

# TB ANYWHERE IS EVERYWHERE

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## Extensively drug-resistant tuberculosis (XDR-TB): the facts

### What is XDR-TB?

XDR-TB is the abbreviation for extensively drug-resistant tuberculosis (TB). One in three people in the world is infected with dormant TB germs (i.e. TB bacteria). Only when the bacteria become active do people become ill with TB.

Bacteria become active as a result of anything that can reduce the person's immunity, such as HIV, advancing age, or some medical conditions. TB can usually be treated with a course of four standard, or first-line, anti-TB drugs.

If these drugs are misused or mismanaged, multidrug-resistant TB (MDR-TB) can develop. MDR-TB takes longer to treat with second-line drugs, which are more expensive and have more side-effects.

XDR-TB can develop when these second-line drugs are also misused or mismanaged and therefore also become ineffective. Because XDR-TB is resistant to first- and second-line drugs, treatment options are seriously limited. It is therefore vital that TB control is managed properly.

### What is the medical definition of MDR-TB and XDR-TB?

MDR-TB, or multidrug-resistant TB, is a specific form of drug-resistant TB. It occurs when the TB bacteria are resistant to at least isoniazid and rifampicin, the two most powerful anti-TB drugs. XDR-TB is TB that is resistant to any fluoroquinolone, and at least one of three injectable second-line drugs (capreomycin, kanamycin, and amikacin), in addition to MDR-TB. This definition of XDR-TB was agreed by the WHO Global Task Force on XDR-TB in October 2006.

### How do people become infected with XDR-TB?

People who are ill with pulmonary TB (i.e. TB of the lungs, the site most commonly affected) are often infectious and can spread the disease by coughing, or sneezing, or simply talking, as this propels TB bacteria into the air. A person needs only to breathe in a small number of these germs to become infected (although only a small proportion of people will become infected with TB disease). Sometimes the bacteria are already drug resistant if they come from a person who already has drug-resistant TB.

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A second way of developing MDR- or XDR-TB is when a patient's own TB develops resistance.

This can occur when anti-TB drugs are misused or mismanaged. This happens when TB control programmes are poorly managed, for example when patients are not properly supported to complete their full course of treatment; when health-care providers prescribe the wrong treatment, or the wrong dose, or for too short a period of time; when the supply of drugs to the clinics dispensing drugs is erratic; or when the drugs are of poor quality.

## How easily is XDR-TB spread?

There is probably no difference between the speed of transmission of XDR-TB and any other forms of TB. The spread of TB bacteria depends on factors such as the number and concentration of infectious people in any one place together with the presence of people with a higher risk of being infected (such as those with HIV/AIDS).

The risk of becoming infected increases the longer the time that a previously uninfected person spends in the same room as an infectious case.

The risk of spread increases where there is a high concentration of TB bacteria, such as can occur in closed environments like overcrowded houses, hospitals or prisons. The risk will be further increased if ventilation is poor. The risk of spread will be reduced and eventually eliminated if infectious patients receive proper treatment.

## Can XDR-TB be cured or treated?

Yes, in some cases. Several countries with good TB control programmes have shown that cure is possible for up to 50–60% of affected people. But successful outcomes also depend greatly on the extent of the drug resistance, the severity of the disease and whether the patient's immune system is compromised.

It is vital that clinicians caring for TB patients are aware of the possibility of drug resistance and have access to laboratories that can provide early and accurate diagnosis so that effective treatment is provided as soon as possible. Effective treatment requires that all six classes of second-line drugs are available to clinicians who have special expertise in treating such cases.

## How common is XDR-TB?

We do not know at the moment, but XDR-TB is rare. However, WHO estimates that there were almost half a million cases of MDR-TB worldwide in 2004, and MDR-TB usually has to occur before XDR-TB arises.

