

# Preliminary results of STI Sentinel Surveillance System in Belgium

by

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## Abstract

**Objectives:** To determine STI incidence trends. Additional objectives: to identify subpopulations at risk that could be prioritised target groups for prevention.

**Methods:** The network consists of gynaecologists, dermatologists, general practitioners, urologists, STI clinics, student centres and sexual education centres. Three years in a row, the number of STI patients has been registered during a 4-month period, from October until January. In the 2002-2003 period, 69 sites reported a total of 282 patients. Trends were analysed on the basis of results from 23 sites that reported in all periods.

**Results:** Between October 2000 and January 2003, an increasing, but not significant trend in chlamydia in women was observed ( $p$ -value=0.25). The syphilis trend started to increase in 2001-2002 (+600%;  $p$ -value<0.01) and continued throughout 2002 and 2003, al be it at a slower pace (+38%;  $p$ -value=0.06). The increase in syphilis infections in men was largely attributable to infections in men who have sex with men (MSM).

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*Overall, an increasing trend in HIV infections among STI patients was seen, particularly among syphilis patients. This high HIV prevalence among patients diagnosed with syphilis (up to 60% in third period) may be partly linked to the specificity of the sites participating in the STI sentinel surveillance.*

**Conclusions:** *The results of this surveillance indicate an important increase of syphilis in MSM and show a large proportion of HIV positive cases among them. The data for syphilis may point out an increase in unsafe sex. This calls for intensification of prevention programmes and for an improved surveillance system countrywide. Even more stress should be put on the recommendation of HIV tests to STI patients.*

**Keywords:** *STI - Sexually transmitted infections - STD - syphilis - sentinel surveillance - HIV*

## **Introduction**

From 1990 until 1996, the Scientific Institute of Public Health (IPH) participated in the project "European Networks for the Surveillance of HIV infections in Sentinel populations of STD patients" (1). The goal of this project was monitoring HIV infection in sentinel populations of sexually transmitted infection (STI) patients. On the occasion of the evaluation of this project in 1998, the participating clinicians were willing to assist to the composition of a STI sentinel surveillance system in Belgium.

STI constitute a serious global health problem (2). STIs may damage reproductive health of women and facilitate the transmission of human immunodeficiency virus (HIV) and hepatitis B (3). Data on STI trends have shown that the numbers of gonorrhoea and syphilis notifications increased in Western Europe between 1995 and 2000 (4). Detection and treatment of STIs could substantially reduce HIV transmission at both individual and community levels. Therefore they are essential components of HIV prevention (5,6).

STI surveillance provides epidemiological information that enables efficient planning of intervention activities. The incidence of STIs may prove to be the most objective, reliable and timely indicator of sexual behaviour (7). Therefore, STI surveillance may play an important role in the identification of changing in sexual risk behaviour.

The Belgian STI sentinel surveillance network of clinicians was created in 2000 (8). The data of this surveillance complement the data of two other sources on STIs: on the one hand the mandatory

notification of gonorrhoea, syphilis and hepatitis B to the provincial inspectors (8) and on the other hand the registration of chlamydia, gonorrhoea and syphilis through the sentinel laboratory network at the IPH.

The mandatory notification was imposed by the law of 24 January 1945 regulating the prophylaxis of sexually transmitted diseases. The motive of the proposal of this law was the sharp increase in STI observed at the end of the Second World War (10). The participation to the sentinel surveillance system does not exempt the mandatory notification. The registration of gonorrhoea and chlamydia by the sentinel laboratory network started in 1986 and as a result of the syphilis outbreak observed in Antwerp in 2001 (11), it was decided in that year to include syphilis in the registration as well.

Given the rising trends in several countries, to enhance surveillance of STIs across Europe is of great importance. The European Surveillance of Sexually Transmitted Infections (ESSTI) aims to find a common case definition and ways of working that make it possible to compare the results of different countries using a homogeneous surveillance system. A sentinel approach is most interesting because of the differences in healthcare systems and the difficulties in obtaining the essential risk and demographic data (4). This approach allows surveillance of a wide range of STIs, and the collection of detailed information regarding sexual lifestyle. Linking these data with the HIV seropositivity status of tested STI cases may be very valuable (7).

