

ROBERT KOCH INSTITUT



Final Report

on the BORDERNET Sentinel-Surveillance (WP 5)

Period of activity:

1.1.2005 - 31.12.2007

BORDER|NET

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Work Package 5

Final Report on the BORDERNET Sentinel Surveillance

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All participating patients and documenting sentinel sites

All participating institutions and projects:

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I. Methods

I.1. Study design

A sentinel surveillance approach was chosen to collect the needed data. With this design, the frequency of STIs can be properly estimated with limited resources. Information about circulation and distribution of STIs within the population is available as well as the detection of special risks, outbreaks or trends for the observed STIs. In this sentinel the national differences in health care can be considered by recruiting the participating institutions.

I.2. Study population

The study population were all persons out of the four regions being infected with HIV, syphilis, chlamydia or gonorrhoea at the time of the study and attending a sentinel site.

I.3. Indicators

All chlamydia, gonorrhoea, HIV and syphilis infections, which are newly diagnosed and laboratory confirmed in the study period and region in the sentinel sites are reported, including asymptomatic infections. Also different or repeating STIs in one person should be reported separately.

I.4. Selection and recruiting of the reporting sites

In the scope of the overall project BORDERNET, four cross-border model regions, each consisting of an area in a new and an old EU member state, were defined (Fig. 2). The HIV and STI sentinel surveillance was also established in these model regions. Sentinel sites in each model region were recruited by the leading cooperation partners of each region. The aim was to compose a sentinel system, which is able to represent the particular epidemiological situation of each region.

Therefore, before recruiting the sentinel sites, we collected detailed information about the number and kind of potential sentinel sites using literature and questionnaires sent to the regional coordinators and the WHO STI-Coordinators in the regions. Because of large differences between the model regions regarding degree of urbanisation, local health system, potential target population or the epidemiological situation, the composition of the sentinel sites had to differ between the regions. The sites were chosen also with the aim to reach a maximum of infected persons in the regions as well as risk groups. The participation in BORDERNET is voluntary and can be ended at any time. The sites leaving the project should then be replaced by new sentinel sites.

Consequently, the chosen sentinel sites are local health authorities, STI-clinics and specialised outpatient clinics for STIs.

I.5. Required data and types of questionnaires

Four different types of questionnaires are used in conducting the BORDERNET sentinel-surveillance. First, a basic questionnaire was handed out to the sentinel sites to provide information on their size, their equipment, the composition of staff, their catchment area as well as the monthly number and type of patients of each sentinel site.

Epidemiological data are collected about patients who are newly and laboratory confirmed diagnosed for chlamydia, gonorrhoea, HIV and syphilis. These are the four most important sexual transmitted infections (STIs) in respect of public health efforts and were therefore chosen.

Epidemiological information is provided through a monthly, a diagnosis and a patient questionnaire:

1. Via the monthly questionnaire, the sentinel sites report the number of clients, the sex distribution, the number of examinations for chlamydia, gonorrhoea, HIV and syphilis and diagnosis for the mentioned four STIs.
2. The treating physician fill in a diagnosis questionnaire for each patient with a diagnosis of one of the stated STIs, gaining clinical information about the current infection and anamnestic details as well as socio-demographic characteristics of the patient and the likely mode of transmission.
3. STI patients voluntary fill in a questionnaire on their socio-demographic background, likely mode and place of transmission, sexual behaviour and drug use. An information letter explaining study objectives and data protection issues as well as stating that participation is voluntary is handed over to the patients at the same time.

1.6. Data flow

The questionnaires are sent from the local sentinel sites to the regional coordinator, who checks them for consistency. The anonymous patient questionnaires, only linked by a unique reference number to the diagnosis questionnaire, are sent to the regional project coordinators. From there they are forwarded to the overall coordinator (SPI) who enters the data into the database. The datasets will finally be sent to RKI, where the data analysis is done. The dataflow guarantees a very high standard of data protection (Fig 1).

1.7. Data analysis

Following analysis is done regularly:

- Absolute and relative frequency of diagnosed cases of HIV, syphilis, chlamydia and gonorrhoea with
 - distribution analysed by region
 - distribution analysed by demographic detail (age, sex, place of residence, origin)
 - distribution analysed by most likely mode of transmission (homo/bisexual contacts, iv.-drug abuse, sex work, heterosexual contacts, other)
- Analysis of risk parameters and identification of risk behaviour for the different STIs
- Identification of
 - trends in time
 - trends in regional distribution
 - changes of risk behaviour

1.8. Limitations

A sentinel survey will not generate representative data of the population under surveillance. A direct comparison between different nations is difficult, but trends are fast and easily detectable.

The national differences of the previous recording and also the social attitude of the included STIs can influence the common collection of the data. Also the distinctions in the national health systems will have an impact on diagnosis and reporting within the sentinel. Some risk groups are expected to be difficult to reach (e.g. sex workers, drug user, migrants).

Regular meetings with the participating institutions as well as a good local cooperation will help to detect problems early and to find solutions.

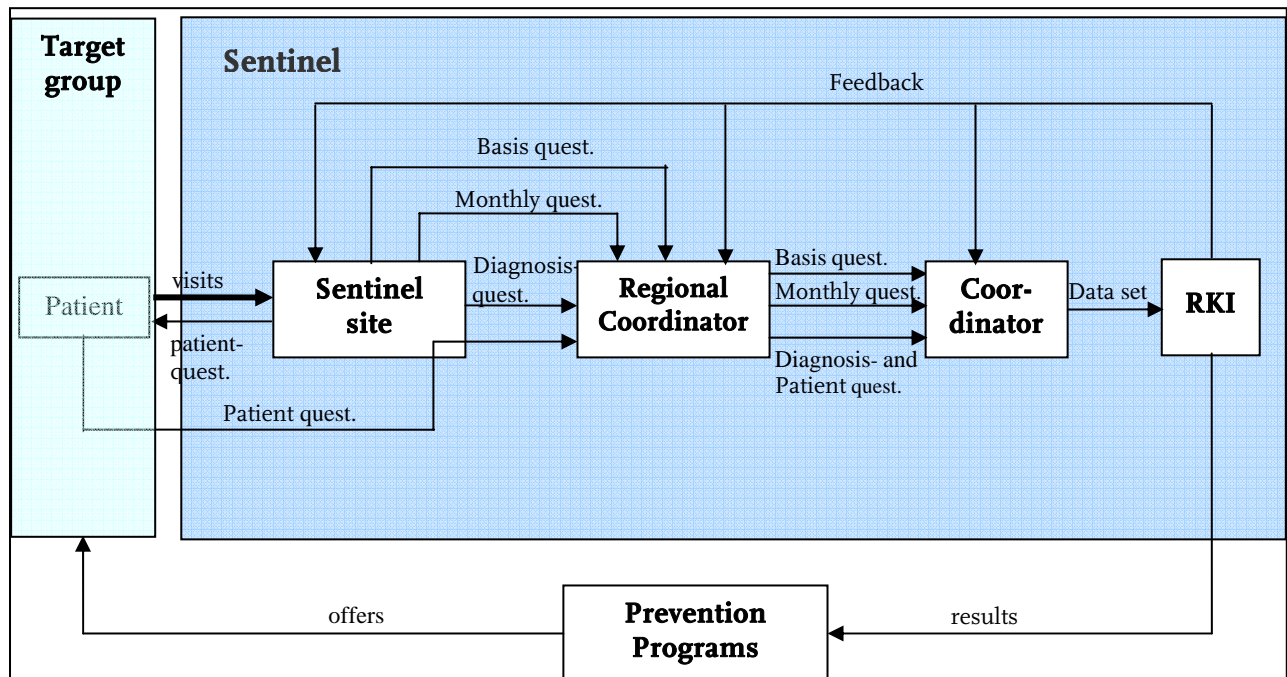


Figure 1
Dataflow within the BORDERNET sentinel-surveillance

1.9. Ethical aspects / Data protection

STIs are diseases being often associated with stigma and shame for the concerned. Hence the confidentiality in the study is very important. This should be guaranteed through the following organisational properties.

The participation of the institutions is voluntary and can be ended at any time. The reporting will be made totally anonymous from the participating institutions to the regional coordinators.

The questioning of the patients will be also anonymous and voluntary. They will be given a questionnaire and an information letter from their diagnosing site, which explains the study, the data protection and also the voluntary participation. This should improve the confidence between the patients and the local institutions and increase the response rate.

For the correct matching of the diagnosis and the patient questionnaire to one patient the reporting sites will assign a reference numbers on both questionnaires. After the matching the numbers will be separated and destroyed.

The collected data will be kept in rooms which can be locked not accessible for others than the members of the project team.

II. Data of the BORDERNET Sentinel-Surveillance

The results reported in this paper are based on the data as of 11th December 2007.

II.1. Composition of the Sentinel-Surveillance-System

Twenty-seven of 52 sentinel sites described their **service area** as “metropolitan”, 24 others as “provincial”, only one institution as “rural”. Thereby, this classifications follow the very different characters of the model regions, which are partly rather rural (e.g. Mecklenburg-Vorpommern, Brandenburg), partly rather metropolitan (e.g. Wien, Bratislava). In analysing this information has to be considered – for instance while looking at groups at risk – to avoid biases.

II.1.1. Properties of the Sentinel Sites

The BORDERNET-Sentinel consists of 60 sentinel sites at the moment, between 2 und 15 in the specific regions (Fig. 2). These are 14 public health offices, 18 private practitioners und 28 Hospital based STI clinics.

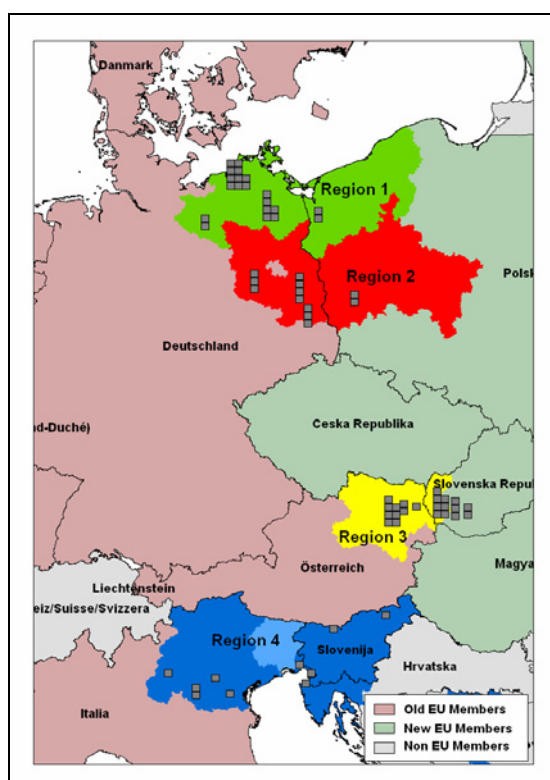


Figure 2
Overview of distribution of sentinel sites, state
31.12.2007

Because the structure of the health care systems in Germany and Austria are based on private and public sentinel sites, the sentinel sites of these two countries are approximately in equal shares private practitioners (nineteen) and public sentinel sites like public health care offices or STI-ambulances at hospitals (seventeen). The sentinel sites in all other regions are almost entirely public sentinel sites. With assistance of a first basic questionnaire the sentinel sites were asked to give general information regarding the size of institution, the existing staff, their service area as well as the composition of their clientele. Fifty-three of 60 sentinel sites responded to the basic questionnaire.

Twenty-seven of 53 sentinel sites described their **service area** as “metropolitan”, 24 more as “provincial”, only one institution as “rural”. Thereby, this classifications follow the very different characters of the model regions, which are partly rather rural (e.g. Mecklenburg-Vorpommern, Brandenburg), partly rather metropolitan (e.g. Wien, Bratislava).

Twenty-one of 53 sentinel sites reported to offer a specific HIV-**consultation**, 22/53 a STI-consultation. Consultations for HIV and concurrently STIs are conducted only by ten of 53 sentinel sites, nine sentinel sites offer a STI-consultation but none for HIV, eleven only for HIV. At 20 sites, none of these specific consultations are given. The latter are mostly private practitioners (dermatologists, gynaecologists, venerologists) as well as gynaecological departments of hospitals. Both are more specialised in other diseases and have got therefore no resources for a specific HIV- or STI-consultation offer. With a view to sentinel sites that offer a HIV- or STI-consultation it becomes apparent that these consultations take place separately in two third of all cases. This is equal in the old as well as in the new EU-states. Combined consultations were offered nearly solely in the western model regions (nine of ten).

Regarding to the **frequency of consultations** we received data of 21/22 sites offering consultations for HIV and for other STIs. 10/21 sentinel sites offer daily HIV-consultations, 10 more at least weekly, in only one of these sites its takes place at least once in a month. The distribution of the frequency of STI-consultancies is identical.

