

Surveillance of sexually transmitted infections among persons living with HIV

Ann Defraye · Dominique Van Beckhoven ·
André Sasse

Received: 3 August 2009 / Revised: 12 July 2010 / Accepted: 25 July 2010 / Published online: 3 December 2010
© Swiss School of Public Health 2010

Abstract

Objectives Surveillance of sexually transmitted infections (STI) among HIV patients in AIDS Reference Centers aims at identifying risk groups and detecting specific STI emerging in this population.

Methods Seven of the nine AIDS Reference Centers in Belgium participate in this surveillance. The reported STI include Chlamydia, gonorrhea, syphilis, Lymphogranuloma venereum, hepatitis B virus and newly acquired hepatitis C in men who have sex with men (MSM).

Results In 2008, 252 HIV patients (250 men, 2 women) were reported with a new STI episode. Sexual orientation was known for 245 men: 241 were MSM, 4 were heterosexual men. In total, 279 new STI episodes were reported. More than half of the diagnoses were syphilis. In 78% of the syphilis cases, the motive of the consultation was not related to an STI complaint.

Conclusions The results underline the importance of regular STI screening among HIV-positive persons, and show a particular sexual health problem among MSM. We estimate that the proportion of HIV-positive MSM acquiring an STI in 2008 was 8.8%.

Keywords Surveillance · HIV · Sexually transmitted infections · STI · Men who have sex with men · MSM

Introduction

HIV prevalence in Europe increases as a result of the ongoing number of new infections each year and the beneficial effects of antiretroviral therapy. UNAIDS estimates the number of people living with HIV in Western and Central Europe at 740,000 in 2007 (UNAIDS 2008). HIV infection remains of major public health importance in Europe, with evidence of increasing transmission in several countries (European Centre for Disease Prevention and Control, ECDC 2008).

In Belgium, the yearly incidence of HIV diagnoses has shown a substantial increase since 1997; in 2007, 1,051 new HIV diagnoses were registered (Sasse et al. 2008). The increasing incidence manifests especially among men who have sex with men (MSM), which is in line with observations in other countries of Western Europe (ECDC 2008).

In 2007, 9,351 HIV patients were under medical follow-up in Belgium (Sasse et al. 2008). At least three quarters of these patients consulted an AIDS Reference Center. AIDS Reference Centers are specialized in consultations for sexually transmitted infections (STI), HIV testing and treatment.

New STI episodes among people living with HIV are an indication of continuous sexual risk taking in terms of STI transmission. Surveillance of STI in AIDS Reference Centers aims at identifying risk groups and detecting specific STI emerging among HIV patients. Such information is useful for the treating physicians, for planning of screening strategies in this patient population and for adaptation of prevention actions to reduce the spread of HIV.

This article reports on recent results of STI surveillance in AIDS Reference Centers based on an existing sentinel STI surveillance system by physicians.

A. Defraye (✉) · D. Van Beckhoven · A. Sasse
Scientific Institute of Public Health,
Operational Direction Public Health and Surveillance,
J. Wytsmanstraat 14, 1050 Brussels, Belgium
e-mail: adefraye@hotmail.com

Methods

The sentinel network of physicians set up for the surveillance of STI in Belgium exists since 2000. This surveillance is organized by the Operational Direction Public Health and Surveillance of the Scientific Institute of Public Health, and only collects data on persons diagnosed with a new STI episode. At the start of this project, different types of physicians diagnosing STI in Belgium were invited to participate in this voluntary registration. Among all sites represented in this network since the beginning, two concerned an AIDS Reference Center. In 2007, the other seven AIDS Reference Centers recognized in Belgium were invited to participate in this surveillance. Among them, five agreed to participate. For this article, only the data from the HIV-positive patients consulting with a new STI episode in one of the seven participating AIDS Reference Centers were analyzed.

The reported STI include Chlamydia, gonorrhea, syphilis, Lymphogranuloma venereum (LGV), hepatitis B virus (HBV) and newly acquired hepatitis C in MSM (HCV). Classification of suspected LGV cases is done using the criteria presented in Table 1. Diagnostic criteria of the other STI are based on laboratory results.

The variables collected provide demographic information on the patient (gender, year of birth, residence, nationality and level of education), information about symptoms and motive of consultation (consultation for STI complaint or for another reason; these other motives were not specified), risk factors (sexual orientation, number of sexual partners in the last 6 months, prostitution, sexual contact with a sex worker or an intravenous drug user and intravenous drug use), country of infection (Belgium or abroad) and the serological status for HIV, hepatitis B, hepatitis C and syphilis. The information on the risk factors may be based on spontaneous reporting by the patient, or the physician may actively ask for it.

