

SIVES 2010

Integrated AIDS/HIV/STI
Surveillance System of
Catalonia (SIVES)

Technical document Nº 20

CEEISCAT BIENNIAL EPIDEMIOLOGICAL REPORT



Generalitat de Catalunya
Departament de Salut



ICO
Institut Català d'Oncologia

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SIVES 2010

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Prologue



With the presentation of the biennial report on the Integrated Epidemiological Surveillance System on AIDS and Sexually Transmitted Infections (SIVES, according to the Catalan acronym), we give continuity to this reference tool for the diffusion of epidemiological information on these infections in Catalonia. This information is essential to adapt and evaluate the institutional response to these epidemics.

The year 2010 marked thirty years since the first diagnoses of the first cases of what would later come to be called AIDS. In Catalonia, the AIDS Prevention and Control Program was created in 1987. In 1994, it was divided, on the one side into the AIDS Prevention and Care Program and, on the other, in the Centre for Epidemiological Studies of HIV/AIDS of Catalonia (CEESCAT, according to the Catalan acronym), which, in turn, in 2007, became known as the Centre for Epidemiological Studies of Sexually Transmitted Infections and AIDS of Catalonia (CEEISCAT, according to the Catalan acronym).

Since 2007 CEEISCAT has incorporated different information systems for the monitoring and evaluation of sexually transmitted infections (STIs), including HIV. These systems currently include the monitoring of morbidity and mortality rates, behavioural surveillance, the monitoring of diagnosis and treatment of HIV and a series of observational studies, which permit us a very careful diagnosis of the epidemiological situation, of the institutional response and the results of this response. It is thus with good reason that SIVES has been considered by the European Centre for Disease Control (ECDC) to be one of the most integrated in Europe. (Mapping of HIV/STI behavioural surveillance in Europe. Stockholm: ECDC; 2009).

The data presented confirms that, as in the rest of Europe, some STIs increase in the young population and, in the case of HIV, among the collective of men who have sexual relations with men (MSM). The data also indicates that HIV infection among injection drug users (IDUs) has continued to decrease in recent years, a fact which confirms that when adequate and proportional preventative interventions are carried out, the evolution of this epidemic can be reversed.

To this end, I would like to take advantage of this occasion to consolidate the commitment of the Department of Health of the Catalanian Parliament to the prevention and control of STIs and HIV, through interventions based on the scientific information and evidence available. To commit to this in times of grave economic crisis, as with the remaining health problems, is an important challenge which we can only achieve if we, the administrations, professionals

and NGOs, all work together. In this sense, the 2010 SIVES report also reflects the joint effort undertaken to generate, analyse and disseminate the information which it presents. I am extremely grateful to all the health sector professionals and non-governmental organisations who have worked on the diverse projects which make up this report. I say with great surety that SIVES will contribute to the achievement of excellence in sexual and reproductive health care in Catalonia and better prevention and control of STIs.

Boi Ruiz
Chief Health Executive

Presentations



It is a pleasure to present the epidemiological report on AIDS, HIV and other sexually transmitted infections (STIs) in Catalonia, SIVES 2010, which includes formal epidemiological surveillance systems and other complementary sources of information such as observational studies. These sources of information adapt to the ever changing evolution of the epidemic and are sufficiently flexible to respond to the necessities which appear over time. The recommendations of the World Health Organisation (WHO) promote the interaction between diverse sources of information within the framework of surveillance, monitoring and evaluation, with the aim, on the one hand, of describing the evolution of the epidemic and its determiners, and on the other hand, of collecting information which allows us to determine to what extent the objectives set out have been achieved through existing prevention programs.

In this sense, it is crucial to have a series of indicators at one's disposal which are comparable over time. For this reason, as an innovation in this year's report, a section has been included in which indicators measuring different aspects of the HIV epidemic and sexually transmitted infections (STIs), as well as other indicators of sexual and reproductive health are collected. We emphasise the indicators recommended by the AIDS Program of the United Nations (UNAIDS), the UNGASS indicators which allow for national and international comparability.

It must not be forgotten that HIV infection continues to be a public health priority. It is estimated that in our environment there are 35,000 people infected, a quarter of whom are unaware of this. Therefore, moving forward with prevention policies is a firm commitment from the Department of Health and, in particular, of the Public Health Agency of Catalonia, with the aim of preventing the spread of the infection.

