



# comment

## XDR tuberculosis – untreatable disease or the X factor in mycobacteriology?

It appears that not only TV producers use the letter X to attract public attention. International tuberculosis (TB) experts are also following this trend. The identification of strains of *Mycobacterium tuberculosis* resistant to isoniazid, rifampicin and at least three additional classes of second-line drugs (aminoglycosides, polypeptides, fluoroquinolones, thioamides, cycloserine and *p*-aminosalicylic acid) raises the spectre of a post-antibiotic era for TB. The authors of the first published report on this phenomenon used the term extensively or extreme drug-resistant TB and coined the interesting acronym XDR.

If the infecting organism is susceptible to three or fewer classes of second-line anti-TB drugs, treatment is unlikely to meet international standards. However, this definition does not consider important differences in the roles of the drugs in the treatment of TB.

XDR TB gained considerable media attention in August 2006 following the presentation of data at the World AIDS Conference in Toronto on an outbreak with very high mortality and HIV co-infection rate in South Africa. Recently, more details of this outbreak have been published, confirming the high mortality and presenting evidence of nosocomial transmission. Although

cases of XDR TB have been reported from most parts of the world, the true extent of XDR remains unclear at moment; the original report showed that 19, 4.1 and 15 % of multi-drug resistant (MDR) cases in Latvia, USA and South Korea, respectively, met the definition of XDR TB.

Results from various countries are difficult to compare due to the lack of international standards and the limited reproducibility of drug susceptibility testing for second-line drugs. In view of this and the shortcomings of the initial definition, a WHO working group has revised the laboratory definition of XDR TB. It is now agreed that XDR TB refers to MDR TB (disease caused by organisms resistant to isoniazid and rifampicin) that is also resistant to a fluoroquinolone and at least one of three injectable second-line anti-TB drugs (capreomycin, kanamycin and amikacin).

In the UK, first-line drugs susceptibility testing is available at the Mycobacterium Reference Unit (MRU) and at Mycobacteriology Centres. A national drug susceptibility testing service for second-/third-line drugs is provided by the Health Protection Agency's MRU. The MRU is a WHO SupraNational Reference Laboratory and European Co-ordinating Centre within the Global Programme on Drug Resistance and operates an EQA for drug resistance on behalf of the WHO. A very small proportion of UK MDR TB cases would now be classed as

XDR TB is a serious and emerging public health threat. But what is XDR TB and how can it be controlled? **Ibrahim Abubakar** takes a look at recent developments.

XDR TB under the new criteria. There is no suggestion that XDR TB cases are increasing in the UK.

The WHO has outlined the steps required to control further spread of these strains. The recommended measures include improved case detection for MDR TB, accelerating access to rifampicin resistance testing, effective treatment of MDR in all patients, implementation of infection control measures and strengthening surveillance.

XDR TB is a serious and emerging public health threat. The problem has arisen because of failures in the public health infrastructure and in delivering an effective case management system. Urgent public health action is necessary in settings with high drug resistance, and continued vigilance and preventive measures are required globally if we are to combat this threat.

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### **Further reading**

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Please note that views expressed in Comment do not necessarily reflect official policy of the SGM Council.

▲ False-coloured transmission electron micrograph of *Mycobacterium tuberculosis*. Alfred Pasieka / Science Photo Library