For Chlamydia, gonorrhea and syphilis, the physician can indicate if it is a reinfection. The reporting of this variable is not based on a fixed definition but on the physician's own experience and judgement.

The data are anonymous and are analyzed with STATA version 10.

In this article, the results of the analysis of the data on HIV-positive persons diagnosed with one or more new STI episodes during the year 2008 are discussed.

Results

Characteristics of the study population

From the beginning of January until the end of December 2008, 252 HIV-positive patients diagnosed with a new STI episode were reported by the 7 participating AIDS Reference Centers. Among them, two were women; in both cases the STI diagnosis concerned Chlamydia. One woman, aged 31 years, had an African nationality; the other woman, aged 24 years, had the Belgian nationality. Since only two patients were women, they were excluded from further analysis. The further analysis included the data from 250 HIV-positive men with a newly diagnosed STI in 2008. The characteristics of these patients are presented in Table 2.

Residence of the patients was distributed over all provinces of the country, with an overrepresentation of the province of Antwerp and the Brussels Capital region (Table 2), which include the biggest urban areas of the country. The province of residence was unknown for six men; for one among them, it was known that he resided abroad.

Almost half of men were to be found in the age group ranging from 35 to 44 years (Table 2). Age ranged from 22 to 68 years; mean age was 39.5.

The majority of the patients were MSM ($N = 241$), and most were of Belgian nationality (Table 2). The information on the level of education was missing in 60% of the cases (Table 2).

In 85% of the patients, HIV status was known since longer than 3 months before the STI diagnosis (Table 2). Among 27 men, HIV seropositivity was discovered together with the STI diagnosis (11%). HIV seropositivity was discovered less than 3 months preceding the STI diagnosis in 12 men (5%). The motive of the consultation was known for 142 patients; 70% were consulting for another reason than an STI complaint (Table 2).

Table 1 Criteria for classification of Lymphogranuloma venereum (LGV) diagnoses (Kivi et al. 2008)

Criteria	Classification		
	Confirmed	Probable	Possible
LGV pathology or contact with LGV patient	Yes	Yes	Yes
<i>C. trachomatis</i> serology, invasive titers	Positive/unknown	Positive	Positive
<i>C. trachomatis</i> PCR (urine/rectum)	Positive	Positive	Unknown
<i>C. trachomatis</i> PCR genotype serovar L1–L3	Positive	Unknown	Unknown

Table 2 Characteristics of the 250 HIV-positive men with a newly diagnosed sexually transmitted infection (Belgium, 2008)

Variables	<i>N</i> (%)
Age (years)	
15–24	6 (2.4)
25–34	63 (25.2)
35–44	115 (46.0)
45–54	55 (22.0)
≥55	11 (4.4)
Nationality	
Belgian	206 (82.4)
Other European countries	22 (8.8)
Latin America	9 (3.6)
Asia	4 (1.6)
Subsaharan Africa	3 (1.2)
North Africa	2 (0.8)
Unknown	4 (1.6)
Highest educational level	
None	2 (0.8)
Primary education	1 (0.4)
Professional secondary education	14 (5.6)
Technical secondary education	14 (5.6)
General secondary education	25 (10.0)
Higher education/University	44 (17.6)
Unknown	150 (60.0)
Motive of consultation	
STI complaint	42 (16.8)
Other motive than STI complaint	100 (40.0)
Unknown	108 (43.2)
Sexual orientation	
Homosexual	234 (93.6)
Bisexual	7 (2.8)
Heterosexual	4 (1.6)
Unknown	5 (2.0)
Number of sexual partners in the last 6 months	
1	17 (6.8)
2–4	40 (16.0)
5 or more	49 (19.6)
Unknown	144 (57.6)
Moment of HIV diagnosis	
Together with the STI diagnosis	27 (10.8)
<3 months before STI diagnosis	12 (4.8)
>3 months before STI diagnosis	211 (84.4)
Serological status for hepatitis B	
Positive	82 (32.8)
Vaccinated	76 (30.4)
Negative	45 (18.0)
Unknown	47 (18.8)

Table 2 continued

Variables	<i>N</i> (%)
Serological status for hepatitis C	
Positive	37 (14.8)
Negative	163 (65.2)
Unknown	50 (20.0)
Serological status for syphilis	
Positive	200 (80.0)
Negative	35 (14.0)
Unknown	15 (6.0)
Place of probable infection	
In Belgium	163 (65.2)
Abroad	7 (2.8)
Unknown	80 (32.0)

Seven men probably acquired the STI infection abroad; it concerns five persons of Belgian nationality and two men originating from subsaharan Africa.