We also know that findings from the only global study carried out so far showed that in some places perhaps as many as 19% of MDR-TB cases were in fact XDR-TB, but this is likely to be uncommon. Wherever second-line drugs to treat MDR-TB are being misused, the possibility of XDR-TB exists. Research is being carried out urgently to find out more.

## How can a person become infected with XDR-TB?

The majority of healthy people with normal immunity may never become ill with TB, unless they are heavily exposed to infectious cases who are not treated or who have been on treatment for less than about one week.

Even then, 90% of people infected with TB bacteria never develop TB disease. This applies to XDR-TB as well as to "ordinary" TB. People with HIV infection, however, in close contact with a TB patient, are more likely to catch TB and fall ill.

The TB patients whom they meet should be encouraged to follow good cough hygiene, for example, covering their mouths with a handkerchief when they cough, or even, in the early stages of

treatment, using a surgical mask, especially in closed environments with poor ventilation.

The risk of becoming infected with TB is very low in the open air. Overall, the chances of being infected with XDR-TB are even lower than with ordinary TB because cases of XDR-TB are still very rare.

## How can a person who already has 'ordinary' TB i.e drug-sensitive TB, avoid getting XDR-TB?

The most important thing is for a patient to continue taking all their treatment exactly as prescribed. No doses should be missed, but this is especially important if the course of treatment is meant to be taken every other day: so-called "intermittent treatment".

Above all, the treatment should be taken right through to the end. If a patient finds that side-effects are a problem, for example, the tablets make them feel sick, they should inform their clinician or nurse, because often there is a very simple solution.

If they need to go away for any reason, patients should make sure they have enough tablets with them for the duration of the trip.

## Why have we never heard of XDR-TB before?

For some years we have seen isolated cases of very highly resistant TB around the world that we would today call XDR-TB. All the drugs used against TB have been around for a long time. If they are not used carefully, then resistance can develop.

It is only recently, as we carry out regular surveys of drug resistance in more and more countries, and with improvements in laboratory capacity, that these cases are being reported in greater numbers. This has led to the problem being more closely examined and given a name.

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### How do countries prevent XDR-TB?

Countries can prevent XDR-TB by ensuring that the work of their national TB control programmes, and all practitioners working with people with TB, is carried out according to the **International Standards for TB Care**.

These emphasize providing proper diagnosis and treatment to all TB patients, including those with drug-resistant TB; assuring regular, timely supplies of all anti-TB drugs; proper management of anti-TB drugs and providing support to patients to maximize adherence to prescribed regimens; caring for XDR-TB cases in a centre with proper ventilation, and minimizing contact with other patients, particularly those with HIV, especially in the early stages before treatment has had a chance to reduce the infectiousness.

### Can the TB vaccine, known as the BCG vaccine, prevent XDR-TB?

The BCG vaccine prevents severe forms of TB in children, such as TB meningitis. It would be expected that BCG would have the same effect in preventing severe forms of TB in children, even if they were exposed to XDR-TB, but it may be less effective in preventing pulmonary TB in adults, the commonest and most infectious form of TB.

The effect of BCG against XDR-TB would therefore likely be very limited. New vaccines are urgently needed, and WHO and members of the Stop TB Partnership are actively working on new vaccines.

### What is the link between XDR-TB and HIV/AIDS? Why in some places is XDR-TB so highly linked with or associated with HIV? Are most people with HIV-TB now infected with MDR-TB and XDR-TB?

TB is one of the most common infections in people living with HIV/AIDS – because so many people are already infected with TB bacteria.

In places where XDR-TB is most common, people living with HIV are at greater risk of becoming infected with XDR-TB, compared with people without HIV, because of their weakened immunity.

If there are a lot of HIV-infected people in these places, then there will be a strong link between XDR-TB and HIV. Fortunately, in most of the places with high rates of HIV, XDR-TB is not widespread. For this reason, the majority of people with HIV who develop TB will have drug-susceptible or ordinary TB, and can be treated with standard first-line anti-TB drugs. For those with HIV infection, treatment

with antiretroviral drugs will likely reduce the risk of becoming infected with XDR-TB, just as it does with ordinary TB.

