Trends of syphilis cases reported by the sentinel laboratory network
Belgium, January 2000 – April 2001

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INTRODUCTION

In April 2001, a cluster of syphilis cases has been reported in the city in Antwerp. Around 50 new cases have been reported by local health services in the first quarter of 2001, including 17 cases reported by a single clinic for sexually transmitted diseases - in the Institute of Tropical Medicine, Antwerp.¹

This lead to investigate and analyze trends of syphilis cases that have been detected by the network of sentinel laboratories set up by the Scientific Institute of Public Health (IPH).

METHODS

One hundred and twenty nine sentinel laboratories report daily or weekly to the IPH the number of detected cases of some selected infectious diseases. These represent 54% (129/237) of all laboratories for clinical microbiology in Belgium. Syphilis is not included in the list of diseases as it was thought to be of marginal importance: each year around 20 new cases of syphilis were reported on average in the whole of Belgium.²

A letter has been sent to the 129 sentinel laboratories on May 3, 2001, requesting to report the number of syphilis cases diagnosed per month in each laboratory during the 12 months of 2000 and the first 4 months of 2001. No specific definition of syphilis cases has been provided in this letter.

Data from laboratories were received by mail (n=12), fax (n=17) and e-mail (n=39) during the period May 4 – June 6. When not specifically mentioned, cases were assumed to be active syphilis cases. Only active cases were considered for the analysis. When detailed laboratory results were provided - as did most large laboratories, the following case definition, proposed by several authors³, was used:

<table>
<thead>
<tr>
<th>Case</th>
<th>Laboratory definition used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active syphilis case</td>
<td>VDRL/RPR positive or titer &gt; 1:8 AND positive treponemal test (TPHA/FTA) OR treponema found in dark field microscopy</td>
</tr>
<tr>
<td>Syphilis case (including both active and old treated syphilis)</td>
<td>Positive treponemal test (with whatever VDRL results) or treponema found in dark field microscopy</td>
</tr>
</tbody>
</table>

VDRL titers equal or below 1:8 were thus considered as negative tests. It is however probable that this case definition misses a percentage of early syphilis, in which the VDRL is not yet positive.⁴ Positive VDRL with negative treponemal tests (TPHA/FTA) were considered as negative (or false positive).

No accurate case definition could be used for active syphilis, such as those recommended by the WHO or CDC⁵, as clinical data was not available.

³ Larsen SA, Steiner BM et al. Laboratory diagnosis and interpretation of tests for syphilis. Clinical Microbiology Reviews, 8, 1, 1–21, 1995.
⁵ CDC. Case Definitions for Infectious Conditions Under Public Health Surveillance1997 / Vol. 46 / No. RR-10.
RESULTS AND DISCUSSION

Sixty-eight (53%) out of the 129 sentinel laboratories responded and 63 provided the data of interest: the number of active syphilis cases from January 2000 until April 2001. They represent a 27% of the total number of laboratories of microbiology in Belgium. This report is thus not representative for the situation of Belgium, but it allows analyzing trends over time. Fifty-two laboratories provided data that allowed monthly analysis (table 1).

Table 1: Distribution of laboratories according to response

<table>
<thead>
<tr>
<th>Answered</th>
<th>Provided annual data on active cases for 2000</th>
<th>Provided annual data on active cases for 2001</th>
<th>Provided annual data on active cases for both 2000 and 2001</th>
<th>Provided monthly data for the entire period</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td>63</td>
<td>66</td>
<td>63</td>
<td>53</td>
</tr>
</tbody>
</table>

A total of 137 active syphilis cases have been reported by these 63 laboratories for the period Jan 2000 – April 2001. Many laboratories also provided data on serological cases: most of them are treated cases showing “serological scars”, many of them being elderly patients who have been treated several decades ago. These data are thus not reported here.

Table 2: Reported cases of active syphilis in 2000 and 2001

<table>
<thead>
<tr>
<th>Cases</th>
<th>2000 (12 months)</th>
<th>Jan – April 2001 (4 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (for the entire period)</td>
<td>90</td>
<td>47</td>
</tr>
<tr>
<td>Average per month</td>
<td>7.5</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Laboratory data on active cases are difficult to interpret as they probably overestimate the number of new cases of syphilis tested by these laboratories: based only on serological data, new cases cannot be distinguished from old untreated cases as some active cases may have been infected years ago. Furthermore, the same patients may have been tested in several laboratories in the same period and may thus be counted twice. And eventually, some laboratories included more active cases than we do (e.g. criteria was VDRL > 1:1 for of them). On the other hand, the case definition may also underestimate the number of active syphilis, as non-treponemal tests may be negative in around 15% patients with early syphilis and 25% of patients with late disease.6 Moreover, data are available from only 27% of the Belgian laboratories.

In 1997, only 20 new cases of syphilis were reported in Belgium for the entire year (source: WHO), but it is likely that these data are incomplete as they are based on mandatory registration.7 Official national data for the following years were not found.

1. ANALYSIS BY TIME

There is no data available on the dates of onset, as laboratory tests cannot differentiate early syphilis from late untreated cases. The only available data on time are the months at which the serological diagnosis were made, reported by 53 laboratories. This information is available for 74 cases (54% of total reported cases). Collection of data did not vary during this period and the observed trend may thus be considered as a fairly good indicator of the situation in Belgium.

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The table 3 and the figures 1 and 2 show a marked increase in the number of cases, starting around midyear 2000. Data for April 2001 are probably underestimated as data were gathered in early May 2001 and treponemal confirmation tests were missing for some patients.

