Co-morbidity of Tuberculosis and Addictive Diseases in the Leningrad Region, Russia
Leningrad Region

- **Area** - 839 000 km\(^2\) (0,5% of the whole Russian area)
- **Population** - 1714403 (in 2011)
- **Density of population** - 19,1 per sq. km.
- 17+1= 18 municipalities
- **Surrounds Saint-Petersburg** with more than 6 mln. population
- **Borders with Estonia and Finland**
Ленинградская область

пораженность на 100 тысяч населения
- до 300
- от 301 до 500
- от 501 до 700
- более 900
- от 701 до 900
Importance of the problem

- There is clear association between TB and alcohol and drug dependence, but the degree of these diseases co-occur has not been systematically evaluated in Russia, especially during the HIV epidemic.

- Also, historically Russian health care system has been very fragmented, thus a single patient who has TB, HIV and AD or other co-morbidities currently treated at separate facilities.
Background

Tuberculosis was widespread in Russia before the Revolution in 1917:

**TB mortality in 1860 was in:**
- 470 per 100 000 pop. in Moscow
- 600 per 100 000 pop. in St. Petersburg

**TB prevalence in Russia was:**
- 223 per 100 000 pop. in 1896
- 539 per 100 000 pop. in 1913
Background

- In 1918 the first antituberculous Dispensary was founded in Moscow
- In 1925 the number of Dispensaries increased to 223
- In 1940 - to 554
TB mortality in RUSSIA, JAPAN and USA after World War II and in 1980s
TB incidence and TB mortality in Russia (1975-2011)
Reasons for resurgence of TB in Russia

- **Economic ruin in the 1990s**
  (high unemployment rates; 30-40% of population were below the poverty line)

- **Local Wars** (migrants, homelessness)

- **Increase in prison population**

- **Destruction of the existing Health Care System when a new one was not yet organized**
Reasons for resurgence of TB in Russia (cont.)

- Reduction in funding for TB control programs
- Dissolution of social support systems
- Decline in the number of TB facilities and TB staff
- TB drug insufficiency
- Increase in TB drug resistance (MDR, EXDR)
- High level of Alcoholism and Drug Abuse among general population
- Rising rates of HIV/AIDS and HIV/TB co-infections
Incidence and Prevalence of Alcohol Consumption in Russia
RELATIONSHIP BETWEEN ALCOHOL DRINK SALE and MORTALITY in RUSSIA

*1L ethanol per person-year
**per 1000 population
***per 100 000 population
HIV incidence & new cases of Substance Abuse in RF and Leningrad Region
HIV transmission risk in the Leningrad Region

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New cases</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1094</td>
<td>973</td>
<td>1165</td>
<td>1162</td>
<td>1401</td>
<td>1349</td>
</tr>
<tr>
<td><strong>Transmission risk (%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Homo -</strong></td>
<td>0,2</td>
<td>0,7</td>
<td>0,2</td>
<td>0,2</td>
<td>0,3</td>
<td>0,2</td>
</tr>
<tr>
<td><strong>Hetero -</strong></td>
<td>34,8</td>
<td>50,0</td>
<td>46,0</td>
<td>39,0</td>
<td>39,0</td>
<td>41,0</td>
</tr>
<tr>
<td>Blood transmission</td>
<td>0,3</td>
<td>0,2</td>
<td>0,0</td>
<td>0,1</td>
<td>0,0</td>
<td></td>
</tr>
<tr>
<td><strong>IDU</strong></td>
<td>63,0</td>
<td>46,0</td>
<td>52,6</td>
<td>45,0</td>
<td>46,2</td>
<td>46,1</td>
</tr>
<tr>
<td><strong>Unknown</strong></td>
<td>-</td>
<td>-</td>
<td>1,0</td>
<td>0,8</td>
<td>0,7</td>
<td>0,7</td>
</tr>
</tbody>
</table>
Frequency of HIV-infected patients among IDUs in the Leningrad Region,
Spectrum of Drug Addiction in the Leningrad Region, Russia