To finish, I must make mention of all the professionals and organisations who have collaborated in this report and to whom I give thanks for their dedication and effort. As the fruit of this collaboration, we offer a collective, coordinated and unified response to all the information collected and analysed. Once again, working in close collaboration and thanks to the information obtained, we can improve the attention received by those people affected, as well as the interventions directed towards prevention and control of HIV and STIs in Catalonia.

Antoni Plasència
Director General of Public Health



It is a pleasure to add my voice to the presentations of CEEISCAT biennial report. In the short space of time, just under three years, since the Centre was incorporated into the Catalan Institute of Oncology (ICO, according to the Catalan acronym), it has not only achieved administrative integration, but has also formed and strengthened important investigative collaborations with other services of the Institute. In particular, there have been joint publications relevant to the Epidemiological Program in the area of immunodeficiency, infection with the human papilloma virus and cancer.

The report which is presented today, the Integrated Surveillance System on AIDS/HIV/STIs in Catalonia (SIVES 2010), is a prime example of the benefits of the integration of clinical information systems, formal epidemiological surveillance systems and specific investigation projects. Amongst other results, this year CEEISCAT coordinates one of the programs of the Biomedical Investigation Centre in the Network of Epidemiology and Public Health (CIBERESP, according to the Spanish acronym), of which some of the priority lines of investigation are infection and cancer, and international health, two lines in which the ICO evidently displays unrivalled leadership through its most emblematic groups.

The ICO has a clear vocation of transversality where translational investigation is a key element in the improvement of the quality and effectiveness of patient care. For this reason, the ability to count on a service such as CEEISCAT, which through epidemiology contributes to improving public health policies and to the facilitating of bridges to communication with other of the ICO's services, is for us an added value which we will continue to take advantage of, to also reinforce aspects of the institution's methodological support.

Finally, I would like to take this opportunity to give thanks to the senior management of Public Health in the Department of Health for the trust placed in our institution, and for providing a place for CEEISCAT in the ICO. Scientific evidence is needed just as much in public health interventions as in welfare actions. In this sense, the collaborations between central administration services and programs which, like ours, can offer the necessary clinical context, both academic and from the laboratory, to generate information and quality analysis, must be welcomed and promoted.

Candela Calle
Director General of ICO

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Introductory technical note



The report on the Integrated Surveillance System on AIDS, HIV and STIs in Catalonia (SIVES, according to the Catalan acronym) which we present corresponds to the year 2010. It is CEEISCAT's Technical Document number 20 and, given that since 2006 the SIVES reports have been biennial, it is the thirteenth SIVES created since 1995, the year in which the first report was published.

Like the previous reports, it includes the information which CEEISCAT creates and organises, this being the data which comes from formal epidemiological surveillance systems, as well as information which comes from projects categorized somewhere between surveillance and applied investigation, often through observational studies. The use of different sources of information for the monitoring of a pathology has been called enhanced epidemiological surveillance and, in this sense, SIVES has been identified by the European Center for Disease Control (ECDC) as one of the most integrated in Europe [1]. With this in mind, we want to take a step further and what is different to previous editions is that sexually transmitted infections (STIs) now appear completely integrated in all the sections, especially in the first one, on morbidity and mortality.

On the other hand, there is wide consensus on the fact that the monitoring of HIV and STIs does not just allow for the description of the parameters of morbi-mortality, but also has to be useful for the design and evaluation of health interventions, whether they be welfare or preventative. In this sense, last year, following the instructions of the World Health Organisation (WHO) and the AIDS Program of the United Nations (UNAIDS), we have now made an effort to identify and disseminate some of the indicators which these organisations have recognised as the most relevant for the monitoring and evaluation of these epidemics [2]. This year a further step has been taken and that which was an annex in the report in 2008, in the 2010 version has become a section. Apart from the indicators generated directly by SIVES, other indicators of sexual and reproductive health which exist in our context have been included (section 6, indicators available through the System of Epidemiological Surveillance of AIDS/HIV/STIs in Catalonia and other sexual and reproductive indicators).