Only seventeen sites offered **free of charge and anonymous HIV tests**. Additional eleven sentinel sites offer free of charge, but not anonymous tests, at thirteen sentinel sites the tests are anonymous but need to be paid for. The latter are public sentinel sites or NGOs with governmental support, nearly solely located in Germany, Italy and the Slovak Republic (sixteen of seventeen). Sentinel sites (such as private practitioners) that need account to health insurance companies and report the data offered free but not anonymous tests. These sites offered also anonymous tests for which patients have to pay for. Analysis of the situation regarding tests for other STIs shows that ten sites offer anonymous and free of charge testing. Free of charge, but not anonymous testing is conducted by eleven more sentinel sites, tests with costs but anonymous by nine.

The **size of the HIV- and STI-sectors** of the sentinel sites, measured by the number of attended persons per month, was surveyed separately for HIV and other STIs. The data for each division were very similar (Table 1). The table shows that there is a great many of sentinel sites with a smaller number of patients per month between one and 25 as well as a smaller number with a high number of patients (seven in each case, whereat only on institution has a high number of clients in both divisions). There are no HIV-patients in thirteen sentinel sites, no STI patients in another 20 sentinel sites.

Table 1
Size of HIV- and STI-sectors of the sentinel sites, measured by number of attended patients/month (n=53)

Patients/month	HIV	STD
0	13	20
1-25	26	22
26-50	6	2
57-75	0	2
76-100	0	0
> 100	7	7

The most represented **medical speciality** of sentinel physicians within the BORDERNET (Fig. 3) sentinel-surveillance was Dermatology/Venerology for both divisions (HIV: 20, STI: 26, n= 53), followed by Gynaecology (HIV: nine, STI: sixteen). General Medicine and physicians of public health care sentinel sites were of more relevance for the HIV-division.

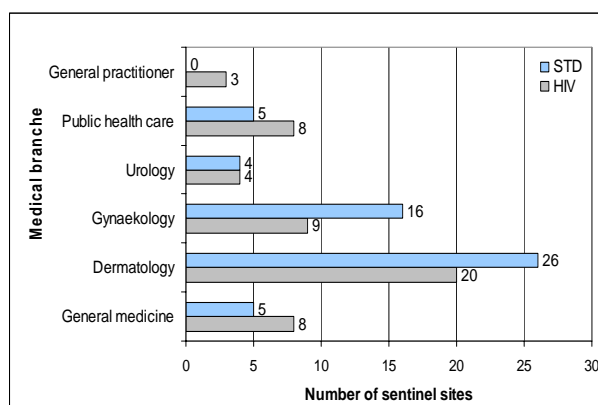


Figure 3

Frequency of branch of study within the BORDERNET sentinel-surveillance (n=53)

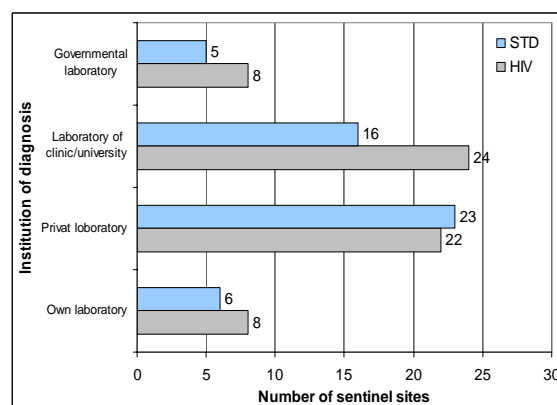


Figure 4

Frequency of sentinel sites doing diagnostics for sentinel sites (n=53)

Sentinel sites that perform **diagnostics** on behalf of the sentinel sites (Fig. 4) are mainly private laboratories, both for HIV and other STIs, or laboratories run by hospitals or universities. The former are charged almost in all cases by private practitioners, the latter by hospital-based STI clinics. Governmental laboratories or laboratories run by the sentinel sites themselves are in contrast less frequent.

II.1.2. Clientele of the sentinel sites

The median estimated proportion of men among all clients was 70.0% regarding sites with HIV section (n=32) and of 65.0% regarding sites with other STIs section (n=30). No important differences between the model regions or between different types of sentinel sites could be observed. The median proportion of people of a foreign origin was 17.5% regarding HIV (n=30), 10.0% regarding other STIs (n=30). All sentinel sites with a proportion equal or higher than 30% were located in western model regions.

Table 2

Median of proportions of different risk groups of all patients of the sentinel sites

		Median (Range, %)
Women	Sex workers (n=27)	5.0 (0-80)
	i.v. Drug user (n=27)	10.0 (0-70)
	Heterosexual persons (n=37)	90.0 (0-100)
	Homo-/bisexual persons (n=36)	35.5 (0-100)
Men	i.v. Drug user (n=26)	5.0 (0-30)
	Heterosexual persons (n=36)	53.0 (0-100)

Further, the sentinel sites were questioned about the **proportion of several groups at risk**, separated by sex (s. tab. 2). Among women, 16.6% of i.v. drug user were reported (range 0% and 70%). Sentinel sites with a proportion of this clientele above 20% (n=7) are located in Wien or Bratislava with only on exception. The reported proportion of sex workers was variable (0%-80%). Sites with a proportion above 20% (n=3) were located near to the borders of the western model regions. Drug use was reportedly low in men (mean: 5.0%; range 0% and 30%). Frequency of homo- or bisexual men as group at risk was higher. The regional distribution of this clientele is highly conspicuous: with one exception all sentinel sites with more than 30% homo- or bisexual men were located only in the western parts of the model regions.

II.2. Response rate

Table 3

Response of monthly, diagnosis and patient questionnaires by region

Region	Monthly Qu.	Diagnosis Qu.	Patient Qu.
Mecklenburg-Vorpommern	238	227	63
Zachodniopomorskie	6	99	95
Brandenburg	115	25	0
Lubuskie	28	0	0
Austria	122	1738	297
Slovakia	159	282	278
Italy	90	296	280
Slovenia	9	1	1
Total	767	2,668	1,014

The response of the different type of questionnaires (monthly, diagnosis and patient questionnaire) varied between the regions (Table 3). The response rate by month was quite constant for the monthly questionnaire with a decrease for the last quarter (Fig. 5). For the diagnosis questionnaire it was stable with a decrease in summer 2006 and a following increase due to inclusion of three important Austrian testing points (Pilzambulatorien). There was a decrease for the last four months, too, presumably due to incomplete reporting by now. The curve of the response rate of the patient questionnaire was slightly equal to that of the diagnosis questionnaire, but on a lower level. Response rates of patient questionnaires were very high in Italy (94.6%), Poland (96.0%), Slovak Rep. (98.6%) and Slovenia (100%), much lower in Germany (25.0%) and Austria (17.1%) ($p < 0.01$).

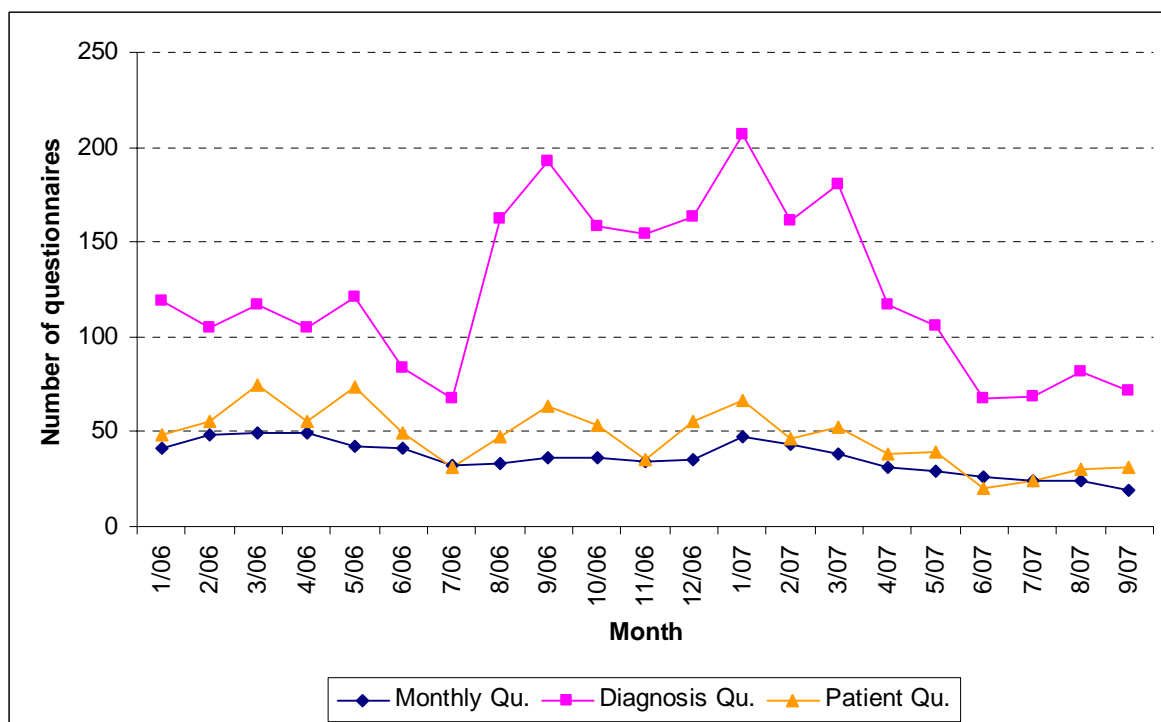


Figure 5

Response rate of monthly, diagnosis and patient questionnaire, January 2006 – September 2007

II.3. Conducted laboratory tests

Within the scope of the BORDERNET sentinel-surveillance, 147,529 laboratory tests were performed in 87,096 persons within the surveillance period.

Table 4

Total number of lab tests (monthly questionnaire), number of positive tests and their proportion of the total number of lab tests (monthly questionnaire), number of sent in diagnosis questionnaires and their proportion of number of positive tests and number of patient questionnaires and their proportion of number of sent in diagnosis questionnaires, all by STI

STI	Number of lab. tests	Positive tests (%)	Diagnosis questionnaire (%)	Patient questionnaire (%)
Chlamydia	41,027	1,847 (4.5)	1,514 (82.0)	375 (24.8)
HIV	34,599	309 (0.9)	235 (76.1)	127 (54.0)
Gonorrhoea	45,619	589 (1.3)	450 (76.4)	183 (40.7)
Syphilis	26,284	620 (2.4)	478 (77.1)	334 (69.9)

The highest proportion of positive tests was given for chlamydia (table 4).

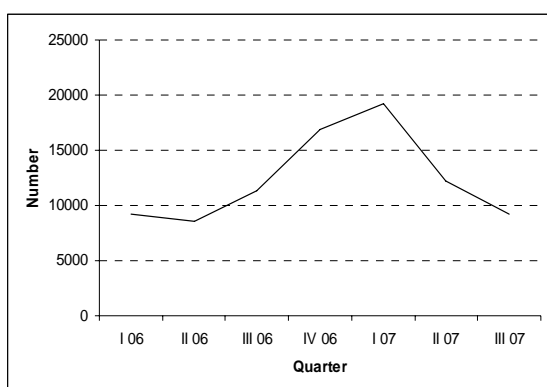


Figure 6

Number of tested persons within the BORDERNET-Sentinel per quarter (monthly questionnaire).

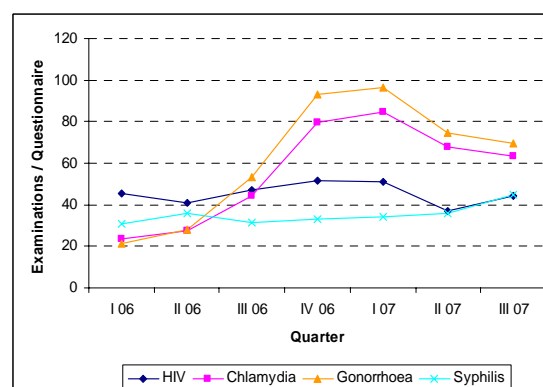


Figure 7

Mean number of lab tests per questionnaire and per quarter (monthly questionnaire).

We observed a decrease of diagnosis questionnaires starting in April 2007. This is due to the fact that some sentinel sites with a more extensive clientele quit participation on the sentinel surveillance due to missing financial gratification for filling in questionnaires. (Fig. 5). We observed a similar decrease in terms of the number of monthly and patient questionnaires as well as in the number of tested persons (Fig. 6). Another decrease starting in the third quarter 2007 is due to reporting delay.

The mean number of lab tests reported per monthly questionnaire stayed relatively stable for HIV and Syphilis (Fig. 7). The numbers of chlamydia and gonorrhoea tests arose due to the inclusion of three testing sites with a large clientele of commercial sex workers; both decreased in the last quarters II and III of 2007.

The number of tested persons per region were below 1,000/quarter for all regions except Austria (Fig 8). 81.6% of all examinations were reported out of this region. Therefore, analyses made across the whole sentinel were heavily influenced by the epidemiological situation in Austria.

