BORDER|NET work

2010-2012 CROSSING BORDERS, BUILDING BRIDGES

Bridging research on HIV/STI prevalence and risks to evidence-based effective practice

Final Report: HIV/STI Sentinel-Surveillance

BORDERNETwork Package 5

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Highly active prevention: scale up HIV/AIDS/STI prevention, diagnostic and therapy across sectors and borders in CEE and SEE

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1. Background

In the context of the gradual EU-Enlargement new challenges evolved; especially the new member countries had to rearrange their health planning and delivering structures. Naturally this upheaval had severe impact on the diagnosis, therapy and prevention of HIV/AIDS and sexually transmitted infections (STI), too.
STIs can cause acute and chronic diseases with severe impact on the quality of life of people as well as on already constraint health budgets. The decrease in bacterial STIs in Western Europe since the seventies was mainly attributed to improved antibiotic treatment and an increased condom-use in the era of a growing HIV-epidemic.
However, some STIs are again on the rise in the last few years in some groups. Many factors have been discussed as potential reasons for this negative development; migration, increased mobility or reduced sexual protective behaviour. In addition, stigmatization of risk and minority groups and lack in access to appropriate healthcare seem to be crucial factors. Therefore, Bordernet was introduced in 2005 to examine and monitor these factors in selected European border regions. Epidemiological data which later helped to guide prevention and therapy efforts had been gained through the implementation of an STI sentinel surveillance system within selected areas.
Encouraged by this, BORDERNETwork has been built upon the experience accrued by its predecessor project. Integrated biological and behavioural surveillance (IBBS) is still critical in regards of analysing the situation of STIs as well as to improve prevention, diagnostics and therapy accordingly. Therefore, the sentinel surveillance system was extended within the BORDERNETwork project and was now performed between 2010 and 2012. Its objectives were to find answers on many public health questions as well as ultimately help funnelling efforts of different stakeholders towards sustainable improvement.
RKI, within this workpackage 5 (WP5), was in charge of implementation and improvement of sentinel surveillance systems in 4 countries (Austria, Bulgaria, Romania and Slovakia) and this report will focus on the results from these countries.

1.1 Participating countries and partners in WP 5

An evidence-based sentinel surveillance system was established in 4 countries, involving 6 partner organisations (4 non-governmental organisations (NGOs) in the respective countries) from 5 countries:

- Austria: AIDS Hilfe Wien (Vienna)
- Bulgaria: Health and Social Development Foundation (HESED), Sofia
- Romania: Romanian Association Against AIDS (ARAS), Bucharest
- Slovakia: C.A. PRIMA (Bratislava)
- Germany: Robert Koch-Institut (RKI), Berlin; Sozialpädagogisches Institut Forschung (SPI), Berlin

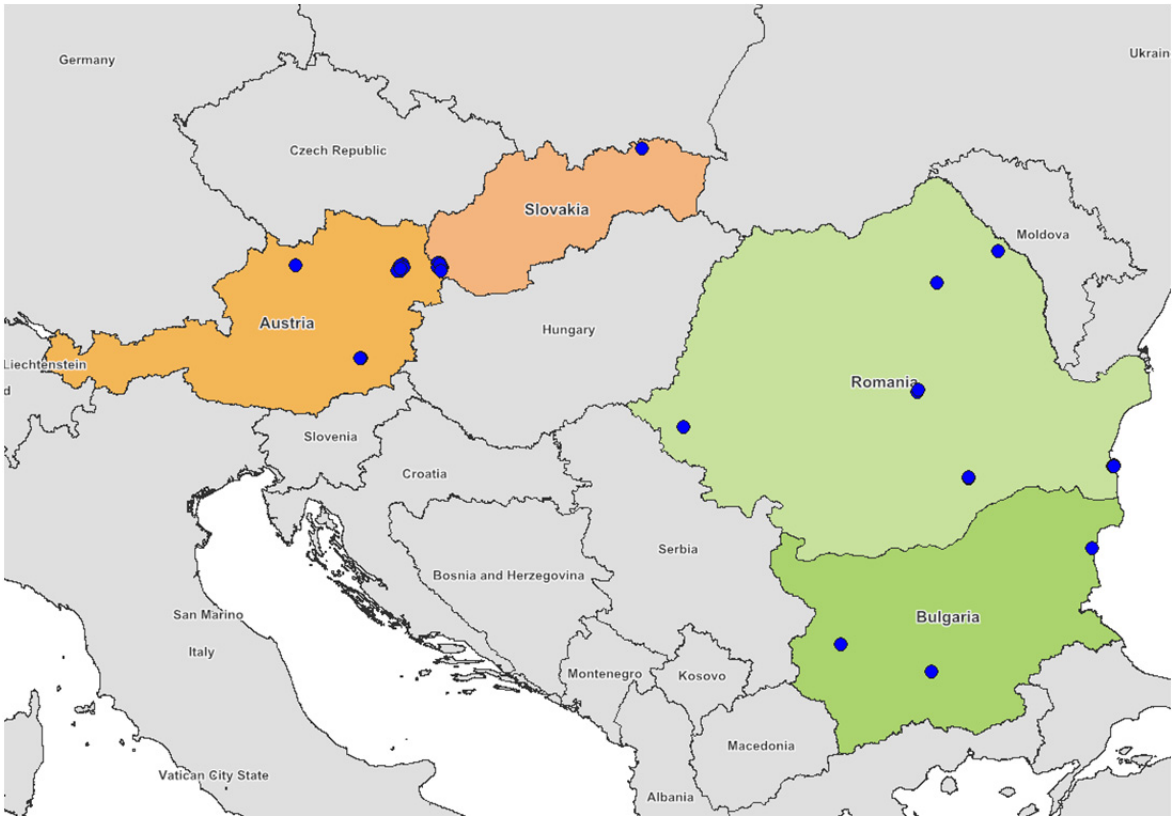


Figure 1: Location of the STI sentinel sites and participating countries

1.2 Local partners

The 4 local NGOs were in charge of recruiting participating sentinel sites, where patients with STIs could be recruited. According to the variety of healthcare systems in the 4 countries, the participating institutions cover a wide array and include

- Public health offices (specialised on STI-/ HIV- care)
- Specialized outpatient departments
- University clinics
- District Dispensaries for Dermato-Venereal Diseases
- Policlinics
- Practitioners specialized in STI/HIV
- (Private) Consultants (Dermato-Venerology, Gynaecology, Urology)
- Outreach programs
- Drop-in clinics

The list of participants who sent data for the sentinel surveillance are listed under 11.2.

2. Objectives

The objectives of the STI-Sentinel surveillance are the detection and analysis of frequency and distribution of STI/HIV as well as behavioural factors within participating regions/countries. Whilst (second generation) sentinel surveillance does not claim to collect representative data, its focus is the early detection of trends in certain risk groups, as is the identification of risk behaviour. Therefore, an improvement of diagnosis and therapy and above all a more successful and effective prevention is the ultimate goal of the current project.

3. Methods

3.1 Study design

The design of a second generation sentinel surveillance systems seemed most appropriate to achieve the outlined objectives timely and at a relative low effort and cost. Surveillance of STIs adds additional value to mere HIV surveillance. Since it might take years from contracting HIV to diagnosis, change in "sexual risk behaviour" is reflected much faster by STIs with just a short delay of diagnosis.
Focusing surveillance activities further on subpopulations, such as men who have sex with men (MSM), Roma communities, intravenous drug users (IDU) or sex-workers (SW) has two additional benefits: first, in countries with low epidemic level of HIV, surveillance of the general population might underestimate the actual HIV numbers and the disease's spread. Second, the allocation of resources to these sub-populations should most likely produce meaningful results.
In addition, the participation of sites from 4 countries using the same instruments and the experience gained through field visits permitted the comparison of different health care systems and approaches towards diagnosis, treatment and prevention of STIs.
During the course of the project and through personal communication at the country visits, it became apparent that different diagnostic methods are used in the countries and institutions and hence a diagnostic survey was additionally initiated to be able to compare results with that additional perspective.

3.2 Study population

All patients with new diagnosis of HIV, Syphilis, Chlamydia, Gonorrhoea or Hepatitis B who attended a sentinel site in one of the participating countries during the study period were eligible to participate.

3.3 Selection and recruitment of sentinel sites

The criteria for site selection were to reach a maximum of infected persons in the regions as well as allowing outreach to risk groups. As we assumed that local NGOs know the situation in their respective country, the decision of who to recruit was up to them, depending on the differences of the national health care structures, and the accessibility of certain patient groups. RKI provided scientific feedback to guarantee the formation of a functioning sentinel network. The participation of sites was voluntary and could be ended at any time, however ideally a replacement should be identified as soon as possible. In Bulgaria and Romania, data collection continued

from the previous project (since 2008), whereas all sentinel sites had stopped to report data in Austria and Slovakia, and had to be re-activated at the start of BORDERNETwork in 2010. An initial assessment of all participating sites was essential as the last basic survey was too long ago, and structures within the sites might have changed.

3.4 Data collection

All patients who were tested for or had a laboratory-confirmed diagnosis of HIV, *Treponema pallidum* - Syphilis (SY), *Chlamydia trachomatis* (CT) or *Neisseria gonorrhoeae* (NG) infection and who attended one of the sentinel sites during the study period were to be reported. New cases of Hepatitis B-infection were also reported by sentinel sites in Bulgaria, Slovakia and Romania. After the first site visit and discussion with participating doctors in Austria it was found irrelevant as in the last years only occasional cases of new hepatitis B-infections were found in Austria. Similarly, partner organisations in Romania and Slovakia found it important to collect information on additional diseases, such as Hepatitis C. Moreover, Slovakian partners expressed their interest in studying Human Papilloma-Virus (HPV) in addition, however it was made clear by RKI that strict case definitions would have to be applied (only lab-confirmed diagnoses were to be reported) in order to rule out reporting of (frequently recurring) clinical wart diagnoses.

3.4.1 Basic questionnaire

At the start of the BORDERNETwork sentinel surveillance in January 2010, participating institutions were asked to fill in one basic questionnaire each to assess initial information about size, equipment, staff, catchment-area of patients as well as estimated monthly number of patients and the estimated proportion of those tested for STIs and proportion of clients belonging to certain subgroups; i.e. IDUs, MSM, SW. This survey was only to be done once at start-point, and repeated for institutions that had a break in their participation, such as in Austria and Slovakia. Results presented here have similarly already been presented in the Interim Report in July 2011, however are now limited to those institutions who actually sent data. Employees answered the questions to their best knowledge and estimated the proportions of attendants according to their experience.

3.4.2 Monthly questionnaire

On a monthly base, participating institutions were asked to fill in this questionnaire and providing data on aggregated numbers of (male) clients attending the site, performed tests and positive diagnoses of HIV, Syphilis, Chlamydia, Gonorrhoea and Hepatitis B.

3.4.3 Diagnosis questionnaire

For every positive STI case, doctors were asked to fill in an individual questionnaire providing demographic information, history of STIs, drug usage and the most likely mode of transmission as judged by the reporting physician.

3.4.4 Patient questionnaire

Each patient with an STI then received a patient questionnaire to be answered anonymously. Questions asked for information on sociodemographic background, most likely mode and place of transmission, sexual behaviour (number of partners, condom usage) and drug use. Diagnosis and patient questionnaires could later be merged through a coded identifier ensuring data protection and anonymity.

3.4.5 Diagnostic survey

Within the course of the project it became apparent that not all institutions were able to apply the case definitions stated in the study protocol, as not everywhere all tests were available or sometimes patients had to pay for the tests themselves, hence less expensive tests were thought be used in practice. Therefore a diagnostic survey among all participating sentinel institutions was performed in Jan/Feb 2012 and these additional results presented for each country.

3.5 Data flow, processing and analysis

In a first step, the obtained anonymized questionnaires were sent from the collection sites, the local sentinel sites, to the regional coordinating office (the respective NGO) which performed a first consistency check. If plausible, the questionnaires were further sent to SPI in to perform data entry in a database. Finally, the dataset was forwarded to RKI which performed consistency and plausibility checks and data analysis. All data analyses were performed using IBM SPSS Statistics Version 20.0.0.1. For creation of tables and figures, Microsoft Excel 2010 and PowerPoint 2010 were used.
Figure 2 depicts the flow of information and data. On one hand, information flows from the collection sites to the place of final data analysis, RKI, in Berlin. On the other hand, computed results were forwarded in the other direction to provide feedback to the regional coordinators and the sentinel institutions.
For analyses purposes, people were grouped according to their risk behaviour, as described in Annex I: Glossary.

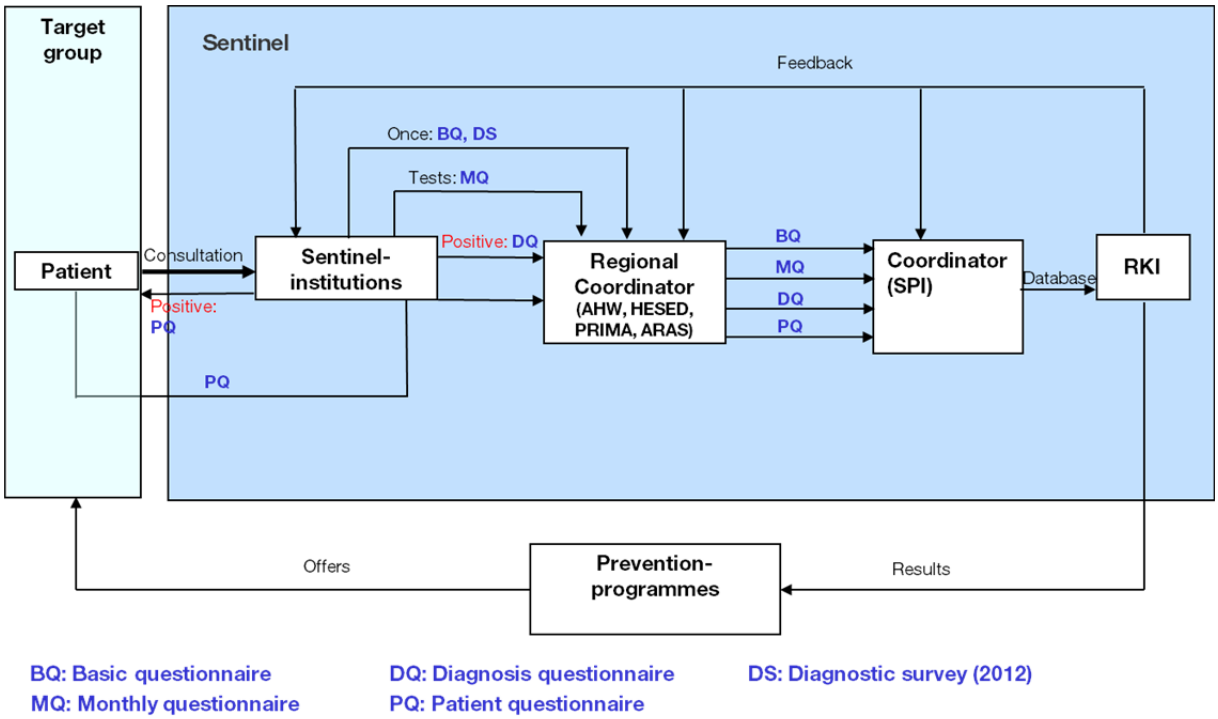


Figure 2: Data flow within BORDERNETwork sentinel surveillance

4. Ethical aspects / Data protection

STIs are diseases being often associated with stigma and shame for affected clients. Hence, confidentiality was of outstanding importance. Every security measure necessary to guarantee data protection has been put in place; patients' anonymity was maintained and access to data was strictly limited to researchers at RKI and SPI.

Participation of institutions was voluntary and could be ended at any time. No patient-identifying information was collected at any time. Patients willing to participate received a questionnaire and an information sheet; these leaflets contained an explanation of the study, details about data protection measures and emphasizing the sheer optional character of their participation once more. All patient information sheets and questionnaires were available in 17 different languages; ensuring greater acceptability.

The questionnaires were sent in sealed envelopes to the regional coordinators, hence further improving the confidence between patients and local institutions. By all these means we expected to increase the participation and response rate.

Approval was sought by the ethical committees at the Medical University of Vienna in Austria, the Health and Social Development Foundation in Bulgaria, the Bioethics Commission at the National Institute for Infectious Diseases "Prof. Dr. Matei Bals" (INBIMB) in Romania and the Ministry of Health in Slovakia, in all 4 participating countries. Approval of the research protocol by the national ethic committees was one of the milestones to be produced in WP5.

Final results from Austria, Bulgaria, Romania and Slovakia

The results presented here are based on a dataset we have received on 4th of September 2012 with the final data status from July 31, 2012. Some of the partner institutions of the predecessor project Bordernet have never ceased their participation. Therefore, data as presented here contains these institutions, too. The first section of the following results dealing with characteristics of sentinel sites and patients attending these sites draws from basic questionnaires. Further, the data from the diagnostic survey performed in the beginning of 2012 are shown for each country. Thereafter, monthly, diagnosis and patient's questionnaires deliver results. Finally, results are compiled to allow easier cross-border comparison.

5. Final results from Austria

5.1 Composition of the Austrian sentinel sites

5.1.1 Characteristics of Austrian sentinel sites

We received basic questionnaires from 13 sites that also sent data, including the locations from the predecessor project. Participating institutions were public hospitals and medical universities (4), NGOs with a focus on HIV/STI (3), municipal STI-outpatient department (1) and private practitioners (5).

With 77% (10/13), the majority of sites classified their **area of service** as urban whilst 23%% (3/13) lacked an answer to this question.

The **number of attending STI patients** per site and month was 0 at two sites (15%), 1 to 25 at two sites (15%), 26 to 50 at one site (8%) and more than 100 at five sites (39%); three sites (23%) did not specify the number of attendees. The **number of attending HIV patients** per site and month was 1 to 25 at seven sites (54%) and more than 100 at three sites (23%) whilst three sites (23%) did not answer this question. Sites with a big number of STI-patients (>100) did not necessarily see a huge number of HIV-patients (>100); all sites with more than 100 STI-patients served 1 to 25 HIV-patients per month.

A specific **STI consultation** was offered by five sites, out of ten who answered this question. An **HIV consultation** was offered by five sites too, out of eight institutions, who answered this question.

The **number of employees** within the STI and HIV sector at the eight sites who answered this question varied between 1 and 20 with a mean of 9.25.

STI testing was anonymous at 3 sites and free of charge at 3 sites too; **HIV testing** was offered anonymously at 6 sites and free of charge at 5.

5.1.2 Attendees of the Austrian sentinel sites

The median proportion of **men among all attending STI-patients** was 25% with a mean of 49% and a range from 20% to 100%. Among **HIV-patients** the median was 70% with a mean of 68% and a range from 20% to 100%.

The median proportion of **migrants** was 25% **among all attending STI-patients**, ranging from 5% to 80%. Among **HIV-patients** the median proportion of **migrants** was 30%, ranging from from 5% to 80% as well. The respective means were estimated 30% migrants among STI-patients and 33% among HIV-patients.

In addition, sites had been asked for an estimation of the proportion of different groups at risk among their patients, stratified by gender (see Table 1).
However, it is difficult to interpret these numbers. The median of groups at risk is calculated by utilizing basic questionnaires; these proportions, however, are not weighted for the size of sentinel sites. It might well be therefore that a large site with a huge proportion of a particular group at risk is underrepresented by the median. In Austria, for example, one site with many patients had FSW as patients mainly.

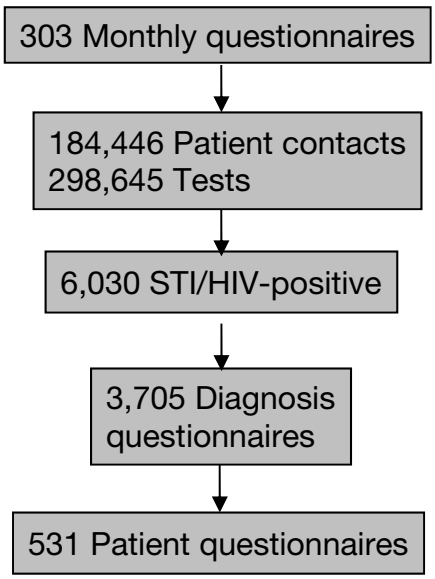
Table 1: Median of proportions of different risk groups among patients in Austria by sex (multiple answers possible)

		Median	Range
Women	FSW	2.5%	0-80%
	i.v. drug user (IDU)	10%	0-70%
	Heterosexual	87.5%	20-99%
Men	MSM	50%	5-90%
	i.v. drug user (IDU)	5%	0-30%
	Heterosexual	50%	5-95%

5.1.3 Diagnostic methods used in Austrian sentinel sites

In Austria, 7 institutions completed the diagnostic questionnaire. Two institutions (28.6%) said that they also get samples from other institutions, apart from their own institution. 4/7 (57.1%) of institutions said that they test the HIV-samples within their institution/hospital, 4/6 (66.7%) did so for chlamydia, 4/6 (66.7%) for gonorrhoea and 4/7 (57.1%) for syphilis. Only one institution (14.3%) said that they participate in an external quality assurance scheme. Comparison of the diagnostic tests used for each STI and strategies, comparing the 4 countries, is shown in 11.3.

5.2 Response rate in Austria



Physicians from participating institutions sent a diagnosis questionnaire in 61% (3,705/6,030) of patients with a positive diagnosis (see Figure 3). Patients completed the patient's questionnaire in 14% (531/3,705). Women were less likely to fill in a patient questionnaire, only 9% of women with an STI filled in a patient questionnaire, compared to 23% of men. This low proportion is at least partly the result of mandatory STI-examinations in sex workers in Vienna who might therefore reject participation.

Figure 3: Flow chart of questionnaires and number of positive tests in Austria, 2006-2007 and from 2010

5.2.1 Response rate over time

Over the years, the rate of patients with an STI who filled in a patient questionnaire which could be linked to a diagnosis questionnaire decreased particularly in women. In men, it improved in the latest period of the project.

Table 2: Number and fraction of patient and corresponding diagnosis questionnaires by gender and year of examination in Austria (datasets with missing gender or wrong year of examination excluded)

	2006	2007	2008	2009	2010	2011	2012
Men	92/467	48/285			69/187	66/253	35/145
	20%	17%			37%	26%	24%
Women	115/529	57/610			28/414	12/746	7/45
	22%	9%			7%	2%	16%

5.3 STI Surveillance data Austria

In Austria, the STI sentinel surveillance was performed in 2006 and 2007 under the Bordernet-project and from 2010 on as part of BORDERNETwork.

5.3.1 Performed tests, positivity rates and reported cases by STI

Since the start of the sentinel surveillance in Austria, a total of 298,645 tests have been performed in 184,446 clients. The higher number of tests than clients results from more than one test being performed in the same patient. In these data from the monthly questionnaires, doctors stated that 39,759 of all clients (21.6%) were men.

Most tests were performed for gonorrhoea, whereas the highest number of positives was found for chlamydia. Chlamydia also had the highest positivity rate. For each positive test, doctors had to send one diagnosis questionnaire per patient. The reported STI cases were highest for chlamydia. In 67% of positive diagnosis, doctors filled in an individual diagnosis questionnaire, whereas they only did so for 48% of syphilis-cases. 10 to 28% of patients filled in a corresponding patient questionnaire, depending on STI, as shown in Table 3.

Table 3: Total number (#) of lab tests, positive tests and positivity rate (in %), number and proportion of reported STI cases and number and proportion of corresponding patient questionnaires by STI, Austria

AUSTRIA	Monthly questionnaire			Diagnosis Questionnaire		Patient Questionnaire	
STI	# lab tests	# positive tests	%	# reported STI-cases	%	# questionnaires	%
Chlamydia	88,629	3,546	4.0%	2,381	67.1%	248	10.4%
Gonorrhoea	97,486	1,668	1.7%	1,110	66.5%	224	20.2%
HIV	66,452	241	0.4%	168	69.7%	25	14.9%
Syphilis	46,012	575	1.2%	276	48.0%	76	27.5%

5.3.2 STI-Trends

The positivity rate was calculated by the number of positive tests over the number of all performed tests by STI. In Austria, the positivity rate was highest for chlamydia in almost all reported quarters. In the second quarter 2010, the positivity rate seemed to be highest for syphilis; however, numbers of performed tests were very small. Only 167 tests were performed compared to routinely reported 3,000 to 4,000 tests per quarter.

