The Netherlands in the elimination phase

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The Netherlands

- 16.8 million people
- Kingdom (King Willem Alexander)
- 12 provinces and three small overseas islands
- Member of the European Union (EU) (green countries).
- Low-lying country, with about 20% of its area (with 21% of its population) below sea level, and 50% of its land lying less than one meter above sea level.
The Netherlands

- Densely populated
- 4 big cities (Amsterdam, Rotterdam, The Hague and Utrecht)
The Netherlands – Rembrandt van Rijn
The Netherlands – the flying Dutchman
TB mortality declined from 2000 to 150 per million

TB incidence declined from 1200 to <100 per million

51 per million; 5.1/100,000
History of TB control organization in the Netherlands

1903  TB control started as a private initiative (Local TB organizations)
1903  (K)NCV = (Royal) Netherlands Central Association of TB control
1953  Committee for Practical TB Control: development of guidelines & policy
1979  New law: Control of TB and other infectious diseases became the responsibility of local government.
1980-1986: Local and provincial TB organizations were incorporated in the Municipal Public Health Services (GGDs).
2005: Establishment of the Centre for Infectious Disease Control at the National Institute for Public Health and the Environment (RIVM).
2012: KNCV handing over Surveillance/National TB Register to RIVM
TB notifications in the Netherlands

Number of TB Notifications

- Cases
- Born in the Netherlands
- Born in a foreign country

Cases:
- 848; 5.1
- 627; 35.0
- 221; 1.5
TB notifications and notification rates in the Netherlands
# Profile TB patients in the Netherlands, 2013

<table>
<thead>
<tr>
<th>Category</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of patients</td>
<td>848</td>
</tr>
<tr>
<td>Incidence per 100,000 inhabitants</td>
<td>5.1</td>
</tr>
<tr>
<td>Foreign-born</td>
<td>627 (74%)</td>
</tr>
<tr>
<td>Residence in one of 4 big cities</td>
<td>270 (32%)</td>
</tr>
<tr>
<td>Pulmonary TB (PTB)</td>
<td>469 (55%)</td>
</tr>
<tr>
<td>Sputum smear-positive TB</td>
<td>141 (17%)</td>
</tr>
<tr>
<td>Culture-positive TB</td>
<td>607 (72%)</td>
</tr>
<tr>
<td>Multidrug-resistance (= resistance against isoniazide and rifampicin) (% of culture-confirmed cases)</td>
<td>17 (2.8%)</td>
</tr>
<tr>
<td>History of previous TB</td>
<td>44 (5.2%)</td>
</tr>
<tr>
<td>HIV co-infection</td>
<td>17 (2.0%)</td>
</tr>
<tr>
<td>Active case finding (contact investigation/screening)</td>
<td>159 (19%)</td>
</tr>
</tbody>
</table>
TB notifications by age groups, 2013

TB patients born in the Netherlands

TB patients born in a foreign country

Age groups:
- 0-4
- 5-14
- 15-24
- 25-44
- 45-64
- 65+

Number of TB notifications:
- Autochthonous
- 2nd generation migrant
TB among migrants 2013, years residence in the Netherlands (550 with known duration of residence)

- 123 (22%) < 2 yrs
- 126 (23%), 2-5 yrs
- 301 (55%) > 5 yrs
## Top 10 countries, 2012

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of TB patients</th>
<th>Proportion of all TB cases</th>
<th>TB incidence per 100,000</th>
<th>Population 1st generation in the Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somalia</td>
<td>170</td>
<td>18%</td>
<td>711</td>
<td>23,908</td>
</tr>
<tr>
<td>Morocco</td>
<td>86</td>
<td>9%</td>
<td>51</td>
<td>167,911</td>
</tr>
<tr>
<td>Suriname</td>
<td>46</td>
<td>5%</td>
<td>25</td>
<td>184,103</td>
</tr>
<tr>
<td>Indonesia</td>
<td>44</td>
<td>5%</td>
<td>38</td>
<td>115,646</td>
</tr>
<tr>
<td>India</td>
<td>30</td>
<td>3%</td>
<td>189</td>
<td>15,832</td>
</tr>
<tr>
<td>Turkey</td>
<td>29</td>
<td>3%</td>
<td>15</td>
<td>197,075</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>15</td>
<td>2%</td>
<td>47</td>
<td>32,201</td>
</tr>
<tr>
<td>Pakistan</td>
<td>15</td>
<td>2%</td>
<td>134</td>
<td>11,232</td>
</tr>
<tr>
<td>China</td>
<td>14</td>
<td>1%</td>
<td>36</td>
<td>38,988</td>
</tr>
<tr>
<td>Poland</td>
<td>14</td>
<td>1%</td>
<td>21</td>
<td>66,044</td>
</tr>
</tbody>
</table>
How is TB controlled in the Netherlands?