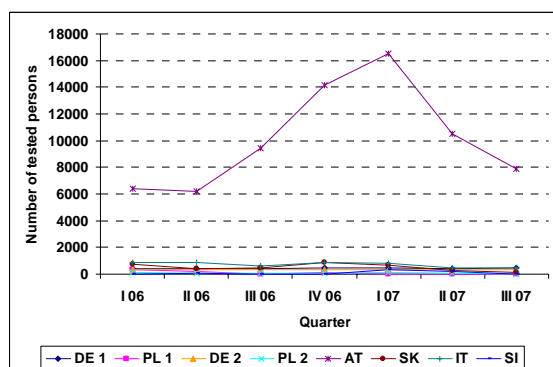


Figure 8
Number of tested persons by region and quarter
(for name of regions s. appendix I.I, monthly qu.)

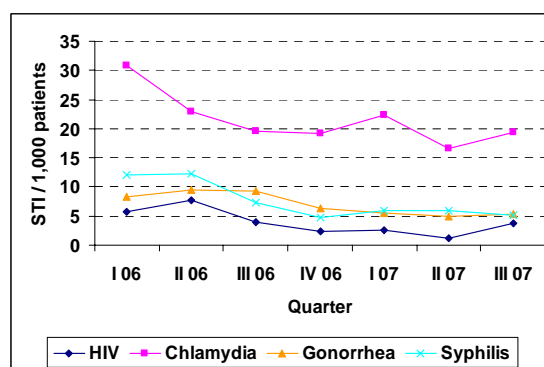


Figure 9
STIs per 1,000 patients by infection and quarter
(monthly qu.)

II.4. Sociodemographic data of the sentinel population

II.4.1. Sex and Age

The sex distribution within the population of the sentinel surveillance showed a small overbalance in men (Table 5). With a proportion of men of all tested persons of only 27.7% a positive test result is made in 5.7%. This proportion was more as double as high as in women (2.0%).

Table 5
Sex distribution, mean of age and origin by sex (diagnosis qu.)

	Men n=1.370	Women n=1.256
Proportion (%)	52.2	47.8
Mean of age (years)	34.0	28.3*
other origin than country of diagnosis	23.8	54.5*

* $p < 0,01$

II.4.2. Origin of patients

We observed large gender differences with respect to the origin of the patients. 82.2% of all men had an origin of one of the countries included in the sentinel-surveillance, with a clear overbalance of the western parts (65.3%, Figs. 10 and 11). On the other hand, only 61.4% of women came from BORDERNET regions, other important regions were other countries of Central Europe, to a lesser extent Eastern Europe, Africa and Asia.

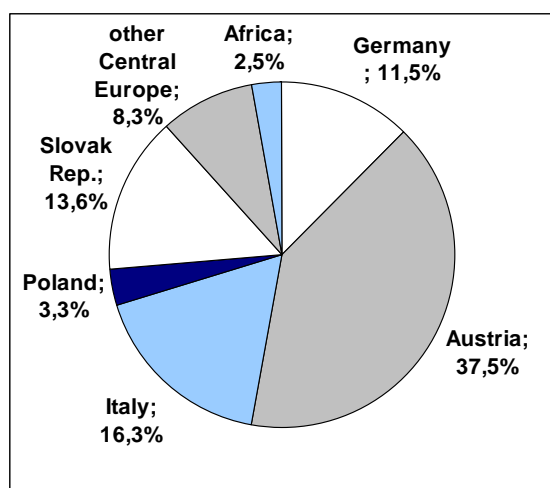


Figure 10
Origin of male patients (diagnosis qu., n=1,156)

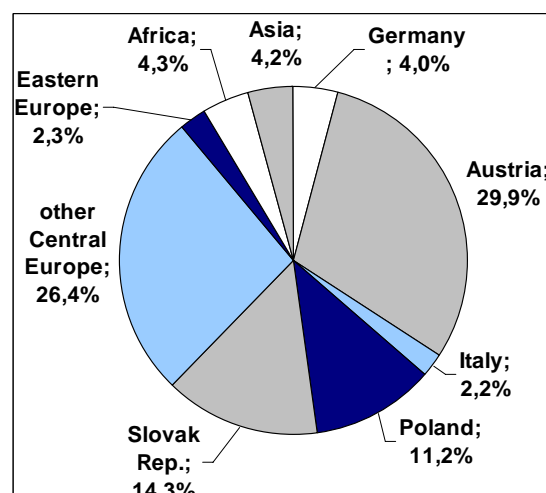


Figure 11
Origin of female patients (diagnosis qu., n=1,115)

However, not all examined persons, of which the origin was reported as a BORDERNET-region, lived in their country of origin but were migrated. All patients with an origin other than the country of their diagnosis were identified as “migrants”. Two hundred forty one (23.8%) men and 584 (54.5%) women fulfilled this definition. This large difference between the sexes were statistically highly significant ($p < 0.01$). An origin from the respective partner region were reported only for 0.7% of male migrants, but for 6.0% of female migrants, of which 67 (89.3%) indicated sex work as the most likely mode of transmission. All persons out of this group migrated from the Slovak Republic to Austria.

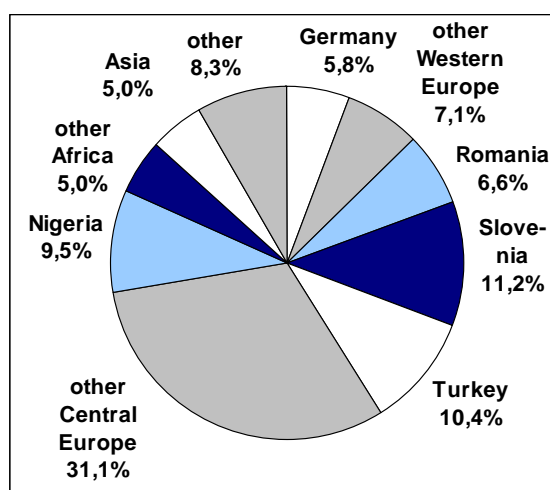


Figure 12
Origin of male migrants > 5% (diagnosis qu., n=241)

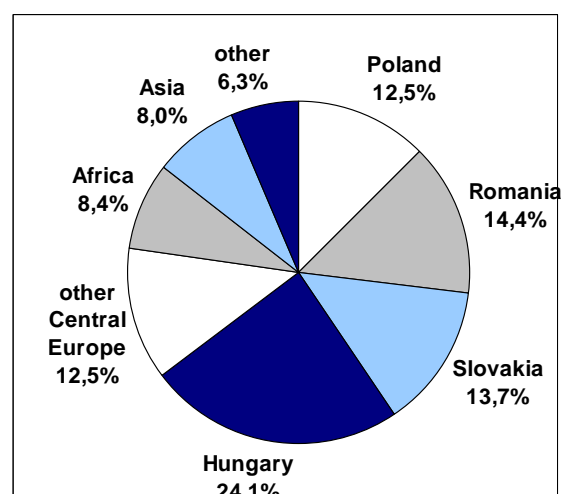


Figure 13
Origin of female migrants > 5% (diagnosis qu., n=584)

72.2% of male migrants originated from countries of the WHO-Euro-Region with particular relevance of central European countries (Fig. 12). The proportion of central-European countries was equal in female migrants (77.3%).

II.5. Epidemiological situation

Chlamydia was the most frequent diagnosed infection in the first three quarters of 2006 in all patients of the BORDERNET sentinel-surveillance by far, with a relatively sta-

ble trend (Fig. 9). In respect to HIV, the lowest numbers of infection were counted, with an also almost stable progression.

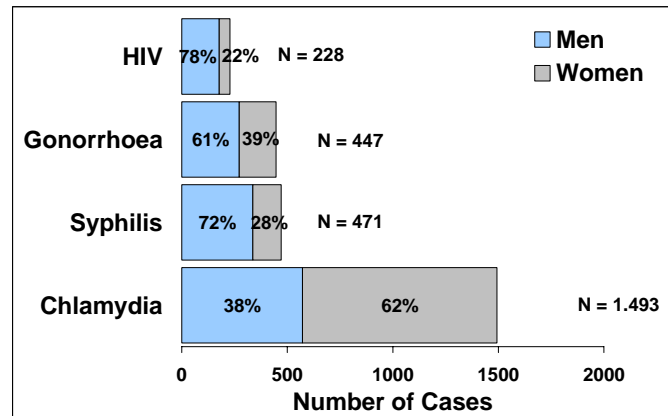


Figure 14
Number of cases by sex and infection (diagnosis qu.,
n=2,639)

Data for gonorrhoea and syphilis were on a slightly higher level than for HIV with little fluctuations, but much lower than for chlamydia. The high number of infections with chlamydia within the study population was observed in nearly all regions.

Analysis of the **sex distribution** of the reported infections showed distinct differences between the particular infections (Fig. 14). HIV and syphilis were reported in three quarters of all cases in men. Also infections by gonorrhoea were diagnosed more often in men, but the difference between the sexes was less distinct. Conversely, two thirds of the chlamydia patients were women.

Table 6
Frequency of STI in anamnesis by sex (diagnosis qu.)

	Men	Women
	n=1,370	n=1,256
STI in anamnesis (%)	28.3	23.4*

* $p < 0,01$

A previous STI was reported for about a quarter of men and women (Table 6). The slight difference was highly significant ($p < 0.01$). In men with previous STI, the most likely mode of transmission reported was “MSM” (55.4%), for another quarter (26.0%) “heterosexual contacts” beyond sex work (n=388). In women with previous STI, the most important mode of transmission by far was sex work (71.1%), and again, “heterosexual contacts” was another frequent risk of infection (21.8%, n=294).

Patients with newly diagnosed HIV infections were more likely to have had a previous STI (Table 7). More than a third of these persons suffered already from an infection of syphilis. Chlamydia and gonorrhoea could be found in more than a quarter of the medical history of persons with an HIV diagnosis. Because of the high relevance of „MSM“ and “commercial sex work” as risks of infection, the STI history of persons with these risks were analysed in more detail (Tables 8 and 9).

Table 7
Frequency of STI in anamnesis by infection of diagnosis (diagnosis qu.)

Previous STI (%)	Diagnosis			
	Chlamydia n=1,514	Gonorrhoea n=450	HIV n=235	Syphilis n=478
Chlamydia	9.8	8.2	28.5	11.5
Gonorrhoea	7.6	19.6	28.5	14.0
HIV	0.6	3.3	---	12.8
Syphilis	5.6	6.2	36.2	20.9
Hepatitis B	4.1	2.2	5.1	6.9
Other	3.8	4.0	22.6	13.5

HIV could be found in the medical history of nearly a quarter (ever or in the last 12 months) of all MSM and was the most frequent previously known STI. Patients with newly diagnosed HIV infections were more likely to have had a previous STI, followed by syphilis and gonorrhoea (Table 7).

Table 8
STI-Anamnesis of chlamydia, gonorrhoea, syphilis and other STIs by risks of infection "MSM" and "Commercial sex work"

	STI (%)	Last 12 month	Ever	No	No answer
MSM n=441	Chlamydia	0.6	15.6	67.3	16.3
	Gonorrhoea	4.5	17.2	63.5	14.7
	Syphilis	8.4	17.2	60.5	13.8
	Other	1.4	14.1	63.9	20.6
Sex work n=198	Chlamydia	13.6	3.0	80.6	2.8
	Gonorrhoea	8.3	4.2	84.5	3.0
	Syphilis	1.0	3.7	89.9	5.4
	Other	1.3	0.5	90.2	7.9

Table 9
STI-Anamnesis of Hepatitis B and HIV by modes of transmission „MSM“ and „commercial sex work“ and by infection

	STI (%)	Yes	No
MSM n=441	Hepatitis B	6.6	93.4
	HIV	22.0	78.0
Sex work n=198	Hepatitis B	12.5	87.5
	HIV	0.7	99.3

II.6. Groups at risk and risk behaviour

Besides data regarding medical details of the reported infection, estimations referring to the most likely way of transmission were collected via the diagnosis questionnaire in order to identify groups at risk and risk behaviour. Additionally, very detailed information concerning this topic were gathered via the patient questionnaire.

II.6.1. Risk of infection

Table 10
Most likely mode of transmission by sex (diagnosis qu., n= 1045)

	Men n = 1,370	Women n = 1,256
%		
MSM	31.6	---
Heterosexual contacts (not commercial)	30.2	27.3
Contact with female or male sex worker	4.7	0.5
Commercial sex work	1.2	45.5
other mode of transmission	0.3	0.2
Unknown/no answer	32.0	26.5

Main risk of infection in men was sex with other men (MSM) followed by heterosexual contacts (Table 10). Compared to that, sexual contact with sex workers as a probable mode of transmission for STIs was not very frequently reported within the BORDERNET sentinel surveillance. In women, the main reported mode of transmission was commercial sex work, followed by heterosexual contacts. Because of the high relevance of MSM as mode of transmission for HIV and syphilis, a more detailed analysis was carried out. As it is shown in Fig. 15, only 12.8% of all reports with MSM as most likely mode of transmission were reported in the new EU member states. Furthermore, 51.6% of all diagnosis in men with given data regarding mode of transmission in Germany, Austria and Italy were reported as MSM, however, in Poland and the Slovak Republic this proportion was only 28.1% (n=931).

