


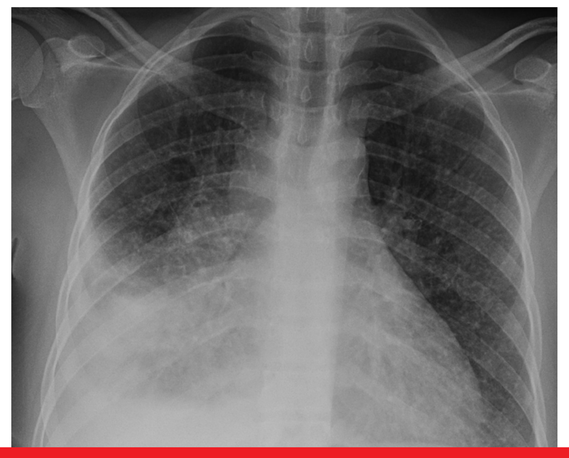
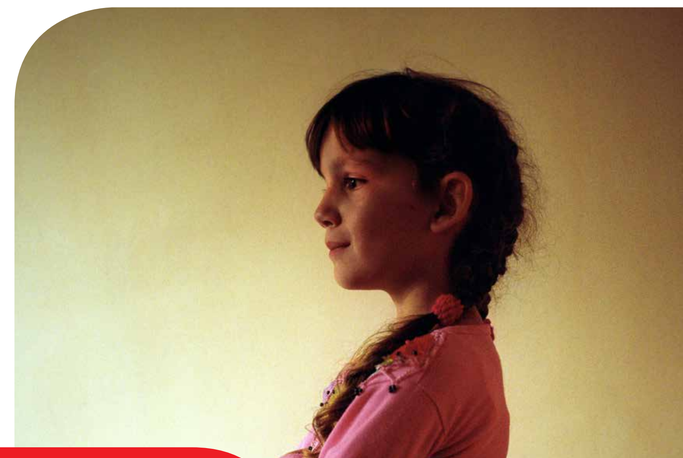

Effectiveness of introducing Xpert MTB/RIF for individuals at risk of TB and MDR-TB in Kazakhstan

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Background

With support from USAID/TB CARE I, Xpert MTB/RIF (Xpert) was introduced in the national TB control program (NTP) of Kazakhstan as a routine test to detect TB and rifampicin resistance (RR) among eleven groups at risk of TB or multidrug resistant (MDR-) TB (Figure 1). This study set out to inform national scale-up of Xpert by assessing the uptake of Xpert, effectiveness of the diagnostic algorithm, and linkages between laboratory and clinics.

Methods

Xpert was implemented under programmatic conditions in three provincial laboratories and the national TB reference laboratory (NTRL). From Augustus 2012 to May 2013, individual patient data was gathered from electronic laboratory and treatment registers. Outcomes measured were: the proportion of individuals that received an Xpert test; that tested positive for TB and RR; that started treatment for TB or RR-TB; turn-around-time of Xpert results; and time from diagnosis to treatment initiation.