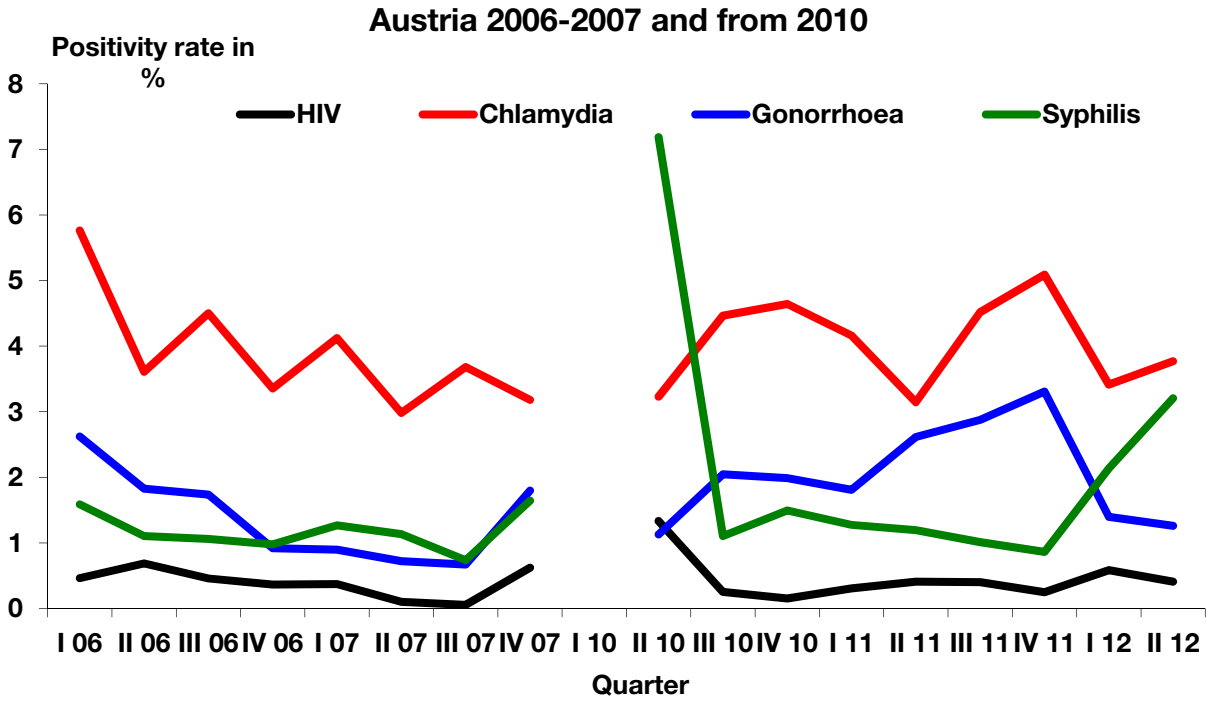


Figure 4: Positivity rate by STI in Austria over time

5.3.3 Sociodemographic characteristics of patients with STIs

With 64% of patients with an STI/HIV being female, their proportion was more than two thirds. There were differences in the age of patients, with a median age of 30 years males being older than females. Also the proportion of migrants was with 79% more than double as high among females. Three quarters of females were sex workers. Differences existed also for intravenous drug use which was higher among female patients. In addition, females had more frequently a history of a previous STI, in more than one third of cases (see Table 4).

Table 4: Demographics of patients with an STI/HIV in Austria (MSM: men who have sex with men; SW: sex worker; i.v.: intravenous)

	Men (n=1,341)	Women (n=2,345)
Percentage	36%	64%
Median age (years)	30	25
Migrant*	34%	79%
Roma	-	-
MSM	23%	--
SW	4%	75%
Drug use (i.v.)	0.4%	1.7%
Drug use (non i.v.)	1.1%	0.2%
History of STI	19%	34%

Data from diagnosis and patient questionnaires. 19 sets of questionnaires without indication of gender excluded. *157 men and 151 women with missing country of origin excluded

More than two thirds of male patients originated from Austria followed by Central European countries. Other nationalities were less frequently reported. In contrast the origin of females: the majority originated from Central Europe, particularly from the other studied countries within BORDERNETwork (shown separately from the respective regions within Figure 5).

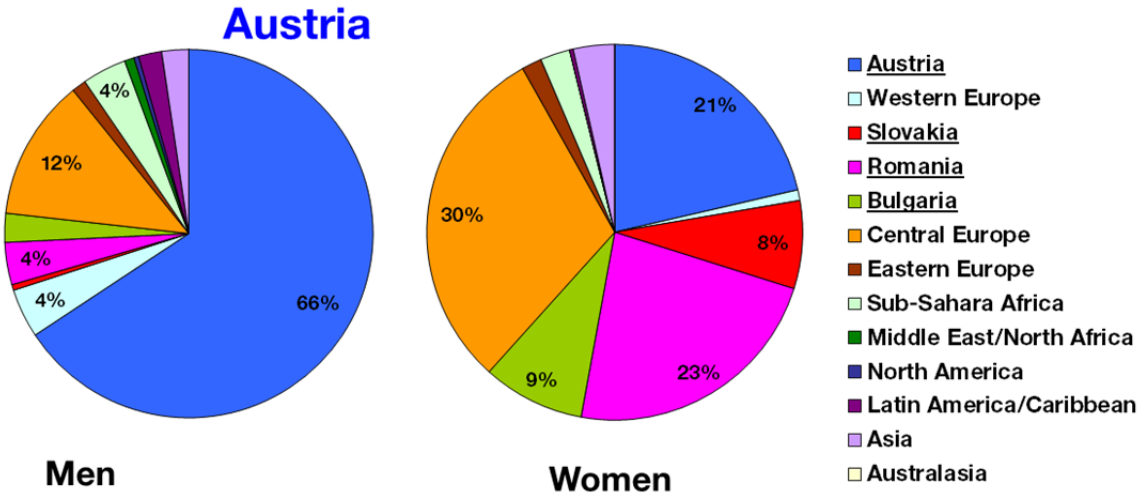


Figure 5: Origin of men (n=1184) and women (n=2194) with STI in Austria stratified by gender; 157 men and 151 women with missing country of origin excluded

5.3.4 Epidemiology of STIs

The most commonly diagnosed STI was chlamydia, followed by gonorrhoea. Chlamydia and gonorrhoea were diagnosed more frequently among females; conversely the gender distribution for syphilis and HIV (see Figure 6).

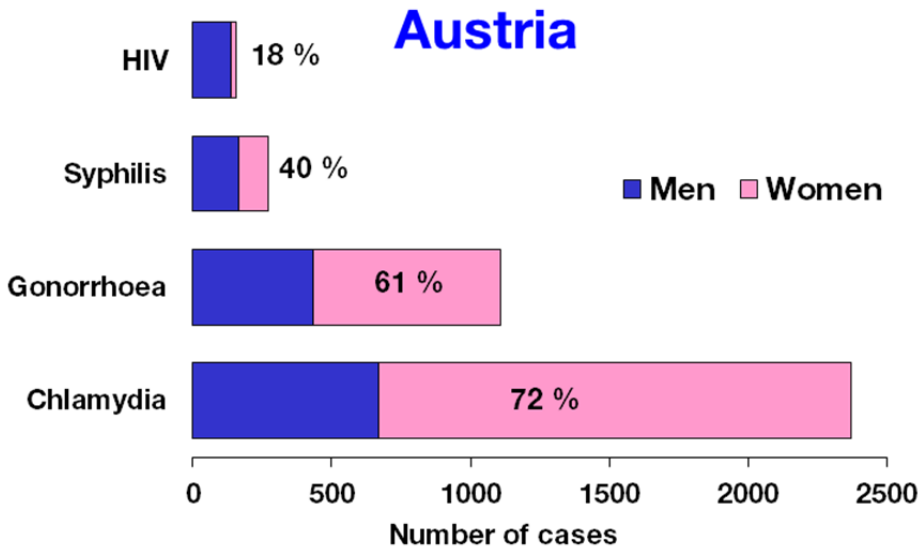


Figure 6: Number and gender distribution of STI/HIV among patients at Austrian sentinel sites

Stratified by STI/HIV there were differences in age, as male patients had a higher median age than females among all STIs and HIV. Median age was highest for male syphilis patients and lowest for female patients with chlamydia or gonorrhoea. The

majority of migrants were women (see Table 5). Eighty-eight percent of all women with gonorrhoea were sex workers, compared to only 40% in women with new HIV diagnosis.

Table 5: Median age and proportion of migrants, MSM and SW among patients in Austria by STI, stratified by gender

AT	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=670)	Women (n=1,699)	Men (n=434)	Women (n=674)	Men (n=165)	Women (n=108)	Men (n=136)	Women (n=30)
Median age (years)	29	24	30	24	35	28	32	29
Migrant*	28%	74%	45%	88%	37%	86%	36%	66%
MSM	6%	-	19%	-	61%	-	71%	
SW	2%	71%	4%	88%	13%	78%	7%	40%

*Men and women with missing country of origin excluded

Co-infections of more than one STI and/or HIV were most commonly diagnosed for gonorrhoea and chlamydia. These co-infections were, more often diagnosed in women (see Table 6). Similarly, 14% of men with gonorrhoea were diagnosed with chlamydia at the same time.

Table 6: Co-infections of chlamydia, gonorrhoea, syphilis and HIV in Austria by gender

AT	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=670)	Women (n=1,699)	Men (n=434)	Women (n=674)	Men (n=165)	Women (n=108)	Men (n=136)	Women (n=30)
Chlamydia	--	--	59 13.6%	149 22.1%	4 2.4%	10 9.3%	1 0.7%	1 3.3%
Gonorrhoea	59 8.8%	149 8.8%	--	--	2 1.2%	8 7.4%	1 0.7%	2 6.7%
Syphilis	4 0.6%	10 0.6%	2 0.5%	8 1.2%	--	--	8 5.9%	1 3.3%
HIV	1 0.1%	1 0.1%	1 0.2%	2 0.3%	8 4.8%	1 0.9%	--	--

19 sets of questionnaires without indication of gender excluded

Another question concerned the history of a previous STI or diagnosis of HIV in regards of the current disease (see Table 7). Sixteen percent of women with chlamydia and 27% of women with gonorrhoea had been diagnosed with the same disease before.

Table 7: History of STI or HIV by current STI/HIV in Austria

AT	Current infection							
	Chlamydia		Gonorrhoea		Syphilis		HIV	
History of:	Men (n=670)	Women (n=1,699)	Men (n=434)	Women (n=674)	Men (n=165)	Women (n=108)	Men (n=136)	Women (n=30)
Chlamydia	25 3.7%	264 15.5%	11 2.5%	147 21.8%	3 1.8%	8 7.4%	3 2.2%	3 10.0%
Gonorrhoea	46 6.9%	169 9.9%	51 11.8%	183 27.2%	11 6.7%	8 7.4%	5 3.7%	3 10.0%
Syphilis	12 1.8%	64 3.8%	22 5.1%	52 7.7%	26 15.8%	9 8.3%	11 8.1%	3 10.0%
HIV	3 0.4%	5 0.3%	15 3.5%	3 0.4%	10 12.1%	0 0.0%	--	--

5.3.5 Groups at risk and risky behaviour

In addition to demographics and epidemiological data we collected behavioural information via diagnosis and patient questionnaires. These included questions such as the most likely source of infection, the number of sex partners and condom use as presented below.

The patient's questionnaire contained an item asking for the most likely source of the current infection.

Figure 7 shows the results stratified by group at risk and gender. MSM assumed most often a casual partner as source of their infection, as did men who reported not engaging in sex with other men (Non-MSM). Either an unknown or a casual partner was the main source of infection for FSW. Women who did not engage in sex work (Non-FSW) thought that their regular partner was most likely the source of their infection. Independent of age less or more than 25 years, men considered a casual partner being the most likely source of infection, whereas women under the age of 25 years suspected their regular partner and women aged 25 years or more did not know, or thought a casual partner was most likely the source of infection.

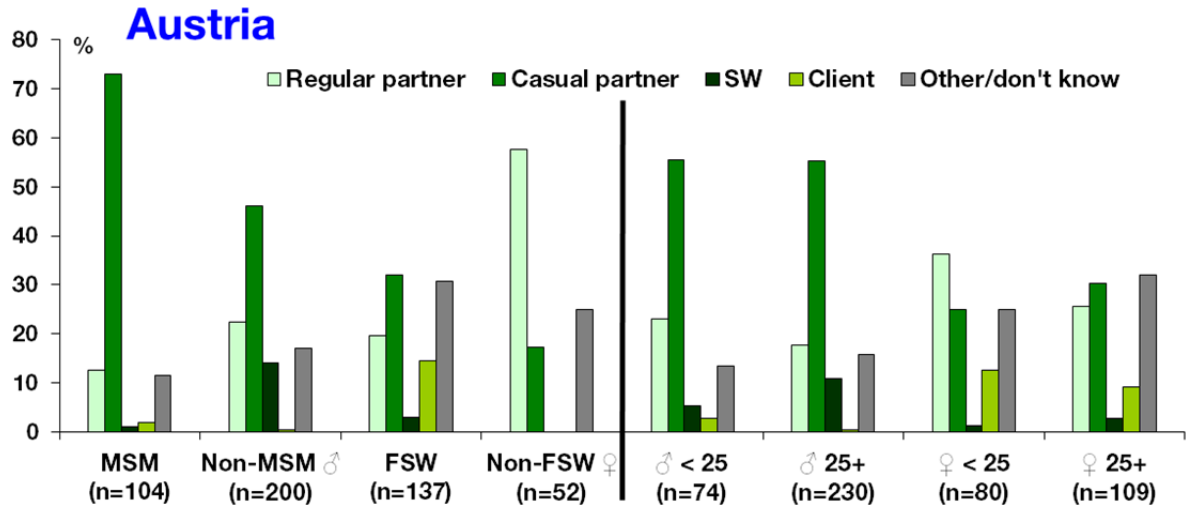


Figure 7: Source of infection as stated by patients in Austria, by risk, age group and gender

Number of sex partners (see Figure 35 and Figure 36) were analysed according to gender and sex work- and MSM-status. MSM (n=97) had a median of 3 and a mean of 15.2 sex-partners within the last 6 months while men, not engaging in sex with other men (n=168) had a median of 2 and mean of 3 partners within the last 6 months. Among women who answered this question, female sex workers (n=97) had a median of 3 and a mean of 67.6 sex-partners in this period, whilst women not engaging in sex work (n=42) had a median of 1 and a mean of 1.7 partners within the last 6 months.

Furthermore, we compared the use of condoms for anal or vaginal sex within the last 6 months among males and females with regular and casual partners and sex workers or clients (see Figure 8 and Figure 9). Non-MSM were in general less likely to use condoms with regular or casual partners compared to MSM. 57% of non-MSM said that they never used condoms with their regular partner and 15% said that they never used condoms with a sex worker (or client).

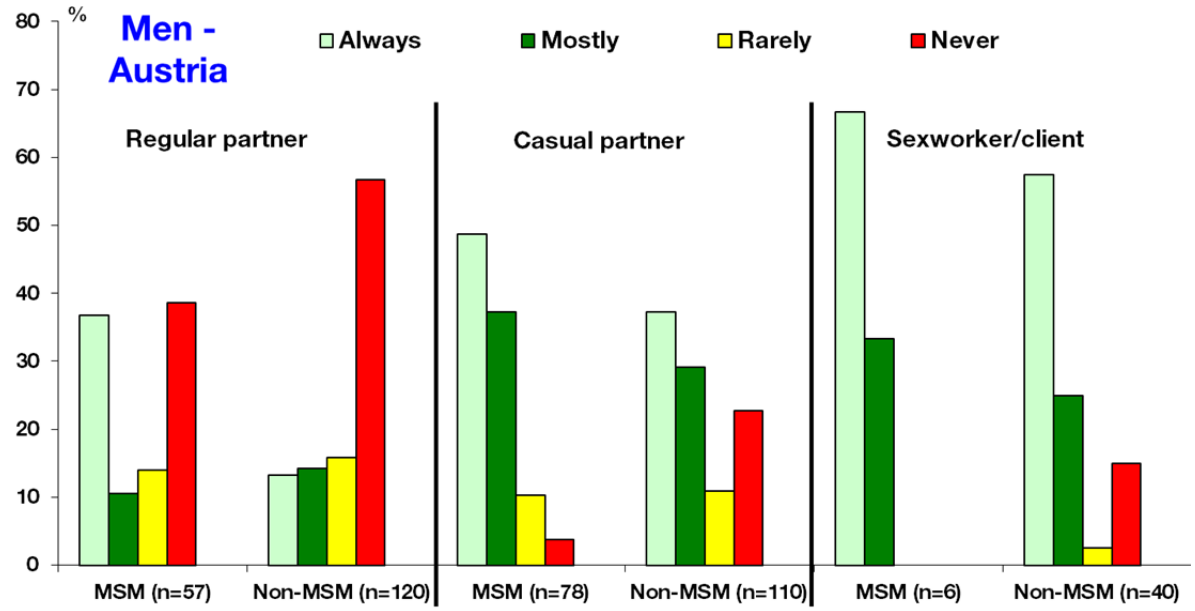


Figure 8: Condom use with regular and casual partner and sex workers/clients among men attending Austrian sites, by MSM-status; Men with no answer, „don‘t know“ or „did not have sex with this partner“ excluded

The majority of non-SW women (53%) and 40% of FSW reported never using condoms with their regular partner. Twenty-one percent of non-SW women never used condoms with casual partners in the last 6 months, compared to 3% of FSW.

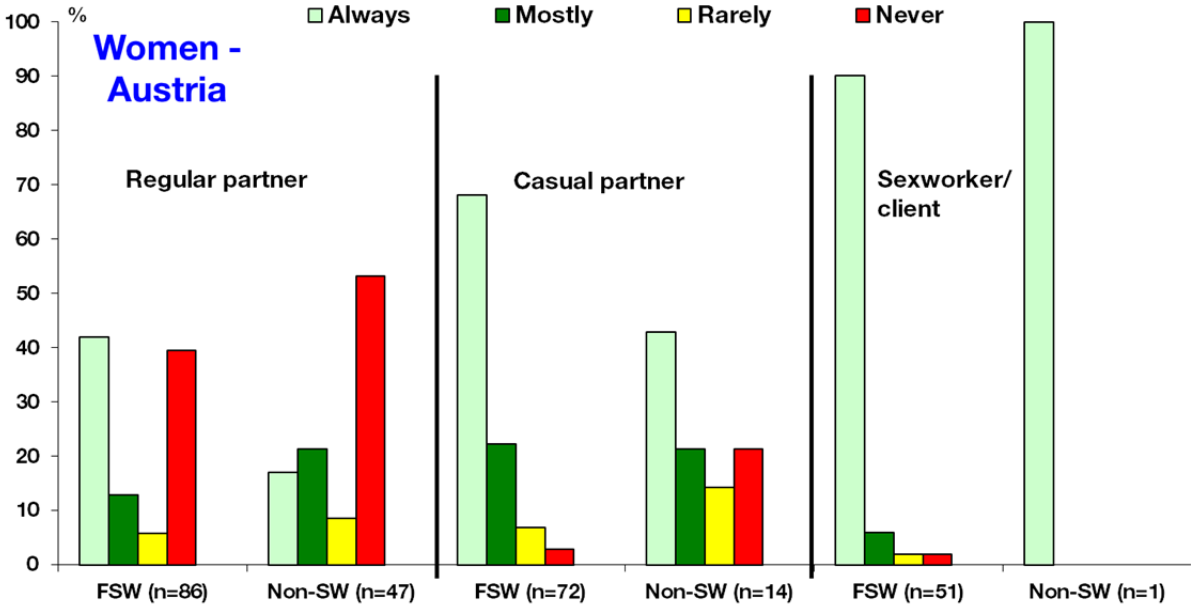


Figure 9: Condom use with regular and casual partner and sex workers/clients among women attending Austrian sites, by sex work-status; Women with no answer, „don‘t know“or „did not have sex with this partner“ excluded

5.4 Limitations and conclusions on the data from Austria

Participating institutions varied substantially in regards of attended patients and, subsequently, number of sent questionnaires. One particular institution, a municipal

STI clinic in charge of mandatory health checks for SW, contributed more than 50% of submitted diagnosis questionnaires from Austria. Hence, the proportion of SW is high. On the other hand, the low patient response rate in Austria might be associated with that institution as well. A mandatory health examination is not the optimal setting for a voluntary participation in a survey.

However, the results show a rather stable trend for all STI under observation. We identified a high proportion of migrants among patients with STIs which is most likely due to a high proportion of migrants among SW working in Austria. A higher proportion of STI, not HIV, has been diagnosed among female than male migrants. In addition, median age of patients with an STI is lower in females. The most frequently diagnosed STI was chlamydia.
Further differences existed in regards of condom use and suspected source of infection. Among people aged less than 25 years males suspected mainly a casual partner whilst females assumed their regular partner. This effect is probably partly due to males belonging to the group of MSM.

Diagnostic standards were found to be high in Austria and almost all tests are available and performed. Data reported from Austrian sites and laboratories seem therefore to be reliable regarding sensitivity and specificity for all reported STIs.

Comparing the sentinel data acquired in Austria to the German STD-sentinel-data (2003-2009), many similarities in patients with STIs can be found and data seem comparable. In Austria however, not as many MSM have been recruited, as many of the Austrian sentinel sites are not particularly focussed on this group. In the future, possible extension of surveillance activities on sites that particularly provide health care for MSM should be emphasized.

In total, the participation of sentinel sites in Austria was very satisfying and data quality was good. For further improvement, doctors could be asked to complete more individual diagnosis questionnaires, and in general, the response rate of patients could be emphasized, as interpretation of behaviour, particularly in women is limited due to partly very low response rate. Unfortunately, we do not know what the reasons of non-responders were and if their risk profile differed from those who filled in a patient questionnaire. Including more sentinel sites outside of Vienna would also allow us to draw more conclusions regarding the capital versus more rural areas and hence interpret geographic data.

6. Final results from Bulgaria

6.1 Composition of the Bulgarian sentinel sites

6.1.1 Characteristics of Bulgarian sentinel sites

Overall, we received basic questionnaires from all 5 participating institutions; all of them have been sending data as well. Participating institutions were district dispensaries for dermato-venereal diseases (2) and public hospitals and medical universities (3).
With 80% (4 of 5) the majority of sites classified their **area of service** as urban whilst 20% (1 of 5) served a rural area.

The **number of attending STI patients** per site and month was 1 to 25 at one site (20%), 76 to 100 at one site (20%) and more than 100 at 3 sites (60%). The **number of attending HIV patients** per site and month was 1 to 25 at one site (20%), 26 to 50 at two sites (40%), 51 to 75 at one site (20%) and between 76 and 100 at another one (20%). There was a high correlation between the number of attending STI and HIV patients in the sites. Among sites with more than 100 STI-patients one site attends 26 to 50, one 51 to 75 a third one 76 to 100 HIV-patients.
A specific **STI consultation** as well as an **HIV consultation** was offered by all sites (100%).
The question about **number of employees** within the STI and HIV-sector had been answered by just one institute (20%) which has 2 employees in this area.
STI testing was anonymous at all five (100%) sites and free of charge at three (60%); **HIV testing** was offered anonymously at all (100%) sites and is free of charge at all as well (100%).

6.1.2 Attendees of the Bulgarian sentinel sites

The median proportion of **men among all attending STI-patients** was 50% with a mean of 54% and a range from 43% to 70%. Among **HIV-patients** the median was 57% with a mean of 65% and a range from 50% to 90%.
The median proportion of **migrants** was 1% with a range from 0% to 10% among **STI- and HIV-patients**. The respective means were 3% migrants among STI-patients and HIV-patients.
In addition, sites had been asked for an estimation of the proportion of different groups at risk among their patients, stratified by gender (see Table 8).