None of this would have been possible without the efforts of all the technicians who have worked in the Centre since the first epidemiological report in 1995, and all the professionals who directly or indirectly facilitate the creation of all the data analyzed and presented. To create and maintain this type of information system is a task which often requires years of work and, therefore, the

vision and constancy of these professionals and the institutions which finance them is fundamental. To this end, I would like to give thanks once again to the Department of Health, through the Management of the Public Health System and the Catalan Institute of Oncology, which the Centre has been a part of since 2007, for all their support and the trust they have placed in us. Finally, I would like to also acknowledge the support of The senior management of the Public Health System; of the Executive Agency for Health and Consumers (EAHC), the EU-Commission (The European Union); the Institute for Women, The Ministry of Work and Social Affairs; the senior management of Public Health, the Ministry of Health and Consumers; The Biomedical Research Centre Network for Epidemiology and Public Health (CIBERESP, according to the Spanish acronym); the Foundation for AIDS Investigation and Prevention in Spain (FIPSE, according to the Spanish acronym); the Agency for Administration of University and Research Grants (AGAUR, according to the Catalan acronym); the Barcelona Public Health Agency (ASPB, according to the Catalan acronym); the Harvard School, Bristol University and Gilead Sciences, Inc.

The epidemiological reports are the physical expression of all this hard work, but the highest acknowledgement is most certainly knowing that the information analyzed is useful to all of us who work in the fields of HIV and STIs, to administrations, NGOs and to health and social science professionals in general. This is what we, the professionals of CEEISCAT desire.

Jordi Casabona
Scientific Director CEEISCAT

[1] European Centre for Disease Prevention and Control (ECDC). Mapping of HIV/STI behavioural surveillance in Europe. ECDC technical report. Stockholm: ECDC; 2009.

[2] UNAIDS. Monitoring the Declaration of Commitment on HIV/AIDS. Guidelines for the development of basic indicators. Report 2010. (UNAIDS/09.10S / JC1676S). Geneva, 2009.

1.1. HIV and AIDS: Morbidity in Catalonia

The object of this epidemiologic surveillance of HIV and AIDS is to identify the characteristics, evolution and geographical distribution of these diseases in Catalonia. It is coordinated through the Centre for Epidemiological Studies on Sexually Transmitted Infections and HIV/AIDS of Catalonia (CEEISCAT, according to the Catalan acronym) with the participation of diverse institutions: the Barcelona Public Health Agency (ASPB, according to the Catalan acronym), the Regional Epidemiological Surveillance Units (UVE, according to the Catalan acronym) of the Health Department (DS, according to the Catalan acronym), the Office for Penitentiary Services, and the Department of Rehabilitation and Juvenile Justice. Welfare centres collected information confidentially using a standardised form [1-2]. In 1996, with the introduction of highly active antiretroviral therapy (HAART), both the time period between infection and the onset of AIDS, and patient survival increased. This situation brought about a decline in the number of new cases in the AIDS registries and, also determined the traits of old infections. Following the recommendations of the World Health Organisation (WHO) and the Centers for Disease Control and Prevention (CDC), Catalonia introduced the epidemiologic surveillance of HIV in 2001 with the New HIV Diagnoses Information System [3-4]. Since 2001 notification of HIV infection in Catalonia has been voluntary. The HIV infection definition criteria of the European Centre for Disease

Prevention and Control (ECDC) are applied [5]. AIDS in Catalonia has been a mandatory declaration disease (MDD) on an individual basis since 1987. The case definition criteria and diagnostic methods applied are in compliance with the definitions given by the CDC in 1982, 1985 and 1987 [6-8], and with the European definition of 1993 [9]. The codification of routes of transmission of HIV is carried out using a hierarchical criterion which prioritises the injecting drug route over the sexual route. This criterion is applied if a patient has two or more possible routes of transmission [1]. The case definition criteria used for the heterosexual transmission group was modified in 2001. Thus, from this year onward, whenever the form indicates heterosexual conduct and no other risk factor, the subject is classified as heterosexual. In the cases diagnosed before this date, the definition of the heterosexual transmission group was more restrictive, as it only included subjects with heterosexual conduct who had maintained sexual relations with infected individuals or those with a high risk of being infected with HIV [10].

This report includes the new HIV diagnoses reported since 2001 until 31st December 2008. As regards AIDS cases, those reported to the AIDS Register since 1981 (the year in which the first case was reported) until 31st December 2008 are included, with an AIDS diagnosis date of up until 31st December 2008. The data presented is not adjusted according to the delay in reporting. The four different time periods with the presented data grouped into calendar

years, refer to the changes introduced in the diagnostic criteria (1981-1987, 1988-1993, and 1994-1996) and after the introduction of HAART (1997-2008). Health status is updated by means of the information provided by the declaring doctors (data on the cause of death is not collected) and is completed with the cross match carried out with the data reported to the Mortality Register of Catalonia, which answers to the DS's Information and Study Service.