The main goal of the sentinel surveillance system in Belgium is to determine STI incidence trends. The additional objectives are to identify subpopulations at risk that could be prioritised target groups for preventive actions. This article will focus on the results of the third registration period (October 2002-January 2003) of this sentinel surveillance by a network of clinicians and on the STI trends seen after three periods of registration (Oct. 2000-Jan. 2001; Oct. 2001-Jan. 2002; Oct. 2002-Jan. 2003).

## **Material and methods**

Data are obtained through a network of voluntary participating gynaecologists (N=14), dermatologists (N=22), general practitioners (N=16), urologists (N=7), STI clinics (N=1), student clinics (N=2) and sexual education centres (N=7), since STIs are diagnosed and cared in all these different settings in Belgium. The number of specialists included in the surveillance tends to be proportional (2%) to the number of specialists in each province. It is anticipated that this will lead to a stable network

of 80 sites at the end of the fourth year of registration. Respectively 27, 39 and 69 sites participated in the first, second and third period. Each registration period takes 4 months, from October until January. Data are collected monthly.

Episodes of 9 STIs (chlamydia, gonorrhoea, trichomonas vaginalis, herpes genitalis, syphilis, chancroid, genital warts, PID and pediculosis pubis) are reported through a form using a standardised protocol. A patient is included when he or she visits for a new episode of one or more of the selected STIs or for screening or for pregnancy on which occasion one of the selected STIs is discovered. Patients with recurrent episodes of herpes genitalis and genital warts (HPV) are excluded; only the first infection episode is included. The diagnostic criteria are indicated on the registration form.

The registered items include age, sex, nationality, place of residence, educational and serological status. Furthermore, information on some behavioural characteristics is obtained (sexual orientation, number of different sexual partners during the last six months, prostitution, sexual contacts with drug users, IV (intravenous) drug use). Finally, the serological status for HIV, HBV and HCV has to be filled in by the clinician. Data will allow analysing trends of STIs for the included items and will also provide information on the prevalence of HIV, HBV and HCV among STI patients. The surveillance system puts extra emphasis on the monitoring of HIV in STI patients in the participating sites.

All data forms are checked before data entry, and editing checks are performed. Errors are corrected whenever possible by contacting the sites by telephone to request verification and correction.

Comparison between the periods was made for the 23 sites (3 sites of dermatologists, 9 sites of general practitioners, 3 sites of gynaecologists, 4 sites of urologists, 1 STI clinic, 2 sexual education centres and 2 students clinics) that reported in the three periods, allowing us to observe trends. To check whether increases or decreases in STIs are significant, we used the non-parametric Mann-Whitney U test.

## **Results**

### *Characteristics of the study population*

A total of 282 patients were registered from 1 October 2002 through 31 January 2003. The sex ratio was 0.96. Men had a somewhat older age profile than women (mean age: 36.7 versus 31.2 years). A quarter of the reported patients had a non-Belgian nationality (N=68); 9% came

from other European countries (N=25), 7% from Sub-Saharan Africa (N=19), 4% from North-Africa (N=11), 3% from Latin-America (N=8), 1% from Asia (N=4) and one person came from North-America. The educational level was known for 58.2% (N=164) of the cases; 37.2% finished higher education (N=61).

### *STI diagnoses*

A total of 313 STIs was diagnosed in 282 patients. Most of the STIs (N=160) were seen by dermatologists (26.8%) and gynaecologists (24.3%). More than half (54.8%) of the women (N=66) and 19.3% of the men (N=16) for whom this was known, consulted for another reason than STI symptoms. The distribution of the diagnoses by sex and type of STI is presented in table 1. In men, syphilis and genital warts are the most frequently diagnosed STIs. Chlamydia and genital warts were the most frequently diagnosed STIs in women.