Risk behavior

The number of sexual partners during the 6 months preceding STI diagnosis was known for 42% of the patients; almost half of them mentioned five or more partners (Table 2).

One heterosexual and one bisexual man mentioned frequentation of sex workers in the last 6 months, one homosexual man mentioned being a sex worker, another homosexual man mentioned using intravenous drugs and two homosexual men mentioned sexual contacts with intravenous drug users in the last 6 months. For each of these variables, information was missing in about 40% of the cases (Table 2).

Reported serological status

The serological status for syphilis, indicating current or previous infection, was known for 94% of men; among them, 85% had a positive serostatus (Table 2). The serological status for hepatitis B and C is presented in Table 2; 30% were vaccinated for hepatitis B.

Current STI diagnoses

In total, 277 new STI episodes were reported among 250 male patients; 27 MSM had 2 STI diagnoses at the same consultation. Most frequent combination of concurrent diagnoses were Chlamydia and syphilis ($N = 9$), LGV and

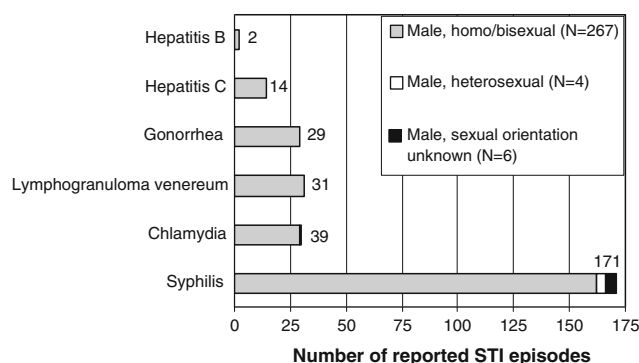


Fig. 1 Repartition of the new episodes of sexually transmitted infections (STI) by sexual orientation (Belgium, 2008)

syphilis ($N = 6$) and Chlamydia and gonorrhea ($N = 5$). Syphilis was the most frequent diagnosis (Fig. 1). In all four heterosexual men, syphilis was diagnosed. Age distribution did not significantly differ by STI diagnosis.

Among LGV diagnoses, 12 were laboratory confirmed as *Chlamydia trachomatis* L2 type, 12 were defined as possible cases and 7 as probable cases, based on the classification criteria presented in Table 1. All 31 LGV cases were MSM; 29 were known HIV-positive since more than 3 months and 24 of them had a positive serostatus for syphilis (77.4%), indicating current or previous infection. Among the 14 cases of newly acquired hepatitis C in MSM, 9 had a positive serostatus for syphilis (64.3%).

The number of episodes considered as reinfections was highest for syphilis ($N = 70$; 41%), was four for gonorrhea and one for Chlamydia.

Proctitis was mentioned as main symptom in 83.9% of LGV cases ($N = 26$) and in half of Chlamydial infections ($N = 15$). One confirmed case of LGV was diagnosed with a genital ulcer. For gonorrhea, urethritis was mentioned in more than half of the cases ($N = 19$). Symptoms for syphilis were often not specified on the reporting form; in 78% of the syphilis cases, the motive of the consultation was not related to an STI complaint.

The STI infections probably acquired abroad concerned six syphilis episodes and two LGV episodes.

Discussion

Our results highlight the high frequency of certain STIs, particularly syphilis, among HIV-positive MSM. Our findings suggest that an important proportion of syphilis infections in HIV infected MSM are reinfections and/or asymptomatic. These results support the findings of other studies (Dougan et al. 2007; Branger et al. 2009).

Among people living with HIV consulting in the 7 participating AIDS reference centers, MSM seem to be the

major risk group for acquiring new STI episodes. Most of these MSM are known HIV-positive individuals of Belgian nationality and aged between 25 and 54 years.