1.1.1. Epidemiology of new HIV diagnoses

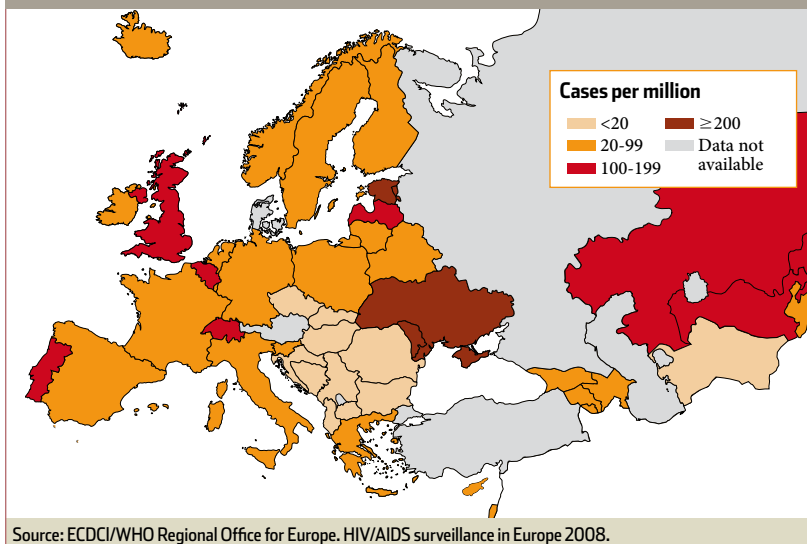
1.1.1.1. Extent and distribution

During 2008, 51,600 new HIV diagnoses were reported in Europe, 49% of which were in European Union (EU) countries. This number underestimates the total of HIV infections, as not all the countries have a notification system of new HIV diagnoses and some countries only have data on certain regions as is the case with Italy and Spain [11]. Of the new diagnoses declared in Europe during 2008, 37% were infected via heterosexual sexual relations, 27% were infected through injecting drug use and 19% were men who had sex with men (MSM) [11].

In **figure 1.1.1** the rates (per million inhabitants) of new HIV diagnoses can be seen in the European countries of the WHO.

Spain has no national system of new HIV infection diagnoses notification. Currently, there are 12 autonomous regions which collect data: Aragón, Asturias, the Balearic

Figure 1.1.1. New HIV infection diagnoses per million inhabitants. WHO European Region, 2008.



Islands, The Canary Islands, Catalonia, Extremadura, Galicia, Navarra, the Basque Country, La Rioja and the autonomous cities Ceuta and Melilla. During 2008, 1,583 new HIV diagnoses were reported in these AR, predominantly from heterosexual relations (41.8%), and followed by MSM (38.8%) and injecting drug users (IDUs) (9.2%) [12].

In Catalonia, the number of new HIV diagnoses since 2001 until 31st December 2008 was 5,506. The annual global rate of new diagnoses for this period was 12 cases per 100,000 inhabitants. In figure 1.1.2 the annual evolution of new HIV diagnoses by gender since 2001 can be seen. During 2008, 636 new HIV diagnoses, 3.8% less than in 2007, were reported.

1.1.1.2. New HIV diagnosis characteristics in Catalonia

Of the total of new HIV diagnoses, 77.8% were men and the rest (22.2%) were women. The majority of new

diagnoses were reported in subjects aged between 25 and 39 years (58%). The global median age was 37 years, 37.6 years for men and 34.9 years for women. The most probable route of transmission was heterosexual sexual relations accounting for 43.3% of the cases (32.2% for men and 81.9% for women), followed at 36.1% by cases of MSM (accounting for 46.5% of cases in men) and

injecting drug use accounting for 14.6% of the cases (figure 1.1.3). If we look at current tendencies related to routes of transmission, we observe an increase of new HIV diagnoses in MSM of 31.5% in the period from 2001 to 2008, going from 191 cases in 2001 to 278 in 2008 (representing an average yearly increase of 4.6%). Regarding heterosexuals, a decrease of 13% from the period 2001 to 2008 is observed, going from 303 cases in 2001 to 268 cases in 2008 (an average yearly decrease of 2.6%). In IDUs there has been a significant decrease of 334% for the period 2001 to 2008, going from 165 cases in 2001 to 38 cases in 2008 (an average yearly decrease of 24.6%) (figure 1.1.4).