1. Passive case finding (hospitals): “Clinicians have to Think TB” – 81%
2. Case holding (35% directly observed treatment in the Netherlands) – >85%
3. Source finding and contact investigation (finding TB and recently infected (LTBI) cases) – 5%
4. Screening risk groups for TB (Chest X-ray) – 9%
5. Targeted screening LTBI (e.g. health care workers)
6. Genotyping to monitor transmission and for outbreak management
7. (Selective BCG vaccination)
Health infrastructure

Curative services:
• 91 hospitals
• 31 out of 45 microbiology laboratories perform MTB cultures; 6 labs also do phenotypic drug susceptibility testing

Public health:
At local/regional level:
• 408 municipalities
• 25 Municipal Public Health Services (GGDs)
• 7 TB regions
At national level:
• National Association of GGDs
• RIVM-CIDC (incl. TB reference laboratory and surveillance)
• KNCV Tuberculosis Foundation
• 2 specialized TB centers
The Netherlands in the elimination phase?

- **New definitions**
  - **Low-incidence countries:** <100 cases per million population notified annually
  - **Pre-elimination:** <10 cases per million population notified annually
  - **Elimination:** <1 case per million population notified annually
With the current tools:

“we cannot eliminate TB but we should eliminate TB transmission”

How?

• Continue and improve source finding and contact investigation
• Perform outbreak management when appropriate
• Consider LTBI screening instead of TB screening (e.g. in migrants)

Monitor transmission with conventional epidemiological and molecular information (DNA fingerprinting – Variable Number of Tandem Repeats (VNTR) typing)
Monitor TB transmission: indicators

Conventional epidemiological

Pulmonary TB, all cases and sputum smear-positive cases

Children < 15 yrs with TB
Monitor TB transmission: indicators

DNA fingerprinting

VNTR clusters with annual growth of 5 or more cases

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>10</td>
</tr>
<tr>
<td>2005</td>
<td>13</td>
</tr>
<tr>
<td>2006</td>
<td>7</td>
</tr>
<tr>
<td>2007</td>
<td>7</td>
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<tr>
<td>2008</td>
<td>5</td>
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<tr>
<td>2009</td>
<td>10</td>
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<tr>
<td>2010</td>
<td>8</td>
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<tr>
<td>2011</td>
<td>4</td>
</tr>
<tr>
<td>2012</td>
<td>4</td>
</tr>
<tr>
<td>2013</td>
<td>6</td>
</tr>
</tbody>
</table>
The incidence of native and foreign-born index patients declined by 6% and 2% per year, respectively.

- In order to accelerate progress towards elimination, the TB program in the Netherlands needs to explore strategies to expand the diagnosis and treatment of LTBI among the foreign-born.

- Furthermore, since global control of TB may lead to lower TB rates among immigrants, global TB control should be strongly supported by low-incidence countries such as the Netherlands.
Main challenge (in 2014): How to sustain an effective and efficient TB program?

Situational analysis:

- Number of TB cases ↓
- Proportion/number of complicated cases ↑
- Workload of health care workers ↓ (e.g. less chest X-rays, THTs)
- Knowledge and expertise professionals ↓
- Regional difference (most of TB patients in urban areas in the west of the country)

Actions

- Scale up e.g. programme of hospital TB coordinators
- More focus on LTBI
Thank you!

Piet Mondriaan
“Victory Boogie Woogie”