TABLE 1  
Distribution of diagnoses by sex  
(period October 2002-January 2003; data from 69 sites)

TYPE OF STI	MEN (N = 141)	WOMEN (N = 172)	TOTAL (N=313)
Chlamydia	15 (10.6%)	<b>46 (26.7%)</b>	61 (19.5%)
Gonorrhoea	10 (7.1%)	2 (1.2%)	12 (3.8%)
Syphilis	<b>45 (31.9%)</b>	3 (1.7%)	48 (15.3%)
Trichomonas	2 (1.4%)	28 (16.3%)	30 (9.6%)
Herpes	13 (9.2%)	24 (14.0%)	37 (11.8%)
Genital warts	<b>45 (31.9%)</b>	37 (21.5%)	82 (26.2%)
PID	-	11 (6.4%)	11 (3.5%)
Pediculosis pubis	3 (2.1%)	2 (1.2%)	5 (1.6%)
Other STIs	8 (5.7%)	19 (11.0%)	27 (8.6%)

### *Risk behaviour*

Among registered STI patients, almost all women mentioned heterosexual orientation (94%). Forty-three percent of men were homosexual or bisexual. Almost half of the patients (44.7%), mostly comprised of women (68.3%), mentioned to have had only one sexual partner in the six months previous to the consultation. Five percent of women (N=8) worked as a prostitute. Nobody mentioned IV drug use; however, this information was not available in 30% of cases.

### *HIV testing*

More than a quarter (27.9%) of the patients already knew their HIV status at the moment of consultation (N=73). In 38.5% of cases, a test was proposed and carried out (N=101); in 2.3% of cases, a test was proposed but refused by the patient (N=6). In 13.4%, the clinician mentioned that a test was not proposed to the patient (N=35); in 9.2%, the clinician mentioned that the test would be performed at a later time (N=24). In 8.8% of the cases, the reason for not being tested was unknown (N=23).

In all persons who were tested (at the moment of the consultation (N=101) or before (N=73)), 18.9% was HIV positive (N=33); 85% of them were men (N=28). Just over 25% of HIV positive persons discovered their HIV seropositivity at the moment of the consultation (N=9). More than half of the HIV positive people for whom this is known (N=12), consulted for another reason than a STI complaint.

In 60% of the HIV positive patients, the STI diagnosed was syphilis (N=20).

### *Trends in STI*

Respectively 108, 113 and 138 STI patients were registered in the first, second and third registration period by 23 sites that reported in all these periods.

Between period 1 (October 2000-January 2001) and period 3 (October 2002-January 2003), there was an increasing, but not significant trend in chlamydia in women (+61% in 2002-2003; p-value=0.247) and a significant increasing trend in syphilis in men. The increase in syphilis began in 2001-2002 (+600%; p-value<0.01) and continued in 2002-2003, al be it with a smaller percentage (+38%; p-value=0.063). The increase in syphilis infections was largely attributable to infections in MSM (men who have sex with men) and was mainly observed in the province of Antwerp. Table 2 shows us the distribution by period and sexual orientation in syphilis patients. To compare this with the distribution of all STI diagnoses, the latter is presented in table 3.

A decrease in the number of gonorrhoea cases was observed (-61%; p-value=0.03) in men in the 2001-2002 period, but this decrease did not continue in the 2002-2003 period. The same phenomenon was seen for pediculosis pubis, for both sexes (-80%; p-value<0.01).

In men, there was also an increasing trend in HIV infections among STI patients (Table 4), particularly among syphilis patients (Figure 1). Up to 60% of syphilis patients is HIV positive in the third period (N=19). This

TABLE 2  
 Syphilis diagnoses by period and sexual orientation of the patient (data from 23 sites)

SEXUAL ORIENTATION	PERIOD 1 (2000-2001)	PERIOD 2 (2001-2002)	PERIOD 3 (2002-2003)
Homo-bisexual men	2 (67%)	15 (71%)	26 (79%)
Heterosexual men	1 (33%)	3 (14%)	3 (9%)
Men: sexual orientation unknown	-	-	4 (12%)
Homosexual women	-	1 (5%)	-
Heterosexual women	-	2 (10%)	-
<b>Total</b>	3 (3100%)	21 (100%)	33 (100%)

TABLE 3  
 All STI diagnoses by period and sexual orientation of the patient (data from 23 sites)