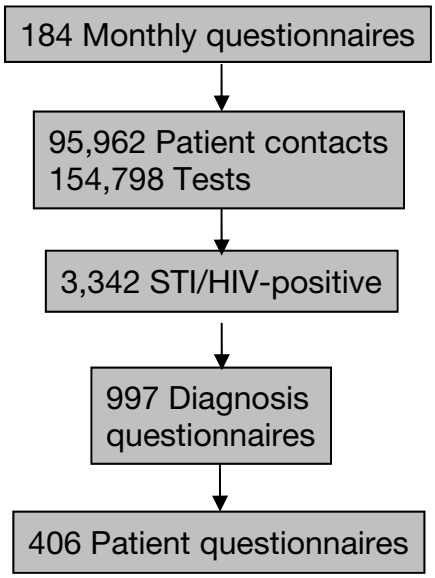
Table 8: Median of proportions of different risk groups among patients in Bulgaria (multiple answers possible)

		Median	Range
Women	FSW	5%	0-10%
	i.v. drug user (IDU)	1%	1-70%
	Heterosexual	90%	90-99%
Men	MSM	10%	1-20%
	i.v. drug user (IDU)	1%	0-80%
	Heterosexual	90%	80-90%

6.1.3 Diagnostic methods used in Bulgarian sentinel sites

In Bulgaria, the three institutions that were still active in 2012 completed the diagnostic questionnaire. All three institutions (100%) said that they also received samples from other institutions, apart from their own institution. All 3 institutions (100%) said that they test the HIV, chlamydia, gonorrhoea and syphilis-samples within their institution/hospital. Two institutions (66.7%) said that they participate in an external quality assurance scheme. Comparison of the diagnostic tests used for each STI and strategies, comparing the 4 countries, is shown in 11.3.

6.2 Response rate in Bulgaria



Physicians from participating institutions sent a diagnosis questionnaire in 30% (997/3,342) of patients with a positive diagnosis (see

Figure 10). Patients completed the patient's questionnaire in 41% (406/997).

Figure 10: Flow chart of questionnaires and number of positive tests in Bulgaria, since 2008

6.2.1 Response rate over time

Over the years, the proportion of STI patients who filled in a patient questionnaire which could be linked to a diagnosis questionnaire decreased continuously in both genders.

Table 9: Number and fraction of patient and corresponding diagnosis questionnaires by gender and year of examination in Bulgaria (9 datasets with missing gender excluded)

	2006	2007	2008	2009	2010	2011	2012
Men			36/49	87/166	97/191	47/162	17/93
			74%	52%	51%	29%	18%
Women			36/42	27/64	40/90	13/64	6/67
			86%	42%	44%	20%	9%

6.3 STI Surveillance data Bulgaria

In Bulgaria, the STI sentinel surveillance was introduced in 2008 and data were reported continuously until the end of the data collection.

6.3.1 Performed tests, positivity rates and reported cases by STI

Since the start of the sentinel surveillance in Bulgaria in 2008, a total of 154,798 tests have been performed in 95,962 clients. In these data from the monthly questionnaires, doctors stated that 45,570 of all clients (47.5%) were men. Most tests by far were performed for syphilis. However the highest number of positives was found for chlamydia and it had the highest positivity rate. In almost 70% of positive chlamydia or HIV diagnoses, doctors filled in an individual diagnosis questionnaire, whereas they only did so for 18% of syphilis-cases. The patient response rate varied between 36 and 53%, depending on STI, as shown in Table 10.

Table 10: Total number (#) of lab tests, positive tests and positivity rate (in %), number and proportion of reported STI cases and number and proportion of corresponding patient questionnaires by STI, Bulgaria

BULGARIA	Monthly questionnaire			Diagnosis Questionnaire		Patient Questionnaire	
STI	# lab tests	# positive tests	%	# reported STI-cases	%	# questionnaires	%
Chlamydia	7,803	706	9.0%	491	69.5%	210	42.8%
Gonorrhoea	12,804	507	4.0%	144	28.4%	52	36.1%
HIV	24,010	78	0.3%	53	67.9%	28	52.8%
Syphilis	105,453	1,855	1.8%	330	17.8%	120	36.4%

6.3.2 STI Trends

In Bulgaria, the positivity rate was highest for chlamydia in almost all reported quarters. It varied from 5.3% (54/1020) to 13.1% (81/617). Similarly, the peak in gonorrhoea positivity in the first quarter of 2011 has to be interpreted cautiously, as number of tests (n=223) was much smaller than in the quarters before (mostly n~1,000).

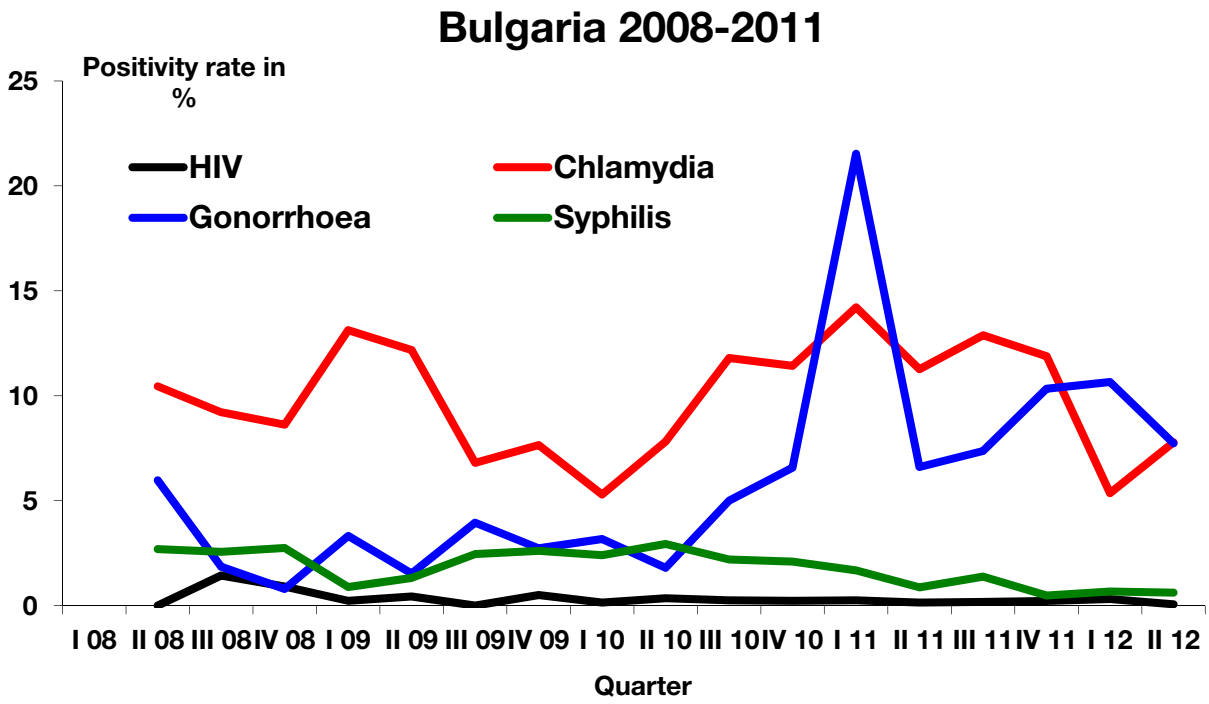


Figure 11: Positivity rate by STI in Bulgaria over time

6.3.3 Sociodemographic characteristics of patients with STIs

Two thirds of the patients with an STI/HIV were male. Men were 3 years older than women. Overall, the proportion of migrants was very low, 1.3% among males and 1.6% among females. Four percent of men and 3% of women belonged to the Roma community. There were more sex workers among females with 5%, however the proportion was lower than in other countries. One in four men and one in five women had a history of a previous STI (see Table 11).

Table 11: Demographics of patients with an STI/HIV in Bulgaria (MSM: men who have sex with men; SW: sex worker; i.v.: intravenous)

	Men (n=661)	Women (n=327)
Percentage	67%	33%
Median age (years)	31	28
Migrant*	1.3%	1.6%
Roma	4%	3%
MSM	17%	-
SW	2%	5%
Drug use (i.v.)	3.3%	1.5%
Drug use (non i.v.)	5%	5%
History of STI	25%	19%

Data from diagnosis and patient questionnaires. 9 sets of questionnaires without indication of gender excluded. *27 men and 7 women with missing country of origin excluded

The vast majority of all patients originated from Bulgaria in both genders. Other nationalities were less frequently reported (see Figure 12).

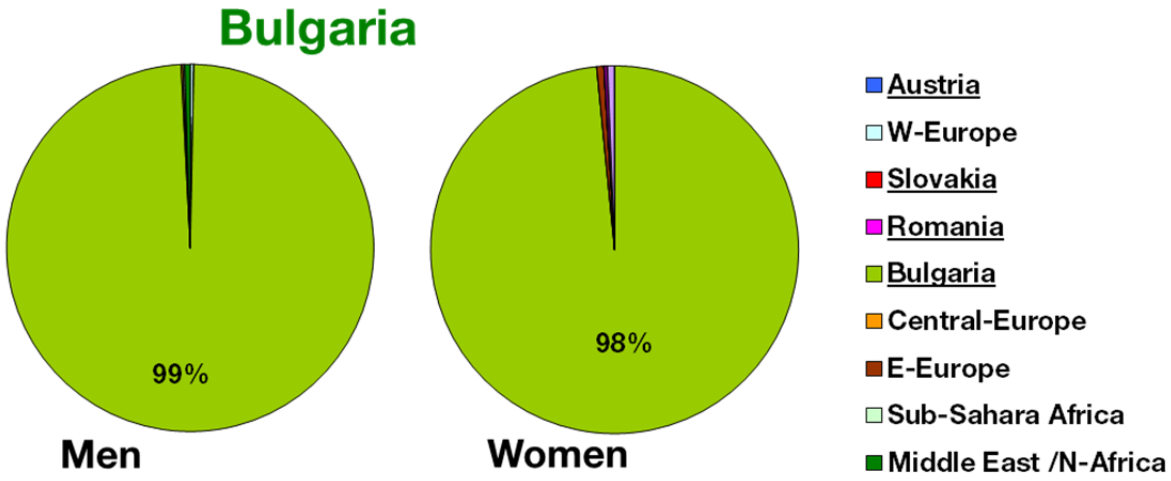


Figure 12: Origin of men (n=634) and women (n=320) with STI in Bulgaria stratified by gender; 27 men and 7 women with missing country of origin excluded

6.3.4 Epidemiology of STIs

Overall, more male STI and HIV patients were reported. The most commonly diagnosed STI was chlamydia. Two thirds of chlamydia cases were male. The second most common STI was syphilis, with a similar gender distribution (see Figure 13).

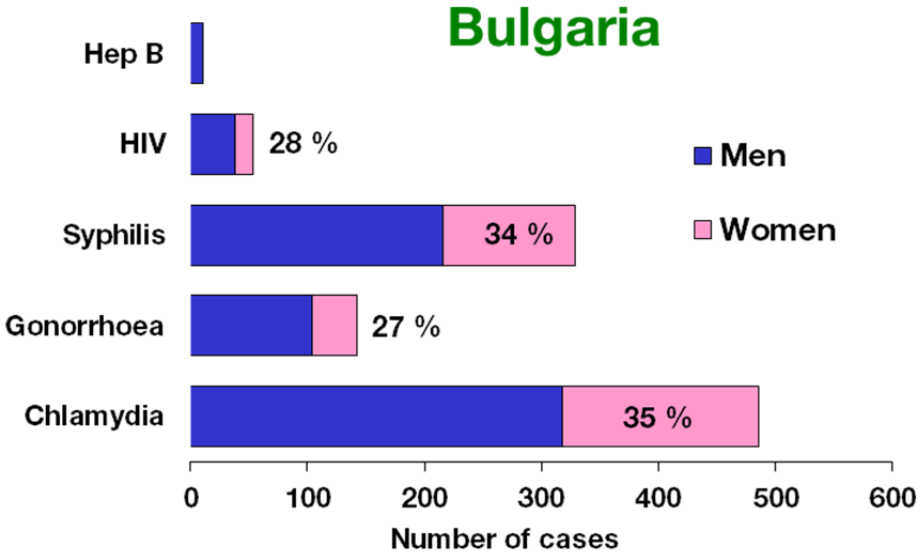


Figure 13: Number and gender distribution of STI/HIV among patients at Bulgarian sentinel sites

Stratified by STI/HIV there was no big difference in age between the genders. Median age was highest among syphilis patients (33 years for males and 29 years for females) and lowest for gonorrhoea (29 years in males and 26.5 years in females) (see Table 12). Migrants played only a minor role in all Bulgarian STI-patients. Out of all male patients with first diagnosis of HIV, 37% were MSM, similar for syphilis, with

27% of men being MSM. Apart from syphilis in women, there were few sex workers among the STI-patients.

Table 12: Median age and proportion of migrants, MSM and SW among patients in Bulgaria by STI, stratified by gender

BG	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=318)	Women (n=168)	Men (n=104)	Women (n=38)	Men (n=216)	Women (n=113)	Men (n=38)	Women (n=15)
Median age (years)	30	28	29	26,5	33	29	29	28,5
Migrant*	1%	1%	3%	0%	1%	0%	0%	7%
MSM	10%	-	13%	-	27%	-	37%	-
SW	2%	2%	2%	0%	3%	10%	5%	7%

*Men and women with missing country of origin excluded

Co-infection of more than one STI and/or HIV was rarely diagnosed; the most common diagnosed co-infections were gonorrhoea and chlamydia. (See Table 13)

Table 13: Co-infections of chlamydia, gonorrhoea, syphilis and HIV in Bulgaria by gender

BG	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=318)	Women (n=168)	Men (n=104)	Women (n=38)	Men (n=216)	Women (n=113)	Men (n=38)	Women (n=15)
Chlamydia	--	--	19 18.3%	8 21.1%	3 1.4%	0 0.0%	0 0.0%	0 0.0%
Gonorrhoea	19 6.0%	8 4.8%	--	--	3 1.4%	1 0.9%	0 0.0%	0 0.0%
Syphilis	3 0.9%	0 0.0%	3 2.9%	1 2.6%	--	--	1 2.6%	0 0.0%
HIV	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 0.5%	0 0.0%	--	--

9 sets of questionnaires without indication of gender excluded

Another question concerned the history of a previous STI or diagnosis of HIV in regards of the current disease (see Table 14). A More than ten percent of chlamydia or gonorrhoea patients had been previously diagnosed with the same STI.

Table 14: History of STI or HIV by current STI/HIV in Bulgaria

BG	Current infection							
	Chlamydia		Gonorrhoea		Syphilis		HIV	
History of:	Men (n=318)	Women (n=168)	Men (n=104)	Women (n=38)	Men (n=216)	Women (n=113)	Men (n=38)	Women (n=15)
Chlamydia	22 6.9%	17 10.1%	6 5.8%	0 0.0%	2 0.9%	0 0.0%	0 0.0%	0 0.0%
Gonorrhoea	44 13.8%	3 1.8%	17 16.3%	2 5.3%	16 7.4%	3 2.7%	1 2.6%	0 0.0%
Syphilis	3 0.9%	4 2.4%	2 1.9%	0 0.0%	9 4.2%	10 8.8%	1 2.6%	0 0.0%
HIV	1 0.3%	0 0.0%	0 0.0%	0 0.0%	1 0.5%	0 0.0%	--	--

6.3.5 Groups at risk and risky behaviour

The patient's questionnaire contained an item asking for the most likely source of the current infection. Figure 14 shows the results stratified by group at risk. MSM assumed most often (in ~ 2/3) a casual partner as source of their infection, as did non-MSM. A client or casual partner was the main source of infection for FSW, whereas non-FSW assumed a casual or their regular partner to be the source. There were differences between male and female patients aged under 25 years: more males suspected a casual partner while females assumed more often their regular partner being the source of their current infection.

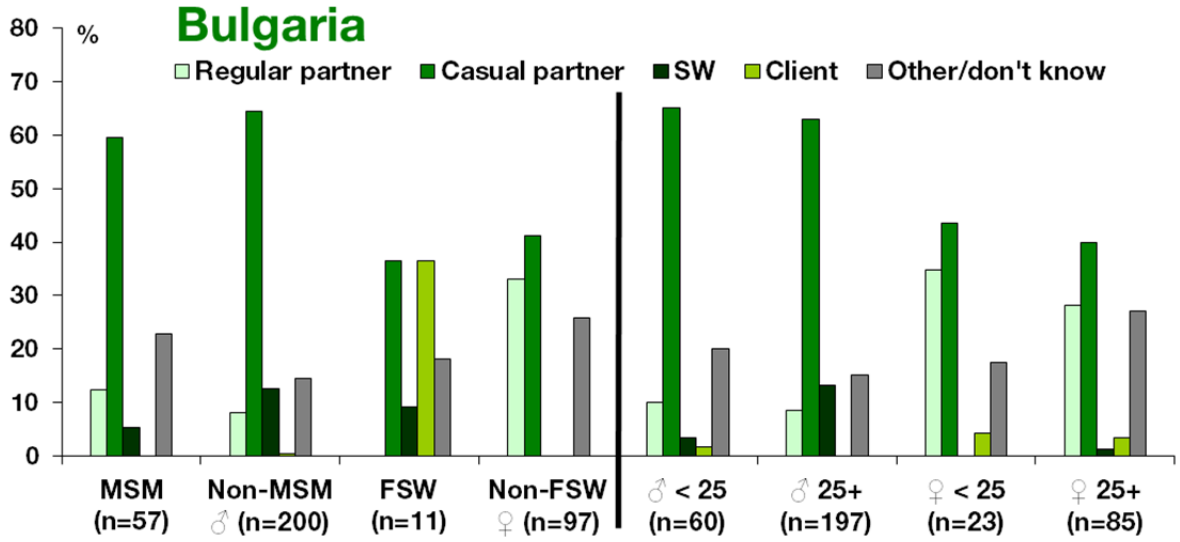


Figure 14: Source of infection as stated by patients in Bulgaria, by risk, age group and gender

The number of sex partners (see Figure 35 and Figure 36) was analysed according to gender and sex work- and MSM-status. MSM (n=41) in Bulgaria had a median of 3 and a mean of 5 sex-partners within the last 6 months while men, not engaging in sex with other men (n= 107) had a median of 3 and mean of 3.5 partners within the last 6 months. Among women who answered this question, female sex workers (n=8) had a median of 5.5 and a mean of 5 sex-partners in this period, whilst women not engaging in sex work (n=56) had a median of 2 and a mean of 2.4 partners within the last 6 months.

The comparison of condom use for anal or vaginal intercourse within the last 6 months among men is shown in Figure 15. Non-MSM were less likely to use condoms with casual partners than MSM.

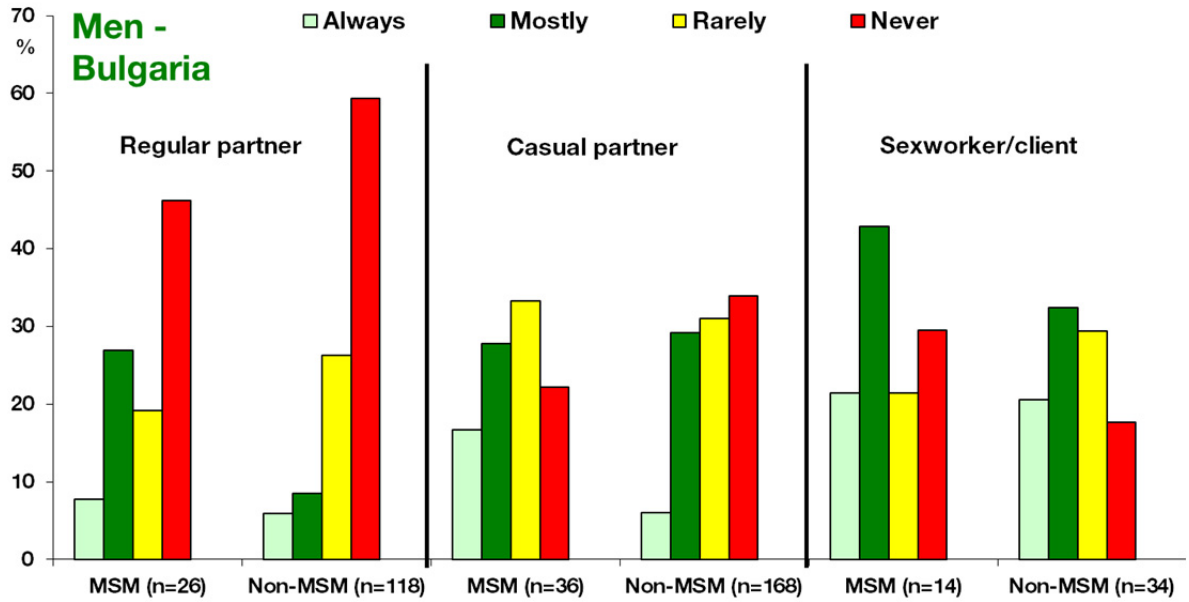


Figure 15: Condom use with regular and casual partner and sex workers/clients among men attending Bulgarian sites, by MSM-status; Men with no answer, „don‘t know“ or „did not have sex with this partner“ excluded

Three thirds of women not engaging in sex work, reported never using condoms with their regular partners. For FSW, data are limited and no relevant conclusions can be drawn. Similarly, analysis of condom use with “sex workers” in non-SW women have to be interpreted very cautiously, as the question could have been misunderstood, and either these women were engaging in sex work or they meant that they never had sexual contacts with a client (with or without condom) or that they really had sexual intercourse with a sex worker.

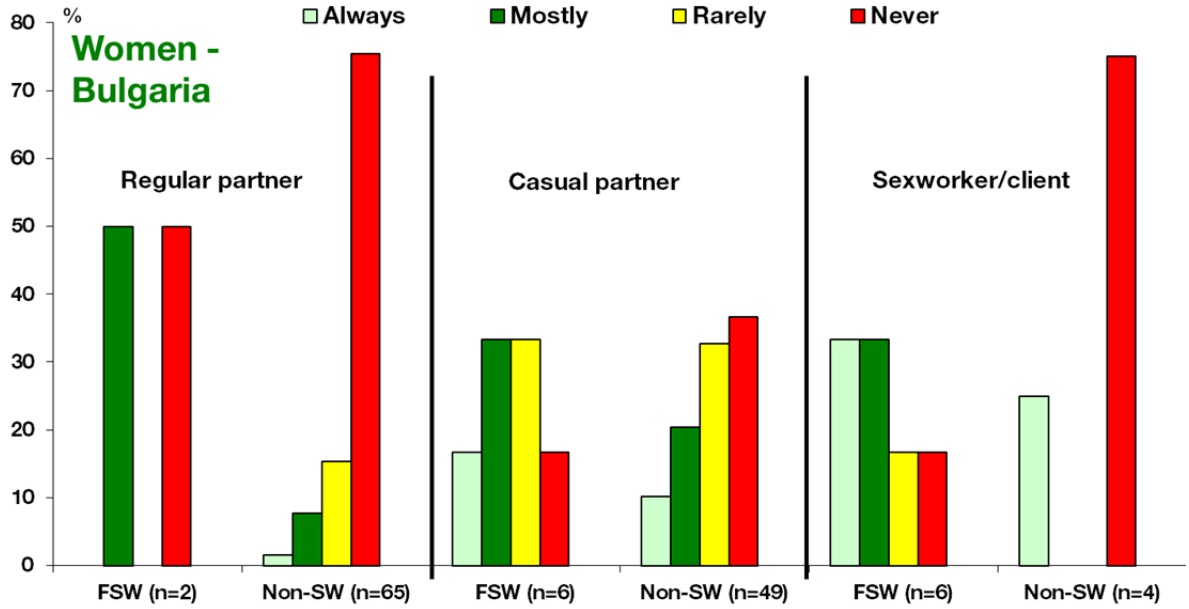


Figure 16: Condom use with regular and casual partner and sex workers/clients among women attending Bulgarian sites, by sex work-status; Women with no answer, „don‘t know“ or „did not have sex with this partner“ excluded

6.4 Limitations and conclusions on the data from Bulgaria

STI-trends varied a lot in Bulgaria probably due to differing numbers of positives and tests. Therefore positivity rates have to be interpreted cautiously and trends should be interpreted on a longer time-period and with higher numbers of participating institutions in the future.
One interesting finding we couldn't interpret initially was the high proportion of patients with syphilis. As we were informally told during our on-site visit, testing for syphilis is still mandatory in Bulgaria on many occasions, such as taking up a new job, entrance of children in kindergarten, getting married, etc. which explains the number of tests.
Interpretation of data in regards of groups at risk is limited due to stigmatization of these patient groups. We might therefore underestimate the proportion of SW, IDU or MSM among our patients. Migrants were of less significance in Bulgaria. Roma people did not account for a high number of STI-patients as assumed in advance, however this might also be due to the accessibility of our sentinel sites and the common asymptomatic course of STIs which might not lead to screening tests. Further, poor healthcare-seeking behaviour of Roma people and their high mobility might play a role.

