Decentralisation of multidrug-resistant-tuberculosis care and management

Multidrug-resistant (MDR) tuberculosis is an important medical and public health challenge, afflicting an estimated 500 000 new patients each year. Recent progress in the development of new molecular diagnostic techniques[1] and the first new antituberculosis drug registration in almost 40 years[2] provide reasons for optimism, but still, globally, less than 10% of individuals with MDR-tuberculosis receive treatment of known quality.

Country data for detection and enrolment onto treatment reported to WHO over the past 3 years paint a varied picture of progress.[3] Some high burden countries report steady increases in the numbers of patients treated over the past 3 years, notably India, Russia, and South Africa. However, less than a quarter of the countries providing complete data showed a linear increase in case detection, and less than half showed a year-on-year increase in the numbers of patients enrolled onto treatment. No country that treated more than 500 patients achieved a treatment success rate of greater than 55%. There has been progress in places, but not nearly enough.

Impediments towards universal access to MDR-tuberculosis treatment are many, ranging from insufficient donor funding to poor laboratory diagnostic capacity and health system challenges, including the need to encourage ambulatory care models.[4] This last point is crucial, because although advances in diagnostics and improved treatment regimens will go a long way to improving access, the models of care in which such technologies are delivered will strongly affect patient access and retention in care.

Historically, MDR-tuberculosis treatment has been provided through small, individualised programmes with specialist clinical support.[5] Such models of care might work where patient numbers are small, but in settings like South Africa and Russia, which both detected more than 10 000 cases in 2011 alone, specialised, centralised programmes are unlikely to meet the need. Moreover, larger MDR-tuberculosis treatment programmes are associated with poorer rates of retention in care.[6]

Increased efforts in global tuberculosis control have resulted in strong basic tuberculosis programmes in many settings that have developed local systems for supporting patients on treatment for tuberculosis and ensuring adherence. Integration of MDR-tuberculosis care and management into routine tuberculosis programmes in such settings is feasible and allows patients with MDR-resistant tuberculosis to receive treatment close to where they live.

There is increasing evidence from several large-scale MDR-tuberculosis programmes of improved access to care and management through decentralisation, without compromising treatment outcomes,[7–10] including programmes that have task shifted initiation of MDR-tuberculosis treatment to trained nurses.[11] Decentralisation has been a crucial strategy for expanding access to treatment for HIV and has been associated with better patient outcomes than with hospital-managed care, mainly due to improved retention;[12,13] there is a broad consensus that to improve early health-seeking behaviour, promote adherence to medication, and minimise defaulting, HIV care is best provided as close as possible to the patient's home and community. These lessons for patient support are clearly applicable to MDR-tuberculosis because default rates from care commonly exceed 20%.[6]

One concern about decentralising MDR-tuberculosis care is the potential increased risk of community transmission, but in most high-burden settings, the MDR-tuberculosis epidemic is driven primarily by direct transmission of MDR-tuberculosis strains. The low proportion of estimated cases that are treated appropriately means that most transmission is occurring among undiagnosed and untreated cases. Therefore, efforts to reduce transmission should be directed at diagnosing and treating as many cases as possible and as early as possible.[14]

After decades of neglect, much needed improvements in diagnostics and therapeutics are becoming available. However, their impact will be small without parallel efforts to improve the service delivery model. Decentralisation is likely to offer the best opportunity for early initiation of treatment at the scale required,

reserving hospital resources to manage the small percentage of patients who require admission on clinical grounds and potentially for those in whom the drug resistance profile means few treatment options.

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1 Boehme CC, Nabeta P, Hillemann D, et al. Rapid molecular detection of tuberculosis and rifampin resistance. *N Engl J Med* 2010; **363:** 1005–15.

2 Voelker R. MDR-TB has new drug foe after fast-track approval. *JAMA* 2013; **309:** 430.

3 Falzon D, Jaramillo E, Wares F, Zignol M, Floyd K, Raviglione MC. Universal access to care for multidrug-resistant tuberculosis: an analysis of surveillance data. *Lancet Infect Dis* 2013; published online June 4. http://dx.doi.org/10.1016/S1473-3099(13)70130-0.

4 Fitzpatrick C, Floyd K. A systematic review of the cost and cost effectiveness of treatment for multidrug-resistant tuberculosis. *Pharmacoeconomics* 2012; **30:** 63–80.

5 Nathanson E, Lambregts-van Weezenbeek C, Rich ML, et al. Multidrug-resistant tuberculosis management in resource-limited settings. *Emerg Infect Dis* 2006; **12:** 1389–97.

6 Toczek A, Cox H, du Cros P, Cooke G, Ford N. Strategies for reducing treatment default in drug-resistant tuberculosis: systematic review and meta-analysis. *Int J Tuberc Lung Dis* 2013; **17:** 299–307.

7 Shin S, Furin J, Bayona J, Mate K, Kim JY, Farmer P. Community-based treatment of multidrug-resistant tuberculosis in Lima, Peru: 7 years of experience. *Soc Sci Med* 2004; **59:** 1529–39.

8 Brust JC, Shah NS, Scott M, Chaiyachati K, et al. Integrated, home-based treatment for MDR-TB and HIV in rural South Africa: an alternate model of care. *Int J Tuberc Lung Dis* 2012; **16:** 998–1004.

9 Malla P, Kanitz EE, Akhtar M, et al. Ambulatory-based standardized therapy for multi-drug resistant tuberculosis: experience from Nepal, 2005–2006. *PLoS One* 2009; **4:** e8313.

10 Medecins Sans Frontieres. Scaling up diagnosis and treatment of drug-resistant tuberculosis in Khayelitsha, South Africa. Cape Town: Medecins Sans Frontieres, 2011. http://www.msf.org.za/publication/scaling-diagnosis-and-treatment-drug-resistant-tuberculosis-khayelitsha-south-africa (accessed May 23, 2013).

11 Farley LDJ, Mlandu N, Ndjeka N, Richard P, ven der Walt M. Nurse initiation and management of MDR-TB-HIV: lessons from operational research. 43rd Union conference on lung health; Kuala Lumpur; Nov 13–17, 2012.

12 Fatti G, Grimwood A, Bock P. Better antiretroviral therapy outcomes at primary healthcare facilities: an evaluation of three tiers of ART services in four South African provinces. *PLoS One* 2010; **5:** e12888.

13 Fayorsey RN, Saito S, Carter RJ, et al. Decentralization of pediatric HIV care and treatment in five sub-Saharan African countries. *J Acquir Immune Defic Syndr* 2013; **62:** e124–e130.

14 Nardell E, Dharmadhikari A. Turning off the spigot: reducing drug-resistant tuberculosis transmission in resource-limited settings. *Int J Tuberc Lung Dis* 2010; **14:** 1233–43.