SEXUAL ORIENTATION	PERIOD 1 (2000-2001)	PERIOD 2 (2001-2002)	PERIOD 3 (2002-2003)
Homo-bisexual men	21 (15.7%)	21 (17.1%)	45 (29.6%)
Heterosexual men	40 (29.9%)	40 (32.5%)	19 (12.5%)
Men: sexual orientation unknown	2 (1.5%)	-	9 (5.9%)
Homosexual women	3 (2.2%)	2 (1.6%)	1 (0.7%)
Heterosexual women	67 (50.0%)	57 (46.3%)	75 (49.3%)
Women: sexual orientation unknown	1 (0.7%)	3 (2.4%)	3 (2.0%)
<b>Total</b>	134 (100%)	123 (100%)	152 (100%)

trend is worrisome since STI/HIV co-infections increase the transmissibility of these infections. Most men with such co-infections were to be found in the age group of 35-39 years, while women with co-infections were primarily found in the age group of 30-34 years.

Almost 75% of seropositive syphilis patients were homo- or bisexual men, and almost 75% of these men already knew their HIV status at the moment of the consultation in the second and the third registration period. Seventy percent of these HIV positive MSM with syphilis had the Belgian nationality. No specific risk factors such as prostitution or number of partners were found that could characterise these patients.

TABLE 4  
Distribution of HIV positive cases by sex and period and percentage of HIV positive cases among all STI patients by period (data from 23 sites)

SEX	PERIOD 1 (2000-2001)	PERIOD 2 (2001-2002)	PERIOD 3 (2002-2003)
women	4	4	-
men	4	11	24
<b>Total</b>	<b>N=8 (7.4%)</b>	<b>N=15 (13.3%)</b>	<b>N=24 (17.4%)</b>

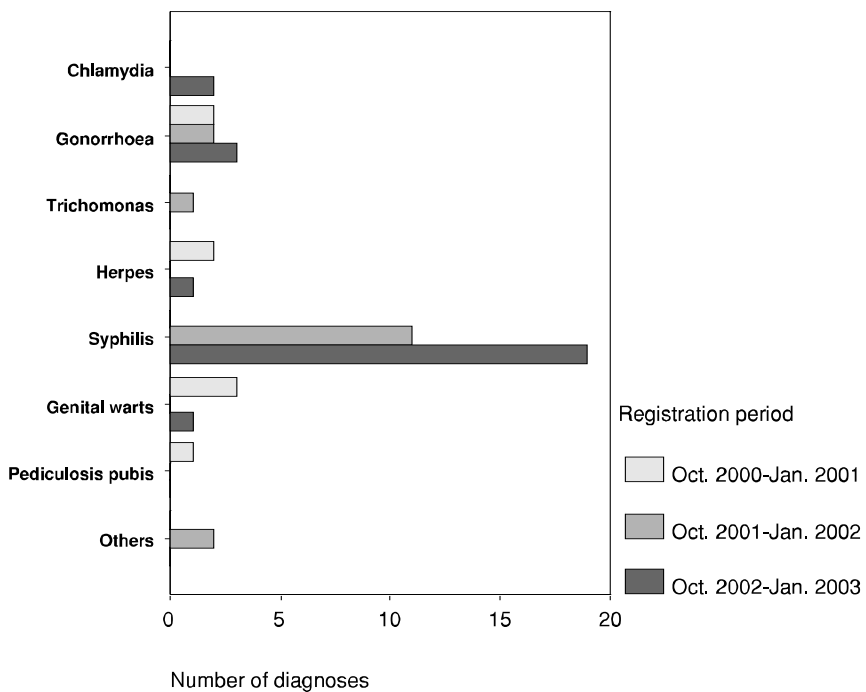


Fig. 1: Distribution of STI diagnoses among HIV positive cases (data from 23 sites)

## Discussion

Because the network was under construction, trends could only be analysed using the information of the 23 sites that participated in all registration periods. Because of the specificity and the location of the sites, a main problem of the sentinel surveillance system is the lack of external validity (12). Still, it was possible to detect some important STI trends that agree with those of other systems.