The gender distribution of STI and HIV shows a majority of males of varying degree: 73% males among gonorrhoea and 66% among syphilis. Also, the majority of chlamydia cases were found among men, being possibly due to the more frequent symptomatic cause of the disease in men and higher specificity of many tests in men, and hence causing this bias. Chlamydia was also the most frequently reported STI in Bulgaria, however, due to the data from the diagnostic survey; they have to be seen with caution. In Bulgaria, frequently tests are used which have been proven to have low sensitivity and specificity for acute infections, such as rapid point-of-care tests and antibody tests. Hence, our case definitions could not always be applied and true positivity is debatable.
There were high proportions of STI patients with the same STI in their history; a possible explanation might be lack of knowledge. However, some groups such as MSM had very low numbers which question the data reliability.
The source of infection varied by group at risk: MSM suspected mainly casual partners whilst the regular partner added to this risk in females less than 25 years of age. Both genders in Bulgaria indicated very low proportions of regular condom use with any kind of partner. Of course, only patients with an STI were included and the difference in condom use in non-infected people could be investigated in future studies.

As we noticed at our on-site visit, there is still a great lack of diagnostic options in Bulgaria. NAATs (nucleic acid amplification tests) are not readily available for chlamydia and gonorrhoea diagnosis and are very expensive for routine use or screening. Furthermore, the Bulgarian healthcare system is still not comparable to western European countries, and not all persons in the country have a health insurance. In regards of STIs this plays an important role, as many of the clients seen in our sentinel institutions lack of health insurance and/or are from a vulnerable group. Therefore, not all diagnostic tests can be performed, as patients would have to pay privately and cannot afford such tests, as found in our diagnostic survey.

Culture and resistance testing for gonorrhoea are frequently not available at all in the country and resistance monitoring impossible.

In total, the participation of sentinel sites in Bulgaria was continuous and satisfying. For future projects, doctors should be asked to complete more individual diagnosis questionnaires, particularly for patients with syphilis and gonorrhoea. Recruitment of more Roma people would be desirable, as only 3-4% of all STI patients being Roma seems to underestimate the situation in the country. Similarly, only few women were reported working as a SW. This might not reflect the true situation. Anonymity should be emphasized in future studies in order to enhance disclosure and hence improve data analyses according to groups most at risk.

7. Final results from Romania

7.1 Composition of the Romanian sentinel sites

7.1.1 Characteristics of Romanian sentinel sites

We received basic questionnaires as well as data from 13 sites, including the locations from the predecessor project. Participating institutions were public hospitals and medical universities (4), Public Health Departments (1) and NGOs (8) being active as outpatient locations or with mobile outreach units. 8% (1) classified their **area of service** as "rural" whilst 39% (5) served smaller towns and 8% (1) urban areas. 46% (6) lacked an answer to this question.
The **number of attending STI-patients** per site and month was 0 at one site (8%), 1 to 25 at four sites (31%), 26 to 50 at one site (8%) and more than 100 at one site (8%); six sites (46%) did not specify the number of attendees. The **number of attending HIV-patients** per site and month was 0 at two sites (15%), 1 to 25 at three sites (23%) and more than 100 at two sites (15%) whilst six sites (46%) did not answer this question. Number of attending STI- and HIV-patients was not correlated.

A specific **STI-consultation** was offered by six sites (46%), one in a rural location, four in smaller towns and one in an urban area. An **HIV-consultation** was offered by five sites, four in smaller towns and one in an urban area. Seven institutions didn't answer these questions.

The **number of employees** within the STI and HIV sector at the four sites who answered this question varied between 1 and 50 with a mean of 20.5 employees.

STI-testing was anonymous at three (23%) and free of charge at five (39%) sites (seven missing answers included); **HIV-testing** was offered anonymously at three (23%) sites and was **free of charge** at six (46%), including seven missing answers.

7.1.2 Attendees of the Romanian sentinel sites

From 5 institutions who answered this question, the median proportion of **men among all attending STI patients** was 60% with a mean of 58% and a range from 50% to 65%. Among **HIV patients** the median and mean were 55% with a range from 43% to 65%.

The median proportion of **migrants** was 1% among all replying institutions among **STI patients** and also **HIV patients**.

In addition, sites had been asked for an estimation of the proportion of different groups at risk among their patients, stratified by gender (see Table 15).

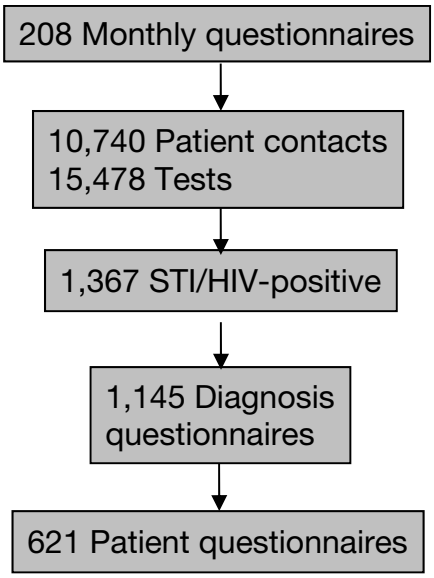
Table 15: Median of proportions of different risk groups among patients in Romania (multiple answers possible)

		Median	Range
Women	FSW	20%	10-40%
	i.v. drug user (IDU)	1%	0-5%
	Heterosexual	82%	20-100%
Men	MSM	10%	2-60%
	i.v. drug user (IDU)	1%	1-5%
	Heterosexual	93%	39-100%

7.1.3 Diagnostic methods used in Romanian sentinel sites

In Romania, seven institutions completed the diagnostic questionnaire. Two institutions (28.6%) said that they also get samples from other institutions, apart from their own institution. All (100%) said that they test the HIV-samples within their institution/hospital, 2 (28.6%) did so for chlamydia, 2 (28.6%) for gonorrhoea and all (100%) for syphilis. No institution said that they participate in an external quality assurance scheme. Comparison of the diagnostic tests used for each STI and strategies, comparing the 4 countries, is shown in 11.3.

7.2 Response rate in Romania



Physicians from participating institutions sent a diagnosis questionnaire in 84% (1,145/1,367) of patients with a positive diagnosis (see Figure 13). Patients completed the patient's questionnaire in 54% (621/1,145).

Figure 17: Flow chart of questionnaires and number of positive tests in Romania

7.2.1 Response rate over time

Over the years, the rate of patients with an STI who filled in a patient questionnaire which could be linked to a diagnosis questionnaire fluctuated in both genders.

Table 16: Number and fraction of patient and corresponding diagnosis questionnaires by gender and year of examination in Romania

	2006	2007	2008	2009	2010	2011	2012
Men			73/83	223/277	26/166	45/161	9/12
			88%	81%	16%	28%	75%
Women			38/43	149/205	20/109	34/85	4/4
			88%	73%	18%	40%	100%

7.3 STI Surveillance data Romania

In Romania, the STI sentinel surveillance was introduced in 2008 and data were reported continuously until the end of June 2012.

7.3.1 Performed tests, positivity rates and reported cases by STI

Since the start of the sentinel surveillance in Romania in 2008, a total of 15,478 tests have been performed in 10,740 clients. In these data from the monthly questionnaires, doctors stated that 6,075 of all attending clients (56.6%) were men. Most tests were performed for syphilis, where also the highest number of positives was found. However, chlamydia had the highest positivity rate. In Romania, doctors filled in more individual questionnaires for chlamydia and gonorrhoea patients than reported on monthly questionnaires. For 43% of HIV-cases, a diagnosis questionnaire was filled out. The patient response rate varied between 40 and 60%, depending on STI, as shown in Table 17.

Table 17: Total number (#) of lab tests, positive tests and positivity rate (in %), number and proportion of reported STI cases and number and proportion of corresponding patient questionnaires by STI, Romania

ROMANIA	Monthly questionnaire			Diagnosis Questionnaire		Patient Questionnaire	
STI	# lab tests	# positive tests	%	# reported STI-cases	%	# questionnaires	%
Chlamydia	768	142	18.5%	147	103.5%	58	39.5%
Gonorrhoea	1,684	130	7.7%	137	105.4%	60	43.8%
HIV	3,629	72	2.0%	31	43.1%	16	51.6%
Syphilis	7,537	972	12.9%	818	84.2%	490	59.9%

7.3.2 STI Trends

In Romania, the positivity rate was highest for syphilis at the start of the study, (42.3%), levelled off to approximately 8%, with a peak of 25.2% in the 1st quarter of 2012. Possible explanations for the very high positivity rate could have been low numbers of tests and positives reported, as the number of reported tests was much higher in the previous and following periods. Overall, chlamydia had the highest positivity rate in Romania, but number of performed tests was low compared to other STIs.

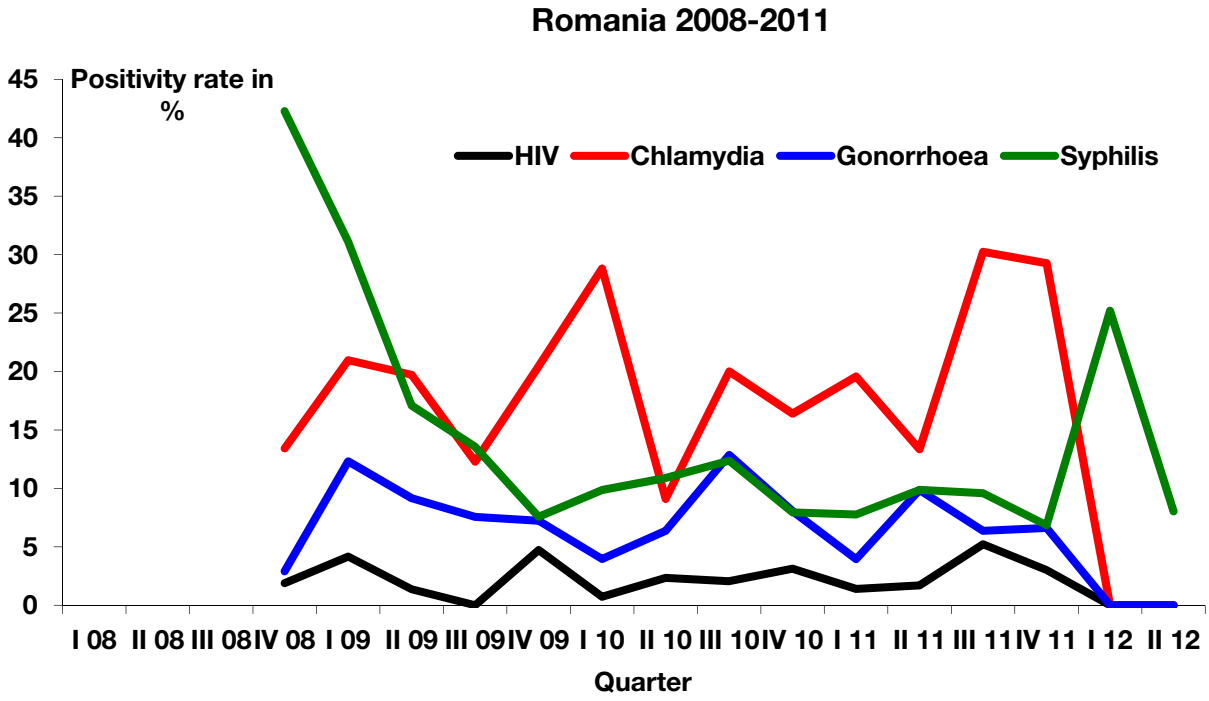


Figure 18: Positivity rate by STI in Romania over time

7.3.3 Sociodemographic characteristics of patients with STI/HIV

Approximately two thirds of patients with an STI/HIV in Romania were male. Patients had a median age of 30 years (men) and 29 years (women), respectively. The proportion of migrants was very low, whilst Roma made up to 8% and 9% in men and women. The proportion of female sex workers was low compared to other countries. A previous history of STI was more common among females (25%) than males (18%), as shown in Table 18

Table 18: Demographics of patients with an STI/HIV in Romania (MSM: men who have sex with men; SW: sex worker; i.v.: intravenous)

	Men (n=699)	Women (n=446)
Percentage	61%	39%
Median age (years)	30	29
Migrant*	0.6%	0.2%
Roma	8%	9%
MSM	4%	-
SW	2%	8%
Drug use (i.v.)	0.6%	3.6%
Drug use (non i.v.)	0.9%	0.2%
History of STI	18%	25%

Data from diagnosis and patient questionnaires. *55 men and 44 women with missing country of origin excluded

The majority patients originated from Romania. Other nationalities were less frequently reported (see Figure 19).

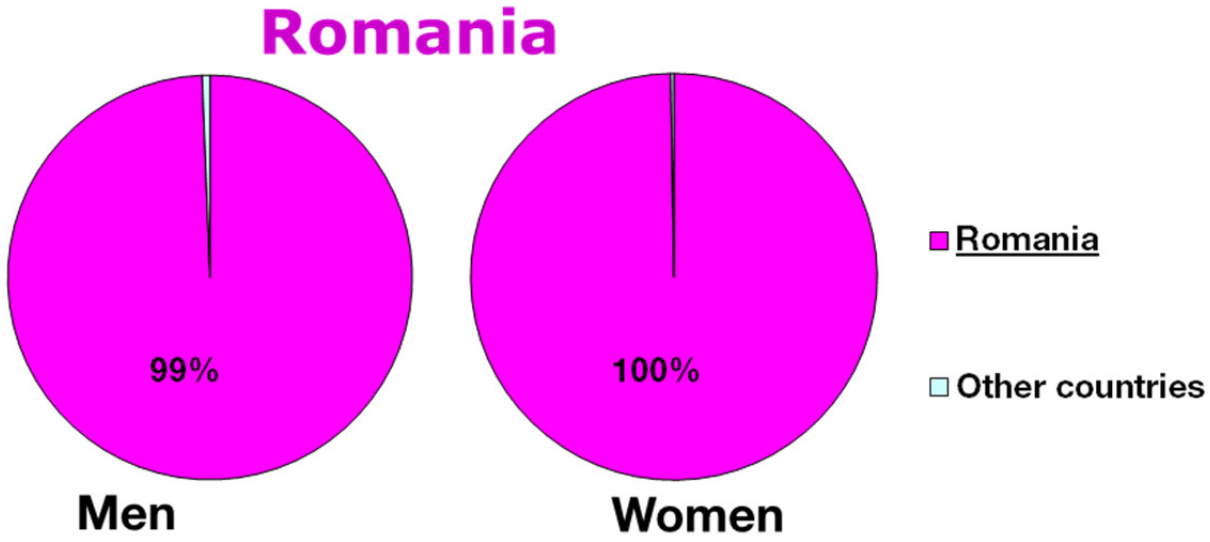


Figure 19: Origin of men (n=644) and women (n=402) with STI in Romania stratified by gender; 55 men and 44 women with missing country of origin excluded

7.3.4 Epidemiology of STIs

Men were more frequently reported that. The most commonly diagnosed STI was syphilis; 54% of syphilis patients were male. The other STI were diagnosed far less frequently . The second most common STI was chlamydia.

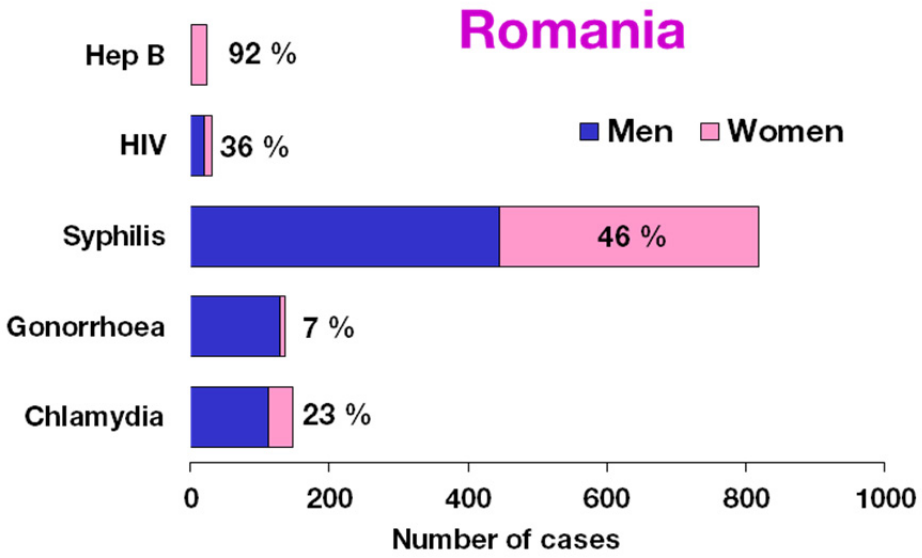


Figure 20: Number and gender distribution of STI/HIV among patients at Romanian sentinel sites

Stratified by STI/HIV there were differences in age between male and female patients with syphilis. Median age was highest among syphilis patients (33 years for males and 29 years for females) and lowest for gonorrhoea in females (24 years) and chlamydia in males (25 years) (see Table 19). Migrants, sex workers or MSM were

only reported in small numbers in Romania, except for HIV-diagnoses. Among those newly diagnosed with HIV, 40% of men were MSM and 20% of men and 27% of women were sex workers.

Table 19: Median age and proportion of migrants, MSM and SW among patients in Romania by STI, stratified by gender

RO	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=113)	Women (n=34)	Men (n=128)	Women (n=9)	Men (n=445)	Women (n=373)	Men (n=20)	Women (n=11)
Median age (years)	25	26	26	24	33	29	30	25
Migrant*	0%	0%	1%	0%	1%	0%	0%	0%
MSM	2%	-	4%	-	3%	-	40%	-
SW	2%	0%	2%	0%	2%	5%	20%	27%

*Men and women with missing country of origin excluded

Co-infection of more than one STI and/or HIV was in general diagnosed very rarely; however, the most common co-infection was chlamydia and gonorrhoea in men (see Table 20).

Table 20: Co-infections of chlamydia, gonorrhoea, syphilis and HIV in Romania by gender

RO	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=113)	Women (n=34)	Men (n=128)	Women (n=9)	Men (n=445)	Women (n=373)	Men (n=20)	Women (n=11)
Chlamydia	--	--	6 4.7%	0 0.0%	1 0.2%	1 0.3%	0 0.0%	0 0.0%
Gonorrhoea	6 5.3%	0 0.0%	--	--	1 0.2%	0 0.0%	0 0.0%	0 0.0%
Syphilis	1 0.9%	1 2.9%	1 0.8%	0 0.0%	--	--	0 0.0%	1 9.1%
HIV	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 0.3%	--	--

Another question concerned the history of a previous STI or diagnosis of HIV in regards of the current disease (see

Table 21). Just for a current syphilis infection existed a significant proportion of previous STI: namely previous chlamydia or syphilis.

Table 21: History of STI or HIV by current STI/HIV in Romania

RO	Current infection							
	Chlamydia		Gonorrhoea		Syphilis		HIV	
History of:	Men (n=113)	Women (n=34)	Men (n=128)	Women (n=9)	Men (n=445)	Women (n=373)	Men (n=20)	Women (n=11)
Chlamydia	2 1.8%	0 0.0%	1 0.8%	0 0.0%	46 10.3%	39 10.5%	0 0.0%	0 0.0%
Gonorrhoea	3 2.7%	2 5.9%	2 1.6%	0 0.0%	10 2.2%	7 1.9%	0 0.0%	0 0.0%
Syphilis	0 0.0%	2 5.9%	3 2.3%	0 0.0%	52 11.7%	48 12.9%	1 5.0%	0 0.0%
HIV	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 0.2%	1 0.3%	--	--

7.3.5 Groups at risk and risky behaviour

The patient's questionnaire contained an item asking for the most likely source of the current infection. Figure 21 shows the results stratified by group at risk. Men assumed most often (in 2/3 of all patients) a casual partner as source of their infection. Women not engaging in sex work assumed by the majority their regular partner to be the source of infection, whereas FSW mostly did not know what the source of their infection was.

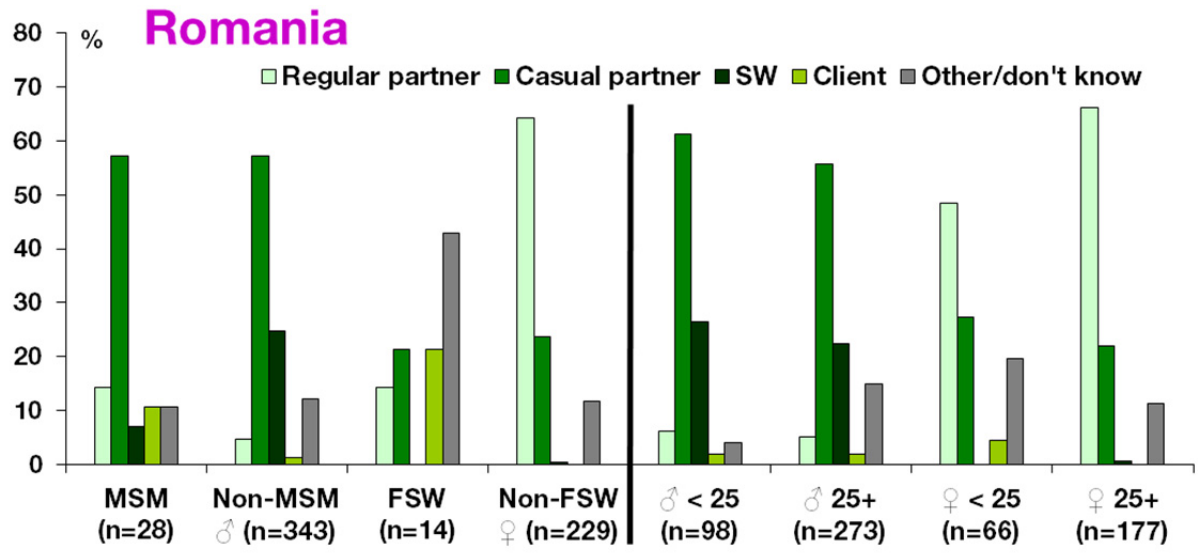


Figure 21: Source of infection as stated by patients in Romania, by risk, age group and gender

Number of sex partners (see Figure 35 and Figure 36) were analysed according to gender and sex work- and MSM-status. MSM (n=28) in Romania had a median of 4 and a mean of 4 sex-partners within the last 6 months while men, not engaging in sex with other men (n= 333) had a median of 3 and mean of 3.8 partners within the last 6 months. Among women who answered this question, female sex workers (n=14) had a median of 1 and a mean of 3.9 sex partners in this period, whilst

women not engaging in sex work (n=223) had a median of 1 and a mean of 1.5 partners within the last 6 months.

Condom use was low in men in Romania overall (Figure 22). The vast majority of MSM and non-MSM said that they never used condoms with their regular partner in the last 6 months. A high number of MSM and non-MSM (41% both) reported never using condoms with casual partners, as did 30% of MSM and 29% of non-MSM with sex workers or clients. However, only few MSM answered this question.