As regards clinical staging, although 59.4% were asymptomatic at the time of HIV diagnosis, 24.6% of the patients matched AIDS defining criteria and 7.8% presented symptoms although without AIDS defining criteria.

Overall, the proportion of immigrants amongst the new HIV diagnoses in Catalonia was 35.6%. How-

Figure 1.1.2. Annual distribution of new HIV diagnoses per sex. Catalonia, 2001-2006.



Figure 1.1.3. Percent distribution of new HIV diagnoses by transmission group and sex. Catalonia, 2001-2008.

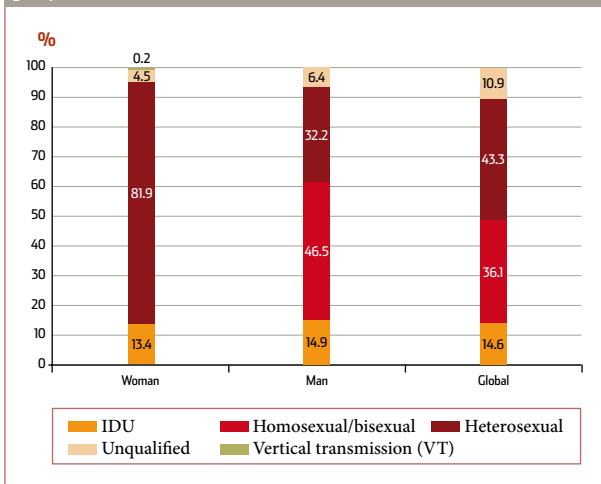
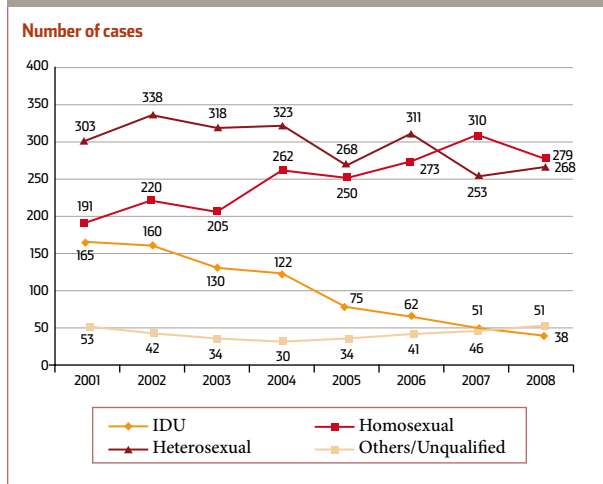


Figure 1.1.4. Evolution of new HIV diagnoses by transmission group. Catalonia, 2001-2008.



ever, there has been a progressive increase over the period analysed, going from 24.4% in 2001 to 47.2% in 2008 (figure 1.1.5).

After those of Spanish origin, 44.2% were from Latin America and the Caribbean, 29.5% were from Sub-Saharan Africa, 11.1% from Western Europe, 6.7% from Eastern Europe, 5.3% from North Africa and the rest from other countries (3.2%)

(table 1.1.1). The most frequent route of transmission of HIV has been heterosexual for women (90%) and homosexual with regard to men (45.5%) (figure 1.1.6). In figure 1.1.7 we can see the distribution of routes of transmission according to region of origin. Although in women the heterosexual route is the most frequent independent of region of origin, this is not the case for men: the heterosexual route of transmission

is the most common for men from Africa, whereas in those from Latin America and Europe it is MSM and for those from Eastern Europe it is injecting drug use.

1.1.2. Epidemiology of AIDS

1.1.2.1. Extent and distribution of AIDS

In 2008, Spain was the EU country with the fourth highest incidence of

Image 1.1. HIV Transmission patterns have changed over the years and nowadays HIV transmission is mainly by sexual practice. Promoting safe sex is an important primary health prevention intervention.