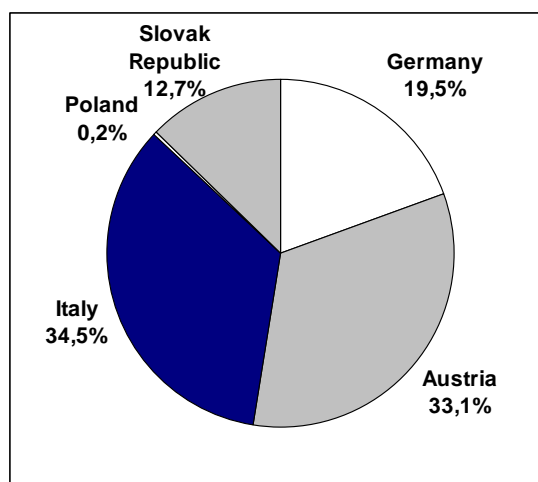


Figure 15
Proportion of countries of all cases with "MSM" as probable way of infection (diagnosis qu., n=441)

MSM was reported more frequently as the probable mode of transmission in HIV and syphilis patients compared to the proportion of MSM as mode of transmission in whole, and sex work in chlamydia and gonorrhoea patients (Table 11). The high proportion of MSM of diagnoses of HIV and syphilis was reflected in the sex distribution of these infections (Fig. 14). Heterosexual contacts were reported in all STIs as a possible way of transmission nearly equal to its proportion of all cases.

Table 11

Mode of transmission, total and by infection (diagnosis qu., n= 2.668)

Mode of transmission (%)	Total n=2,668	Chlamydia n=1,514	Gonorrhoea n=450	HIV n=235	Syphilis n=478
MSM	16.5	2.7	20.0	51.5	41.2
Heterosexual Contacts (not commercial)	28.9	27.5	22.9	26.4	30.8
Contact with sex worker	2.7	0.6	5.1	3.0	7.1
Commercial sex work	22.3	29.1	26.7	4.7	11.1
Not known/no answer	29.3	39.8	25.4	14.5	9.9

II.6.2. Condom use

As an important behaviour for reducing risk of infection on an individual level, data regarding the frequency of condom use were collected via the patient questionnaire, separate for sexual contacts with regular partners and casual sex partners (Table 12). Regarding **sexual contacts with a regular partner**, about a half of all men and women reported to use a condom not every time. 8.7% in men and about double as much in women reported to “always” use condoms. A proportion of 49.8% of all patients stated not to “always” use a condom with their regular partner, of which 3.2% reported to have sexual contacts with female or male sex workers, another 5.5% to have contacts to a suitor in the scope of sex work and roughly a third (30.9%) to have sexual contacts with a casual partner.

Regarding **sexual contacts with casual sex partners**, 43.0% of men stated not to use a condom every time, in women it was a proportion of 19.6%. 40.5% of all responding persons made no statement with reference to their condom use with casual sex partners. By excluding questionnaires of persons which made no statements in regards of casual sex partners, we observed a higher proportion of persons not always using a condom (73.9% in men (n=354) and 58.5% in women (n=118)). 42.4% of men stated that the sex of their source of infection was male, 67.6% female (n=519).

Table 12
Frequency of condom use by kind of partner and sex (patient qu.)

	Regular partner		Casual sex partner	
	Men	Women	Men	Women
Condom use (%)	n=593	n=354	n=594	n=356
Always	8.8	13.8	16.7	13.8
Often/sometimes	14.1	11.9	23.6	12.6
Never	36.1	40.7	19.4	7.0
No sex with such partner	11.0	7.6	11.4	12.1
Not known/no answer	30.0	15.5	29.0	54.8

The **source of infection** of patients, who did not always use a condom while having sexual contacts with a casual partner, differed clearly by sex and the kind of partner (Table 13). The most important mode of transmission in women while having sexual contacts with their partner was sexual contact with their regular partner, in men it were sexual contacts with casual sex partners.

Table 13
Ways of infection of persons which had sexual intercourse with a casual partner and which did not always use condoms, by kind of partner and sex (patient qu.)

	not always used a condom with:			
	regular partner		casual sex partner	
	Men	Women	Men	Women
Ways of infection (%)	n=298	n=186	n=255	n=69
Regular partner	33.2	44.1	7.4	15.9
Casual sex partner	44.3	22.0	77.6	66.7
Female/male sex worker	3.7	0.5	4.3	1.4
Suitor	2.3	3.3	3.1	4.3
not known/no answer	16.4	30.1	6.7	11.6

Sexual contacts in the scope of sex work were of less importance. The modes of transmission of persons who did not always use a condom in sexual contacts with casual sex partners differed a lot to that with regular partners, but were relatively equal in both sexes. About three quarters of men and more two third of women got infected via sexual contact with a casual sex partner.

In women, 34.7% who stated to use always a condom with their regular partner reported that they got infected by them anyway (n=49). 10.2% of these women got infected by suitors and by casual sex partners each, another 28.6% did not know the way of infection. Most frequent way of infection in men who stated to use always a condom with their regular partner was sexual contact with a casual sex partner (73.1%, n=52). In regard to women who always use a condom while having sexual contacts with casual partners, a clear picture came up: 34.7% got infected by casual partners, 18.4% by their regular partner, 6.1% by suitors and 34.7% did not know their way of infection (n=49). Men quoted predominantly casual partners as way of infection (68.7%), 18.2% their regular partner, other ways were not frequent (n=99).

II.6.3. Drug use

Drug use was of minor relevance within the population of the sentinel with an overall proportion of 3.8% (i.v. drug use and other, n=2668). Thereby, only small gender differences were identified (women: 4.7%, men, 3.2%). Drug user originated predominantly from the Slovak Republic (39.0%) and from Austria (28.6%). 10.5% of all drug users were migrants.

II.6.4. Number of partners

In respect to the number of partners, gender differences could be found: women had a median of one sexual partner (mean: 7.8) and men a median of two partners (mean 5.4) within the last six months. The differences, especially the higher mean in women, could be explained by the high number sex partners and contacts of female sex workers. As Fig. 16 shows, men reported less frequently only one sexual partner, and more frequently 3-5 partners than women. Most likely mode of transmission in men who had three or more sex partners was MSM (50.6%), followed by 34.3% heterosexual contacts and contact to a female or a male sex worker (7.3%, n=178).

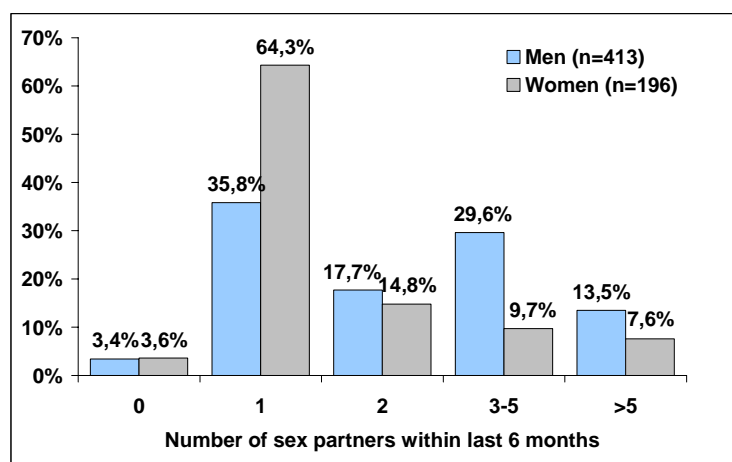


Figure 16
Number of sex partners within last 6 months by sex (patient qu.)

II.7. Sex work and migration

Sex workers were clearly overrepresented among the sentinel population compared to their mean given in the basic questionnaires (s. II.1.2). Through weighting the data given by the sentinel sites with the number of sent in questionnaires by each site this difference was nearly balanced.

96.3% of the sex workers within the sentinel population were women (n=594). Mean age was 26.7 years (Median: 25 years), 36.7% had a previous STI; in 4.4% two, in another 0.5% three STIs were detected at the same time. With 74.2%, an infection with chlamydia was the most frequent diagnosis within this group at risk by far, followed by gonorrhoea (20.2%). Syphilis (8.9%) and HIV (1.9%) were clearly less frequent (n=594).

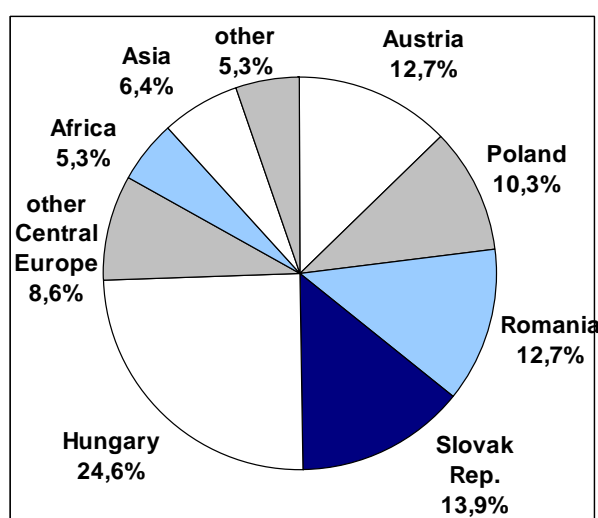


Figure 17
Origin of sex workers (> 5%, n=581, diagnosis qu.)

82.3% of the sex workers were migrants. Nearly three quarter of all sex workers originated from Central European states (70.1%, Fig. 17), with a clear emphasis on Poland, Romania, the Slovak Republic and Hungary. Processes of migration mostly proceeded from Central Europe and, with a lower frequency, Subsaharan-Africa (with a proportion of about 10:1) to Western Europe. A large proportion of migrants has been observed in the western BORDERNET regions (Table 14). Thereby, Austria was on the top of all other regions.

Table 14
Proportion of migrants of all diagnoses by region (diagnosis qu.)

Region	Proportion migrants (%)
DE1	21.6 (n=227)
AT	47.2 (n=1,737)
SK	3.9 (n=282)
IT	22.3 (n=296)

Table 15
Frequency of STIs in migrants by infection and sex (diagnosis qu.)

STI	Men (%) n=295	Women (%) n=632
Chlamydia	51.2	73.9
Gonorrhoea	26.1	18.8
HIV	14.2	4.8
Syphilis	12.5	7.4

The most frequent infection in male migrants was chlamydia, followed by gonorrhoea (Table 15). The proportion of diagnoses of HIV (12.5%) was higher, compared to the proportion of HIV in the whole BORDERNET population (8.9%). Half (54.1%) of male migrants infected with HIV were MSM. Infections with chlamydia were more frequent and

HIV and syphilis less frequent in female than in male migrants. In 5.3% of all migrants, two STIs were diagnosed simultaneously.

Table 16
Mode of transmission in migrants by sex (diagnosis qu.)

Mode of transmission (%)	Men n=295	Women n=632
MSM	19.0	---
Heterosexual contacts	31.5	10.6
Contact with sex worker	5.8	0.3
Commercial sex work	3.1	75.0
Not Known/no answer	40.7	14.1

Most important mode of transmission in male migrants were heterosexual contacts beyond sex work, secondly MSM (Table 16). The most important mode of transmission in female migrants was commercial sex work, whereas heterosexual contacts were of minor relevance in this group.

Self estimated **language skills** of female migrants were inferior to those of male migrants, since only a quarter of women and more than half of men stated to speak “fluently” the language of the country of diagnosis (Table 17).

There were nearly no gender difference in regard to the **financial position** of migrants turned (Table 18). Only one quarter of men and 14.2% of women rated their financial position as “good”.

Table 17
Language skills in migrants by sex (patient qu.)

Language skills (%)	Men n=114	Women n=125
Fluently	55.3	23.2
Can express myself	31.6	54.4
Only a little/not at all	13.1	22.4

Table 18
Financial position in migrants by sex (patient qu.)

Financial position (%)	Men n=110	Women n=113
Good	25.5	14.2
Average	50.9	57.5
Not good	23.6	28.3

The reported duration of stay in the country of diagnosis was less than two years in approximately 50% of female and in about 20% of male migrants (Table 19).

Table 19
Duration of stay of migrants in country of their diagnosis by sex (patient qu.)

Duration of stay (%)	Men n=97	Women n=90
0-1	10.3	34.5
2	8.9	15.6
3-5	25.7	25.6
>5	55.8	24.3

Persons with minor language skills made clearly more often use of assistance for filling in the patient questionnaire as those with good skills (2:1).

II.8. Discussion

II.8.1. Composition of the sentinel

The **composition** of the BORDERNET sentinel-surveillance differs strongly between the particular regions. The present configuration of the sentinel-system reflects the very different structures of the health care systems of the participating countries. Overall, it was more difficult to recruit sentinel sites in more rural regions with a low number of infections as it was in urban areas such as Wien or Bratislava, because it was easier to make the importance of additional epidemiological studies clear to the latter. Nevertheless, it can be stated by now that during the year 2006 it was possible to establish a satisfying coverage of most regions with sentinel sites in an epidemiological sense. This means that sites with different profiles regarding their clientele were chosen to give an appropriate picture of the specific populations given in the particular regions with special respect to their importance in the scope of infections with STIs. The partly rather rural, partly rather metropolitan characters of the particular regions have to be considered in analysing data to avoid biases, for instance while looking at groups at risk.