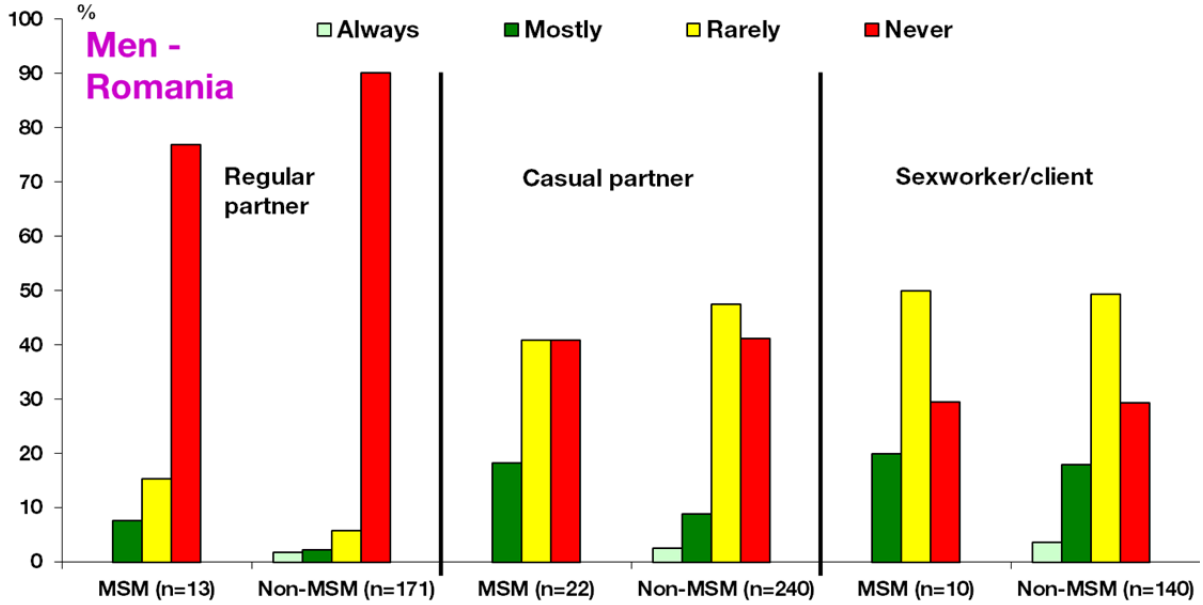


Figure 22: Condom use with regular and casual partner and sex workers/clients among men attending Romanian sites, by MSM-status; Men with no answer, „don‘t know“ or „did not have sex with this partner“ excluded

Although few women, especially FSW filled in the question on condom use, it seems that condom use is in general very low. The majority of all women, FSW and women who are not engaging in sex work, said that they never used condoms will all kinds of partners in the last 6 months, as shown in Figure 23.

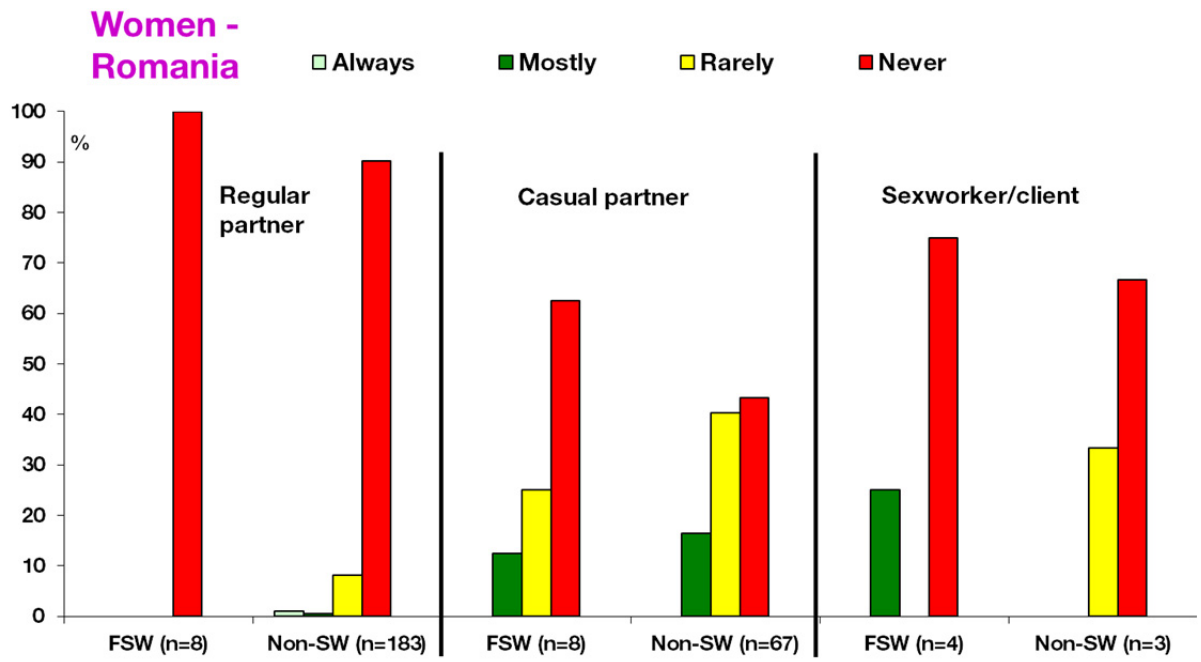


Figure 23: Condom use with regular and casual partner and sex workers/clients among women attending Romanian sites, by sex work-status; Women with no answer, „don't know" or „did not have sex with this partner" excluded

7.4 Limitations and conclusions on the data from Romania

Similarly to Bulgaria, the numbers of diagnosed STIs were small which limits some statistical analyses. Also on our on-site visit in Romania we found out that syphilis testing is also quite common in Romania for various reasons. Furthermore, a national STI-programme exists which allows syphilis testing free of costs for anyone, also for people without health-insurance.

Like in Bulgaria, interpretation of data in regards of groups at risk is limited due to stigmatization of vulnerable populations. We might therefore underestimate the proportion of SW, IDU or MSM among the patients recruited through sentinel institutions. Migrants did not play an important role. Furthermore, Romania is the only country in the whole of Europe where prostitution is prohibited and the law is still enforced. This criminalisation precludes open declaration and thus limits interpretation of data. Further, no screening programmes for sex workers can be offered, such as in other countries and the small numbers of chlamydia, gonorrhoea and syphilis could be caused by this. Affirmatively, 77% of all chlamydia cases were found in men, where these infections cause symptoms more frequently. Additionally, we saw fairly low numbers of chlamydia tests, which could be due to the high cost of appropriate diagnostics in the country and hence the frequently used and recommended syndromic approach, which limits lab-confirmed STI data collection.

Although 5 of our sentinel institutions are drop-in clinics from our partner-NGO ARAS, which focuses on IDUs, we did not get many reports from IDUs. A possible explanation could be that these low-threshold clinics might not test for STIs or might not have had any new STI-diagnosis, apart from HIV and hepatitis. Further the requirement for compliance with the case definitions was made, and no reports of rapid-tests only should be made, hence if patients are sent away for confirmatory testing, the report through the sentinel site might be difficult.

Also due to these clinics, a selection bias of our sentinel sites might have occurred, making data comparison difficult. ARAS-clinics mainly focus on harm reduction in IDUs and therefore concentrate on HIV and hepatitis-testing (blood), whereas no swabs for chlamydia or gonorrhoea diagnosis are taken.
When analysing the basic questionnaires, we found out that the data quality could be improved, i.e. not all questionnaires were filled in completely and missing data were difficult to analyse.
Similar to the situation in Bulgaria we found a great lack of diagnostic options in Romania, with NAATs (nucleic acid amplification tests) not being available at all. Therefore a syndromic approach was chosen for treatment of STIs with discharge in Romania. This could explain the low numbers of chlamydia tests. As serology is still performed for chlamydia diagnosis, one has to question if a comparison to other countries can be made at all. For the future, (generic, cheap) NAATs should be introduced in the country. Gonorrhoea diagnoses are frequently made through Gram stains, as reported in our diagnostic survey. However, sensitivity and specificity of this method are varying, particularly in asymptomatic women. Culture and resistance testing are sometimes not available in the institutions and resistance monitoring limited.

As in Bulgaria, the Romanian healthcare system is still not comparable to Western European countries, and not all persons in the country have a health insurance, making routine STI-testing difficult particularly in persons with limited resources.
In Romania, we saw very small numbers of persons with co-infections. A possible mistake could have been that doctors reported each STI on a separate diagnosis questionnaire and it should be pointed out that one of these questionnaires has to be filled in by patient, not by STI. Further, we received more individual questionnaires for chlamydia and gonorrhoea patients than reported on monthly questionnaires. Data could not be clarified although it was made clear to doctors to send one diagnosis questionnaire only for each positive patient reported via the monthly questionnaires.

8. Final results from the Slovak Republic

8.1 Composition of the Slovakian sentinel sites

8.1.1 Characteristics of the Slovakian sentinel sites

Including the locations from the predecessor project we received basic questionnaires from 14 sentinel sites that also provided data. Participating institutions were all in 50% (7) from public hospitals and medical universities or the outpatient clinics (ambulancias) attached, laboratory (1), other clinics (4) and Policlinics (2). Specialties participating were dermatovenerology, urology, infectiology and hepatology. 7% (1) classified their **area of service** as smaller town whilst 86% (12) served urban areas. 7% (1) lacked an answer to this question.
The **number of attending STI-patients** per site and month was 0 at one site (7%), 1 to 25 at eight sites (57%), 26 to 50 at one site (7%), 51 to 75 at one site (7%) and more than 100 at two sites (14%); one site (7%) did not specify the number of attendees. The **number of attending HIV-patients** per site and month was 0 at six sites (43%), 1 to 25 at four sites (29%) and more than 100 at three sites (21%); one site (7%) did not answer this question. One site which saw more than 100 STI-patients also saw more than 100 HIV-patients per month.

A specific **STI-consultation** was offered by six sites (43%), five in an urban and one in a provincial location. An **HIV-consultation** was offered by four sites (29%), three of them being in an urban location.

The **number of employees** within the STI and HIV-sector at the sites who answered this question (7) varied between 1 and 5 with a mean of 2 employees.

STI-testing was anonymous at three (21%) sites and free of charge at eleven (79%); **HIV-testing** was offered anonymously at eight (57%) sites and free of charge at twelve (86%).

8.1.2 Attendees of the Slovakian sentinel sites

The median proportion of **men among all attending STI-patients** was 70% with a mean of 62% and a range from 0 to 90% in those who answered this question. Among **HIV-patients** the median was 70% with a mean of 66% and a range from 0 to 100%.

The median proportion of **migrants** was 1% with a range from 0% to 10% for STI-patients and 1% with a range from 0% to 15% among HIV-patients, respectively. The respective means were 2.4% migrants among STI-patients and 3.4% among HIV-patients.

In addition, sites had been asked for an estimation of the **proportion of different groups at risk** among their patients, stratified by gender (see Table 22).

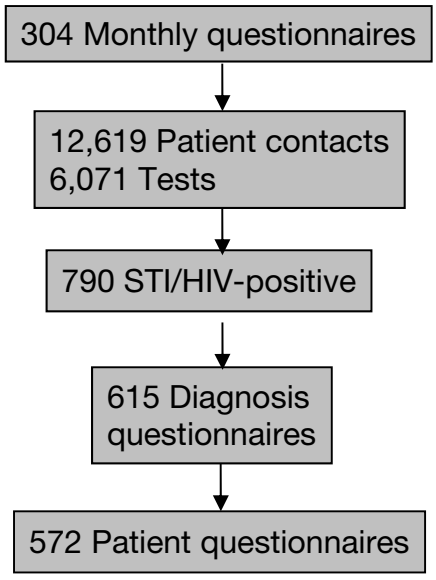
Table 22: Median of proportions of different risk groups among patients in Slovakia (multiple answers possible)

		Median	Range
Women	FSW	2%	0-20%
	i.v. drug user (IDU)	2%	0-70%
	Heterosexual	62.5%	0-100%
Men	MSM	10%	0-90%
	i.v. drug user (IDU)	1%	0-20%
	Heterosexual	70%	0-98%

8.1.3 Diagnostic methods used in Slovakian sentinel sites

In Slovakia, 4 institutions completed the diagnostic questionnaire. No institution said that they received samples from other institutions apart from their own institution. No institution said that they tested any samples within their institution/hospital; all referred their samples to private labs. Therefore no institution participated in an external quality assurance scheme. A comparison of the diagnostic tests used for each STI and strategies, comparing the 4 countries, is shown in 11.3.

8.2 Response rate in Slovakia



Physicians from participating institutions sent a diagnosis questionnaire in 78% (615/790) of patients with a positive diagnosis (see Figure 24). Patients completed the patient's questionnaire in 93% (572/615).

Figure 24: Flow chart of questionnaires and number of positive tests in Slovakia

8.2.1 Response rate over time

Over the years, the rate of patients with an STI who filled in a patient questionnaire which could be linked to a diagnosis questionnaire fluctuated in men and women.

Table 23: Number and fraction of patient and corresponding diagnosis questionnaires by gender and year of examination in Slovakia (datasets with missing gender or wrong year of examination excluded)

	2006	2007	2008	2009	2010	2011	2012
Men	104/105	93/93			28/48	64/70	49/49
	99%	100%			58%	91%	100%
Women	54/55	49/49			18/28	48/53	35/35
	100%	100%			64%	91%	100%

8.3 STI Surveillance data Slovakia

In the Slovak Republic, the STI sentinel surveillance was performed in 2006 and 2007 under the Bordernet-project and from 2010 on as part of BORDERNETwork.

8.3.1 Performed tests, positivity rates and reported cases by STI

Since the start of the sentinel surveillance in Slovakia, a total of 6,071 tests have been performed in 12,619 clients. Only in Slovakia, not in all patients tests were performed. In the data from the monthly questionnaires, doctors stated that 3,237 of all clients (25.7%) were men. Most tests were performed for HIV, whereas the highest number of positives was found for syphilis. Syphilis also had the highest positivity rate by far. For each positive test, doctors were supposed to send one diagnosis questionnaire per patient. For gonorrhoea and syphilis, more individual diagnosis sheets were filled out than positives reported on monthly questionnaires. Patient response rate was very high, between 92% and 97% in all STIs, as shown in Table 24.

Table 24: Total number (#) of lab tests, positive tests and positivity rate (in %), number and proportion of reported STI cases and number and proportion of corresponding patient questionnaires by STI, Slovakia

SLOVAKIA	Monthly questionnaire			Diagnosis Questionnaire		Patient Questionnaire	
STI	# lab tests	# positive tests	%	# reported STI-cases	%	# questionnaires	%
Chlamydia	855	84	9.8%	72	85.7%	69	95.8%
Gonorrhoea	582	52	8.9%	77	148.1%	71	92.2%
HIV	3,204	85	2.7%	60	70.6%	58	96.7%
Syphilis	889	377	42.4%	412	109.3%	378	91.7%

8.3.2 STI Trends

In Slovakia, high positivity rates were found for all STIs, but particularly for syphilis at the start of the study. In the 2nd quarter of 2006, the syphilis positivity rate reached 79.4%. Similarly, the HIV-positivity rate was as high as 43.5% in the 4th quarter of 2007. Since the start of the project only few data have been reported from Slovakia, also only starting in the 3rd quarter of 2010 and trend-data have to be interpreted very cautiously, as number of reported tests and positives vary a lot.

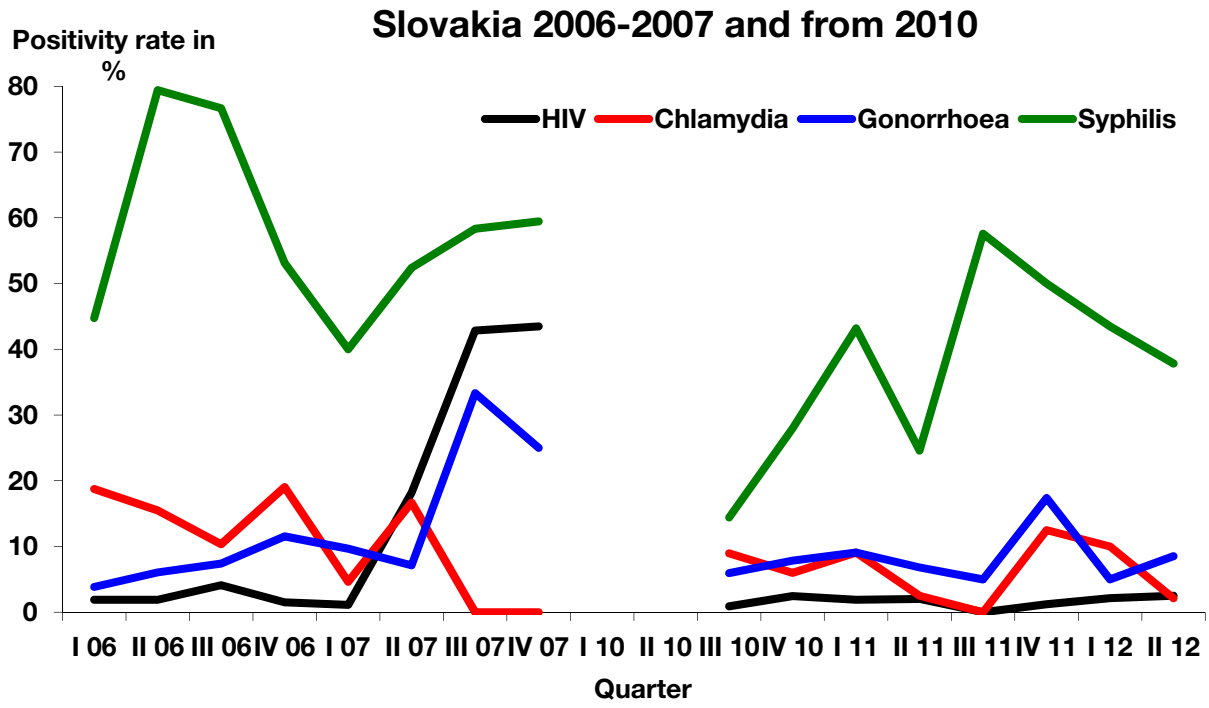


Figure 25: Positivity rate by STI in Slovakia over time

8.3.3 Sociodemographic characteristics of patients with STI

Two thirds of patients with an STI/HIV in Slovakia were men. Male patients had a median age of 34 years whilst median of females was 32 years. The proportion of migrants was low, 6% in men and 7% in women. 21% of females were sex workers. Intravenous drug use was 13% among women with an STI. A previous history of STI was more common in men (17%) than in women (8%), as shown in Table 25.

Table 25: Demographics of patients with an STI/HIV in Slovakia (MSM: men who have sex with men; SW: sex worker; i.v.: intravenous)

	Men (n=386)	Women (n=228)
Percentage	63%	37%
Median age (years)	34	32
Migrant*	6%	7%
Roma	-	-
MSM	34%	-
SW	9%	21%
Drug use (i.v.)	3.6%	13%
Drug use (non i.v.)	6.7%	6%
History of STI	17%	8%

Data from diagnosis and patient questionnaires. 1 set of questionnaires without indication of gender excluded. *3 men and 2 women with missing country of origin excluded

The majority of patients originated from Slovakia. Other nationalities were less frequently reported; among males mainly other Central European countries and Eastern European for females (see Figure 26).

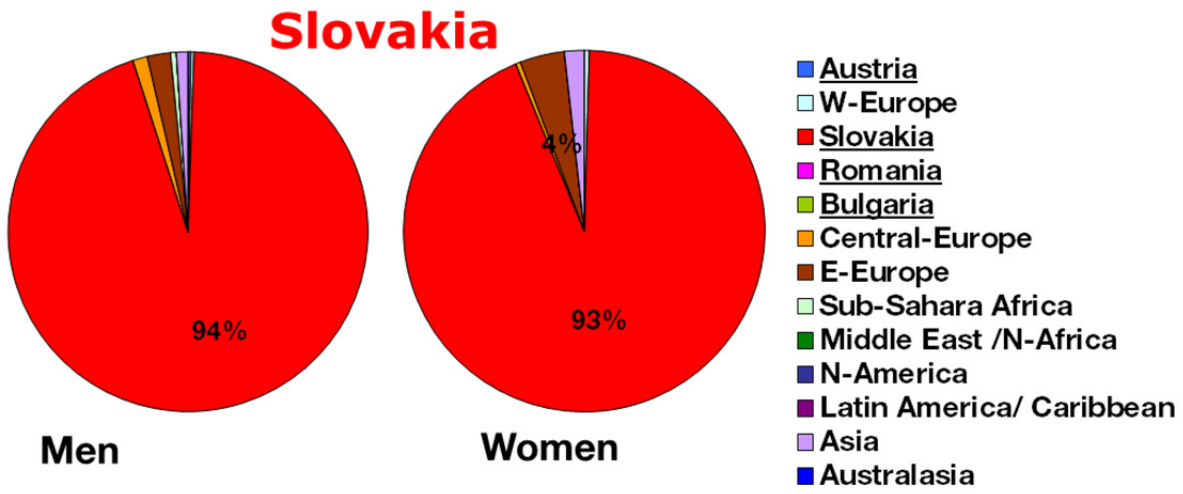


Figure 26: Origin of men (n=383) and women (n=226) with STI in Slovakia stratified by gender; 3 men and 2 women with missing country of origin excluded

8.3.4 Epidemiology of STIs

More male than female STI patients were reported. The most commonly diagnosed STI was syphilis with over 50% of male patients. The other STI were diagnosed less frequently. Male gender was more common among all other STI and HIV patients compared to the syphilis distribution (see Figure 27).

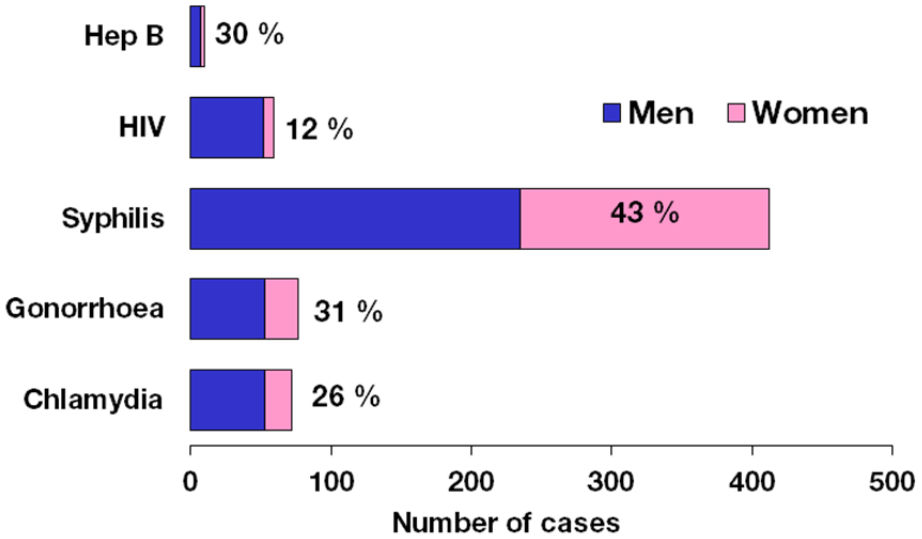


Figure 27: Number and gender distribution of STI/HIV among patients at Slovakian sentinel sites

Median age was highest among male chlamydia patients (36 years) and female syphilis patients (32 years) and lowest for gonorrhoea in both genders (30 years in males and 25 in females), as shown in Table 26. Eleven percent of women with chlamydia were migrants, as well as 29% of those with HIV. Among all men with new HIV or syphilis diagnosis, 77% and 34% were MSM, respectively. Among all women with chlamydia, 26% were FSW, comparable to 29% of those with HIV.

Table 26: Median age and proportion of migrants, MSM and SW among patients in Slovakia by STI, stratified by gender

SK	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=53)	Women (n=19)	Men (n=53)	Women (n=24)	Men (n=235)	Women (n=177)	Men (n=52)	Women (n=7)
Median age (years)	36	31	30	25	34	32	31	26
Migrant*	6%	11%	2%	8%	7%	6%	0%	29%
MSM	17%	-	21%	-	34%	-	77%	-
SW	11%	26%	13%	17%	9%	20%	6%	29%

*Men and women with missing country of origin excluded

Co-infection of more than one STI and/or HIV was rarely diagnosed apart from HIV and syphilis in men (see Table 27). Overall, numbers were too small for detailed analyses and conclusions. Numbers of women with HIV were too small to draw any conclusions.