It would have been interesting to analyze data from 1999 to know if a similar trend has been observed in the second semester and whether seasonal trends can be detected. It is anyway striking to see that the number of cases detected in the first quarter of 2001 has more than...
tripled compared with the same period in 2000 (table 4). Possible causes of this increase need to be investigated.

### Table 4: Comparison of active cases during the first quarter of 2000 and 2001

<table>
<thead>
<tr>
<th></th>
<th>Jan – Mar 2000</th>
<th>Jan- Mar 2001</th>
<th>Difference (abs.)</th>
<th>Difference in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6</td>
<td>22</td>
<td>+16 cases</td>
<td>+ 267%</td>
</tr>
<tr>
<td>Average per month</td>
<td>2.0</td>
<td>7.3</td>
<td>+ 5.3 cases</td>
<td>+ 267%</td>
</tr>
</tbody>
</table>

The curve of monthly cases is very similar to the one observed in Greater Manchester (England). A marked increase of the number of cases is also reported from several other parts of Europe (especially United Kingdom) since late 1999.

### 2. ANALYSIS BY PLACE

Only the location of the sentinel laboratories are available. Although patients who tested in these laboratories may originate from different places, especially when it concerns the large laboratories, data were analyzed per location of laboratory to obtain a proxy indicator of the most affected areas.

The analysis by province may introduce several biases: the areas hosting the largest laboratories and the largest population are likely to report the highest number of cases. Incidence rates per 100,000 inhabitants could not be calculated as data do not cover all country laboratories. The trends per province in 2001 compared to 2000 are more interesting to analyze as biases can be partially controlled.

Figure 3: Syphilis cases reported by 63 sentinel laboratories. Belgium, Jan 2000 - April 2001.

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Table 5: Comparaison of reported cases of active syphilis, per location of laboratories

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antwerpen</td>
<td>12</td>
<td>2.3</td>
<td>3.8</td>
<td>+ 1.5</td>
<td>+67%</td>
</tr>
<tr>
<td>Vlaams-Brabant</td>
<td>5</td>
<td>0.3</td>
<td>0.5</td>
<td>+ 0.25</td>
<td>+100%</td>
</tr>
<tr>
<td>Brussels</td>
<td>6</td>
<td>2.9</td>
<td>3.5</td>
<td>+ 0.58</td>
<td>+20%</td>
</tr>
<tr>
<td>Brabant Wallon</td>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.00</td>
<td>--</td>
</tr>
<tr>
<td>West-Vlaanderen</td>
<td>12</td>
<td>0.3</td>
<td>0.5</td>
<td>+ 0.25</td>
<td>+100%</td>
</tr>
<tr>
<td>Oost-Vlaanderen</td>
<td>8</td>
<td>0.7</td>
<td>1.5</td>
<td>+ 0.83</td>
<td>+125%</td>
</tr>
<tr>
<td>Hainaut</td>
<td>7</td>
<td>0.1</td>
<td>0.5</td>
<td>+ 0.42</td>
<td>+ 500%</td>
</tr>
<tr>
<td>Liège</td>
<td>4</td>
<td>0.6</td>
<td>0.5</td>
<td>- 0.10</td>
<td>-14%</td>
</tr>
<tr>
<td>Limburg</td>
<td>6</td>
<td>0.5</td>
<td>1.0</td>
<td>+ 0.50</td>
<td>+100%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Namur</td>
<td>2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.00</td>
<td>--</td>
</tr>
</tbody>
</table>

NA: not available
Avg: average

As expected, the highest number of cases is reported from the city of Brussels and the province of Antwerpen as these are the most populated areas, hosting the biggest laboratories (figure 3). Reported cases seem to increase more in the Northern part of Belgium (table 5), but this should be taken with caution as data are less complete from the Southern part and concern very small numbers of cases.

An hypothesis could be that urban areas are mainly affected (Brussels, Antwerpen, Gent and Liège), as it is expected from most sexually transmitted diseases. However, a few cases are also reported from rural areas.

As information on cases is not available (e.g. age, sex, occupation), no further analysis could be performed.

**CONCLUSIONS**

A very clear increasing trend in the number of syphilis reported by laboratory can be observed since midyear 2000, with over a 3-fold increase of active cases between the first quarter of 2000 and the same period in 2001. Similar trends have been described in some other parts of Europe.

Clinical data are necessary to confirm this trend, as serological tests cannot differentiate old (untreated) active cases from recent syphilis. More into-depth studies are also necessary to investigate possible causes of this increase (e.g. commercial sex, decrease in safe sexual practices etc.) and contribute to its control.

This punctual survey was made possible thanks to the sentinel laboratory surveillance network. The quick response from half of the laboratories (including the largest ones) allowed for a rapid assessment of the situation. This was facilitated by the fact that over half of the responses arrived by e-mail. Such countrywide system also allows to put a local health problem into a national perspective.

On the other hand, it is difficult to draw conclusions on the syphilis situation in Belgium as data originate from only 27% of the Belgian laboratories for microbiology.

This marked increase of syphilis cases calls for an increased detection of the disease by health practitioners. It is essential to improve the surveillance system countrywide and to remind that syphilis is a disease under mandatory notification in Belgium.
As a next step, the Institute of Public Health will propose to add syphilis (Treponema pallidum) into the pathogens to be monitored by the sentinel laboratory surveillance network, in order to properly monitor syphilis trends in the longer term.