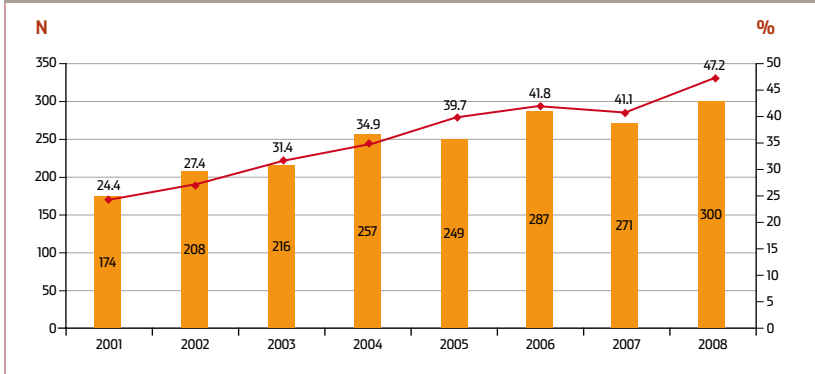
AIDS (29.1 cases per million inhabitants) after Estonia, Latvia and Portugal [11]. According to the latest update, in the Spanish AIDS register, there were 77,953 cases diagnosed up until 31st December 2008. During 2008 1,340 AIDS cases were reported. Amongst those autonomous regions with a rate of over 30 cases per million inhabitants were the Balearic Islands (58), Murcia (39.7), Madrid (38.4), La Rioja (35.7), Aragón (34.1), the Basque Country (32.3) and Navarra (31.5) (table 1.1.2) [13].

In Catalonia, the total number of AIDS cases from 1981 until 31st December 2008 was 16,235. Since the diagnosis of the first case in 1981, the annual incidence rate has increased progressively, going from 0.8 cases per 100,000 inhabitants in 1983 until arriving at 26.1 cases per 100,000 inhabitants in 1994, coinciding with the expansion of the epidemiological definition of AIDS. Between 1996

Table 1.1.1. Country of origin of new HIV infection diagnoses. Catalonia, 2001-2008.

	N	%
Spain	3,544	72.3
Other countries	1,962	35.6
Latin America/Caribbean	867	44.2
Ecuador	158	
Brazil	131	
North Africa	103	5.2
Morocco	86	
Sub-saharan Africa	579	29.5
Nigeria	83	
Western Europe	218	11.1
France	50	
Eastern Europe	131	6.7
Russia	32	
Others	64	3.3

Figure 1.1.5. Evolution of new HIV diagnoses in immigrant population. Catalonia, 2001-2008.



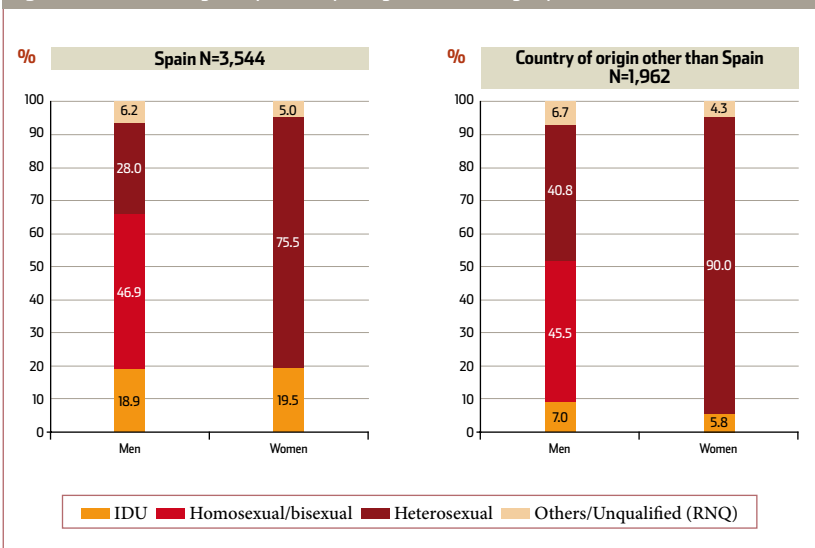
and 1998 there was a sharp decline in the number of cases (1357 and 686 cases, respectively), representing a decrease in the reported cases of AIDS of 49% in 2 years. Since then, the annual decrease in the number of AIDS cases has been less and more gradual, this stabilisation reflecting the effect of the new treatments on the incidence of AIDS cases. During 2008, 228 cases were reported to the Catalonian AIDS Register, representing a global rate of 3.1 cases per