Table 27: Co-infections of chlamydia, gonorrhoea, syphilis and HIV by gender in Slovakia

SK	Chlamydia		Gonorrhoea		Syphilis		HIV	
	Men (n=53)	Women (n=19)	Men (n=53)	Women (n=24)	Men (n=235)	Women (n=177)	Men (n=52)	Women (n=7)
Chlamydia	--	--	1 1.9%	1 4.2%	2 0.9%	1 0.6%	1 1.9%	1 14.3%
Gonorrhoea	1 1.9%	1 5.3%	--	--	2 0.9%	2 1.1%	2 3.8%	1 14.3%
Syphilis	2 3.8%	1 5.3%	2 3.8%	2 8.3%	--	--	9 17.3%	1 14.3%
HIV	1 1.9%	1 5.3%	2 3.8%	1 4.2%	9 3.8%	1 0.6%	--	--

1 set of questionnaires without indication of gender excluded

Another question concerned the history of a previous STI or diagnosis of HIV in regards of the current disease (see

Table 28). Eleven of men with gonorrhoea reported this infection already in the past; 17% of men and 21% of women with chlamydia reported syphilis in their past.

Table 28: History of STI or HIV by current STI/HIV in Slovakia

SK	Current infection							
	Chlamydia		Gonorrhoea		Syphilis		HIV	
History of:	Men (n=53)	Women (n=19)	Men (n=53)	Women (n=24)	Men (n=235)	Women (n=177)	Men (n=52)	Women (n=7)
Chlamydia	6 11.3%	0 0.0%	1 1.9%	1 4.2%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Gonorrhoea	5 9.4%	3 15.8%	6 11.3%	2 8.3%	3 1.3%	0 0.0%	1 1.9%	0 0.0%
Syphilis	9 170%	4 21.1%	2 3.8%	0 0.0%	11 4.7%	8 4.5%	7 13.5%	0 0.0%
HIV	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 1.3%	0 0.0%	--	--

8.3.5 Groups at risk and risky behaviour

The patient's questionnaire contains an item asking for the most likely source of the current infection. Figure 28 shows the results stratified by group at risk. MSM assumed most often a casual partner as source of their infection as did non-MSM. FSW suspected a casual partner or a client having been the source of their infection, whereas non-FSW suspected mostly their regular partner.

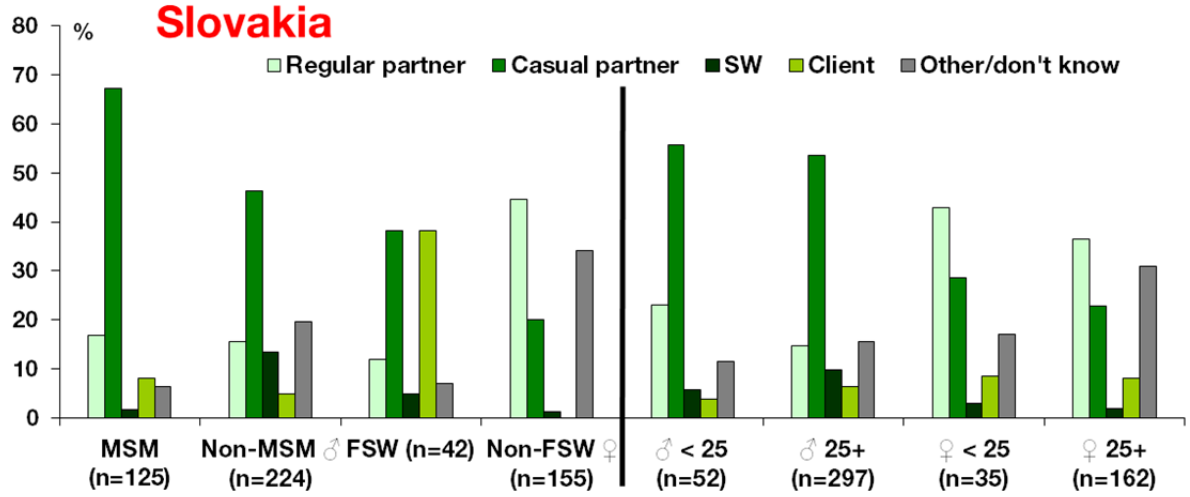


Figure 28: Source of infection as stated by patients in Slovakia, by risk, age group and gender

The number of sex partners (see Figure 35 and Figure 36) was analysed according to gender and sex work- and MSM-status. MSM (n=105) in Slovakia had a median of 2 and a mean of 4 sex-partners within the last 6 months while men, not engaging in sex with other men (n= 173) had a median of 1 and mean of 2.2 partners within the last 6 months. Among women who answered this question, FSW (n=33) had a median of 1.5 and a mean of 6.4 sex-partners in this period, whilst women not engaging in sex work (n=129) had a median of 1 and a mean of 1.2 partners within the last 6 months.

We compared the use of condoms within the last 6 months with different partners among males and females by MSM and female sex worker-status. A high proportion of men reported never using condoms with either partner overall. Although numbers were small and have to be interpreted cautiously, 57% of MSM and 66% of non-MSM men reported never having used condoms with a sex worker or client within the last 6 months.

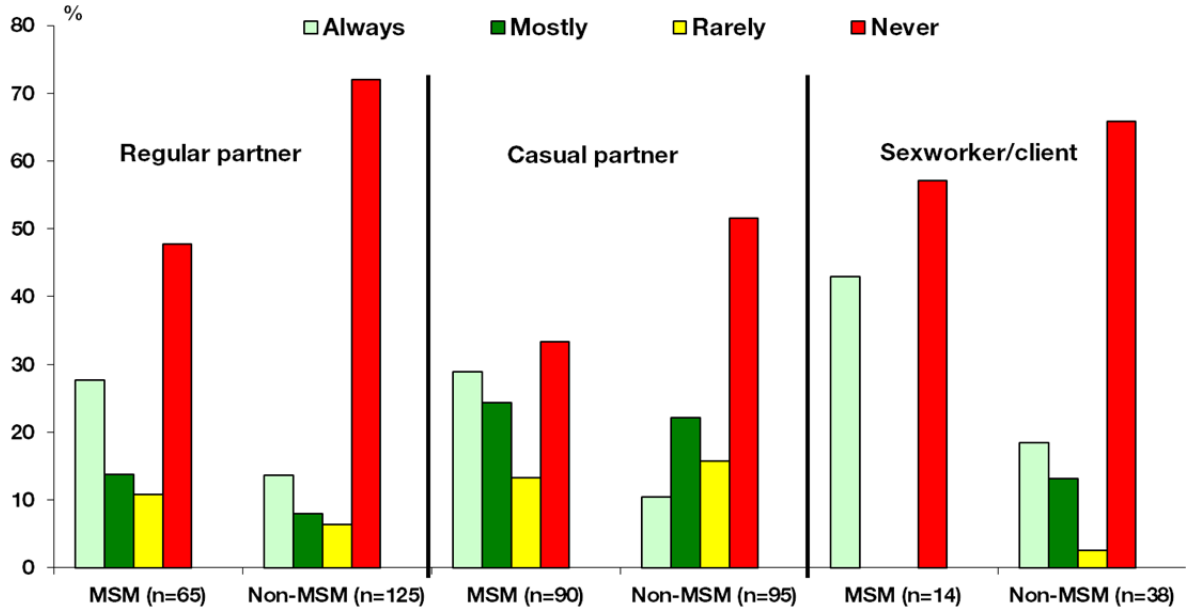


Figure 29: Condom use with regular and casual partner and sex workers/clients among men attending Slovakian sites, by MSM-status; Men with no answer, „don't know" or „did not have sex with this partner" excluded

The majority of women in Slovakia who answered this question, did not use condoms with their regular partner. Also, 46% of non-SW women reported never having used condoms with a casual partner within the last 6 months. 31% of FSW said that they never used condoms with clients in the last 6 months, as shown in Figure 30.

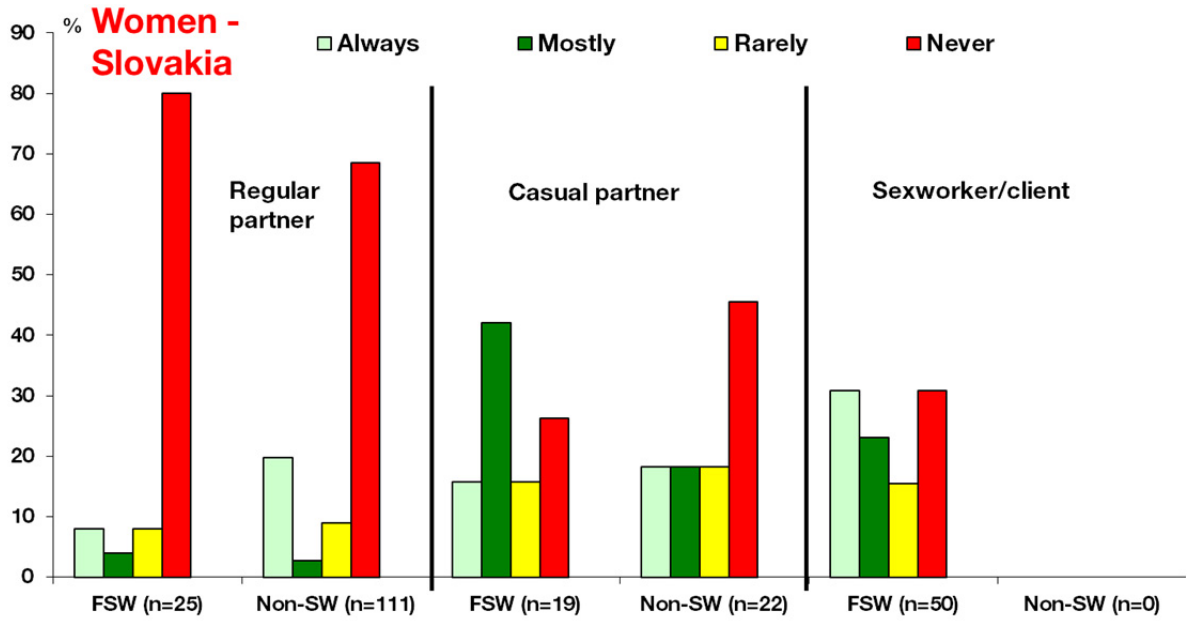


Figure 30: Condom use with regular and casual partner and sex workers/clients among women attending Slovakian sites, by sex work-status; Women with no answer, „don't know" or „did not have sex with this partner" excluded

8.4 Limitations and conclusions on the data from Slovakia

Numbers of received questionnaires from Slovakia were small and hence statistical analyses, particularly from subgroups were difficult to interpret. There were major difficulties at the start of BORDERNETwork, due to logistic reasons with the contract and therefore, the first questionnaires were only sent in the third quarter of 2010.
Like in Austria, there was a disruption in the project, and therefore institutions had to be recruited again. For future projects, continuous data collection should be preferred, as re-involvement in the project was found to be hard in some countries.
Within the cross-border meeting with Slovakian and Austrian participants it became apparent that migration of sex workers across the border is assumed to play an important role. Also, it is very likely that clients of female sex workers consume their services in Slovakia, but might attend Austrian healthcare facilities in case of symptoms. As reported by our Slovakian partners, migration of sex workers from further east does not play such an important role in Bratislava. This can also be seen in the sentinel data, where at least 90% of men and women were from Slovakia.
Also, Slovakia is the only of our four sentinel surveillance-countries where more clients attended the sites than tests have been performed. So, our recruited sites in Slovakia see patients where no test is performed at all. This could be due to the fact that the majority being dermatology or gynaecology outpatient departments, where people might attend due to other reasons.
Three quarter of all cases of chlamydia were found in men, posing a similar situation as in Bulgaria and Romania. However, in Slovakia, doctors answered in the diagnostic survey that good diagnostic tests are available and covered for by the health insurance and that testing of asymptomatic persons is also possible. Interpretation of data in that context is difficult and should be discussed with clinicians.

9. Comparison of the results of the four countries

This chapter comprises the results previously reported from all four countries for better cross-border comparison.

9.1 Data collection and response rates

Most patients were seen in Austria and most tests performed, followed by Bulgaria. Similarly, most positive STI-diagnoses were found in Austria, followed by Bulgaria. Patient response rate varied significantly between the countries, as shown in Figure 31.

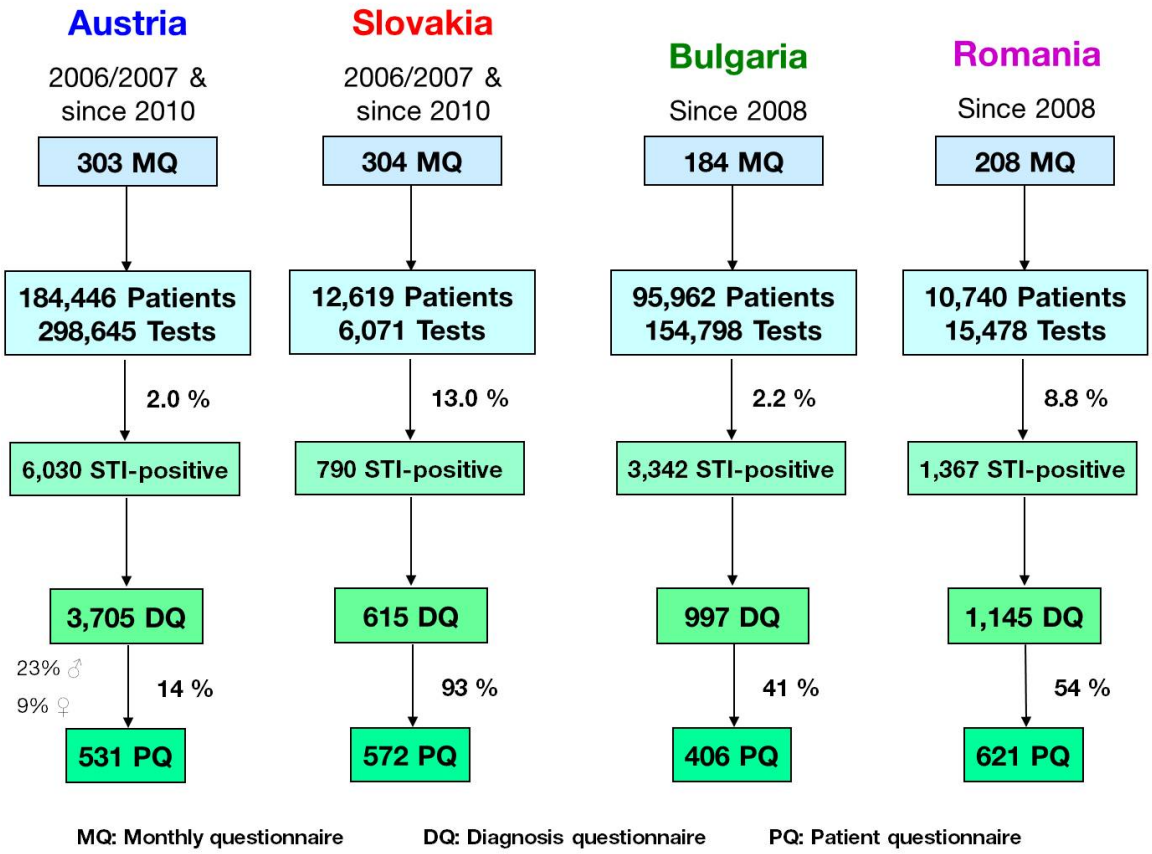


Figure 31: Comparison of data collection and response rate between the 4 countries

9.2 STI Surveillance data

9.2.1 Performed tests, positivity rates and reported cases by STI

Out of all tests performed for STIs, syphilis was by far the most frequently tested STI, mainly due to the very high numbers of tests in Bulgaria. For all other tests, Austria had the highest numbers. Similarly, the highest numbers of positive syphilis tests was found in Bulgaria, but followed by Romania. Out of all positive tests, Austria had the highest number of positives, namely for chlamydia. The highest positivity rate was found for syphilis in Slovakia, followed by chlamydia in Romania.

	Country	Number of tests	%	Number of positive tests	%	Positivity rate in %
HIV						
	AT	66,452	68	241	51	0.36
	BG	24,010	25	78	16	0.32
	RO	3,629	4	72	15	1.98
	SK	3,204	3	85	18	2.65
	Total	**97,295**	**100**	**476**	**100**	**0.49**
Chlamydia						
	AT	88,629	90	3,546	79	4.00
	BG	7,803	8	706	16	9.05
	RO	768	1	142	3	18.49
	SK	855	1	84	2	9.82
	Total	**98,055**	**100**	**4,478**	**100**	**4.57**
Gonorrhoea						
	AT	97,486	87	1,668	71	1.71
	BG	12,804	11	507	22	3.96
	RO	1,684	1	130	6	7.72
	SK	582	1	52	2	8.93
	Total	**112,556**	**100**	**2,357**	**100**	**2.09**
Syphilis						
	AT	46,012	29	575	15	1.25
	BG	105,453	66	1,855	49	1.76
	RO	7,537	5	972	26	12.90
	SK	889	1	377	10	42.41
	Total	**159,891**	**100**	**3,779**	**100**	**2.36**

Figure 32: Number of (positive) tests and positivity rate by STI and country

9.2.2 Sociodemographic characteristics of patients with STI

Comparing the demographics of STI-patients between the four countries, 2/3 were male in Slovakia, Bulgaria and Romania. Only in Austria, the gender distribution was the opposite way. Median age was similar between the four countries, between 28 and 32 years overall, apart from women in Austria. Migration of patients with an STI only played a role in Austria. The proportion of MSM was highest in Slovakia, followed by Austria. Sex work played a significant role in women in Austria, and to a smaller degree in Slovakia, whereas almost no sex workers were found in Bulgaria or Romania. A history of STIs was very common in Austrian and, to a smaller degree, Slovakian women with an STI and men in all four countries.

Table 29: Demographics of STI-patients by gender and country

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=1,341)	Women (n=2,345)	Men (n=386)	Women (n=228)	Men (n=661)	Women (n=327)	Men (n=699)	Women (n=446)
Percentage	36%	64%	63%	37%	67%	33%	61%	39%
Median age (years)	30	25	34	32	31	28	30	29
Migrant*	34%	79%	6%	7%	1.3%	1.6%	0.6%	0.2%
Roma	-	-	-	-	4%	3%	8%	9%
MSM	23%	--	34%	--	17%	- -	4%	- -
SW	4%	75%	9%	21%	2%	5%	2%	8%
Drug use (i.v.)	0.4%	1.7%	3.6%	13%	3.3%	1.5%	0.6%	3.6%
Drug use (non i.v.)	1.1%	0.2%	6.7%	6%	5%	5%	0.9%	0.2%
History of STI	19%	34%	17%	8%	25%	19%	18%	25%

*Men and women with missing country of origin excluded

9.2.3 Epidemiology of STIs

Chlamydia in Austria was the most frequently reported STI, for which an individual diagnosis questionnaire was filled in. Almost ¾ of patients with chlamydia were female. In Bulgaria, chlamydia-diagnoses were frequent too, however, we do not know what lab tests were exactly used for these diagnoses. Syphilis was the most frequent STI in all other countries, with a comparable gender-distribution in Bulgaria, Slovakia and Romania. For chlamydia, only very few female cases were detected in those countries.

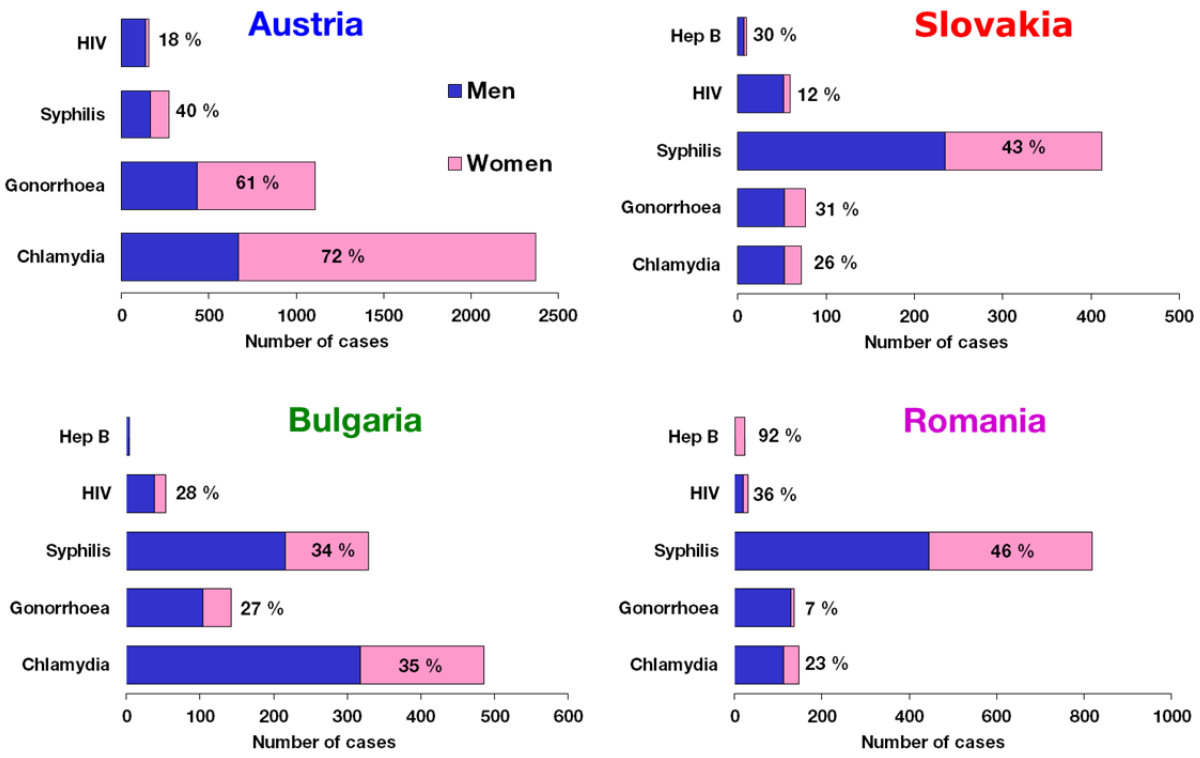


Figure 33: Sex-distribution of STIs by gender and country

Female patients with chlamydia in Austria were predominantly migrants and sex worker, to a smaller degree this was also found in Slovakia. In male patients with chlamydia in Austria, migration also played a role, whereas MSM played a role in Slovakia. A similar picture was found for gonorrhoea in Austria. Similarly in Slovakia, and to a smaller extend in Bulgaria gonorrhoea was diagnosed among MSM. Comparable to the other STIs, patients with syphilis were frequently migrants in Austria. Migration did not play in syphilis-patients in the other 3 countries. Male Austrian syphilis-patients were frequently MSM . As seen with the other STIs, sex work was common in Austrian women with syphilis, but here also in men with syphilis. Migration did not play such an important role in female HIV-patients, as for the other STIs, however, it was much higher in Slovakian female patients. HIV was more frequently diagnosed in MSM in all four countries, to different extents, but all above the level of other STIs. Sex work was less important in female HIV-patients in Austria, but much more important in females in Slovakia and males and females in Romania.

Table 30: Characteristics of patients with different STIs by gender and country

Chlamydia

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=670)	Women (n=1,699)	Men (n=53)	Women (n=19)	Men (n=318)	Women (n=168)	Men (n=113)	Women (n=34)
Median age (years)	29	24	36	31	30	28	25	26
Migrant*	28%	74%	6%	11%	1%	1%	0%	0%
MSM	6%	-	17%	-	10%	-	2%	-
SW	2%	71%	11%	26%	2%	2%	2%	0%

Gonorrhoea

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=434)	Women (n=674)	Men (n=53)	Women (n=24)	Men (n=104)	Women (n=38)	Men (n=128)	Women (n=9)
Median age (years)	30	24	30	25	29	26,5	26	24
Migrant*	45%	88%	2%	8%	3%	0%	1%	0%
MSM	19%	-	21%	-	13%	-	4%	-
SW	4%	88%	13%	17%	2%	0%	2%	0%

Syphilis

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=165)	Women (n=108)	Men (n=235)	Women (n=177)	Men (n=216)	Women (n=113)	Men (n=445)	Women (n=373)
Median age (years)	35	28	34	32	33	29	33	29
Migrant*	37%	86%	7%	6%	1%	0%	1%	0%
MSM	61%	-	34%	-	27%	-	3%	-
SW	13%	78%	9%	20%	3%	10%	2%	5%

HIV

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=136)	Women (n=30)	Men (n=52)	Women (n=7)	Men (n=38)	Women (n=15)	Men (n=20)	Women (n=11)
Median age (years)	32	29	31	26	29	28,5	30	25
Migrant*	36%	66%	0%	29%	0%	7%	0%	0%
MSM	71%		77%	-	37%	-	40%	-
SW	7%	40%	6%	29%	5%	7%	20%	27%

Co-infection of chlamydia and gonorrhoea played a role in Austria and Bulgaria in both, men and women. In Austria, women with syphilis fairly often also had infections with chlamydia and men with syphilis had an HIV-coinfection. All other numbers were too small to draw serious conclusions.

