

# Improving treatment for multi-drug resistant tuberculosis patients – lessons from Shandong Province, China

## Policy brief

Our [study](#) identified the barriers to case management from the experiences of multi-drug resistant-TB (MDR-TB) patients and providers during 3 periods:

1. identification of suspected cases
2. MDR-TB diagnosis (sputum culture and drug sensitivity tests)
3. MDR-TB treatment.

Read our full research papers here:

1: Diagnostic and treatment delays of multi-drug resistant tuberculosis before initiating treatment: a cross-sectional study

[doi:10.1111/tmi.12566](https://doi.org/10.1111/tmi.12566)

2: Treatment interruption and directly observed treatment of multi-drug resistant tuberculosis patients in China

[doi.org/10.5588/ijtld.14.0485](https://doi.org/10.5588/ijtld.14.0485)



## Key policy implications:

1. Rapid diagnosis using drug susceptibility tests should be introduced at prefecture TB Hospitals.
2. Streamlining the transporting of sputum samples and reporting of results between the TB dispensaries, prefecture TB hospitals and provincial laboratories will help reduce delays in diagnosis.
3. The limited capacity of laboratories at the prefecture TB hospitals should be addressed; they need to be equipped with necessary devices, trained technicians and infection control facilities to significantly reduce delays in diagnosis.
4. Training should be provided to doctors in TB clinics at prefecture hospitals to help prevent the irrational use of second-line anti-TB drugs among general TB patients.
5. Training for family members to help with directly observed treatment (DOT) may help reduce high default rates among MDR-TB patients and improve treatment success. Further studies are needed to assess the involvement of family members in DOT.

## TB treatment in China

China has almost one fifth of all the world's MDR-TB cases<sup>1</sup> and the second highest number of TB cases in the world.<sup>2</sup> Over the past 10 years, China has taken some important steps to improve MDR-TB control:

- several provinces, including Shandong, have implemented the WHO standardised 24-month treatment for MDR-TB; and
- since 2005, a DOT strategy has been in place in all parts of Shandong, in line with WHO recommendations that MDR-TB treatment is given using DOT.

However, major challenges to using DOT still exist, particularly around treatment delay and treatment interruption.

Missing 10% or more doses of MDR-TB medication in any 6-month period has been shown to result in poor treatment outcomes and further transmission of the disease to the wider population. Compliance to national TB guidelines is also a challenge.



### Findings on diagnosis delay

1. A prolonged diagnosis delay was the most important factor contributing to the overall delay in MDR-TB patients receiving their treatment. More than 80% of patients experienced a diagnosis delay of more than 90 days. 19% of patients waited longer than 180 days for diagnosis.
2. Delays were due to the limited capacity of laboratories at the prefectural level, and therefore over-reliance on stretched provincial laboratories to carry out drug susceptibility tests.

### Policy implications

1. The limited capacity of laboratories at the prefecture TB hospitals should be addressed. Prefecture TB hospitals need to be equipped with necessary devices, trained technicians and infection control facilities. This will significantly reduce delays in diagnosis.
2. The logistics of transporting sputum and reporting results should be streamlined between TB dispensaries, prefecture TB hospitals and provincial laboratories.
3. Rapid diagnosis using drug susceptibility tests should be introduced at prefecture TB hospitals. However, these should be evaluated, and the financial implications understood, before wider scale-up.



### Findings on treatment delays

More than 37% of patients experienced a delay in starting their anti-MDR-TB treatment. Chronic cases and those who did not regard TB as a serious disease were more likely to have treatment delays.

### Policy implications

1. MDR-TB treatment should be given to patients who experience retreatment failure before their drug resistance profile is confirmed to reduce treatment delays.
2. Comprehensive free treatment and a care package provided by the Global Fund might contribute to reducing the financial burden that would prevent patients with MDR-TB from seeking MDR-TB treatment.



### Findings on treatment difficulties

Misuse of MDR-TB drugs was common. This was particularly the case at prefecture TB hospitals. If MDR-TB patients do not receive the right combination of drugs at the right time, the risk of generating extensive drug resistance increases.

### Policy implications

1. Training should be provided to doctors in TB clinics at prefectural-level hospitals to help prevent the irrational use of second-line anti-TB drugs among general TB patients.



### Findings on treatment interruption

1. 68% reported treatment interruption.
2. Only half of all patients interviewed received DOT.
3. DOT provided by family members resulted in less severe treatment interruptions, but only half of all family members received relevant training in administering DOT.
4. Almost a quarter of patients received their MDR-TB injections from family members, raising questions about dosage and infection control.

### Policy implications

1. Family members should be properly trained to provide DOT.
2. More structured involvement of family members should be tested in future studies.

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#### References:

1. Zhao Y, Xu S, Wang L, et al. (2012) National survey of drug-resistant tuberculosis in China. The New England Journal of Medicine. [doi.org/ 10.1056/NEJMoa1108789](https://doi.org/10.1056/NEJMoa1108789)
2. World Health Organization. (2010) Multi-drug and extensively drug resistant TB (M/XDR-TB) 2010 global report on surveillance and response. [Link](#)

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