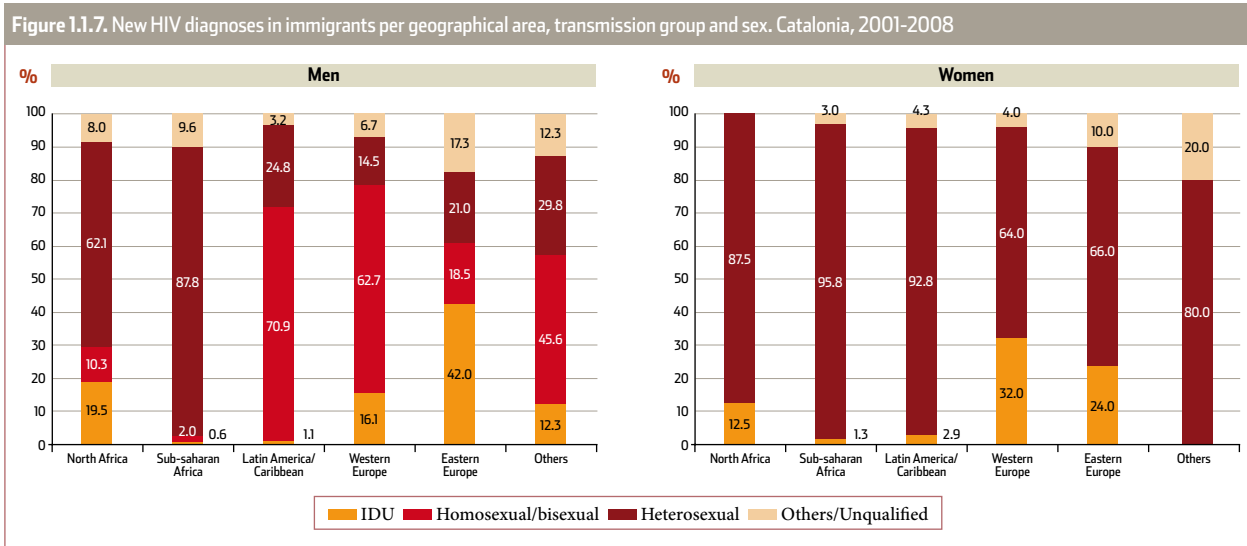
100,000 inhabitants. **Table 1.1.3** shows the AIDS cases and the corresponding rates according to health regions. The data on the declaration of AIDS in the last year should be interpreted cautiously and only provisionally due to the delay in reporting. Taking this consideration into account, during 2008 there were 25.4% less cases reported than in 2007.

1.1.2.2. Characteristics of the AIDS cases

Men represent 80.5% of the total

Figure 1.1.6. New HIV diagnoses per country of origin, transmission group and sex. Catalonia, 2001-2008.





of AIDS cases reported. However, the proportion of cases diagnosed in women has been increasing over time from 14.2% in 1986 to 21.9% in 2008. **Figure 1.1.8** shows the distribution of cases diagnosed by gender from the beginning of the epidemic, along with the ratio men:women.

65.6% (10,650) of AIDS cases were diagnosed in subjects aged between 25 and 39 years. The median age of the subjects at the time of diagnosis has increased progressively, both in men and women. In the first period (1981-1987), the median age was 30.8 years in men and 24.9 in women, whilst in the last period (1997-2008) the medi-

an age at the time of diagnosis was significantly higher, 39.8 and 36.5 years in men and women, respectively.

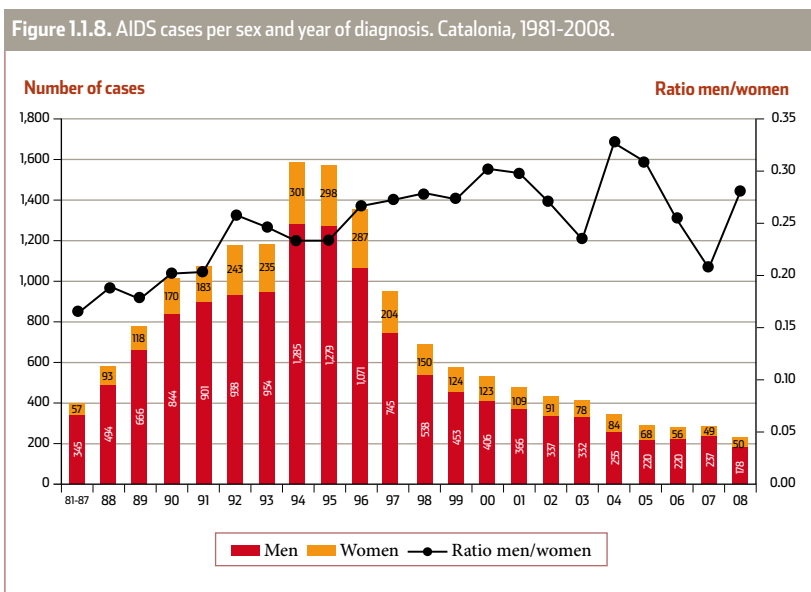


Table 1.1.2. AIDS cases diagnosed per million inhabitants. Spain, 2008.