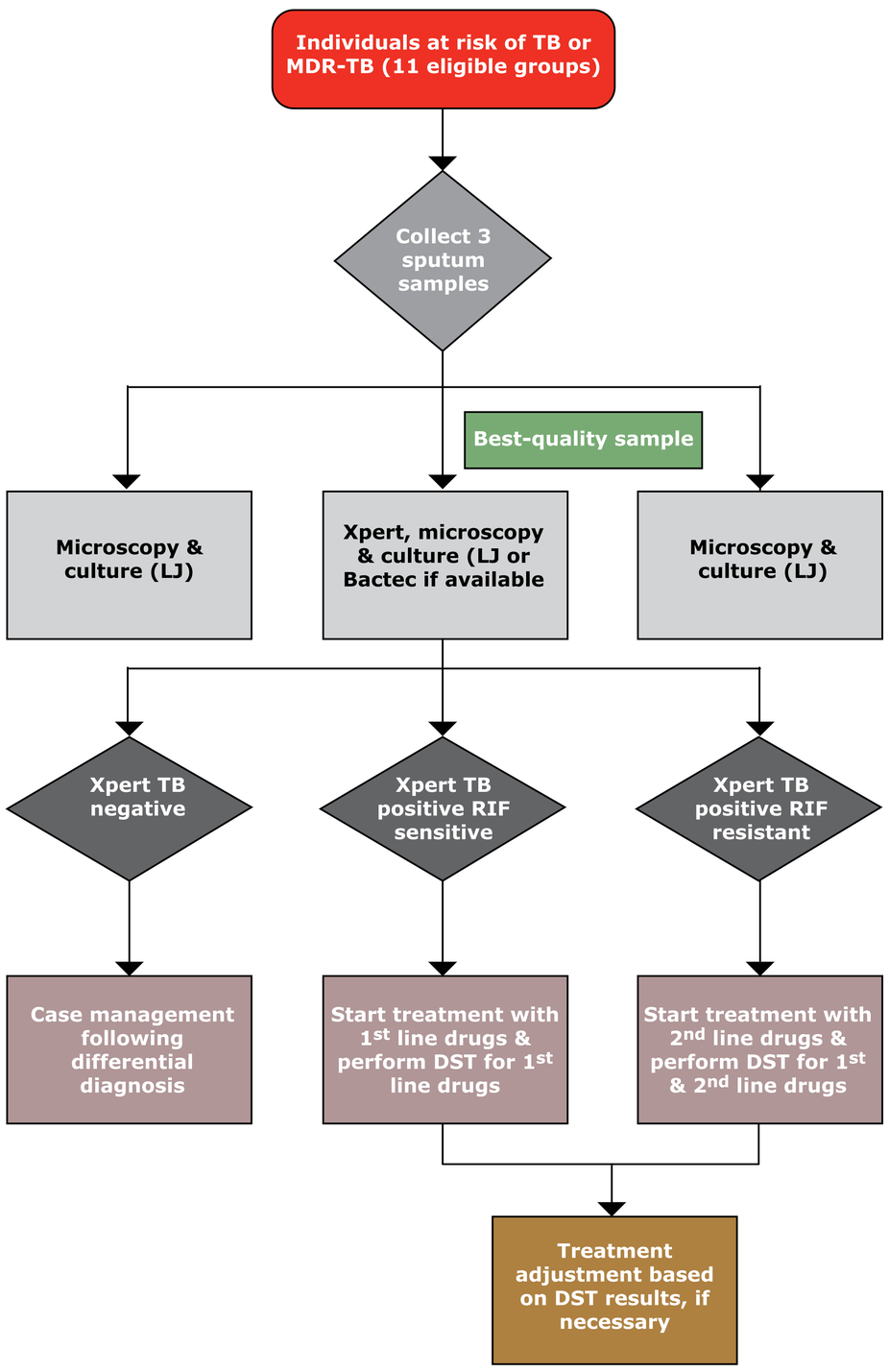

Figure 1. Diagnostic and treatment algorithm used for eleven eligible groups at risk of TB or multidrug-resistant TB in four provincial laboratories in Kazakhstan

Results

Uptake op Xpert testing was immediate with on average 140 tests done per month per site. Mostly close contacts of MDR-TB patients, retreatment cases and new (presumptive) TB patients were tested. (Ex-) prisoners and people living with HIV/AIDS (PLWHA) suspected of TB showed a high proportion of RR among TB positives, comparable to that of retreatment patients (Table 1).
Two sites registered start of MDR-TB treatment for 89% of RR-TB patients, while in the two other sites this was 43-50%. In one site, 23% of individuals started TB treatment despite negative Xpert and culture results. The median turn-around-time of an Xpert result to the clinic was one day (IQR 0-1 day). Median time from diagnosis to start of TB treatment was 5 days (IQR 1-10 days) and for MDR-TB treatment 8 days (IQR 5-19 days).

Eligible group	Number of people tested	TB positive (among all tested)	Rifampicin resistant (among TB positives)
Presumptive MDR-TB patients treated previously for TB			
Retreatment patients	1,114	57%	58%
Smear-positive after intensive phase	338	59%	53%
Acute progressive TB	127	50%	42%
TB/HIV co-infected patients	48	65%	42%
Previous treatment not in line with national guidelines	21	43%	33%
Presumptive MDR-TB patients not previously treated for TB			
(Ex-)prisoners suspected of TB	188	36%	59%
PLHWA suspected of TB	110	34%	54%
Close MDR-TB contacts	1,288	39%	43%
Medical/prison staff suspected of TB	56	25%	43%
Group type not recorded	407	41%	43%
Others (mostly new and presumptive TB patients)	1,224	36%	38%
Pregnant women or after delivery suspected of TB	190	13%	32%

Table 1. Proportion of TB positive and rifampicin resistant Xpert results among eleven eligible groups in four provincial laboratories in Kazakhstan (Aug 2012-May 2013)

Conclusion

Uptake of Xpert in provincial laboratories was high and rapid. Xpert results were readily adopted for treatment decisions by clinicians as shown by the short time to start patients on anti-TBand MDR-TB regimen after testing. However, reasons for the gap between diagnosis and treatment registration should be further assessed. Efforts should go towards testing more prisoners and PLWHA suspected of TB and increase referrals from penitentiary and HIV/AIDS centers in order to rapidly detect RR-TB among these risk groups.

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