A special difficulty was to reach **people without a legal residence permit status**. This was only possible in Austria and Italy, because in these countries institutions which offer anonymous and free of charge health care for these persons could be acquired as sentinel sites partly. Lacking surveillance of people without a legal residence permit status is a basic problem regarding STIs, because these persons have to be considered as especially vulnerable because of a difficult access to health care and frequent involvement in sex work.

While analysing the data given in the basic questionnaires it became evident that **diagnostics and therapy of HIV/Aids and other STI** are frequently **separated**. This seems to be not very reasonable because of several reasons. On the level of prevention it is important to consider that HIV/Aids and other STIs occur often in conjunction, that they have very similar ways of transmission and that they appear within the same groups at risk or because of the same risk behaviour. Furthermore, the risk of a new infection with HIV increases as a result of a systemic (e.g. syphilis) and/or local (e.g. HSV) immune reaction. The conjunction of HIV- and STI-counselling and -treatment is an important aim of BORDERNET. The need for joint counselling and treatment opportunities became very clear on the basis of the reported data. A closer conjunction of prevention and health care of HIV/Aids and other STIs has to be emphasised. Furthermore, the strategy of BORDERNET for the improvement of diagnostics and treatment of HIV and STIs intends to make anonymous and free of charge testing for all sexual transmitted infections available in as many sentinel sites as possible. Within the group of the BORDERNET sentinel sites, only nine sentinel sites fulfilled these criteria. This stresses the necessity to establish and to broaden anonymous and at the same time free of charge testing offers for HIV and other STIs in the model regions. In addition, the testing offers could be enlarged by encouraging sentinel sites with a limited range of testing facilities to cooperate among each other.

II.8.2. Response rate

During the years 2006 and 2007, the response rates of many sentinel sites were satisfying. Differences in the response rates of the particular questionnaires were on the one hand side because of the different situation regarding sexual transmitted infections in the different regions, on the other hand side because of a different quality of reporting.

The response rate of the **monthly questionnaire** is a good indicator for the quality of reporting of the single sentinel sites, because this kind of questionnaire has to be filled in each month, also if there were no diagnosis made in the anent period (“zero reporting”). As Figure 5 shows, the response rate of the monthly questionnaires was passably constant with a little decrease while summer. With regard to the very differing number of sentinel sites in each region, the monthly reporting was satisfying with just a few exceptions.

When analysing the response rate of the **diagnosis questionnaires** it is essential to keep in mind that an increase in the number of questionnaires of reported infections could be attributed to an increase of the number of infections or a change in the quality of reporting (e.g. sporadic sending of questionnaires). Due to that, the epidemiological situation can only be assessed by an accurate analysis of the whole data given by the monthly and the diagnosis questionnaires, not only by the response rate of the questionnaires. For example, the decrease of diagnosis questionnaires in June and July 2006 and the following increase is founded in the holiday season in summer, which was compensated afterwards. The distinct decrease starting in summer 2007 was due to the loss of two important sentinel sites in Austria. Fortunately, it was possible to convince them to participate again, but data were not sent in till the state of data of this report.

The large differences regarding the number of diagnosis questionnaires between the regions (Table 3) reflect on the one hand side a very different epidemiological progression in each region, which is founded mainly in the very different basis conditions (e.g. differences between rural and metropolitan areas, scene of sex workers). On the other hand side, the level of reporting is affected by differing diagnostic offers in the regions. For instance, the AIDS-Hilfe Wien conducted an additional, temporary diagnosis campaign for syphilis, which increased the number of diagnosed and reported syphilis cases in this period. The proportion of received diagnosis questionnaires as to all surveyed STIs in respect to all reported diagnoses (as reported in the monthly questionnaires) is, each with more than three quarters, satisfying, but nevertheless increasable (Table 4). It is possible to give contenting statements on this basis. Actions were taken to increase these proportions furthermore.

With regard to the **patient questionnaire**, a detailed analysis showed enormous differences between the single regions with regard to the response rate (Table 3). The differences in response rates between countries with solely public health institutions as sentinel sites and other countries were noticeable and have to be considered. It must be clarified to what extent participation on the sentinel-surveillance was completely voluntarily for every single person. If there are any doubts left, the participating sentinel sites have to be sensitised in this regard. Unfortunately, the response rate of patient questionnaires of female sex workers is quite low (24.5% of all diagnosed infections with this mode of transmission). Because of the large proportion of this group of the total number of all female patients, the number of patient questionnaires of women is clearly lower than the one of men. Therefore, only very limited statements can be made about sex workers diagnosed at BORDERNET sentinel sites on the basis of the patient questionnaire at the moment. All over, the curve of the patient questionnaires follows the one of the diagnosis questionnaires on a lower level. This is an indicator for a stable request of the patients by the physicians.

Although response rates of many sentinel sites are quite satisfying, additional efforts have to be undertaken to optimise the response rate, especially with regard to sentinel sites in which only a few diagnoses are made. They have to be motivated regularly.

II.8.3. Epidemiological situation

Based on the means of the number of examinations per monthly questionnaire, conclusions about **test frequency** of each reported infection within the reporting sentinel sites could be stated. Analysis of these data made clear that the test frequency of HIV were constant within the sentinel-surveillance, whereas that of chlamydia and gonorrhoea increased and that of syphilis decreased lightly. Because almost three quarters of all examinations were reported out of the region Austria, analyses made across the whole Sentinel is heavily influenced by the epidemiological situation in Austria.

Chlamydia is the most **frequently reported infection** within the BORDERNET sentinel-surveillance. It also had the highest proportion of positive examinations. This can result from a higher prevalence of chlamydia, but also from a lower test frequency in asymptomatic patients than for other STIs. Overall, we have to assume that chlamydia is underreported because of the deficits of the applied diagnostic methods regarding this infection (s. III.2). Chlamydia was twice as often diagnosed in women as in men. **Chlamydia and gonorrhoea** were lightly **overrepresented in sex workers**, compared to their proportion of all diagnoses. This must be considered while developing specific prevention messages for this group at risk. Additionally, it has to be assured that offers for testing and treatment of chlamydia and gonorrhoea become well known in this population. It is also of special importance that all offers made must be language- and culture-sensitive. An important instrument to improve this situation is the ongoing development of the successful cross-border cooperations in the scope of BORDERNET.

Regarding infections with **HIV and syphilis**, the group of **MSM** was **clearly overrepresented** as mode of transmission, accordingly to other surveys.^{1,2} Although prevention efforts have been undertaken in this field, HIV and syphilis have to be pronounced in prevention materials for MSM further on. This analysis was reflected already within the period of this report in an additional information and test campaign for syphilis which was undertaken by the AIDS-Hilfe Wien as a supplement to their established offer in the period from July 2006 till December 2007.

The **high proportion of men** in positive results of **HIV and syphilis** is of special importance regarding the fact that the proportion of men of all examined persons was only 36.4% (III.4.1). The proportion of men of all diagnosed patients was only slightly more than half of the proportion as it was estimated within the sentinel sites on basis of the data given in the basic questionnaires. This was caused by the high number of reports from the model region Austria, where only a low proportion of men were reported by the sentinel sites via the basic questionnaire. By weighting the regarding data of the basic questionnaire with the number of diagnosis questionnaires sent in by the respective sentinel sites, both values converge.

Persons with a newly diagnosed HIV-infection have had most frequently a **previous STI** in comparison to persons with other newly diagnosed STIs. STI history differed distinctly for MSM and for sex workers as mainly important groups at risk. An HIV infection in medical history was of particular relevance for the group of MSM. In MSM with a previously known HIV-infection, the most frequent newly diagnosed infection was syphilis (57.7%, n=97). The most frequent previously known STIs of sex workers - chlamydia and gonorrhoea – were also overrepresented in the newly diagnosed infections in this group and should be emphasized in prevention tasks regarding commercial sex workers.

II.8.4. Groups at risk and risk behaviour

Sex with men as well as **heterosexual contacts** were the most important mode of transmission in men. The reporting of the mode of transmission as “MSM” were dependent distinct on the specific region, in western regions this mode of transmission was clearly

more frequent reported than in the eastern parts (II.6.1). This difference was also existent in the data given in the basic questionnaires (III.1.1). Against the background of the KAB surveys that were undertaken in the scope of BORDERNET and against other data, it has to be assumed that these differences can not only be attributed to different frequencies of this mode of transmission in the particular regions, but also to a different cultural exposure regarding this topic, like fear of discrimination of the patients because of disclosing their homosexuality. Because of the high impact of lifestyle accepting prevention methods for avoidance of STIs (e.g. in the group of MSM or of drugs users), a greater sensibility in respect of these groups at risk has to be claimed towards the concerning sentinel sites and furthermore. The high number of MSM (22.0%), for which a previous HIV infection was reported, underlines that.

Commercial sex work was the most important mode of transmission within the female sentinel population by far (II.6.1). Migration affected about a third of all patients within the sentinel, whereas the proportion in women is more as double as high as in men (II.4.1). Therefore, women often have a double burden through migration and sex work. Unfortunately, till now only few patient questionnaires were filled in by sex workers. Therefore, it is not possible to make detailed considerations about risk behaviour and life circumstances of this group. Anyhow, it has to be assumed that these women often live in a precarious social and financial situation which is of unfavourable impact for their preparedness and behaviour in regard of prevention. In BORDERNET regions in which these women are of importance by number (especially Austria), prevention offers specific for this target group as well as culturally and linguistically sensitive should be established or enlarged. In doing so, these offers have to be established with special emphasis to women migrating from Central European countries.

Besides MSM and sex work, **heterosexual contacts** beyond sex work were an important mode of transmission for both sexes. These three risks of infection have to be considered in the realm of prevention tasks on the primary and secondary level of prevention, within the BORDERNET project and beyond it.

In the context of **migration**, the frequent origin from Central European states, both for women and men, was noticeable. Therefore, persons migrated from Central European states are of big importance in terms of prevention tasks and improving treatment of STIs within the BORDERNET regions.

Although these are subjective estimations given by the migrants themselves, the data in regard to their financial position sensitise for the health conditions of migrants, especially against the background of the clear negative correlation between a poor economic situation and an unsatisfying health situation of migrants. With respect to these persons, inexpensive or free of charge offers in the scope of STI-diagnostic and –treatment are exceedingly necessary.

In respect of tasks in prevention and therapy of STIs, persons who dispose of minor or no language skills of their country of immigration are of special importance for prevention matters due to the difficulties in reaching them via prevention messages in the language of the country of immigration. This applies to about a quarter of female migrants. However, it must be assumed that a high proportion of patients with minor language skills forbore from filling in the patient questionnaires completely. Therefore, estimations with regard to language skills, financial position and duration of stay have to be adjusted downward.

Migrants who do not dispose of a legal residence permit status are of big importance from an epidemiological point of view because they are frequently affected by commercial sex work. Due to fear of discovery or deportation, they seldom visit public health care sentinel sites or other governmental run sentinel sites. Therefore, it is to assume that these

people are underrepresented within the population of the BORDERNET sentinel-surveillance. Indeed, this applies not to the regions Austria and Italy, where governmental run sentinel sites also provide care for illegal migrants anonymously and free of charge. Such sentinel sites take part in the BORDERNET sentinel surveillance and therefore provide a better insight into the infection events of these groups within the mentioned regions.

Analysis of **condom use** (s. II.6.2) with regard to sexual contacts within and outside of regular relationships showed several hints to topics, which are of special interest for prevention tasks. On the one hand side, the only sporadic or completely not existing use of condoms in sexual contacts with regular partners is of high importance for chains of infection, that are acquired outside of these relationships. On the other hand, it became clear, that a very high number of persons do not use a condom also within sexual contacts with casual sex partners. It was assumed, that many persons, that reported no data concerning condom use with a casual sex partner, had no sexual contacts with such partners. After excluding them from analysis, two third of men and nearly a half of women did not always use a condom with casual sex partners. Such behaviour has to be estimated as a very high risk for acquiring a STI. Men stated such a behaviour distinct more often than women. Because of the high prevalence of this behaviour in both sexes, prevention tasks in this regard should be strengthened. In men, heterosexual contacts are of as much importance as homosexual contacts are in this regard.

Overall, the assumption of the whole project BORDERNET, suggesting that sex work and migration are of special importance for the social and epidemiological situation along the old EU borders, was clearly confirmed by the data of the BORDERNET sentinel-surveillance (s. II.9). Special efforts in the fields of diagnostics, therapy and prevention for this groups as proposed in this report are of enormous relevance to decrease the number of infections and to improve the medical standards.

II.9. Epidemiological specifics of Bratislava and Vienna: an example for regional epidemiological events

The BORDERNET model region 3 (Bratislava-Vienna) is - due to the vicinity of these two towns - characterised by a lively process of migration. The following analysis of data of the sentinel surveillance gives some interesting insights into the epidemiological events in this area and the high importance of cross-border networking in the fields of diagnostics, therapy and prevention.