Table 31: Co-infections of chlamydia, gonorrhoea, syphilis and HIV by gender and country

Chlamydia

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=670)	Women (n=1,699)	Men (n=53)	Women (n=19)	Men (n=318)	Women (n=168)	Men (n=113)	Women (n=34)
Gonorrhoea	59	149	1	1	19	8	6	0
	8,8%	8,8%	1,9%	5,3%	6,0%	4,8%	5,3%	0,0%
Syphilis	4	10	2	1	3	0	1	1
	0,6%	0,6%	3,8%	5,3%	0,9%	0,0%	0,9%	2,9%
HIV	1	1	1	1	0	0	0	0
	0,1%	0,1%	1,9%	5,3%	0,0%	0,0%	0,0%	0,0%

Gonorrhoea

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=434)	Women (n=674)	Men (n=53)	Women (n=24)	Men (n=104)	Women (n=38)	Men (n=128)	Women (n=9)
Chlamydia	59	149	1	1	19	8	6	0
	13,6%	22,1%	1,9%	4,2%	18,3%	21,1%	4,7%	0,0%
Syphilis	2	8	2	2	3	1	1	0
	0,5%	1,2%	3,8%	8,3%	2,9%	2,6%	0,8%	0,0%
HIV	1	2	2	1	0	0	0	0
	0,2%	0,3%	3,8%	4,2%	0,0%	0,0%	0,0%	0,0%

Syphilis

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=165)	Women (n=108)	Men (n=235)	Women (n=177)	Men (n=216)	Women (n=113)	Men (n=445)	Women (n=373)
Chlamydia	4	10	2	1	3	0	1	1
	2,4%	9,3%	0,9%	0,6%	1,4%	0,0%	0,2%	0,3%
Gonorrhoea	2	8	2	2	3	1	1	0
	1,2%	7,4%	0,9%	1,1%	1,4%	0,9%	0,2%	0,0%
HIV	8	1	9	1	1	0	0	1
	4,8%	0,9%	3,8%	0,6%	0,5%	0,0%	0,0%	0,3%

HIV

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=136)	Women (n=30)	Men (n=52)	Women (n=7)	Men (n=38)	Women (n=15)	Men (n=20)	Women (n=11)
Chlamydia	1	1	1	1	0	0	0	0
	0,7%	3,3%	1,9%	14,3%	0,0%	0,0%	0,0%	0,0%
Gonorrhoea	1	2	2	1	0	0	0	0
	0,7%	6,7%	3,8%	14,3%	0,0%	0,0%	0,0%	0,0%
Syphilis	8	1	9	1	1	0	0	1
	5,9%	3,3%	17,3%	14,3%	2,6%	0,0%	0,0%	9,1%

Female chlamydia-patients in Austria, and to a smaller extend in Bulgaria, had a re-infection with chlamydia. A history of gonorrhoea-infection also played a role in chlamydia-patients in Austria, Slovakia and Bulgaria. Chlamydia-patients in Slovakia frequently had syphilis in their history. Female gonorrhoea-patients in Austria frequently had a history of gonorrhoea, or chlamydia in the past. Male gonorrhoea-patients frequently had a history of gonorrhoea in Bulgaria, Slovakia and Austria. syphilis-reinfection was fairly common in Austrian men and in men and women in Romania. Additionally Romanian syphilis-patients had frequently previous chlamydia-infections.

Table 32: History of STI or HIV by current STI/HIV and gender and country

Chlamydia

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=670)	Women (n=1,699)	Men (n=53)	Women (n=19)	Men (n=318)	Women (n=168)	Men (n=113)	Women (n=34)
Chlamydia	25 3.7%	264 15.5%	6 11.3%	0 0.0%	22 6.9%	17 10.1%	2 1.8%	0 0.0%
Gonorrhoea	46 6.9%	169 9.9%	5 9.4%	3 15.8%	44 13.8%	3 1.8%	3 2.7%	2 5.9%
Syphilis	12 1.8%	64 3.8%	9 17.0%	4 21.1%	3 0.9%	4 2.4%	0 0.0%	2 5.9%
HIV	3 0.4%	5 0.3%	0 0.0%	0 0.0%	1 0.3%	0 0.0%	0 0.0%	0 0.0%

Gonorrhoea

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=434)	Women (n=674)	Men (n=53)	Women (n=24)	Men (n=104)	Women (n=38)	Men (n=128)	Women (n=9)
Chlamydia	11 2.5%	147 21.8%	1 1.9%	1 4.2%	6 5.8%	0 0.0%	1 0.8%	0 0.0%
Gonorrhoea	51 11.8%	183 27.2%	6 11.3%	2 8.3%	17 16.3%	2 5.3%	2 1.6%	0 0.0%
Syphilis	22 5.1%	52 7.7%	2 3.8%	0 0.0%	2 1.9%	0 0.0%	3 2.3%	0 0.0%
HIV	15 3.5%	3 0.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%

Syphilis

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=165)	Women (n=108)	Men (n=235)	Women (n=177)	Men (n=216)	Women (n=113)	Men (n=445)	Women (n=373)
Chlamydia	3 1.8%	8 7.4%	0 0.0%	0 0.0%	2 0.9%	0 0.0%	46 10.3%	39 10.5%
Gonorrhoea	11 6.7%	8 7.4%	3 1.3%	0 0.0%	16 7.4%	3 2.7%	10 2.2%	7 1.9%
Syphilis	26 15.8%	9 8.3%	11 4.7%	8 4.5%	9 4.2%	10 8.8%	52 11.7%	48 12.9%
HIV	20 12.1%	0 0.0%	3 1.3%	0 0.0%	1 0.5%	0 0.0%	1 0.2%	1 0.3%

HIV

	Austria		Slovakia		Bulgaria		Romania	
	Men (n=136)	Women (n=30)	Men (n=52)	Women (n=7)	Men (n=38)	Women (n=15)	Men (n=20)	Women (n=11)
Chlamydia	3 2.2%	3 10.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Gonorrhoea	5 3.7%	3 10.0%	1 1.9%	0 0.0%	1 2.6%	0 0.0%	0 0.0%	0 0.0%
Syphilis	11 8.1%	3 10.0%	7 13.5%	0 0.0%	1 2.6%	0 0.0%	1 5.0%	0 0.0%

9.2.4 Groups at risk and risky behaviour

Casual partners were the main suspected source of infection in MSM in all four countries. Casual partners or clients were the main sources of infection of FSW in Slovakia and Bulgaria, as shown in Figure 34.

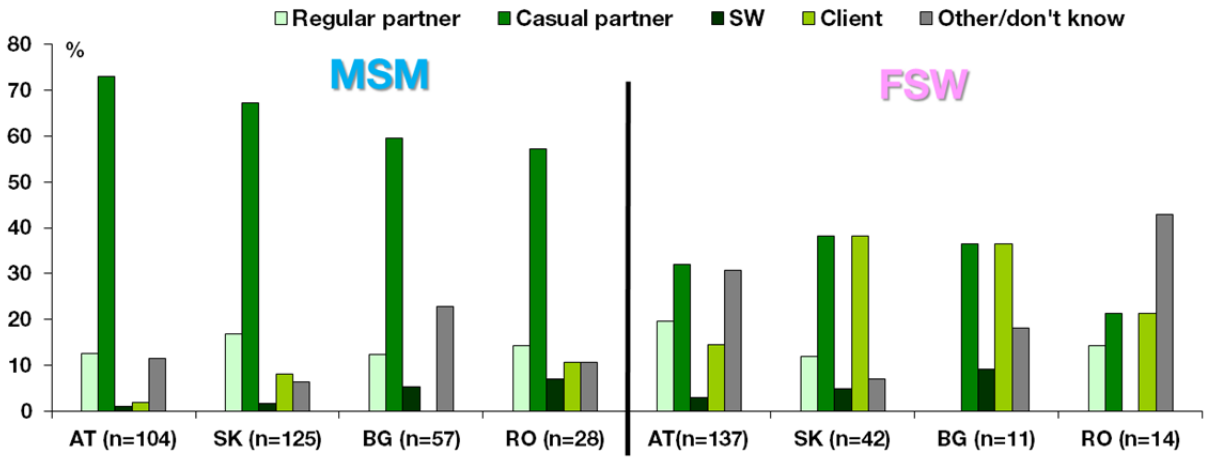


Figure 34: Comparison of source of infection stated by MSM and FSW in the four countries

Mean numbers of partners were similar in MSM in Slovakia, Bulgaria and Romania, however were higher in Austrian MSM. Similarly Austrian FSW had much higher mean numbers of partners in the last 6 months, compared to the other 3 countries. Median number of partners in FSW was however highest in Bulgaria.

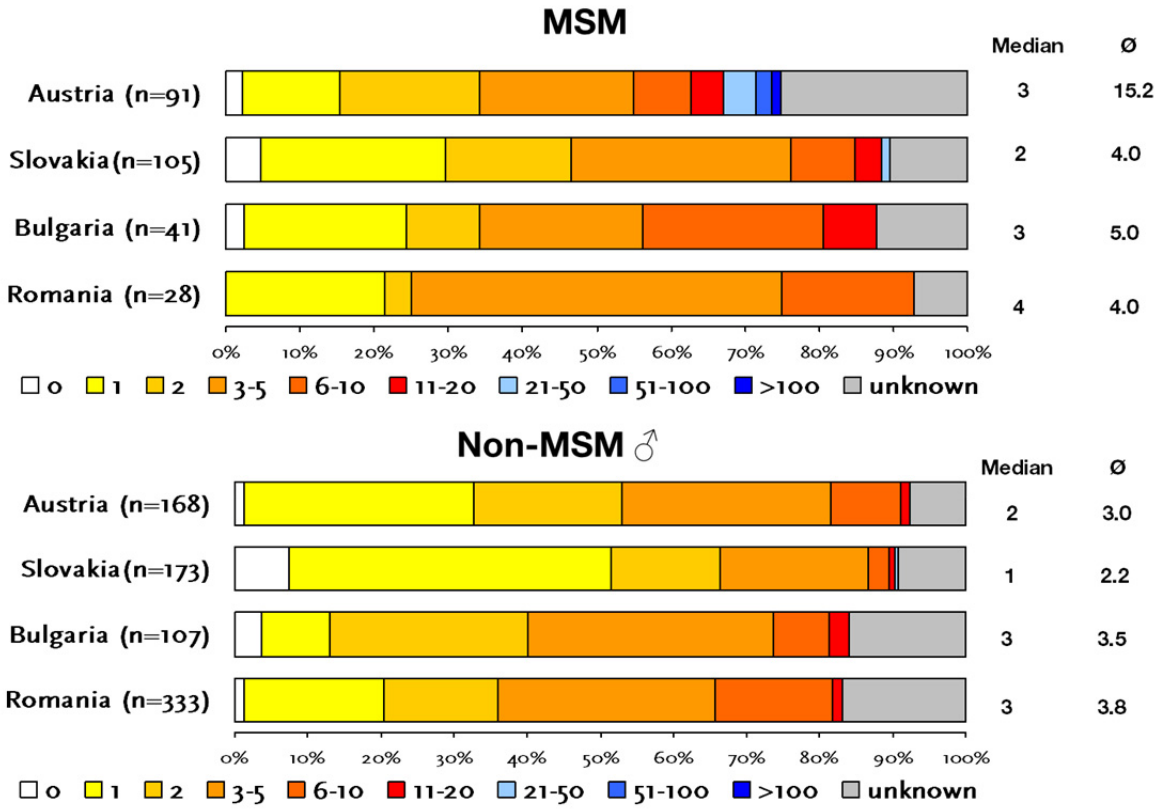


Figure 35: Comparison of number of partners in men by country and MSM-status

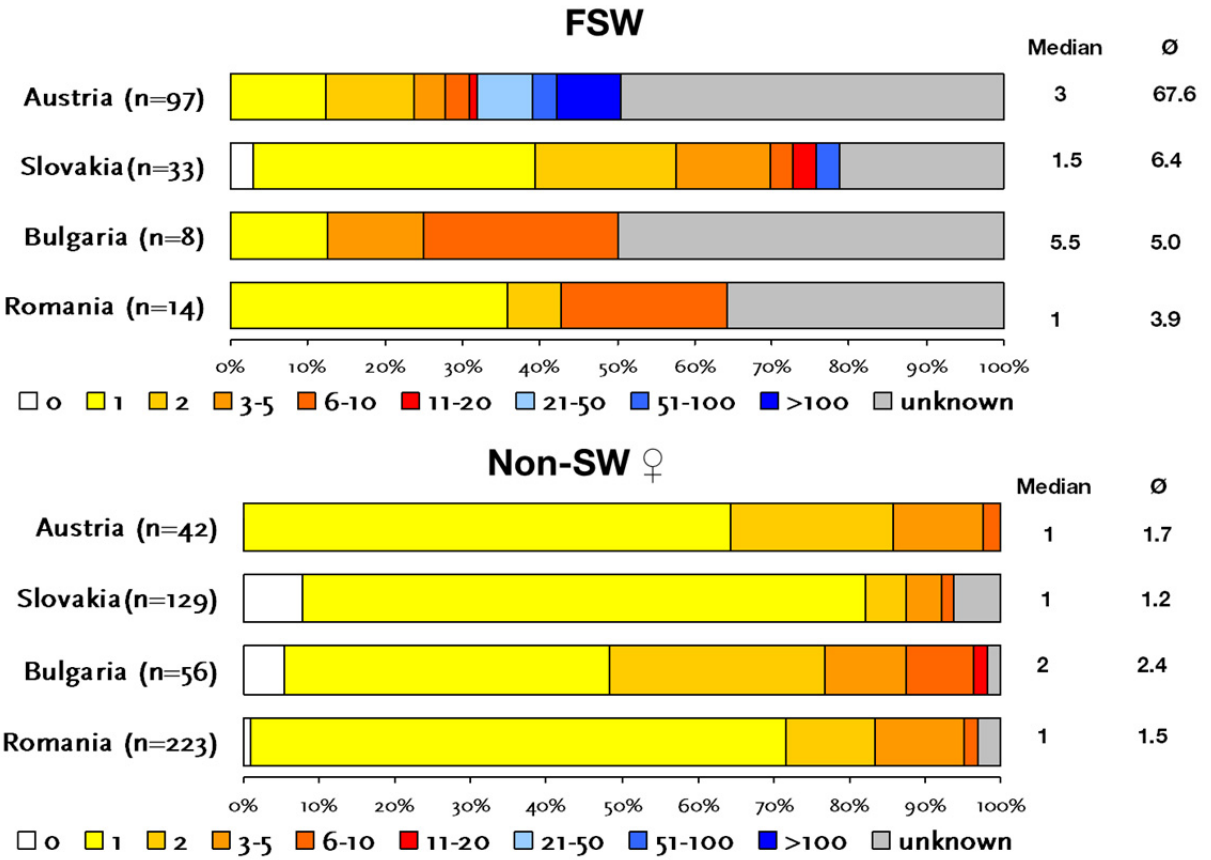


Figure 36: Comparison of number of partners in women by country and sex work-status

MSM reported never using condoms with their regular partner in the majority of cases in all four countries. However, condom use of MSM with casual partners differed between the countries and was much lower in Bulgaria and Romania and, to a smaller extent, also in Slovakia.

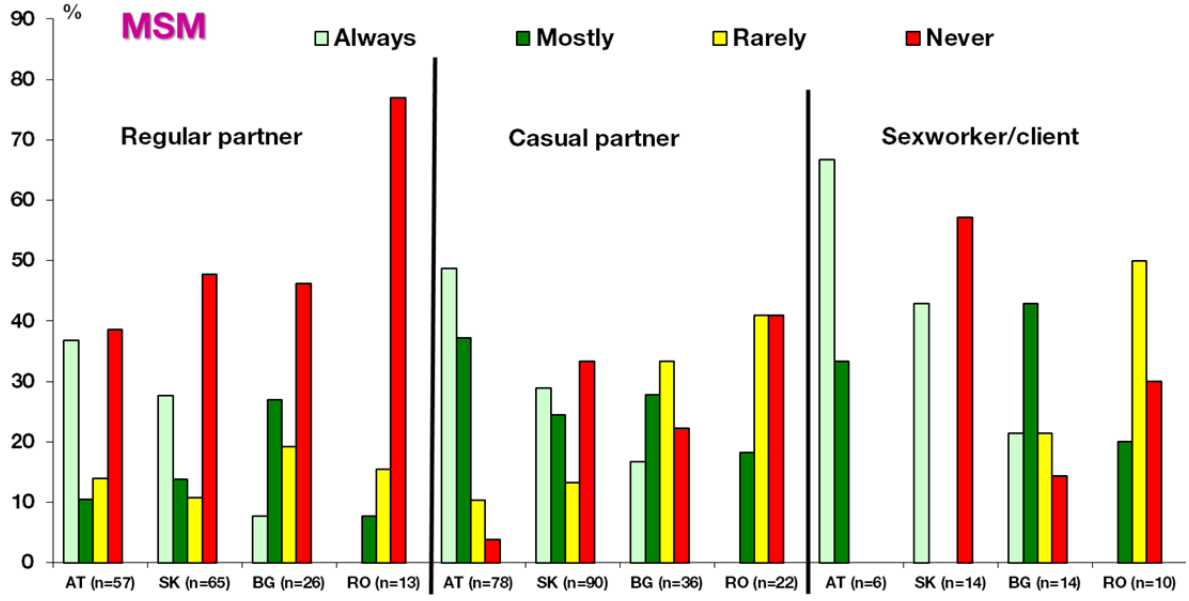


Figure 37: Comparison of condom use with regular and casual partner and sex workers/clients among MSM attending sites in the 4 countries; MSM with no answer, „don't know" or „did not have sex with this partner" excluded

In men, who did not engage in sex with men, the situation was similar, with even lower numbers of condom use with regular partners. However, in Austria, condom use with casual partners was lower. Slovakian men frequently said that they never use condoms with sex workers.

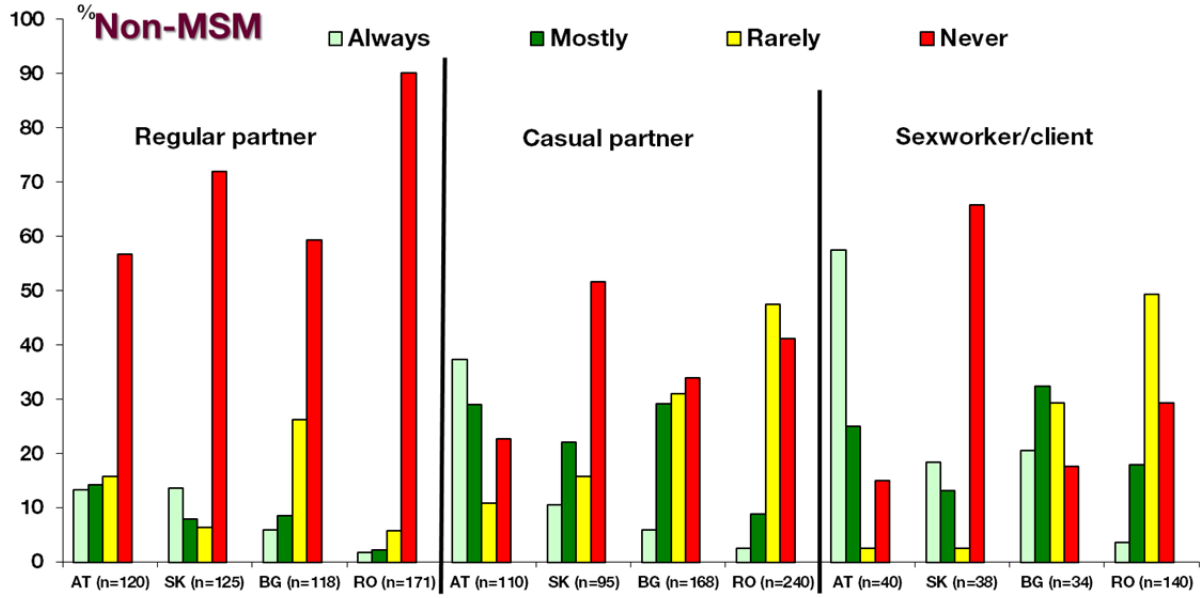


Figure 38: Comparison of condom use with regular and casual partner and sex workers/clients among men who do not engage in sex with other men attending sites in the 4 countries; Men with no answer, „don't know" or „did not have sex with this partner" excluded

In Romania the majority of FSW said that they never used condoms with casual partners, and even more never used condoms with clients. Limiting though are the very small numbers.

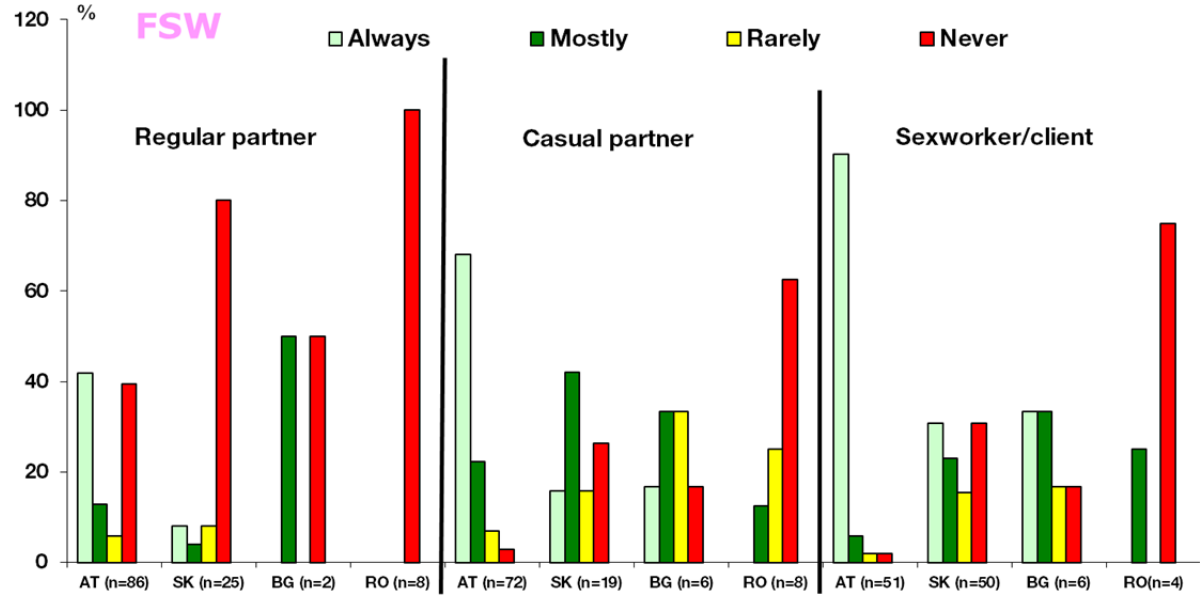


Figure 39: Comparison of condom use with regular and casual partner and sex workers/clients among female sex workers attending sites in the 4 countries; Women with no answer, „don't know" or „did not have sex with this partner" excluded

Women who did not engage in sex work, reported never using condoms with their regular partner in the majority of cases in all 4 countries. However, they frequently

reported never using condoms with casual partners either in Slovakia, Bulgaria and Romania.

