

Fact Sheet: MDR and XDR-TB and Infection Control

What is MDR and XDR-TB?

MDR-TB and XDR-TB are names given to strains of TB that have become resistant to TB treatment. Sensitive (ordinary) TB is treated with four drugs: isoniazid (INH), rifampicin (RIF), pyrazinamide (PYZ) and ethambutol (ETH).

MDR-TB:

- MDR stands for 'multi-drug resistant'
- Is resistant to rifampicin (RIF) and isoniazid (INH)
- These two drugs are the strongest TB drugs and resistance to them makes MDR-TB very difficult to treat.

XDR-TB

- XDR stands for 'eXtremely drug-resistant'
- Is resistant to rifampicin and isoniazid (ie it is already an MDR strain), and resistant to fluoroquinolones and one of the following injectable drugs: kanamycin, amikacin or capreomycin.

Figure 1. The newspapers make a really big fuss about MDR and XDR TB. Is it justified?



How is MDR and XDR-TB diagnosed?

- By laboratory culture: MDR-TB and XDR-TB can only be diagnosed when the laboratory grows and does sensitivity tests on the TB germ. Smear microscopy will diagnose TB, but will not tell if that TB strain is sensitive or resistant to TB drugs.
- By clinical response: Patients who have MDR-TB will often respond initially to ordinary TB treatment, but will fail to improve and may deteriorate when continuation phase TB treatment is started.
- By new molecular tests: The HAIN's strip test (a PCR line probe assay) can be done on smear-positive sputum and can tell within 48 hours if the TB strain is sensitive to RIF and INH. Ask your laboratory if the HAIN's strip is available.

How did MDR and XDR-TB develop?

Resistance to TB drugs occurs naturally in TB strains, but is very rare. When TB treatment is taken correctly (RIF, INH, PYZ, ETH for 2 months, then RIF, INH for 4 months) drug resistance will not develop. Until recently in South Africa, the TB control programme was poorly supervised. Drug resistance developed and spread. Today, a person can get drug resistant TB (MDR or XDR) in the following ways:

- Drug resistance in newly diagnosed TB patients usually occurs when a person is infected with a resistant strain of TB.
- Drug resistance in previously treated TB patients occurs when a person has been poorly adherent to TB treatment.

How common is MDR and XDR-TB?

In 2002-3 a study of all TB cases in South Africa showed that MDR-TB occurred at a rate of 1.6% amongst new TB cases and a rate of 6.6% in retreatment cases. But this was a long time ago. Since then, XDR-TB was recognized for the first time in Tugela Ferry in KZN, when 53 XDR-TB cases were identified¹. Reports suggest that there are over 300 cases of XDR-TB in South Africa, and around 8000 MDR cases.

What infection control measures should be in place when MDR and XDR-TB cases are treated?

Identical TB infection control measures should be in place when MDR and XDR-TB cases are treated. Additional measures² should also be taken, including:

- Cohorting of resistant TB cases (i.e. keeping resistant cases together)
- Regular screening of all contacts of MDR and XDR-TB cases (including HCW) for TB disease. INH prophylaxis should be given (not second-line TB drugs) to children and adult HIV+ contacts.
- Strict wearing of N95 respirator/masks when in contact with infectious MDR and XDR patients.

How are MDR and XDR-TB treated?

MDR-TB is treated with second-line TB drugs given as part of a standardised regimen of six-month daily intensive phase with five drugs (kanamycin, pyrazinamide, ofloxacin, ethionamide and either terizidone/cycloserine or ethambutol), followed by an 18-month daily continuation phase with three drugs (ofloxacin, ethionamide and either ethambutol or terizidone/ cycloserine). XDR-TB cannot be successfully treated as there are presently no effective TB drugs.