- Opiates: 76.0%
- Cannabis: 52.0%
- Analgetics: 44.0%
- Stimulators: 24.0%
- Atropin-like drugs: 12.0%
- Hallucinogens: 8.0%
- Sedative-hypnotics: 4.0%
- Cocaine: 4.0%
TB & HIV incidence in the Russian Federation and Leningrad region
The number of HIV/TB cases & deaths in the Leningrad region

<table>
<thead>
<tr>
<th>Year</th>
<th>All cases</th>
<th>Deaths</th>
<th>New cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>110</td>
<td>49</td>
<td>85</td>
</tr>
<tr>
<td>2007</td>
<td>164</td>
<td>73</td>
<td>91</td>
</tr>
<tr>
<td>2008</td>
<td>227</td>
<td>103</td>
<td>124</td>
</tr>
<tr>
<td>2009</td>
<td>294</td>
<td>100</td>
<td>194</td>
</tr>
<tr>
<td>2010</td>
<td>355</td>
<td>107</td>
<td>243</td>
</tr>
</tbody>
</table>
## Socio-demographic and epidemiological characteristics of patients dying at the TB hospital Zelenyi Holm

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>HIV/TB patients n = 63</th>
<th>TB patients n = 26</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age (years)</td>
<td>31,1</td>
<td>44,5</td>
<td>p &lt; 0,01</td>
</tr>
<tr>
<td>Male gender</td>
<td>45 (71%)</td>
<td>19 (73%)</td>
<td>p &gt; 0,1</td>
</tr>
<tr>
<td>Unemployed</td>
<td>55 (87%)</td>
<td>24 (92%)</td>
<td>p &gt; 0,1</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>38 (60%)</td>
<td>14 (54%)</td>
<td>p &gt; 0,1</td>
</tr>
<tr>
<td>Injecting drug users</td>
<td>52 (83%)</td>
<td>3 (12%)</td>
<td>p &lt; 0,003</td>
</tr>
<tr>
<td>HIV transmission risk (IDU)</td>
<td>49 (78%)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hospitalization reason (emergency)</td>
<td>22 (35%)</td>
<td>9 (35%)</td>
<td>p &gt; 0,1</td>
</tr>
<tr>
<td>Length of hospitalization (&lt; 30 days)</td>
<td>29 (46%)</td>
<td>12 (46%)</td>
<td>p &gt; 0,1</td>
</tr>
<tr>
<td>TB case finding route (“passively”)</td>
<td>54 (86%)</td>
<td>23 (88%)</td>
<td>p &gt; 0,1</td>
</tr>
</tbody>
</table>
Drug resistant TB among HIV/TB and TB patients included in the analysis
DEPRESSION SCORES AMONG TB PATIENTS WITH AND WITHOUT AD

With AD
Without AD

0-10 Non depression: 31.6, 40.8
11-20 Mild depression: 33.2, 38.5
>21 Moderate depression: 35.2, 20.7
### TB Cases and Addictive Diseases