In these 7 centers, 7,012 HIV patients (4,428 males, 2,583 females, 1 gender unknown) were under medical follow-up in 2008. The probable mode of HIV transmission was known for 65% of these patients ($N = 4,526$); among them, 55% reported heterosexual contact ($N = 2,470$), 39% homo/bisexual contact ($N = 1,745$), 3% intravenous drug use ($N = 120$), 1% mother-to-child transmission ($N = 62$) and 3% other transmission modes ($N = 129$).

Based on the distribution by sexual orientation, we estimate that the proportion of HIV-positive MSM acquiring an STI in 2008 was 8.8%. Together with the increasing HIV incidence observed in this group, this confirms the findings of behavioral studies showing risky sexual behaviors in core groups of MSM, often within the context of HIV serosorting (Platteau et al. 2008; Marcus and Schmidt 2008).

The presence of ulcerative STI like syphilis in combination with sexual practices that damage the mucosal surface probably makes this group more susceptible for hepatitis C (van de Laar et al. 2007). Indeed, more than half of newly acquired cases of hepatitis C in MSM reported in our study were in patients with a positive serostatus for syphilis.

Due to the cost of the diagnostic procedure, serovaryotyping for confirmation of cases suspected of LGV was only done for one center at the time of the writing of this article. Some cases classified as possible or probable LGV could be non-LGV associated *C. trachomatis* serovars. Nevertheless, invasive titers, used as a diagnostic criterion in our study, were found of possible diagnostic value for LGV proctitis in another study (Van der Snoek et al. 2008). An LGV outbreak among MSM has already been observed in at least 11 European countries (Timen et al. 2008). The largest number of patients was reported in Great Britain (Stary and Stary 2008). A recent study among MSM diagnosed with LGV in UK shows that clinical manifestations of LGV are not confined to proctitis, and a small but significant number of inguinogenital cases of LGV has been observed. Therefore, the authors conclude that clinicians need to be vigilant for these less common presentations of LGV (Sethi et al. 2009). In our study, most, but not all, suspected cases of LGV were presenting with proctitis; a genital ulcer was observed in one confirmed case. However, symptoms were not specified for the other four possible cases without proctitis.

This surveillance system has several limitations

First, by not incorporating other STI diagnoses like active genital herpes infections, we underestimate the full

spectrum of STIs emerging among people living with HIV. The selection of the STI included was made in consultation with the centers, and limiting extra work load was a main factor in this discussion. The choice of STI included may also influence the male/female ratio of reported STI patients, since for example *Trichomonas vaginalis* infections likely occur more often in women (Defraye and Sasse 2008; Kalichman et al. 2000).

Secondly, not all physicians per center are participating in this voluntary STI surveillance, which leads to an underestimation of the real number of new STI episodes. On the other hand, information lacks on the number of STI episodes that were diagnosed in the same patient during the study period, which may imply an overestimation of the number of patients reported in this study.

Thirdly, for a number of variables on risk behavior, our analysis to identify specific characteristics of risk group was limited by the high proportion of missing data. These missing data may be ascribed to difficulties in asking these more personal questions or to time pressure physicians are dealing with during consultation.

Finally, two AIDS reference centers are not participating in this surveillance. The population seen at these two centers has similar characteristics (gender, transmission mode) as the population seen at the seven centers included in the STI surveillance, except for nationality. In the two non-participating centers located in Brussels, the proportion of patients of subsaharan African origin (42%) is higher than this proportion in the seven participating centers (35%).

Sexual counseling is an integral part of consultations in these centers and aims at supporting sexual health, preventing STI and further spread of HIV infection. A European research project among people living with HIV has shown a huge need for including diversified counseling on sexual risk behavior in standard HIV care, in order to allow targeting people at particular risk (Nöstlinger et al. 2008). Since individual counseling is time-consuming, medical centers providing dedicated, comprehensive HIV care need specific resources in order to be able to fully integrate sexual counseling in their practice (Borms et al. 2008).

This sexual counseling is part of effective prevention, which includes information, sensibilization, individual counseling and testing. Combining these prevention measures with HIV treatment and care is necessary to successfully halt HIV, as global responses to the HIV pandemic have shown (Mykhalovskiy et al. 2009).

This enhanced surveillance allows detecting specific STI problems among HIV-positive persons. The results of our study underline the importance of regular screening for STI among HIV-positive persons. Moreover, our findings show a need for improved sexual health promotion among MSM.

In HIV-positive MSM, a screening test for LGV should also be considered (Stary and Stary 2008). Therefore, affordable diagnostic procedures for both symptomatic as well as asymptomatic LGV infections are urgently needed (Smelov et al. 2008). Surveillance of LGV and newly acquired hepatitis C in MSM throughout Europe is recommended in order to press for public health response.