The increase in the number of syphilis cases that we observed in period 2 (October 2001-January 2002) and period 3 (October 2002-January 2003) was also detected by the data of the mandatory notification in the province of Antwerp (32 cases in Jan. 2003 versus 18 in Jan. 2002 and 10 in Jan. 2001) (11).

Furthermore, this increasing syphilis incidence was also found in other countries, for example in the Netherlands (13). Our findings suggest that the increase in syphilis is largely attributable to infections in MSM. Among these men, a large proportion already knew that they were HIV positive; this corresponds with the findings in the Netherlands. Similar trends were already seen in Europe before 2000 (4). Syphilis outbreaks during the period 2001-2003 were observed in the United States (14,15) and in Scotland (16).

The sentinel surveillance system of STIs by a network of clinicians in Belgium offers the opportunity to collect data on STIs and to follow STI trends, which is important for prevention. This surveillance may also offer the opportunity to identify risk factors and to sensitise physicians to certain risk factors. It emphasises the importance of proposing a HIV test to a STI patient. The sentinel surveillance system adds information about STIs other than chlamydia, gonorrhoea and syphilis, about risk factors and about the HIV seropositivity in STI patients to the information on STIs that is offered by the mandatory notification system and the sentinel laboratory network.

Since STIs may often be asymptomatic, STIs found by screening are also reported in order to offer a more accurate idea of the situation. On the other hand, it may create a bias since changes in screening practice or the introduction of screening campaigns are likely to influence the number of diagnosed STIs.

The system does not allow for excluding double reporting. This would however not lead to an overestimation of STI incidence because the chance is very small that two different physicians participating in the network would report the same patient.

When the patient says he has already been tested for HIV, the result mentioned by the patient is filled in. The chance that this self-reported information would be inaccurate is small, but nevertheless, this can be considered as a weakness of the surveillance system.

High levels of collaboration and a high completeness of data were obtained from the vast majority of sites represented in the network. Nonetheless, some problems emerged, especially with respect to timeliness of the data obtained: a reporting delay was observed in several

sites. In order to keep the interest in the system high, the sites receive feedback by means of annual reports. However, motivation of the participants remains a difficult issue in a surveillance system that is based on voluntary participation without payment. Therefore, other possibilities of compensation for the participants are considered. A possibility that will be investigated for its feasibility is to give the participants training acknowledgement that counts towards the mandatory yearly trainings.

The STI sentinel surveillance network in Belgium is still in the phase of construction and as a result, the network is not yet stable. Further efforts must be made to expand the network in order to raise the representativeness of the geographic distribution of the clinicians. However, it means a great challenge to recruit new sites in specific provinces and to reach the number of sites needed to cover the same proportion of specialists in each province.

Finally, it would also be interesting to collect data on the total number of consultations by site and specialisation, in order to be able to monitor the proportion of consultations dedicated to STIs. The feasibility of this information collection will be assessed.

To enlarge the study population, it is considered to lengthen the registration period to six months instead of four.

## **Conclusion**

For public health, it is important that STI surveillance is intensified and improved in order to be able to collect data that may contribute to an oriented approach of prevention.

The results of this surveillance indicate an important increase of syphilis in MSM and show a large proportion of HIV positive cases among them. The data on syphilis may point out an increase in unsafe sex. Syphilis is one of the STIs that most clearly reflect trends in sexual risk behaviour (4).

The data also suggest an increase in chlamydia in women, though not significant. Nevertheless, initiatives to limit the spread of chlamydia are important because the infection is widespread and may lead to ectopic pregnancy or infertility in infected women. Screening of individuals who do not seek testing is therefore considered to be important to lower the prevalence of disease and the risk of complications and HIV infection (17).

The scope of our analyses is limited at this moment because of the small study population. Therefore, we have to interpret the results with

caution. Nevertheless, the observed trends call for intensification of prevention programmes and for an improved surveillance system countrywide.

Even more stress should be put on the recommendation of HIV tests to STI patients, since we observe an increase in the number of HIV positive cases in this sentinel population of STI patients in Belgium.

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