Implementing Xpert MTB/RIF in rural Zimbabwe: Impact on diagnosis of smear-negative TB and time-to-initiation of TB treatment in smear-negative patients co-infected with HIV

Steven Van Den Broucke[1], Sandrina Simons[1], Dhodho Munyaradzi[1], Brian Nyagadza[1] Carol Metcalf[2], Kzenwakwenkosi Ncube[3], Helen Bygrave[2]

[1] Médecins Sans Frontières, Zimbabwe

[2] Médecins Sans Frontières, Southern Africa Medical Unit, Cape Town, South Africa

[3] Ministry of Health and Child Welfare Zimbabwe, Buhera District, Zimbabwe

Background

Xpert® MTB/RIF is a new molecular diagnostic tool, developed to increase detection and shorten time to diagnosis of sputum-smear-negative (SSN) tuberculosis (TB). In April 2011, Médecins Sans Frontières (MSF) in collaboration with the Zimbabwean Ministry of Health and Child welfare implemented two Xpert® MTB/RIF systems in a rural district in Zimbabwe serving two hospitals and 26 decentralised primary care clinics.

Methods

From May to October 2011, parallel testing with both smear microscopy and Xpert® MTB/RIF was performed on specimens from all TB suspects. We used information abstracted from clinical and laboratory records to compare the number of laboratory-confirmed TB cases, number of TB notifications, and the time to diagnosis among HIV/TB co-infected patients with sputum-smear-negative TB during 6 months before and after Xpert® MTB/RIF implementation.

Results

A total of 1672 sputum specimens were processed, of which 184 (11.0%) were smear-positive. Mycobacterium tuberculosis was detected by Xpert® MTB/RIF in 116 (7.8%) of the 1488 remaining smear-negative specimens. Comparing the period after implementing Xpert® with the period before, the proportion of TB notifications that were smear positive (33% versus 27%), smear-negative (48% versus 49%), sputum not tested (11% versus 12%), and extra-pulmonary (8% versus 12%) was unchanged. The median time to TB treatment initiation among HIV/TB co-infected patients with sputum-smear-negative TB, decreased at decentralised sites (from 18.5 days to 7 days), but remained constant at the hospital level (5.5 days before and 6 days after).

Conclusions

Xpert® MTB/RIF increased the number of laboratory-confirmed TB cases in rural Zimbabwe. In settings where access to chest X-Ray and trained doctors is lacking the impact on TB notifications may be greater. Time-to-initiation of TB treatment at the decentralized clinics was reduced, which has the potential to reduce morbidity in individuals and reduce the risk of TB transmission to others.