

## Extensively Drug-Resistant Tuberculosis (XDR TB)

### What is XDR TB?

Extensively drug-resistant tuberculosis (XDR TB) is a relatively rare type of multidrug-resistant tuberculosis (MDR TB). It is resistant to almost all drugs used to treat TB, including the two best first-line drugs: isoniazid and rifampin. XDR TB is also resistant to the best second-line medications: fluoroquinolones and at least one of three injectable drugs (i.e., amikacin, kanamycin, or capreomycin). (World Health Organization [WHO] definition for cases detected on initial susceptibility testing.)

### How is XDR TB spread?

Drug-susceptible (regular) TB and XDR TB are spread the same way. TB germs are put into the air when a person with TB disease of the lungs or throat coughs, sneezes, speaks, or sings. These germs can float in the air for several hours, depending on the environment. Persons who breathe in the air containing these TB germs can become infected.

TB is not spread by

- shaking someone's hand
- sharing food or drink
- touching bed linens or toilet seats
- sharing toothbrushes
- kissing

### Why is XDR TB so serious?

Because XDR TB is resistant to the most powerful first-line and second-line drugs, patients are left with treatment options that are much less effective and often have worse treatment outcomes. XDR TB is of special concern for persons with HIV infection or other conditions that can weaken the immune system. These persons are more likely to develop TB disease once they are infected, and also have a higher risk of death once they develop TB disease.

### Who is at risk for getting XDR TB?

Drug-resistant TB (MDR or XDR) is more common in people who:

- Do not take their TB medicine regularly
- Do not take all of their TB medicines as told by their doctor or nurse
- Develop active TB disease again, after having taken TB medicine in the past
- Come from areas of the world where drug-resistant TB is common
- Have spent time with someone known to have drug-resistant TB disease

### How can I prevent myself from getting TB?

Avoid close contact or prolonged time with known TB patients in crowded, enclosed environments like clinics, hospitals, prisons, or homeless shelters.

### Can the TB vaccine (BCG) help prevent XDR TB?

There is a vaccine for TB disease called bacille Calmette-Guérin (BCG). It is used in some countries to prevent severe forms of TB in children. However, BCG is not generally recommended in the United States because it has limited effectiveness for preventing TB in adults. The effect of BCG against XDR TB would likely be similar to the effect on drug-susceptible TB.

## If I have regular (drug-susceptible) TB, how can I prevent getting drug-resistant TB?

The most important thing is for you to continue taking all your TB medicines exactly as prescribed. No doses should be missed and treatment should not be stopped early. You should tell your health care provider if you are having trouble taking the medications. If you plan to travel, talk with your health care provider, and make sure you have enough medicine to last while away.

## Can XDR TB be treated and cured?

Yes, in some cases. Some TB control programs have shown that cure is possible for an estimated 30% of affected people. Successful outcomes depend greatly on the extent of the drug resistance, the severity of the disease, whether the patient's immune system is weakened, and adherence to treatment.

## What are the symptoms of XDR TB?

The general symptoms of TB disease include feelings of sickness or weakness, weight loss, fever, and night sweats. The symptoms of TB disease of the lungs may also include coughing, chest pain, and coughing up blood. Symptoms of TB disease in other parts of the body depend on the area affected. If you have these symptoms, you should contact your doctor or local health department.

## What should I do if I have been around someone who has XDR TB?

If you think you have been exposed to someone with XDR TB disease, you should contact your doctor or local health department about getting a TB skin test or a special blood test for TB infection. You should tell the doctor or nurse **when** you spent **time** with this person. You should also tell the doctor or nurse where the person with XDR TB is being treated. It will be important to know about this person's treatment. If your test for TB infection is positive, you will need special follow up.

## How long does it take to find out if you have XDR TB?

If TB bacteria are found in the sputum (phlegm), the diagnosis of TB can be made in a day or two, but this finding will not be able to distinguish between drug-susceptible (regular) TB and drug-resistant TB. To determine drug susceptibility, the bacteria need to be grown and tested in a laboratory. Final diagnosis for TB, and especially for XDR TB, may take from 6 to 16 weeks.

## Is XDR TB a problem in the United States?

The risk of acquiring XDR TB in the United States appears to be relatively low. However, it is important to acknowledge the ease at which TB can spread. As long as XDR TB exists, the United States is at risk and must address the threat.