Table 20
Proportion of most likely mode of transmission, by region and sex

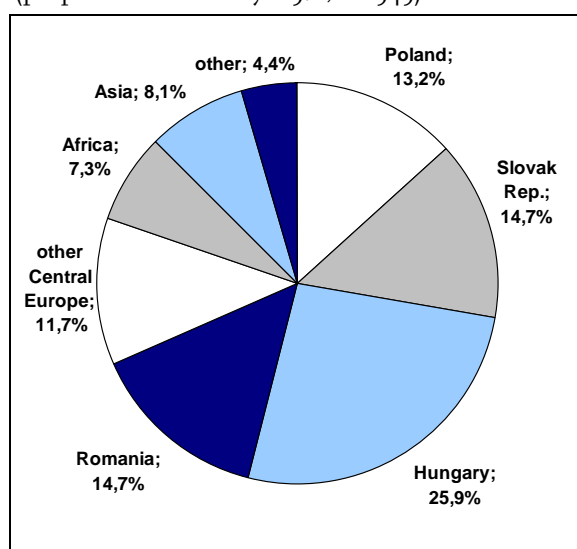
%	Bratislava		Vienna	
	Men n=179	Women n=100	Men n=724	Women n=995
MSM	31.3	---	19.6	---
Heterosexual contacts	47.5	78.0	22.5	14.1
Contact to commercial sex worker	15.1	3.0	2.8	0.3
Commercial sex work	0.5	11.0	1.6	55.4
other mode of transmission	0	0	0.2	0.3
nott known / n.a.	5.6	8.0	53.3	29.9

The epidemiological situation in these towns is distinguished by considerable differences: while 64.2% of infections in Bratislava were diagnosed in men, this proportion was only

42.1% in Vienna. In Bratislava, syphilis had the largest proportion in all newly diagnosed infections in both sexes (men: 55.2%, women: 76.8%), whereas in Vienna this applied for Chlamydia (men: 78.1%, women: 59.8%). Also the distribution of risks of transmission differed heavily, especially in men (tab. 1). In Bratislava, heterosexual contacts were the predominant risk of infection in women, in Vienna commercial sex work.

Figure 18

Country of origin of female migrants in Vienna, (proportion of country > 5%, n= 545)



Having a closer look to the data as to country of origin, specific phenomenons of migration were becoming clear. In Vienna, 47.1% of all infections were diagnosed in migrants (people with another country of origin than country of diagnosis), with a proportion of women of 72.0%. 14.7% of all female migrants in Vienna were of slovak origin, 1.8% of men. 90.0% (72 abs.) of these women were commercial sex workers. In Bratislava, for a proportion of only 11.0% (11 abs.) of all women, commercial sex work were stated as mode of transmission. Predominantly diagnosed STI in female Slovak sex workers in Vienna was Chlamydia (59.7%), followed by gonorrhoea (34.7%).

Figure 19a

Number and sex distribution of STIs in Bratislava

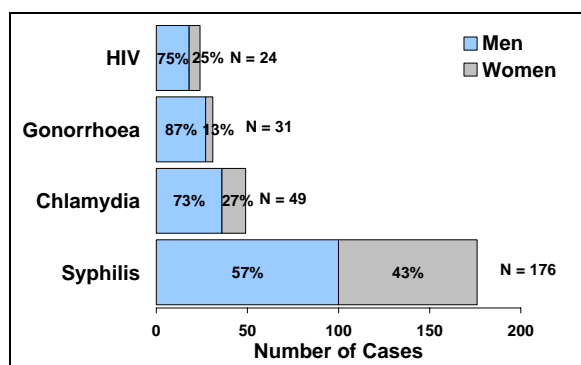
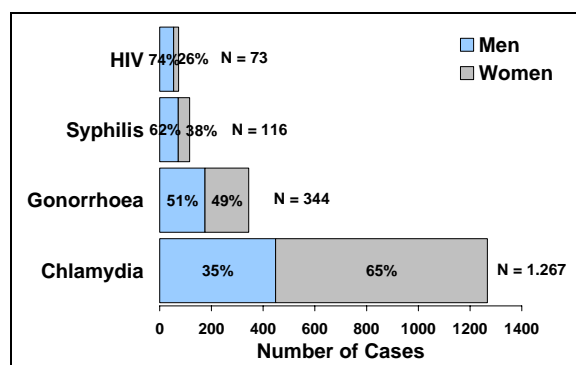


Figure 19b

Number and sex distribution of STIs in Vienna



The data made clear that there is a substantial migration process of female sex workers of Slovak origin (as well as of other central European origin) to Vienna. Additionally, the analysis gave evidence to the assumption that only a small proportion of commercial sex workers of Slovak origin and working in Vienna took up health care in the near located

city Bratislava. Therefore, a large proportion of this group were not surveyed by the Slovak surveillance system.

Considering adequate structures for diagnostics and treatment of STI as to this group, it appears as indispensable to empower cross border networks between Austrian and Slovak health care institutions. This applies to sufficient prevention as well as to effective counselling in medical and psychosocial regards.

Just as it has to be assumed that Slovak commercial sex workers have sexual contacts (on commercial as well as on personal level) at both sides of the border, they have a high impact on the epidemiological situation as to STI in both countries.

Cross border networking structures, like realised within the scope of the overall project BORDERNET, are of high importance also for an effective and sufficient care of the described group of commercial sex workers.

The impact of these data were discussed with stakeholders at the meeting "Diagnostic, pre- and post-test counselling of HIV and other STI" of the National Reference Center for HIV/AIDS of the Slovak Republic, held in Štrbské Pleso (26./27.9.2007) as well as at the "Wiener AIDS-Tag", held in Vienna (27.11.2007).

III. Survey of diagnostic methods used in the scope of the BORDERNET sentinel-surveillance

An extensive survey of the diagnostic methods used by the sentinel sites of the BORDERNET sentinel-surveillance was carried out in April 2006 to give a more detailed basis to estimate the quality of the reported diagnoses. The results of this survey are reported in the following.

III.1. Design of the study

Table 21

Diagnostic methods queried within the diagnostic survey by infection

STI	Diagnostic method
Chlamydia	<ul style="list-style-type: none"> • Rapid test • Gene probe • Nucleic acid amplification (NAA, z.B. PCR, LCR, SDA, TMA) • Antigene test (z.B. EAI, DFA) • Antibody test • Culture
Gonorrhoea	<ul style="list-style-type: none"> • Microscopy • Nucleic acid amplification • Gene probe • Culture
HIV	<ul style="list-style-type: none"> • Antibody test (e.g. ELISA), proven via confirmation test (e.g. Western Blot) • Rapid test
Syphilis	<ul style="list-style-type: none"> • Treponema-direct prove (via monoclonal antibodies) • Darkfield examination • Serology <ul style="list-style-type: none"> - TPHA/TPPA - EIA - VDRL/Cardiolipin

Via a cross sectional study design, all sentinel sites participating in the BORDERNET sentinel-surveillance were questioned about the diagnostic methods that they use by default. A standardised questionnaire was used to gather these data. Methods regarding the four

STIs that are included in the BORDERNET sentinel-surveillance (chlamydia, gonorrhoea, HIV and syphilis) were surveyed. Therefore, it was of no importance, if these methods were conducted by the sentinel sites themselves or by another laboratory. In respect of chlamydia and gonorrhoea, additional data regarding materials of the collected specimen were surveyed. Against the background of recent discussion on screening and with regard to a sufficient treatment of partners of STI patients, the sentinel sites were asked for doing diagnostics also of asymptomatic persons and for reason for that, both for chlamydia and syphilis.

The surveyed diagnostic methods of each infection were as it is shown in table 20, multiple responses was possible.

In respect to chlamydia, HIV and syphilis, it was possible to state additionally used diagnostic methods via free text answers.

III.2. Results

Fifty-three of 75 sentinel sites which participated in the BORDERNET sentinel surveillance at the time of the survey sent back a filled in questionnaire (69.3%). Therewith, all sentinel sites which report data regularly and reliable were represented. Currently, statements about the diagnostic methods concerning 86.1% of all sent in monthly questionnaires, 97.1% of all diagnosis questionnaires and 94.4% of all patient questionnaires could be made.

A general overview showed that 44/53 sentinel sites did examinations of chlamydia, 42/53 of gonorrhoea, 49/53 sentinel sites tested for HIV and 48/53 for syphilis. At 38/53 sites, examinations of all four STIs were offered, three sentinel sites offered only examinations of HIV on a regular basis.

By analysing the use of diagnostic methods concerning **chlamydia** within the BORDERNET sentinel, a very inconsistent picture arose (Table 21). Only 18/44 sentinel sites used solely NAA as the method that was defined as a reference in the scope of the case definition of the BORDERNET sentinel-surveillance. At another three sites, a NAA in addition to another diagnostic method was used, whereas the NAA was less frequent in diagnostics for these sentinel sites. Twenty-three sites never used NAA. This situation was very similar in nearly all participating countries. Most frequently compared to the total number of participating sentinel sites in the particular countries, NAAs were used in Austria (Table 22). In Poland it was not possible to use NAAs on a regular basis because the costs for this specific diagnostic method were not covered by the health insurance.

Table 22

Number of sentinel sites using the specific diagnostic method for chlamydia (monthly qu.)

Diagnostic method	Number of sentinel sites
Rapid test	1
Gene probe	7
Nucleine acid amplification	18
Antigene test	16
Antibody test	18
Culture	10

These data were related to the number of tests conducted by each sentinel site. Only 63.5% of the total of 680 reported chlamydia cases were diagnosed by using solely nucleic acid amplification, 27.8% without these methods. For the rest of 8.7% there were no data

concerning the diagnostic methods used. No diagnosis was made by an institution that uses NAAs in combination with other methods.

As specimens, urethral (30/44) and cervical (28/44) swabs were taken most frequent, followed with clear distance by vaginal swabs (18/44), urine samples (17/44), anal (15/44) and pharyngeal swabs (10/44).

27/44 sentinel sites tested asymptomatic patients for chlamydia, too. Mostly stated reasons for that were an infection of the sex partner (8/44), an other existing STI and regular gynaecological examinations, for example in the scope of pregnancy (each 6/44). Risk behaviour and routine examinations of fluorid patients were only stated in 2/44 cases each, examinations because of an explicit wish of the patient 1/44.

Culture (28/42) and microscopy (24/42) were the most frequent used examination methods for **gonorrhoea** by far. NAAs (10/42) and gene probe (4/42) were used more infrequently. As in the scope of diagnostics of chlamydia, predominantly urethral (33/42) and cervical swabs (34/42) were taken, but also anal (25/42), pharyngeal (23/42) and vaginal (22/42) were used in more than half of the sentinel sites as samples on a regular basis. Urine samples were used substantially seldom (10/42).

Table 23

Number of sentinel sites testing chlamydia and number of sentinel sites with solely use of nucleic acid amplification methods

Country	Number of sentinel sites testing chlamydia	Number of sentinel sites with solely use of nucleic acid amplification methods
Germany	21	5
Poland	1	0
Austria	11	11
Slovak Republic	7	3
Italy	4	1
Slovenia	0	0
Total	44	18

47 of 49 sentinel sites which offer **testing for HIV** conducted an antibody test, proven be a confirmation test (2 sites “do not know”). Three of them (one public health office, two hospitals) stated to conduct additionally rapid tests, one site additional PCR as diagnostic method. Diagnostic methods used for detecting STIs within the BORDERNET sentinel-surveillance accorded completely to the recent medical standards.

Syphilis was diagnosed, as expected, in nearly all sentinel sites (45/48) via the gold standard, a serological test. Dark field examinations were used (mostly additional) at 13/42 sentinel sites, a direct prove only at 7/48 sentinel sites. For this serological test mainly TPHA/TPPA were used (42/45), VDRL/Cardiolipin at 25/45 sites, Enzyme Immuno Assay (EIA) at 14/45. Also the diagnostics of syphilis was according to the required standards of quality.

Asymptomatic patients were examined for syphilis at 38/49 sentinel sites. Most stated reason was a broad diagnosis task for STIs (18/48) due to anamnestic hints. Other reasons were a clinical suspicion (5/48), screening because of an existing HIV infection (4/48), an infection of the sex partner, examinations in the scope of pregnancy and screening of the whole clientele at STI-ambulances (each 3/48). The latter was only mentioned in public sentinel sites in the region Italy.

III.3. Discussion

The survey of diagnostic methods, undertaken in the scope of the BORDERNET sentinel-surveillance, is a very valuable basis for a precise estimation of the quality of reported surveillance data, because all sentinel sites which report a relevant number of STIs within the BORDERNET sentinel-surveillance participated in this study. The high coverage of institutions reporting regularly was of special importance for the epidemiological valuation of the reported chlamydia infections, because the sensitivity and specificity of the methods used at the sentinel sites differs a lot (s.b.) and therefore quality of data also.

