Treating Patient, Not Disease: People-Centered Approach

7th TB Symposium – Ministry of Health of the Kyrgyz Republic and Médecins Sans Frontières

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Tuberculosis and Diabetes in the Chechen Republic

Dr Jay Achar

MSF Manson Unit, London
Diabetes and TB

- TB prevalence and incidence higher amongst people with diabetes
- Those with insulin dependence have the highest risk
- Diabetes prevalence higher amongst TB patients than general population

Jay Achar, Manson Unit, MSF UK
Diabetes prevalence

Jay Achar, Manson Unit, MSF UK
Looking ahead....

- Diabetes prevalence projected to increase to 13% by 2035
- Modelling suggests this would reduce the drop in TB incidence by >8%
- A strong reduction in TB will not be possible without addressing diabetes

Lancet Vol 2, Sept 2014

Jay Achar, Manson Unit, MSF UK
TB & DM interaction

• Diabetes is a recognized risk factor for TB disease
• Estimated that 15% of global TB burden due to diabetes
• Associated with:
  – Infection → Disease
  – Worse TB treatment outcomes
  – Risk of death
  – Risk of TB relapse
TB & DM interaction

- Glycaemic control associated with TB outcome
- TB worsens glycaemic control
- Possible more severe and overlapping side-effects
  - Neuropathy and Lzd
  - Nephropathy and SLI
Chechen Republic

- Population: 1.3 million
- TB incidence dropping from 2010 - 2015
- High rates of second line drug resistance
  - 14% of all MDR-TB cases are diagnosed with XDR-TB
  - Further 10% harbor FQ resistance and 25% SLI resistance
Collaboration

- Started early 2015
- Diabetes managed in collaboration with MoH at the TB dispensary
- Engagement with endocrinologists
- MSF endocrinologist
- Included all TB patients diagnosed with diabetes
- Regular follow-up to address glycaemic control, CV risk factors, and complications of diabetes
## Cohort characteristics

<table>
<thead>
<tr>
<th></th>
<th>Number (%)</th>
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</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>95 (100%)</td>
</tr>
<tr>
<td>DS-TB</td>
<td>52 (55%)</td>
</tr>
<tr>
<td>MDR-TB</td>
<td>15 (16%)</td>
</tr>
<tr>
<td>Pre-XDR-TB</td>
<td>15 (16%)</td>
</tr>
<tr>
<td>XDR-TB</td>
<td>12 (13%)</td>
</tr>
<tr>
<td>Type 1 diabetes</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
<td>90 (95%)</td>
</tr>
</tbody>
</table>

![Inclusion into DM & TB cohort over time](chart.png)
## Cohort characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Median (IQR)</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>58 (50-65)</td>
<td>32 (24-48)</td>
</tr>
<tr>
<td>Female</td>
<td>55 (58%)</td>
<td>48%</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>26 (23-29)</td>
<td>19 (17-21)</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>9.7 (7.6–10.9)</td>
<td></td>
</tr>
<tr>
<td>Systolic BP (mmHg)</td>
<td>130 (120-135)</td>
<td></td>
</tr>
</tbody>
</table>

![Baseline BMI by DST group](chart1)

![Baseline HbA1c by DST group](chart2)
## Results

<table>
<thead>
<tr>
<th></th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>95 (100)</td>
</tr>
<tr>
<td>LTFU</td>
<td>7 (7.4)</td>
</tr>
<tr>
<td>Died</td>
<td>9 (9.5)</td>
</tr>
</tbody>
</table>

### Mean (95% CI)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in HbA1c</td>
<td>-0.61 (-1.0 - -0.2)</td>
</tr>
<tr>
<td>BMI</td>
<td>1.71 (1.13 – 2.28)</td>
</tr>
</tbody>
</table>

*Median change in HbA1c: -0.6 (-1.0 – -0.2)*

*Renal toxicity greatest in XDR cases*
Conclusions

• Diabetic TB patients are older
• Those with DS-TB may have worse glycaemic control
• Co-management can improve HbA1c
• Worse renal deterioration with increasing resistance
• Diabetic patients have lower rate of LTFU
• Pending work to look at TB treatment outcomes
Key messages

• People with TB complicated by DM need special attention
• Screening TB patients for diabetes is important
• Knowledge amongst endocrinologists is crucial to detect symptoms early
• Treatment of diabetes will improve treatment outcomes
• Risk of LTFU might be reduced by linking TB follow-up with diabetes management
Acknowledgements

Patients, doctors and nurses in Chechnya
MSF field teams