Acknowledgments The data presented in this article were obtained thanks to the voluntary reporting of the physicians working in the AIDS Reference Centers, which deserves huge appreciation.

Conflict of interest The authors declare that they have no conflict of interest.

References

- Borms R, Murphy C, Wilkins E et al (2008) What do sexual and reproductive health services offer in Europe? Abstract MOAX0504 Abstract Book Volume 1 XVII International AIDS Conference, Mexico City
- Branger J, van der Meer JTM, van Ketel RJ, Jurriaans S, Prins JM (2009) High incidence of asymptomatic syphilis in HIV-infected MSM justifies routine screening. *Sex Transm Dis* 36(2):84–85
- Defraye A, Sasse A (2008) SOA-surveillancestelsel via een peilnetwerk van klinici in België. Jaarrapport 2007. Scientific Institute of Public Health, Unit of Epidemiology, Brussels
- Dougan S, Evans B, Elford J et al (2007) Sexually transmitted infections in Western Europe among HIV-positive men who have sex with men. *Sex Transm Dis* 34(10):783–790
- European Centre for Disease Prevention and Control (ECDC) (2008) HIV/AIDS surveillance in Europe. ECDC, Stockholm
- Kalichman SC, Rompa D, Cage M (2000) Sexually transmitted infections among HIV seropositive men and women. *Sex Transm Infect* 76:350–354
- Kivi M, Koedijk FDH, van der Sande M, van de Laar MJW (2008) Evaluation prompting transition from enhanced to routine surveillance of Lymphogranuloma Venereum (LGV) in the Netherlands. *Euro Surveill* 13(14):pii=8087
- Marcus U, Schmidt AJ (2008) Changes of sexual behaviour in MSM in the HAART era: implications for STI and HIV epidemics and prevention strategies. Abstract W11.2 p.39 Abstract book 24th IUSTI Europe Conference, Milan
- Mykhalovskiy E, Patten S, Sanders C et al (2009) Conceptualizing the integration of HIV treatment and prevention: findings from a process evaluation of a community-based, national capacity-building intervention. *Int J Public Health* 54:133–141
- Nöstlinger C, Platteau T, Mueller MC et al (2008) Eurosupport V: understanding sexual risk behaviour among people living with HIV. Abstract MOAC0306 Abstract Book Volume 1 XVII International AIDS Conference, Mexico City
- Platteau T, Nöstlinger C, Schrooten W et al (2008) Eurosupport V: sexual health in a group of HIV-positive men who have sex with men (MSM). Abstract WEPE0738 Abstract book Volume 2 XVII International AIDS Conference, Mexico City
- Sasse A, Defraye A, Buziarsist J, Van Beckhoven D, Wanyama S (2008) Epidemiologie van AIDS en HIV-infectie in België. Toestand op 31 December 2007. Scientific Institute of Public Health, Unit of Epidemiology, Brussels
- Sethi G, Allason-Jones E, Richens J et al (2009) Lymphogranuloma venereum presenting as genital ulceration and inguinal syndrome

- in men who have sex with men in London, United Kingdom. *Sex Transm Infect* 85(3):165–170
- Smelov V, Morré SA, de Vries H (2008) Are serological chlamydia-specific markers useful to detect asymptomatic cases of lymphogranuloma venereum proctitis? *Sex Transm Infect* 84(1):77–78
- Stry G, Stry A (2008) Lymphogranuloma venereum outbreak in Europe. *J Dtsch Dermatol Ges* 6:935–939
- Timen A, Hulscher EIJ, Vos D et al (2008) Control measures used during Lymphogranuloma venereum outbreak, Europe. *CDC EID* 14(4)
- UNAIDS (2008) 2008 report on the global AIDS epidemic. UNAIDS, Geneva
- van de Laar T, van der Bij K, Prins M et al (2007) Increase in HCV incidence among men who have sex with men in Amsterdam most likely caused by sexual transmission. *J Infect Dis* 196:230–238
- Van der Snoek EM, Ossewaarde JM, van der Meijden WI, Mulder PG, Thio HB (2008) The use of serological titres of IgA and IgG in (early) discrimination between rectal infection with non-lymphogranuloma venereum and lymphogranuloma venereum serovars of *Chlamydia trachomatis*. *Sex Transm Infect* 84(1):77