Analysis of the **diagnostic methods** used at the sentinel sites showed no meaningful differences between the particular regions. The used methods for **HIV** and **sypilis** accorded to the recent medical standards. The methods used by most of the sentinel sites for diagnostic of **gonorrhoea** are considered as a gold standard still today^{3,4}, although other methods have a better sensitivity and specificity partly^{3,5}. Nevertheless, sensitivity and specificity of the applied methods for these three STIs are satisfying with regard to a reliable diagnosis. Case definitions of the BORDERNET sentinel-surveillance were complied with. Therewith, the quality of information of the reported diagnoses of these three infections is high.

However, this is not said to be for the diagnostics of **chlamydia** within the BORDERNET sentinel-surveillance. In respect of this infection, NAAs are the gold standard because of a sensitivity of 90-95% and a specificity of nearly 100%.⁶ Other methods are of much inferior quality for both criteria and are to be assumed as unsatisfying. A particular problem of other methods than NAA is the lacking sensitivity.^{5,6,7,8} Serological diagnostic shows a low sensitivity especially for detecting acute infections of chlamydia.⁸ Due to their frequent use in the scope of the BORDERNET sentinel-surveillance (18/44), a distinct underdetection has to be assumed to estimate the reported infections in a realistic way.

Only the numbers of the 18/44 sentinel sites which used solely NAAs could be assumed to give a reliable picture of the actually existing infections. By relating the proportions of the diagnostic methods used for chlamydia to the number of tests conducted by each sentinel site, the picture was becoming much better, but by no means satisfying. The sentinel sites which used solely NAA covered a high number of all chlamydia diagnoses done within the BORDERNET sentinel-surveillance due to their mostly extensive clientele. However, an accurate estimator for this proportion can not be indicated. Recent studies emanate from a respectively high prevalence of chlamydia also beyond the typical groups at risk. Because of the possibility of heavy complications such as sterility, infections with chlamydia are of great impact for public health efforts. Improvement of diagnostic methods for detecting chlamydia should be an ongoing task of the overall BORDERNET project. Only on this basis it is possible to establish an effective therapeutic action and to avoid these severe health problems.

The taken **specimens** varied between the sentinel sites strongly, mainly due to the different clientele of the sentinel sites and the assumed localisations of infection. Especially the infrequent taking of pharyngeal samples in respect of chlamydia diagnostics was conspicuous. Physicians should be sensitised for the not infrequent appearance of pharyngeal infections with chlamydia. Furthermore, the high number of urethral samples for detecting chlamydia was surprising, especially regarding sentinel sites which used NAAs as a standard, because taking urethral samples is quite more invasive as the highly recommended use of first catch urine.^{5,9}

About three quarters of the sentinel sites examined also **asymptomatic patients** for sypilis, about two third also for sypilis. Because these two infections proceed often without any symptoms, such an approach is good medical practice and should be broadened to decrease the number of infections effectively. Analysis of reasons for these ex-

aminations showed a good consciousness of the conditions of the infectious events. Reasons were not so often routine examinations, for instance regarding standardised examinations in the scope of pregnancy, but rather a high sensibility regarding disrupting chains of infection and also regarding the special vulnerability of specific groups at risk. This knowledge should be disseminated as best practice via the network action of BORDERNET within the project, but also in a wider scale.

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Appendix 1: Glossary

Case definitions: obligatory definitions for measurement of infections resp. diseases via use of specified diagnostic methods. Important to estimate quality of reported data and to ensure possibility of comparison of data reported by different sites

HIV- resp. STI-consultation: Consultation at the sentinel sites including diagnostics and treatment of HIV resp. of other STIs. Counselling could be existing sometimes, but is not obligatory

Modes of transmission (risk of infection):

- (Commercial) sex work: sexual contact of a male or female prostitute to a suitor, for which the person received cash, drugs or accommodation
- Contact with female or male sex worker: sexual contact of a suitor to a sex worker of the same or the different sex
- Heterosexual contacts (not commercial): sexual contacts between people of different sex beyond commercial sex work
- MSM: Men who have sex with men (category that was defined because not all men who have sex with men define themselves as homo- or bisexual due to cultural or religious reasons)

Sentinel (sentinel site): an institution of medical care that is part of a sentinel-surveillance reporting system

Surveillance (sentinel-surveillance): monitoring system for gathering epidemiological data to detect trends and outbreaks of monitored events in selected sentinel sites

Types of sentinel sites:

- Hospital based STI-clinics: STI-clinics that are affiliated to a hospital or university which do not hospitalize patients, but only diagnose and treat them outpatient
- Private practitioners: physicians that are not employed by a public health office, a university or a hospital, but work on a private basis
- Public health offices: health care institutions that are run by the local government

Appendix 2: Nomination of the regions

Definition	Abbreviation	Region
Region 1	DE 1	Mecklenburg-Vorpommern
Region 2	PL 1	Zachodniopomorskie
Region 3	DE 2	Brandenburg
Region 4	PL 2	Lubuskie
Region 5	AT	Austria
Region 6	SK	Slovak Republic
Region 7	IT	Italy
Region 8	SI	Slovenia

Appendix 3: List of sentinel sites (state of date: 31.12.2007)

Nr.	Name	Address	Branch of Study etc.
Mecklenburg-Vorpommern (D)			
1.	Dr. med. Renate Leis	An den Wurthen 22 17489 Greifswald	Gynaecologist
2.	Dipl.-Med. Eva Fischer	Mendelejewweg 16 17491 Greifswald	Venerologist
3.	Dr. med. Ingo Besthorn	Hufelandstr. 1 17438 Wolgast	Gynaecologist
4.	Dr. med. Elke Giehm	Knieperdamm 2 18435 Stralsund	Dermatologist
5.	Dr. med. Kerstin Neuber	St.-Georg-Str. 109 18055 Rostock	Gesundheitsamt Rostock
6.	Dr. med. Angelika Krzyzanowski	Heide 1 18055 Rostock	Gynaecologist
7.	Dr. med. Frank-Michael Putlitz	Kolumbusring 58 18106 Rostock - Schmarl	Gynaecologist
8.	Dr. med. Frank Michael Mäß	Pferdemarkt 11 18273 Güstrow	Gynaecologist
9.	Dr. med. Biedermann	Wismarsche Str. 397 19055 Schwerin	Helios-Klinik
10.	Petra Hermann	Woldegker Str. 4 17033 Neubrandenburg	Gesundheitsamt, SG Hygiene und amts- ärztlicher Dienst
11.	Dr. med. Christiane Albus	Hans-Beimler-Str. 1-3 17489 Greifswald	Gynaecologist
12.	Dr. med. Karin Behl	Bleistraße 13 18439 Stralsund	Gynaecologist
13.	Dipl. med. Heike Stein	Knieperdamm 2 18435 Stralsund	Dermatologist

Nr.	Name	Adress	Branch of Study etc.
14.	Prof. Dr. M. Jünger	Fleischmannstraße 42-44 17475 Greifswald	Universitätsklinikum Greifswald Direktor der Klinik und Poliklinik für Haut- krankheiten
15.	Dr. med. Matthias Lademann	Ernst-Heydemann-Str. 6 18057 Rostock	HIV-Ambulanz Uni- Klinik Rostock

Zachodnie-Pomorskie (PL)

16.	Poradnia Nabytych Nieoborów Immunologicznych	Broniewskiego St. 12 Szczecin	Anonymous testing point BORDERNET
17.	Wojewódzka Przychodnia Skórno- Wenerologiczna	ul. Piłsudskiego 40/42 70-421 Szczecin	bezirkliches Kranken- haus

Brandenburg (D)

18.	Frau Würzburg	Puschkinpromenade 25 03044 Cottbus	Stadtverwaltung Cottbus Gesundheitsamt Beratungsstelle für Aids und sexuell übertragbare Krankheiten
19.	Frau Ringk	Leipziger Straße 53 15232 Frankfurt (Oder)	Stadt Frankfurt (Oder) Gesundheitsamt Beratungsstelle für Aids und sexuell übertragbare Krankheiten
20.	Frau Petschke	Postfach 10 01 36 03141 Forst	Landkreis Spree-Neiße Gesundheitsamt AIDS-Beratung
21.	OA Dr. W. Güthoff	In der Aue 59-61 14480 Potsdam	Klinikum „Ernst von Bergmann“ Infektionsambulanz und Schwerpunktpraxis
22.	Dr. med. M. Winkler	Marktplatz 4 15230 Frankfurt (O.)	Dermatologist
23.	Amtsärztin Carola Kaiser	Stadtverwaltung Potsdam Gesundheitsamt – Aids-Beratung Friedrich-Ebert-Straße 79/81 14461 Postdam	GA Potsdam
24.	Dr. sc. med. Rudolf Markus	Leipziger Straße 18 15232 Frankfurt/Oder	HIV-Praxis
25.	Dr. med. Susanne Jantsch	Leipziger Straße 46 03048 Cottbus	Dermatologist
26.	Dr. med. Niemann	Jacobstraße 10 14776 Brandenburg	Gynaecologist

Nr.	Name	Adress	Branch of Study etc.
27.	Dr. med. Sigrid Blisse	J.-R.-Becher-Straße 24 15711 Königs-Wusterhausen	Dermatologist
28.	Dr. med. Niedermeyer	Fürstenberger Straße 1 15890 Eisenhüttenstadt	Dermatologist

Lubuskie (PL)

29.	Testing Point and HIV/AIDS Counseling Centre	Zielona Góra	
30.	Head of Service – Jacek Smykała M.D. Szpital Wojewódzki in Zielona Góra Infectious Diseases Department	ul. Zyty 26 65-046 Zielona Góra	

Austria (AUS)

31.	Aids Hilfe Wien	Mariahilfer Gürtel 4 A-1060 Wien	
32.	Dr. Bernd Gmeinhart	Rembrandtstraße 12 1020 Wien	
33.	Dr. Horst Schalk	Zimmermannplatz 1/1/4 1090 Wien	Praxisgemeinschaft Wien9
34.	Univ. Prof. Dr. Angelika Stary	Lainzer Straße 58 1130 Wien	Pilzambulatorium Hietzing GmbH
35.	Univ. Prof. Dr. Angelika Stary	Schlüsselgasse 19 1080 Wien	Pilzambulatorium Schlüsselgasse GmbH
36.	Univ. Prof. Dr. Angelika Stary	Franz Jonasplatz 8/2/3 1210 Wien	Pilzambulatorium Floridsdorf
37.	Prim. Dr. Silvia Mayerhofer	Neutorgasse 20 1010 Wien	STD-Ambulatorium der Stadt Wien
38.	Prim. Univ. Prof. Dr. Klemens Rappersberger	Juchgasse 25 1030 Wien	KA Rudolfstiftung Abt. f. Allgemeine Dermatologie
39.	OA Dr. Armin Rieger	Währinger Gürtel 18-20 1090 Wien	Allgemeines Krankenhaus d. Stadt Wien Univ.-Klin. f. Dermatologie Abt. f. Immundermatologie u. infekt. Hautkrankheiten
40.	OÄ Dr. Karoline Kandel	Kundratstraße 3 A-1100 Wien	SMZ Süd /Kaiser Franz Josef Spital 4. Med. Abt. mit Infektiologie u. Tropenmedizin

Nr.	Name	Address	Branch of Study etc.
Slovak Republik (SK)			
41.	Mudr. Milos Mokras, CSC.	Limbova 3 833 05 Bratislava	FN Akad.L.Dérera KIGM
42.	DOC.MUDR.HINŠT JOZEF, CSC.	Limbova 5 833 05 Bratislava	FN Akad.L.Dérera Klinika Ženských Chorob
43.	MUDr. F. Gazdík, CSc.	Limbova 14 83301 Bratislava	SYU
44.	RNDr. Kristína Koncová	Limbová 14 833 01 BRATISLAVA	SZU NRC pre hepatitidy
45.	MUDr. Tomáš Dianiška	Limbova 5 833 05 BRATISLAVA	FN Akad.L.Dérera Kožná ambulancia
46.	prednosta DOC.MUDR.TIBOR DANILLA, PHD.	LIMBOVA 1 833 40 BRATISLAVA	prednosta DOC.MUDR.TIBOR DANILLA, PHD.
47.	prednosta Prof.MUDr.M. ŠI-MALJAKOVÁ, PHD.	MICKIEWICZOVA 13 813 69 BRATISLAVA	FN KOŽNÁ KLINIKA
48.	MUDr. Cupanik, CSc	Partizánska 81103 BRATISLAVA	súkromná gyn. Amb.
49.	MUDR. IGOR BARTL	RUŽINOVSKÁ 6 826 06 BRATISLAVA	FNSP RUŽINOV UROL.KLINIKA
50.	MUDr. BARO ÁKOVÁ ANASTÁZIA	RUŽINOVSKÁ 6 826 50 BRATISLAVA	FNSP RUŽINOV vene- rolog .amb
51.	MUDR. PETER TRUSKA, CSC.	RUŽINOVSKÁ 8 820 09 BRATISLAVA	RÚVZ HL.MESTA SR BRATISLAVY
52.	ŠIMKO JURAJ MD. PHD.	GEOLOGICKÁ 21 833 05 BRATISLAVA	Inštitút molekulovej biológie

Italy (I)