<table>
<thead>
<tr>
<th></th>
<th>New cases</th>
<th>Relapse</th>
<th>Chronic</th>
<th>RR</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>Without AD</strong></td>
<td>46</td>
<td>69.7</td>
<td>9</td>
<td>13.6</td>
<td>11</td>
</tr>
<tr>
<td><strong>With AD:</strong></td>
<td>66</td>
<td>55.5</td>
<td>19</td>
<td>15.9</td>
<td>34</td>
</tr>
<tr>
<td><strong>Alcohol abuse</strong></td>
<td>29</td>
<td>51.8</td>
<td>10</td>
<td>17.8</td>
<td>17</td>
</tr>
<tr>
<td><strong>Alcohol addict</strong></td>
<td>23</td>
<td>57.5</td>
<td>4</td>
<td>10.1</td>
<td>13</td>
</tr>
<tr>
<td><strong>Alcohol + DU</strong></td>
<td>10</td>
<td>62.4</td>
<td>3</td>
<td>18.8</td>
<td>3</td>
</tr>
<tr>
<td><strong>Drug use</strong></td>
<td>4</td>
<td>57.1</td>
<td>2</td>
<td>28.6</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>112</td>
<td>60.5</td>
<td>28</td>
<td>15.1</td>
<td>45</td>
</tr>
<tr>
<td>TB CHARACTERISTICS</td>
<td>With AD (N=119)</td>
<td>Without AD (N=66)</td>
<td>P value</td>
<td></td>
<td></td>
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<tr>
<td>----------------------------------------</td>
<td>-----------------</td>
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<tr>
<td></td>
<td>%</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulmonary infiltration</td>
<td>52.9</td>
<td>60.6</td>
<td>P&gt;0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulmonary dissemination</td>
<td>30.2</td>
<td>19.7</td>
<td>P&gt;0.05</td>
<td></td>
<td></td>
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<tr>
<td>Isolated cavity</td>
<td>12.6</td>
<td>10.6</td>
<td>P&gt;0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other forms</td>
<td>4.3</td>
<td>9.1</td>
<td>P&gt;0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mycobacterium tuberculosis (MT)+</td>
<td>61.3</td>
<td>51.5</td>
<td>P&gt;0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lung cavity (+)</td>
<td>69.7</td>
<td>75.8</td>
<td>P&gt;0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Drug Resistance</td>
<td>37.8</td>
<td>25.8</td>
<td>P&gt;0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi Drug Resistance (MDR)</td>
<td>21.8</td>
<td>7.6</td>
<td>P&lt;0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 and &gt; pulmonary segments</td>
<td>73.9</td>
<td>40.9</td>
<td>P&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMPARISON OF TB CHARACTERISTICS AMONG PATIENTS
TB and HIV control systems in the Leningrad Region

Leningrad Regional ATD
- 5 TB Hospitals
- Regional TB Lab
- >20 municipal TB doctors

Leningrad Regional AIDS Center
- 21 municipal screening Labs
- Regional Reference Lab
- 21 municipal Trust doctors
  - Regional Monitoring Lab
  - Intermunicipal Monitoring Labs (4)
TB and HIV control systems in the Leningrad Region

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TB screening in HIV-infected patients in the Leningrad Region (2010)

Among all HIV-infected patients

- Not screened for TB: 46.4%
- Screened for TB: 53.6%

Among those who are under dispensary observation

- Not screened for TB: 68.7%
- Screened for TB: 31.3%
Projects related to HIV-prevention in high risk groups (2008-2010) (with NGO «Positive Wave»):

- HIV-prevention in migrants (1045 people were involved);
- Outreach for CSW in the Leningrad Region (323 women were involved);
- Developing non-medical service system for people living with HIV in the Leningrad Region (286 PLWH);
- Establishing information-center with internet access (321 people);
- Outreach for IDUs in the Leningrad Region (263 people were involved)
Russian-Finnish projects

- «Social and psychological support for HIV-infected pregnant women and children in the Leningrad Region» (2007-2009);

Conclusion

- Among TB patients ADs are widespread, especially alcohol abuse and alcohol addict, in HIV/TB co-infected subjects- IDU;

- Most TB patients with AD do not function well in society and are prone to psychological disorders;

- Alcohol abuse, alcohol addict worsen the development of TB; increasing MDR, developing multi-segmented lung TB and chronic forms of TB;

- Though HIV and TB control systems are established in the Leningrad Region, nevertheless HIV and TB epidemics are continuing to spread;
Conclusion

Simultaneous treatment of TB, HIV and AD is important to achieve optimum results in outcomes of these diseases.

For one to centralize the current health care system in Russia might be difficult and costly, in fact next to impossible.

A partial solution might exist today, however… TB hospitals should include narcologists, infectionists on their staff.
Thank you