## How many cases of XDR TB have been reported in the United States?

In the United States, 51 cases of XDR TB meeting the WHO definition have been reported between 1993 and 2007. Further analysis of TB cases during this time period identified an additional 28 cases that were not XDR TB on initial testing, but met the WHO definition on follow-up drug susceptibility testing. Another 4 cases were identified that were the equivalent of XDR TB based on resistance to another rifamycin (i.e., rifabutin). The sum of these cases is 83 XDR TB cases in the United States between 1993 and 2007.\*

\* Shah, NS, Pratt, R, Armstrong, L, Robison, V, Castro, KG, Cegielski, JP. Extensively Drug-Resistant Tuberculosis in the United States, 1993-2007. JAMA 2008; 300 (18): 2153.

## Is it safe to travel to countries where cases of XDR TB have been reported?

Although MDR and XDR TB are occurring globally, they are still rare. HIV-infected travelers are at greatest risk if they come in contact with a person with MDR or XDR TB.

All travelers should avoid high risk settings where there are no infection control measures in place. Documented places where transmission has occurred include crowded hospitals, prisons, homeless shelters, and other settings where susceptible persons come in contact with persons with TB disease.

## What can health care providers do to prevent XDR TB?

Health care providers can help prevent MDR and XDR TB by quickly diagnosing cases, following recommended treatment guidelines, monitoring patients' response to treatment, and making sure therapy is completed.

Providers should also ensure proper implementation of infection control procedures to prevent exposure to TB in hospitals or health-care settings where TB patients are likely to be seen.

## Why haven't we heard about XDR TB before now?

For some years we have seen isolated cases of very highly resistant TB around the world that we would today call XDR TB. The drugs used to treat TB have been around a long time and drug resistance has taken many years to develop. Over time, countries have improved their laboratory capacity to test for drug resistance and their ability to track the number of cases. All of these factors have contributed to an increase in reporting of cases of drug-resistant TB. With more cases being identified, the problem was more closely examined, defined, and given a name.

## What is CDC doing to prevent XDR TB from becoming a bigger problem?

CDC is collaborating with other federal agencies and international partners to raise awareness and enhance strategies for TB prevention worldwide by

- Strengthening TB services for people living with HIV/AIDS
- Assembling outbreak response teams
- Improving access to TB drugs
- Developing international TB testing standards
- Building capacity of health care providers to diagnose and treat TB
- Reconvening the Federal TB Task Force
- Providing technical assistance to expand TB program capacity
- Supporting TB communication and education efforts

## Additional Information

CDC. Extensively Drug-Resistant Tuberculosis Information.

[www.cdc.gov/tb/publications/factsheets/drtb/xdrtb.htm](http://www.cdc.gov/tb/publications/factsheets/drtb/xdrtb.htm)

CDC. Questions and Answers About TB.

[www.cdc.gov/tb/publications/faqs/default.htm](http://www.cdc.gov/tb/publications/faqs/default.htm)

CDC. Tuberculosis: General Information.

[www.cdc.gov/tb/publications/factsheets/general/tb.htm](http://www.cdc.gov/tb/publications/factsheets/general/tb.htm)

CDC. Multidrug Resistant Tuberculosis.

[www.cdc.gov/tb/publications/factsheets/drtb/mdrtb.htm](http://www.cdc.gov/tb/publications/factsheets/drtb/mdrtb.htm)

CDC. Tuberculosis Information for International Travelers.

[www.cdc.gov/tb/publications/factsheets/general/tbtravelinfo.htm](http://www.cdc.gov/tb/publications/factsheets/general/tbtravelinfo.htm)

CDC. Extensively Drug-Resistant Tuberculosis - United States, 1993—2006.

[www.cdc.gov/mmwr/preview/mmwrhtml/mm5611a3.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5611a3.htm)

CDC. CDC's Role in Preventing XDR TB.

[www.cdc.gov/tb/publications/factsheets/drtb/cdcandxdrtb.htm](http://www.cdc.gov/tb/publications/factsheets/drtb/cdcandxdrtb.htm)

CDC. Plan to Combat Extensively Drug-Resistant Tuberculosis. *MMWR* 2009; 58 (No. RR-3).

[www.cdc.gov/mmwr/preview/mmwrhtml/rr5803a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5803a1.htm)