53.	Vassiliopoulou Angele	Presidio Ospedaliero Vicenza Dermatologia centro MST 36100 Vicenza	Dermatologia Ospedale Vicenza
54.	Cancian Giampaolo	Presidio Ospedaliero Treviso Dermatologia Via Ospedale 25070 Treviso	Dermatologia Ospedale Treviso
55.	Moise Gianmichele Longobardi Margherita	Centro MST/AIDS Via Mazzini, 7 34170 Gorizia	Centro MST/AIDS Dermatologia Gorizia

Nr.	Name	Adress	Branch of Study etc.
56.	Veller Fornasa Cleto	Immunodermatologia Ulss 16- Via Scrovegni 12 5100 PADOVA	ULSS 16 Dermatologia Coordination MTS Includes: Clinica dermatologica Immunodermatologia Clinica ginecologica U.O.A di urologia U.O.A microbiologia U.O.A mal. infettive Padova
57.	Lattuada Emanuela	Malattie Infettive Az.Osp. 37135 Verona	Malattie Infettive Az.Osp. Verona
58.	Cruciali Mario	Centro Medicina Preventiva Sezi- one screening HIV V.Germania, 20 37135 Verona	Gruppo C (HIV screen- ing) Verona

Slovenia (SI)

59.	Prim. Vera Urlep Šali- novi ,dr.med.,spec	Ljubljanska 5 2000 Maribor	General Hospital Mari- bor, Department for Blood Transfusion and Immunology
60.	Marjetka Podlipnik, dr.med., spec.	Gospodsvetska 12, 4000 Kranj	Health Centre Kranj, Ambulatory for Gynaeco- logy

Appendix 4: Posters, Lectures and Articles

Posters

1. Gilsdorf A., Jansen K., Steffan E., Hamouda O., Bremer V.: Methods and first results of a new cross-border sentinel system for sexually transmitted infections. 11th EPIET Scientific Seminar Menorca, 12.-14.10.2006
2. Jansen K., Gilsdorf A., Steffan E., Hamouda O., Bremer V.: The BORDERNET Sentinel Surveillance: Experiences in building up an international reporting system for sexually transmitted infections (STIs). 3. Deutsch-Österreichischer AIDS-Kongress, Frankfurt/M., 27.-30.6.2007.
3. Jansen K., Gilsdorf A., Steffan E., Hamouda O., Bremer V.: Sexually transmitted infections (STI) in west-eastern EU border regions Results of the BORDERNET Sentinel-Surveillance. 17th ISSTD Meeting / 10th IUSTI World Congress, Seattle, 29.7.-1.8.2007.
4. Jansen K., Gilsdorf A., Steffan E., Hamouda O., Bremer V.: The BORDERNET Sentinel Surveillance: Experiences in building up an international reporting system for sexually transmitted infections (STI). 17th ISSTD Meeting / 10th IUSTI World Congress, Seattle, 29.7.-1.8.2007.

5. Jansen K., Gilsdorf A., Steffan E., Hamouda O., Bremer V.: Sexually transmitted infections (STI) in west-eastern EU border regions Results of the BORDERNET Sentinel-Surveillance. European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE), Stockholm, 18.-20.10.2007.
6. Jansen K., Gilsdorf A., Steffan E., Hamouda O., Bremer V.: HIV and other Sexually Transmitted Infections (STI) in West-Eastern EU Border Regions: Data from the BORDERNET Sentinel-Surveillance. 11th European AIDS Conference (EACS), Madrid, 24.-27.10.2007.
7. Jansen K., Gilsdorf A., Steffan E., Hamouda O., Bremer V.: The BORDERNET Sentinel-Surveillance: Establishing an International Reporting System for HIV and other Sexually Transmitted Infections (STI) in a Resource-limited Setting. 11th European AIDS Conference (EACS), Madrid, 24.-27.10.2007.

BORDERNET-internal lectures

1. Gilsdorf, A., Jansen K.: Die Sentinel-Surveillance in BORDERNET. BORDERNET Start-up-meeting, Berlin, 26.6.2005.
2. Jansen K.: BORDERNET. HIV/Aids und STD-Prävention, Diagnostik und Therapie entlang der alten und neuen EU-Grenzen. Fachtagung der BORDERNET-Partner in Mecklenburg-Vorpommern und Zachodniopomorskie, Anklam, 7.9.2005.
3. Gilsdorf A.: BORDERNET. HIV/AIDS and STI-Prevention, Diagnostics and Therapy along the old and new EU-Borders. Fachtagung der BORDERNET-Partner in Italien und Slowenien, Verona, 20.10.2005.
4. Gilsdorf A.: Sexually Transmitted Infections (STI)-Situation and Surveillance in Germany. Fachtagung der BORDERNET-Partner in Italien und Slowenien, Verona, 20.10.2005.
5. Jansen K.: BORDERNET. HIV/Aids und STD-Prävention, Diagnostik und Therapie entlang der alten und neuen EU-Grenzen. Fachtagung der BORDERNET-Partner in Österreich, Wien, 11.10.2005.
6. Jansen K.: BORDERNET. HIV/AIDS and STI-Prevention, Diagnostics and Therapy along the old and new EU-Borders. Fachtagung der BORDERNET-Partner in der Slowakischen Republik, Bratislava, 12.10.2005.
7. Jansen K.: Erste Ergebnisse aus der BORDERNET-Sentinel-Surveillance. BORDERNET-Steering-Committee, Berlin, 10.11.2006.

External lectures

1. Bremer, V.: BORDERNET. HIV/Aids und STD-Prävention, Diagnostik und Therapie entlang der alten und neuen EU-Grenzen. Colloquium des Fachgebiets „HIV und andere sexuell oder durch Blut übertragbare Infektionen“ des Robert Koch-Instituts, Berlin, 14.3.2005.
2. Jansen K.: BORDERNET – die internationale Komponente des Sentinels. 3. STD-Sentinel Treffen des Robert Koch-Instituts, Berlin, 10.9.2005.
3. Gilsdorf A., Jansen K.: BORDERNET. HIV/Aids und STD-Prävention, Diagnostik und Therapie entlang der alten und neuen EU-Grenzen. Colloquium der Abteilung für Infektionsepidemiologie des Robert Koch-Instituts, Berlin, 16.7.2005.

4. Jansen K.: Surveillance von STDs entlang alter EU-Grenzen – erste Ergebnisse des EU-Projekts BORDERNET. 4. Treffen der STD-Teilnehmer, Berlin, 16.9.2006.
5. Jansen K.: The BORDERNET Sentinel-Surveillance. Fachtagung im Rahmen der bilateralen gesundheitspolitischen Zusammenarbeit zwischen Bulgarien und der Bundesrepublik Deutschland, Berlin, 13.11.2006.
6. Jansen K.: Diagnostik von Chlamydia trachomatis im Rahmen des BORDERNET-Sentinels. STD-Fachtagung, Zielona Gora, 18.11.2006.
7. Jansen K.: Diagnostik von Chlamydia trachomatis im Rahmen des BORDERNET-Sentinels. Deutsch-Polnische Ärztesfachtagung, Frankfurt (Oder), 25.11.2006.
8. Jansen K.: The BORDERNET Sentinel-Surveillance – Aims and Structure. International BORDERNET Meeting “Sentinel”, Linz, 25./26.1.2007.
9. Jansen K.: The BORDERNET Sentinel-Surveillance – Results for the Regions Austria and Slovak Republic. International BORDERNET Meeting “Sentinel”, Linz, 25./26.1.2007.
10. Jansen K.: Die BORDERNET Sentinel-Surveillance – Hintergründe und Daten. Fachtagung der deutschen STD-Gesellschaft in Kooperation mit BORDERNET. Rostock, 24.2.2007.
11. Borón-Kaczmarek A., Steffan E., Jansen, K.: Cross border Cooperation on HIV/AIDS and STI Prevention, Diagnostics and Therapy. Responsibility & Partnership – Together against HIV/AIDS. EU Presidency Conference, Bremen, 12./13.3.2007.
12. Jansen K.: BORDERNET - HIV/Aids und STD-Prävention, Diagnostik und Therapie entlang der alten und neuen EU-Grenzen. BZgA-Fachtagung „HIV/AIDS Forschungsprojekte im Geschäftsbereich des BMG“, Köln, 30.3.2007.
13. Jansen K.: HIV- und STD-Diagnostik in Deutschland - Ergebnisse einer Befragung niedergelassener Ärzte. BZgA-Fachtagung „HIV/AIDS Forschungsprojekte im Geschäftsbereich des BMG“, Köln, 30.3.2007.
14. Jansen K.: The Sentinel-Surveillance: Background and results. Regione del Veneto: Fachtagung “Sistemi di sorveglianza sentinella e diagnostica delle Infezioni Sessualmente Trasmissibili (STI) e dell’HIV”, Verona, 4.6.2007.
15. Jansen K., Gilsdorf A., Steffan E., Hamouda O., Bremer V.: Sexually transmitted infections (STIs) in west-eastern EU border regions: results of the BORDERNET sentinel surveillance. 3. Deutsch-Österreichischer AIDS-Kongress, Frankfurt/M., 27.-30.6.2007 (European Journal of Medical Research (2007), 12 (Suppl. I), 31).
16. Jansen K.: The BORDERNET Sentinel Surveillance. Fachtagung im Rahmen der bilateralen gesundheitspolitischen Zusammenarbeit zwischen Polen und der Bundesrepublik Deutschland, Berlin, 28.8.2007.
17. Jansen K., Steffan E.: The BORDERNET Sentinel-Surveillance: Aims, Structure and Data with special regard to the Slovak Republic. Fachtagung "Diagnostic and pre-and post-test counselling of HIV and other STI" des National Reference Center HIV/AIDS der Slowakischen Republik, Štrbské Pleso, 26./27.9.2007.
18. Jansen K.: Die BORDERNET-Sentinel-Surveillance – Epidemiologische Daten für Österreich und Osteuropa. „Regional – Transnational – International – Strategien gegen HIV und STDs“, Wiener AIDS-Tag, Wien, 27.11.2007.

19. Jansen K.: STDs diesseits und jenseits der Grenzen – die BORDERNET Sentinel-Surveillance. 57. Jahrestagung der Deutschen Gesellschaft zur Prävention sexuell übertragbarer Krankheiten, Hannover, 6.-8.12.2007.

Articles

1. Jansen K., Gilsdorf A, Bremer V.: Wie ist die Lage von STDs in Europa – Erste Ergebnisse aus dem EU-Projekt BORDERNET. HIV and More, 2, 2006; 3: 35.
2. Gilsdorf A., Jansen K.: Wie ist die Lage von STDs in Europa? Erste Ergebnisse aus dem EU-Projekt BORDERNET. STD-Telegramm, 2, 2006.
3. Jansen K. Sexuell übertragbare Erkrankungen überschreiten Grenzen - Zu den Ergebnissen der internationalen BORDERNET-Sentinel-Surveillance. Epidemiologisches Bulletin, 39, 2007: 359-363.
4. Jansen K. Die BORDERNET-Sentinel-Surveillance - Ergebnisse aus einer internationalen epidemiologischen Studie zur Verbreitung von sexuell übertragbaren Erkrankungen entlang alter und neuer EU-Grenzen. Retrovirus-Bulletin, 3, 2007: 1-5.

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Literature

1. Marcus u et al.: Understanding recent increases in the incidence of sexually transmitted infections in men having sex with men: changes in risk behaviour from risk avoidance to risk reduction. *Sex Transm Dis* 2006; 33 (1): 11-17.
2. Nicoll A and Hamers FF: Are trends in HIV, gonorrhoea, and syphilis worsening in Western Europe? *Bmj* 2002; 324 (7349): 1324-1327.
3. Wheeler, JL, et al.: Molecular testing (strand displacement assay) for identification of urethral gonorrhoea in men: can it replace culture as the gold standard? *Int J STD AIDS* 2005; 16 (6): 430-432.
4. Schneede, P, Tenke P and Hofstetter AG: Sexually transmitted diseases (STDs) – a synoptic overview for urologists. *Eur Urol* 2003; 44 (1): 1-7.
5. Spigarelli MG and Biro FM: Sexually transmitted disease testing: evaluation of diagnostic tests and methods. *Adolesc Med Clin* 2004; 15 (2): 287-299.
6. Schütt S and Essig A: Diagnostik von Chlamydien-Infektionen. *J Lab Med* 2004; 28 (2): 144-153.
7. Rani R et al.: Is there any role for rapid tests for chlamydia trachomatis ? *Int J STD AIDS* 2002; 13 (1): 22-24.
8. Johnson RE et al.: Screening tests to detect chlamydia trachomatis and Neisseria gonorrhoea infections – 2002. *MMWR Recomm Re*, 2002; 51 (RR-15): 1-38; quiz CE1-4.
9. Schachter J et. Al.: Vaginal swabs are the specimen of choice when screening for chlamydia trachomatis and Neisseria gonorrhoea: results from a multicenter evaluation of the APTIMA assays for both infections. *Sex Transm Dis* 2005; 32 (12): 725-728.



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