### How do I know if I have TB or XDR-TB?

Symptoms of XDR-TB are no different from ordinary or drug-susceptible TB: a cough with thick, cloudy mucus (or sputum), sometimes with blood, for more than 2 weeks; fever, chills, and night sweats; fatigue and muscle weakness; weight loss; and in some cases shortness of breath and chest pain.

If you have these symptoms, it does not mean you have XDR-TB, but it does mean you must go and

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see a doctor for a check-up. If you are already a patient with TB and you are taking treatment, if after a few weeks of treatment at least some of these symptoms are not improving, you should inform your clinician or nurse.

### What should be done if a person has been in contact with a known or suspect case of XDR-TB?

Anyone who has been in contact with someone known, or suspected of having, XDR-TB should consult their doctor or a local TB clinic and be screened to see if they have TB. This is most important if the person has any symptoms of TB.

If they have a cough, they will be asked to provide a sample of sputum, which will be tested for evidence of TB. Several other tests will be performed in the clinic, including a skin test and a chest radiograph. If TB is found, treatment will be started with the drugs to which the person's TB is most likely to respond.

If there is any evidence of infection with TB bacteria but without TB disease, preventive treatment may be given (the choice of drugs will depend upon the known drug resistance pattern) or the person may simply be asked to attend regularly for a check up.

## Is it safe to travel to places where XDR-TB has been identified?

XDR-TB has been found in every region of the world, though it is still very rare.

People who are at most risk, if they do come into contact with someone with XDR-TB, are those with reduced immunity to infectious diseases, such as those with HIV infection or other medical conditions that can weaken a person's immunity.

It is also advised that such people should avoid high-risk areas where there are no infection control measures in place.

Air travel itself carries only very minimal risks of infection with TB of any kind.

Travellers with concerns about visiting countries with XDR-TB, or other health risks, should seek advice from their doctor, national authorities, or trusted travel web sites such as [www.who.int/topics/travel](http://www.who.int/topics/travel).

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### What risks do health-care workers face with XDR-TB, particularly those who may be HIV-positive themselves?

To protect health-care workers who may come into contact with infectious TB patients, appropriate and strict infection control measures must be implemented in health-care facilities at all times.

Health care workers are also encouraged to make sure they are aware of their HIV status so that they can avoid putting themselves at risk of exposure.

### How quickly can XDR-TB be diagnosed?

This depends on the patient's access to health-care services. If TB bacteria are found in the sputum, the diagnosis of TB can be made in a day or two, but this finding will not be able to distinguish between drug-susceptible and drug-resistant TB.

To evaluate drug susceptibility, the bacteria need to be cultivated and tested in a suitable laboratory. Final diagnosis in this way for TB, and especially for XDR-TB, may take from 6 to 16 weeks. To reduce the time needed for diagnosis, new tools for rapid TB diagnosis are urgently needed.

### What is WHO doing to combat XDR-TB?

First, WHO is ensuring that the health authorities responsible for TB control receive accurate information about XDR-TB.

Second, WHO is emphasizing that good TB control prevents the emergence of drug resistance in the first place, and that the proper treatment of MDR-TB prevents the emergence of XDR-TB.

This is completely in line with the new **Stop TB Strategy** launched in March 2006. Third, WHO is disseminating MDR-TB guidelines for national TB control programme managers published in May 2006 to help countries establish effective programmes to combat drug-resistant TB.

Fourth, the WHO Stop TB and HIV departments are coordinating an international response through a WHO Global Task Force on XDR-TB which met for the first time in October 2006.

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### Latest information and regular updates

Latest information and regular updates on XDR-TB, and related TB issues, will be published on the WHO Stop TB web site at [www.who.int/tb](http://www.who.int/tb) and on the Stop TB Partnership web site at [www.stoptb.org](http://www.stoptb.org)

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