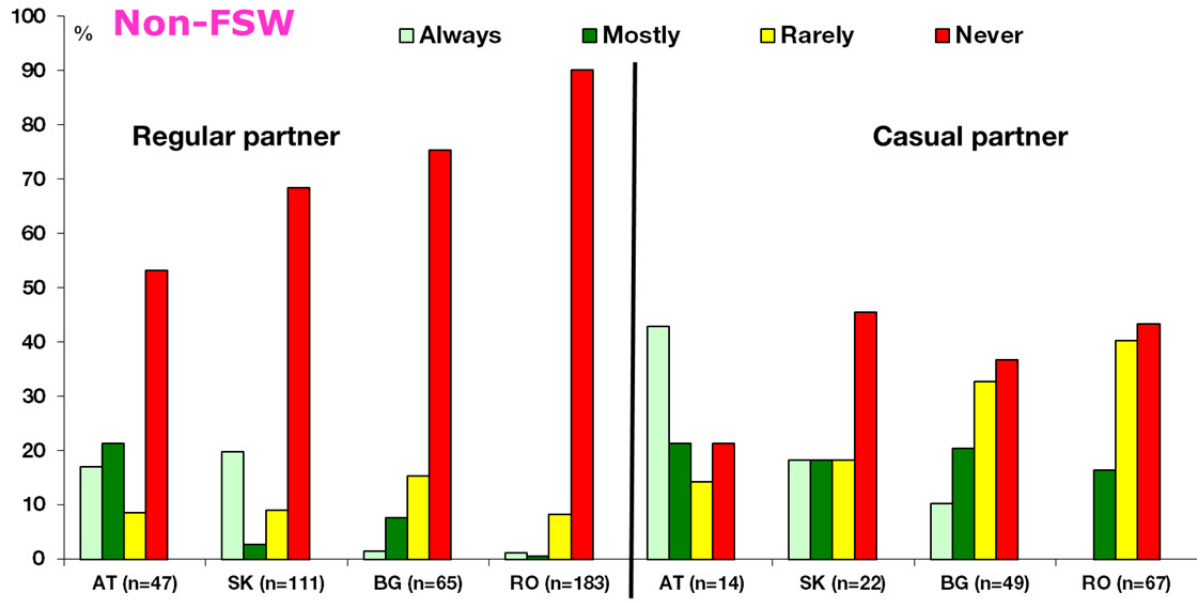


Figure 40: Comparison of condom use with regular and casual partner and sex workers/clients among women who do not engage in sex work attending sites in the 4 countries; Women with no answer, „don‘t know“ or „did not have sex with this partner“ excluded

10. General discussion of the results and recommendations

A sentinel survey is not intended to provide representative population data. Therefore, a comparison of results on national level was not a goal of this project. However, the sentinel surveillance gathers useful information on groups most at risk and by using the same instrument in all four countries; our aim was to make it comparable. On the other hand, access to points of health care of some population groups, such as ethnic minorities is limited in some countries. Additionally, some risk groups are potentially difficult to reach, e.g. SW and IDU or MSM; mainly due to fear of criminalisation or stigmatization.

Particularly for sex workers, we found different legal issues in the four countries, for example sex work being criminalized in Romania [1], compared to compulsory testing for registered sex workers in Austria [2]. Open disclosure of sexual orientation might pose a problem in some cultures. Therefore we imagine that the proportion of MSM and FSW among STI/HIV-patients is higher than reported. We therefore suspect that some data of our “Non-FSW” and “Non-MSM” account for FSW and MSM instead and the line can therefore not be drawn strictly in countries where open-minded handling of sexuality or behaviour is limited.

Migration played a very important role among STI-patients in Austria, as previously reported [2], whereas it did not in the other 3 countries. A similar phenomenon was found within the German STD-sentinel performed between 2003 and 2009 [3-5]. Further studies should be initiated about the mobility of these migrants, i.e. how long they have been resident in the respective countries in order to estimate where the infection was most likely acquired. Similarly, it should focus on the tendency of using healthcare-systems in different countries than the home country due to anonymity or economic reasons. Particularly between Bratislava and Vienna such a

tendency was observed. However, we do not know if these Slovakian patients were resident in Austria for a longer period of time and where they might have contracted their STI. To improve health services, cultural mediators and translators should be considered in institutions with high proportions of migrants. On a long term, healthcare systems should be improved in the home countries, free and anonymous testing ensured to allow timely treatment of STIs.

Some of the participating countries experienced decades of centrally planned, so called “Semashko”, health systems. These inheritances might have caused initial problems with data gathering, acceptance of NGOs and collection as well as social attitude and stigma towards the included STIs.

Different healthcare structures, as well as varying sentinel sites limit our comparison of results for all four countries as a whole. For example, Austrian data are strongly influenced by this one institution, which sent large amounts of data from female sex workers, whereas the other three countries reported only small numbers of SW among all women. Comparing all women in one country to the other countries would bias the interpretation, and thus vulnerable groups were compared between the four countries.

Also, particularly in Romania and Bulgaria, (compulsory) syphilis testing still plays an important role, and has to be regarded as a “historical relic” (Personal communication). In the future, efforts should be made to reconsider this testing strategy, as testing everyone for syphilis is very time-, labour- and cost-intensive, and the people currently tested might not be the ones at high risk. Testing parents before their child can attend kindergarten or bus drivers, etc. does not seem to reach the right targets, and a revision of the current national testing strategy is strongly recommended.

Furthermore, improvement of current diagnostic tests is strongly encouraged and anonymous and free-of cost tests would be desirable for STIs for everyone. Particularly the unavailability or not routine use of NAATs for chlamydia diagnosis should be tackled in the future, as only early diagnostic and treatment can prevent further spread. Evaluated non-approved NAATs might be a much cheaper option for resource-poor settings, as recommended previously [6, 7].

Furthermore, use of culture for gonorrhoea diagnosis is not the routine test in many settings, resulting in very poor knowledge about the resistance situation in the country. As antimicrobial resistance in *Neisseria gonorrhoeae* can become a problem in the future [8], efforts should be made to monitor the situation in the respective country, and at least make culture available and affordable.

Comparing the gender-distribution of STIs in some countries and comparing it to previously described distribution, it appears that diagnostic tests are only performed in symptomatic persons, or in those who can afford (some costly) diagnostic tests. As particularly chlamydia has been described to be asymptomatic in up to 80% of women, it remains unclear if the predominance of male chlamydia-cases is true, or if it may have been biased by the more frequent symptomatic nature of chlamydia-infections in men and hence more frequent testing. Similarly, for symptomatic men, microscopy to detect gonorrhoea has a much higher sensitivity and specificity than in (asymptomatic) women [9], which might have caused the “gender-bias” among gonorrhoea-patients too. Screening recommendations should be contemplated for at-risk populations, and, as mentioned, older recommendations, such as screening of certain groups of the population, reconsidered according to the positivity rates within these groups.

Re-infections were common in all countries, and counselling regarding possible re-infection should be emphasized at each visit.
We found high numbers of syphilis in Bulgaria, Romania and Slovakia among all STI-patients, being possibly true to the more frequent testing strategies, or truly higher prevalences in these countries. However, syphilis might just be overrepresented in comparison to other STIs, as frequently no lab-tests for other STIs are performed and hence remaining unnoticed.
From the experience gained through the on-site visits, accessibility of institutions is important for vulnerable groups and all efforts should be made to reach low-threshold and minimal barriers for attendance in order to reach people who are most at risk for acquiring an STI or HIV. Outreach-work seems to play an important role too and can be used for prevention [10], as well as (minimal) healthcare support on the spot. It can also be seen as an “icebreaker” to minimise barriers for the usage of healthcare structures.
Last but not least, also our methodological problems have to be mentioned when implementing and improving the sentinel surveillance system. As already explained, motivation of participants is sometimes hard, particularly if there is a disruption in the surveillance system, as it was the case in Austria and Slovakia. A lot of effort had to be made in order to re-recruit the previous sentinel sites, as well as convincing possible future participants. Incentives in this process seem to play a minor role. By visiting some of the sentinel sites in our on-site-visits, we had the impression that data collection and quality improved substantially afterwards, as personal feedback and clarification of individual problems seem to be very important. At recruitment, more institutions said that they wanted to participate, however, no data were delivered at any time of the project and hence they were excluded from this report. If a sentinel system was to be established or continued in one of the countries, these institutions could however be reactivated and asked for participation based on the present results.
At the start of the study, we had to update the questionnaires and clarify with participants from the countries which diseases to include. Thereafter, hepatitis B was excluded from the Austrian questionnaires, and HPV and hepatitis C included in some of the other countries and the database had to be updated to allow data entry. Data collection posed a particular problem in Slovakia, as the IDs from the previous project were partly mixed up or new institutions received the IDs from previous participants not allowing us to sum up data initially according to sentinel site. Timeliness of data acquisition through so many partners involved also seemed to be a major problem. During the course of the study, efforts have been made to improve this delay by asking the sentinel sites to frequently deliver all questionnaires and also by asking the NGOs in the country to send it more frequently to SPI. In general, the way of data collection seemed to involve too many institutions to deliver timely results, and data clarification could sometimes only be made half a year after the patients’ attendance. For future projects it is also recommended that data entry, plausibility control and analysis should be made at one centre, as typographical errors are frequent and cannot be solved when analysing the data without original questionnaires. Further, for the future, electronic methods of data collection and reporting should be discussed with potential participants and enhanced subsequently.
With this sentinel surveillance system, we intended to formulate policies and recommendations based on the data acquired. Particularly outstanding is the fact

that biological data can be linked to (sexual) behaviour data. However, for these analysis, a large amount of patients is necessary, particularly when breaking it down to certain groups at risk or age groups, and for some countries, the results have to be interpreted cautiously.
Also, analysing trend seems to be difficult in such a short period of time, as testing frequencies and reported numbers vary substantially when breaking it down to quarters. A longer surveillance period would be preferable and should be pursued.
Further, we tried to put a strong emphasis in delivering the results to a wider audience as well as trying to formulate recommendations together with stakeholders and partners that can be implemented in the respective countries in the future.
In general, the implementation and improvement of an STI-sentinel surveillance system has shown to be feasible at a relatively low cost and it has delivered some important results which are open to be discussed and applied within the countries.

11. Annex

11.1 Annex I: Glossary

Countries: Within this report, sometimes abbreviations are used for the four participating countries:
AT: Austria
BG: Bulgaria
RO: Romania
SK: Slovakia / Slovak Republic

Groups (at risk): Persons belonging to a group of people who are thought to be at risk or more vulnerable to acquiring an STI. For analyses, the following definitions from the data from diagnosis and patient questionnaires were made:
Migrants: either born in or holding citizenship of another country as stated by doctors or patients themselves
Men who have sex with men (MSM): Men who state themselves having had sex during the last 6 months with men or both gender, who thought that the gender of their source of infection was male or male patients where doctors reported that the STI was most likely contracted via same-sex contact
Non-MSM: Men who do not state that they had sexual contacts with men within the last 6 months, mostly thought to be heterosexual, however, as we thought that disclosure of sexual behaviour might not be that open and accepted in all countries, no assumption on "heterosexual" should be made. Non-MSM might also include some MSM who did not confess this openly.
Sex worker (SW): Person who stated him-or herself having received cash, drugs or accommodation in exchange for sex in the last 6 months, stating that they thought they were infected through a client, admitting sexual contacts with clients during the last 6 months or where doctors reported that the STI was most likely contracted via commercial sex work
Female sex worker (FSW): Sex worker, as defined above with female gender
Non-FSW: Women who did not engage in sex work
Intravenous drug users (IDU): Person where the doctor reported intravenous drug use
Roma: Member of the Roma ethnic minority, as stated by doctors or patients themselves (in Romania and Bulgaria only)

History of STI: Infections in medical history as stated by doctors, ever or within the last 12 months

HIV/STI case definitions: obligatory definitions for measurement of infections/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-/STI-consultation: Consultation at the sentinel sites including diagnostics and treatment of HIV / STIs. Counselling could be existing sometimes, but is not obligatory

Positivity rate: Number of positive tests for a specific STI over the number of all performed tests for this STI

Sentinel site: a healthcare institution that is part of the STI sentinel surveillance reporting system

11.2 Annex II: List of sentinel sites who provided data

Participation in the project was completely voluntarily and could be terminated at any stage. Included are all participants from Bordernet and BORDERNETwork who contributed data until 30/06/2012.

ID-Nr.	Name	Address	Branch of Study etc.	Period of activity
		Austria		
500	OÄ Dr. Karoline Kandel	Kundratstraße 3 1100 Wien	SMZ Süd/Kaiser Franz Josef Spital; 4. Med. Abt. (Infektiologie u. Tropenmedizin)	01/2006 - 05/2012
502	Prof. Dr. Geusau	Währinger Gürtel 18-20 1090 Wien	Allgemeines Krankenhaus der Stadt Wien; Univ.Klinik f. Dermatologie; STD-Ambulanz	03/2006 - 06/2006
503	OÄ Dr. Wasilewicz	Juchgasse 25 1030 Wien	KA Rudolfstiftung; Abt. für Allgemeine Dermatologie	01/2006 - 07/2007
504	Prim. Dr. Silvia Mayerhofer, Dr. Eva-Maria Vinzelj-Horvath	Neutorgasse 20 1010 Wien	STD-Ambulatorium der Stadt Wien (MA15)	01/2006 - 06/2012
505	Dr. Susanne Palfi	Franz Jonasplatz 8/2/3 1210 Wien	Pilzambulatorium Floridsdorf	03/2006 - 08/2011
506	Univ. Prof. Dr. Angelika Stary, Dr. Mojgan Taghizadeh-Safa, Dr. Michaela Mück	Schlösselgasse 19 1080 Wien	Pilzambulatorium Schlösselgasse GmbH	08/2006 - 04/2011
507	Univ. Prof. Dr. Angelika Stary, Dr. Claudia Heller-Vitouch	Lainzer Straße 58 1130 Wien	Pilzambulatorium Hietzing GmbH	08/2006 - 06/2012
508	Dr. Horst Schalk	Zimmermannplatz 1/1/4 1090 Wien	Praxisgemeinschaft Wien9 (GP specialized in HIV-care)	01/2006 - 02/2007
509	Dr. Bernd Gmeinhart	Rembrandtstrasse 12 1020 Wien	Practitioner (dermatologist, GP)	12/2005 - 08/2006
513	Dr. Gerlinde Balluch, Dr. Tamara Tedesch	Mariahilfer Gürtel 4 1060 Wien	Aids Hilfe Wien	01/2006 - 06/2012
514	PD Dr. Peter Komericki	Auenbruggerplatz 8 8036 Graz	Medizinische Universität Graz, Klin. Abt. f. Umweltdermatologie u. Venerologie	06/2010 - 06/2012

ID-Nr.	Name	Address	Branch of Study etc.	Period of activity
516	Markus Tritremmel, Dr. Lola Fleck	Schmiedgasse 38/1 8010 Graz	Aids Hilfe Steiermark,	01/2011 - 06/2012
517	Elisabeth Müllner	Blütenstrasse 15 4040 Linz/Urfahr	Aids Hilfe Oberösterreich	10/2010 - 06/2012
		Bulgaria		
1002	Elena Djakova, MD	4000 Plovdiv	District Dispensary for Dermato-Venereal Diseases with Stationary	09/2008 - 12/2010
1003	Krasimira Chudomirova, MD, PhD	4000 Plovdiv	Department of Dermatology and Venereology, Medical University	08/2008 - 06/2012
1001	Dniela Markova, MD	9000 Varna	Multiprofile Hospital for Active Treatment "St. Ana" Unit 203 Dermato-Venerology	01/2008 - 12/2010
1004	Vasilka Kuzeva, MD	1000 Sofia	District Dispensary for Dermato- Venereal Diseases without Stationary	08/2008 - 06/2012
1005	Elena Petrova, MD, PhD	1000 Sofia	Department of Dermatology and Venereology, Medical University	06/2008 - 06/2012
		Romania		
901	Dr. Vasile Benea	20125 Bucharest	Dermato-Venerological Unit, Clinical Hospital “Prof.Dr. Scarlat Longhin”	11/2008 - 03/2012
902	Cristina Munteanu	87000 Constanta	Dermato-Venerological Clinic in Hospital	10/2008 - 10/2009
903	Simona Atanasiu	Constanta	Baylor Marea Neagra Foundation	10/2008 - 11/2008
907	Raluca Teodorescu	Bd. 1 Decembrie 1918, nr 9J, sector 3, Bucharest	ARAS – Titan drop-in clinic	01/2010 - 06/2012
908	Cristina Fierbinteanu	Str. Dr. Grozovici nr.1, sect 2, Bucharest	ARAS Bucuresti – ARENA drop-in clinic and mobile unit	01/2011 - 06/2012
941	Dr. Gadiuta Mirela	Brasov	Public Health Department Brasov	10/2008 - 06/2009
942	Luminita Bosea	50000 Brasov	Hospital of Infectious Diseases	10/2008 - 06/2010
944	Luminita Anghel	Str. Memorandului, Camin 10, Brasov	ARAS - VCT Community Centre Brasov	03/2011 - 02/2012
952	Beatrice Marcu	Constanta	ARAS (201.2)	03/2010 - 06/2010
953	Lazarescu Otilia	Timisoara	ARAS (201.3)	01/2010 - 06/2012

ID-Nr.	Name	Address	Branch of Study etc.	Period of activity
954	Dr. Sorina CAPITANU, Petreo Catalin	Str. Pacii nr. 1, Piatra Neamt, jud. Neamt	VCT Community Centre ARAS (201.4)	02/2010 - 06/2012
955	Beatrice Manea	Iasi	ARAS (201.5)	01/2010 - 08/2010
960	Prof. Dr. George-Sorin TIPLICA	Stefan cel Mare 19-21, 020125 Bucharest	2nd Dermatological Clinic "Carol Davila" University of Medicine and Pharmacy Colentina Clinical Hospital Sos.	01/2010 - 06/2012
		Slovakia		
601	Miloš Mokráš, MD, PhD.	Limbova 3 83305 Bratislava	Infectologist, FN Akad.L.Dérera, KIGM	01/2006 - 06/2012
601	Miloš Mokráš, MD, PhD.	Limbova 3 83305 Bratislava	Infectologist, FN Akad.L.Dérera, KIGM	01/2006 - 06/2012
602	Jaroslav Hinšt, MD, PhD.	Limbova 12 83301 Bratislava	Gynaecologist, Slovak Medical University	01/2006 - 05/2012
603	MUDR. KLIMENT MICHAL, CSc.	Limbova 5 83305 Bratislava	Gynaecologist (HPV), FN Akad.L.Dérera KLIN.ŽEN. CHOROB	01/2006 - 01/2007
604	prof. MUDr. J. Holoman, CSc.,	Limbova 12 83301 Bratislava	Hepatologist, Slovak Medical University	01/2006 - 03/2008
605	Anna Čukasova, MD, PhD.	Limbova 5 83305 Bratislava	Gynaecologist (HPV), FN Akad.L.Dérera KLIN.ŽEN. CHOROB	01/2006 - 04/2012
607	MUDr. J. Elschekova,	Limbova 5 83305 Bratislava	Nestatna kozna ambulancia, FN Akad.L.Dérera	01/2006 - 06/2006
608	MUDr. Tomas Dianiska	Limbova 5 83305 Bratislava	Nestatna kozna ambulancia, FN Akad.L.Dérera	01/2006 - 02/2007
610	Igor Bartl, MD, PhD..	Ruzinovska 6 82606 Bratislava	Urologist, FNSP RUŽINOV UROL.KLINIKA	01/2006 - 09/2010
611	MUDr. Peter Osusky, CSc.	Mickiewiczova 13 813 69 Bratislava	Dermatovenerologist, FN KOŽNÁ KLINIKA	01/2006 - 03/2012
612	Milena Osuská, MD	Mickiewiczova 13 813 69 Bratislava	Dermatovenerologist, FN KOŽNÁ KLINIKA	01/2006 - 06/2012
613	Dr. Danica Staneková, PhD	Limbova 14, 83301 Bratislava	Slovenskej zdravotnickej univerzity (narodne referencne centrum)	01/2006 - 03/2007
620	Gabriela Kolatorova	Líščie údolie 57 84104 Bratislava	Dermatovenerologist, DERMAVITA s.r.o.	08/2010 - 06/2012
621	doc. Mária Belovičová, MD, PhD.	09631 Bard. kúpele	Hepatologist, Interná amb. Bard.kúpele s.r.o.	08/2010 - 03/2011
623	Agáta Filkornová, MD	Strečianska 13 85105 Bratislava	Dermatovenerologist, FILACERM s.r.o.	08/2010 - 06/2012

11.3 Annex III: Comparison of diagnostic methods used for HIV, *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (NG) and *Treponema pallidum* (SY) by country

	HIV				CT				GO				SY			
	AT (n=7)	**SK (n= 4)**	**RO (n=7)**	**BG (n=3)**	**AT (n=4)**	**SK (n=3)**	**RO (n=2)**	**BG (n=3)**	**AT (n=4)**	**SK (n=3)**	**RO (n=2)**	**BG (n=3)**	**AT (n=7)**	**SK (n=3)**	**RO (n=7)**	**BG (n=3)**
Syndromic treatment					0	0	50%	0	0	0	50%	0				
Median time (years) since testing (min-max)	21 (8-26)	23 (20-30)	5 (4-23)	21 (15-22)	14 (1-20)	15 (15-30	11 (5-16)	14 (10-18)	12 (1-50)	29 (27-30)	33 (16-50)	50 (50-89)	8 (1-50)	29 (27-30)	2 (2-59)	50 (50-102)
Median number of samples in 2011 (min-max)	2000 (10-13400)	70 (37-100)	150 (24-3000)	1000 (1000-3900)	6400 (2-11500)	50 (45-50)	415 (129-700)	550 (25-1000)	6400 (2-13000)	43 (40-45)	628 (556-700)	900 (150-1600)	957 (2-12000)	38 (30-45)	40 (20-7000)	8178 (8000-17000)
Who pays for the test§																
Public/private health insurance	29%	100%	29%	33%	50%	100%	100%	33%	50%	100%	100%	0	29%	100%	33%	67%
Patient	14%	0	29%	67%	0	0	100%	100%	0	0	100%	100%	29%	0	33%	100%
NGO	0	0	57%	33%	0	0	0	67%	0	0	0	67%	14%	0	50%	33%
Government programme	29%	0	0	33%	0	0	100%	0	0	0	100%	0	14%	0	33%	0
International programme	0	0	57%	67%	0	0	0	33%	0	0	0	33%	0	0	50%	33%
Other	43%*	0	14%#	33%	50%*	0	0	0	50%*	0	0	0	29%*	0	17%	33%
Tests used§																
Rapid point-of-care test	29%	0	57%	100%	0	0	50%	67%	0	0	0	33%	0	0	71%	33%
Antibody test (ELISA)	86%	100%	29%	100%												
Antibody test (Western Blot, Immunofluorescence test)	43%	50%	0	0												
PCR quantity	43%	50%	0	0												
Antigen detection: DIF					0	0	0	0	0	0	0	0				
Antigen detection: EIA					0	0	100%	67%	0	0	0	0				
Hybridization test					0	0	0	-	0	0	0	0				
Amplification test (NAAT, PCR, etc.)					75%	75%	0	33%	50%	67%	0	33%	0	0	0	0
Antibody test					0	75%	50%	67%								
Culture					0	0	0	0	75%	100%	0	33%				
Serological test													86%	67%	29%	100%
Darkfield examination													29%	33%	29%	67%
Microscopy									50%	100%	100%	100%				
Resistance testing									75%	67%	50%	0				
Referral for resistance									0	33%	100%	0				

testing													
Screening test§													
TPHA/TPPA/MHA-TP										100%	100%	50%	50%
EIA/ELISA										0	67%	25%	50%
VDRL/RPR/MPR/Cardiolipin										33%	33%	75%	100%
Confirmation test§													
TPHA/TPPA/MHA-TP										33%	67%	100%	100%
EIA/ELISA										67%	67%	33%	100%
VDRL/RPR/MPR/Cardiolipin										67%	67%	0	33%
FTA-Abs										67%	100%	0	0
IgG-Immunoblot										0	33%	0	0
Test in asymptomatic persons		25%	75%	50%	67%	50%	100%	0	67%	71%	100%	57%	100%

*City of Vienna, honorary capacity, # European Funds, § multiple answer question

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BORDER|NET work

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