Decreasing Treatment Delay in Tuberculosis in Guinea Bissau: A longitudinal cohort study


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TUBERCULOSIS IN BISSAU

- DSS population 102,000 (urban)
- Estimated TB incidence rate of the study area is 470/100,000*
- TB-surveillance since 1996
- All patients with a confirmed TB-diagnosis are registered

*Gustafson et al. 2004
DEFINITIONS

The total treatment delay

Initial symptoms → First Contact → Diagnosis → Treatment start
OBJECTIVES

- To describe the background factors that influence total treatment delay in the diagnosis of tuberculosis.

- To measure the time dependent changes in total treatment delay during the study period.

- To investigate the effect of treatment delay on clinical severity of TB at diagnosis and the influence on mortality at follow up.
INCLUSION AND FOLLOW UP

- Inclusion after diagnosis at local health centers and the TB-referral hospital in Bissau.

- Structured questionnaire including information on TB symptoms and disease anamnesis etc.

- Clinical examination at 2 and 4 months after diagnosis and at the end of treatment. (6 or 8 months)

- Mortality follow up at 12 months and 24 months
BANDIM TB-SCORE

- Newly developed tool to measure clinical severity
- Based on both symptoms and medical examination
- Detects changes in clinical severity
- Predictor for mortality at follow up*

*Wejse et al. 2008
### INCLUSION

#### Flow chart of studied TB-cases

<table>
<thead>
<tr>
<th></th>
<th>Not Included</th>
<th>Number of TB Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Tuberculosis-cases in the study period</td>
<td></td>
<td>1424</td>
</tr>
<tr>
<td>Not included due to age&lt;15 years</td>
<td>58</td>
<td>1366</td>
</tr>
<tr>
<td>Refused to participate</td>
<td>364</td>
<td>1002</td>
</tr>
<tr>
<td>Incomplete information on initial symptoms</td>
<td>12</td>
<td>990</td>
</tr>
<tr>
<td>Extrapulmonary TB</td>
<td>17</td>
<td>973</td>
</tr>
</tbody>
</table>
PATIENT CHARACTERISTICS

- Included cases had a mean age of 35.7 years and 62% were male patients

- Non-included patients were older (p=0.00) and more often visitors in the study area (p=0.03).

- No significant difference in gender

- The overall median treatment delay was 12.1 weeks
THE TREATMENT DELAY

Kaplan-Meier failure estimates

Time from first symptom

Proportion in treatment

Male
Female
## FACTORS AFFECTING TREATMENT DELAY

<table>
<thead>
<tr>
<th>Factor</th>
<th>Attribute</th>
<th>Univariant HR*</th>
<th>p</th>
<th>Multivariant HR*</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>0.87[0.76;0.99]</td>
<td>0.032</td>
<td>0.92[0.80;1.06]</td>
<td>0.269</td>
</tr>
<tr>
<td>Age</td>
<td>More than 45 years</td>
<td>0.72[0.62;0.84]</td>
<td>0.000</td>
<td>0.87[0.73;1.05]</td>
<td>0.141</td>
</tr>
<tr>
<td>Civil Status</td>
<td>Ever been married</td>
<td>0.76[0.67;0.87]</td>
<td>0.000</td>
<td>0.97[0.83;1.13]</td>
<td>0.675</td>
</tr>
<tr>
<td>Education</td>
<td>0-6 years</td>
<td>0.65[0.57;0.74]</td>
<td>0.000</td>
<td>0.79[0.67;0.92]</td>
<td>0.000</td>
</tr>
<tr>
<td>Sputum</td>
<td>No positive smear</td>
<td>0.84[0.73;0.96]</td>
<td>0.008</td>
<td>0.84[0.73;0.97]</td>
<td>0.015</td>
</tr>
<tr>
<td>Residence</td>
<td>Guest</td>
<td>0.71[0.61;0.82]</td>
<td>0.000</td>
<td>0.89[0.75;1.06]</td>
<td>0.204</td>
</tr>
<tr>
<td>Religion</td>
<td>Traditional</td>
<td>0.73[0.63;0.84]</td>
<td>0.000</td>
<td>0.86[0.73;1.02]</td>
<td>0.088</td>
</tr>
<tr>
<td>Ethnical Group</td>
<td>Balanta</td>
<td>0.80[0.67;0.96]</td>
<td>0.016</td>
<td>0.90[0.74;1.09]</td>
<td>0.297</td>
</tr>
</tbody>
</table>

*Cox regression analysis. HR<1 indicates a higher risk of treatment delay*
OTHER FACTORS

No influence on total treatment delay in univariate analysis:

- HIV-status
- BMI
- Employment
- Smoking-status
TREATMENT DELAY OVER TIME
TREATMENT DELAY OVER TIME

- In a linear regression model total treatment delay decreased with 10% pr. year from 2003 to 2010.
- The change was different between residents in the area and guests.
## TREATMENT DELAY AND TBSCORE

<table>
<thead>
<tr>
<th>Group</th>
<th>Percentile</th>
<th>Delay (weeks)</th>
<th>TB-score</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>0-25%</td>
<td>0-7.6</td>
<td>5.7[5.4;5.9]</td>
<td>(ref)</td>
</tr>
<tr>
<td>Medium</td>
<td>25-50%</td>
<td>7.6-12.1</td>
<td>6.3[5.9;6.7]</td>
<td>0.001</td>
</tr>
<tr>
<td>Long</td>
<td>50-75%</td>
<td>12.1-21-1</td>
<td>6.8[6.4;7.2]</td>
<td>0.000</td>
</tr>
<tr>
<td>Very long</td>
<td>75%-</td>
<td>21.1-</td>
<td>6.7[6.3;7.1]</td>
<td>0.000</td>
</tr>
</tbody>
</table>
## TREATMENT DELAY AND SURVIVAL

<table>
<thead>
<tr>
<th>Group</th>
<th>Percentile</th>
<th>Delay (weeks)</th>
<th>HR</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>0-25%</td>
<td>0-7.6</td>
<td>1.00</td>
<td>(ref)</td>
</tr>
<tr>
<td>Medium</td>
<td>25-50%</td>
<td>7.6-12.1</td>
<td>0.98 [0.62; 1.55]</td>
<td>0.934</td>
</tr>
<tr>
<td>Long</td>
<td>50-75%</td>
<td>12.1-21.1</td>
<td>1.09 [0.70; 1.69]</td>
<td>0.718</td>
</tr>
<tr>
<td>Very long</td>
<td>75%-</td>
<td>21.1-</td>
<td>1.42 [0.93; 2.16]</td>
<td>0.102</td>
</tr>
</tbody>
</table>
TREATMENT DELAY AND SURVIVAL

Effect?

Treatment delay → Clinical Severity → Mortality
CONCLUSION

- Different background factors increase the risk of total treatment delay including education and TB smear status.

- Since 2003 there has been a noteworthy fall in the total delay to treatment for TB-patients in Bissau.

- Bandim TB-score increases when treatment delay is long and treatment delay may also have a direct effect on mortality.
QUESTIONS?

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