Balears	58.0
Murcia	39.7
Madrid	38.4
La Rioja	35.7
Aragón	34.1
País Vasco	32.3
Navarra	31.5
Melilla	30.1
Galicia	29.3
Ceuta	28.2
Cataluña	26.9
C. Valenciana	24.5
Canarias	20.3
Andalucía	19.8
Cantabria	19.5
Castilla La Mancha	13.3
Castilla y León	12.3
Asturias	7.7
Extremadura	7.4
Total	26.1

Source: AIDS National Plan Secretary.

Table 1.1.3. Number of AIDS cases that reside in Catalonia and incidence rate (per 100,000 inhabitants) by health region, 2000-2008.

Sanitary region	2000		2001		2002		2003		2004		2005		2006		2007		2008	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Lleida	26	7.6	26	7.4	19	5.4	18	5.1	15	4.3	15	4.3	11	3.3	12	3.5	13	3.7
Tarragona	30	6.8	30	6.4	25	5.3	14	3.0	13	2.8	6	1.3	4	0.7	7	1.2	15	2.5
Terres de l'Ebre	8	6.0	9	6.6	11	8.0	4	2.9	5	3.7	6	4.4	6	3.4	9	4.9	2	1.1
Girona	38	4.1	37	3.9	32	3.3	40	4.2	24	2.5	14	1.5	30	4.5	31	4.5	28	3.9
Costa de Ponent	80	8.7	73	7.6	61	6.4	51	5.3	55	5.7	47	4.9						
Barcelonès Nord i Maresme	70	10.3	55	7.7	65	9.1	49	6.9	18	2.5	61	8.6						
Centre	84	5.3	64	3.8	60	3.6	57	3.4	29	1.7	26	1.6						
Barcelona Ciutat	190	12.6	181	12.0	155	10.3	177	11.8	150	10.0	113	7.5						
Catalunya Central													8	1.7	4	0.8	10	2.0
Barcelonès													215	4.4	222	4.6	158	3.2
Alt Pirineu i Aran													2	2.8	1	1.4	2	2.6
Total	526	8.1	475	7.0	428	6.3	410	6.1	309	4.6	288	4.3	276	3.9	286	4.0	228	3.1

The route of transmission which accumulated most cases of AIDS in Catalonia was via injecting drug use with 54.4% (54.3% in men and 54.6% in women). In second place amongst men was the MSM group (24%) and amongst women, it was the group infected through heterosexual sex (35.7%).

Looking at current tendencies in the distribution of transmission groups we can see that from the beginning of the epidemic until 1993, the IDU group represented 58.1% of AIDS cases, followed by the MSM group with 25.9%. Comparing recent tendencies (2001-2008) one can see a great decrease in cases amongst IDUs (37.1%), a stabilising of the cases amongst MSM (20.7%) and a large increase in cases amongst heterosexuals (37%) (figure 1.1.9). Figure 1.1.10 shows the annual percentage evolution of routes of transmission and gender in the period 1981-2008.

Table 1.1.4 shows the AIDS defining illnesses grouped into time periods.

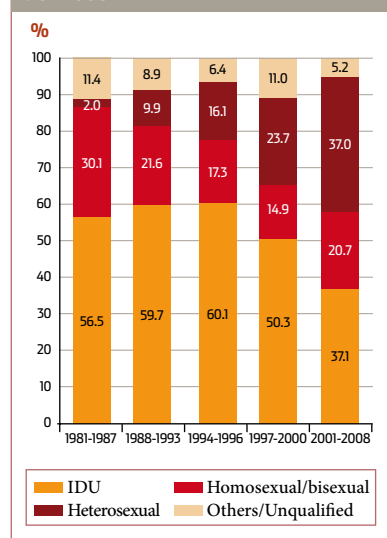
With the incorporation of tuberculosis (pulmonary and extrapulmonary), it became the most common AIDS defining illness, representing 26.4% of cases in the latest period. Amongst women diagnosed with AIDS for the period 1994-2008 (2072), 102 were diagnosed with invasive cervical cancer (4.9%).

1.1.2.3. AIDS in children

There has been a sharp decline in paediatric AIDS since 1996 when Zidovudine prophylaxis (AZT) was introduced for pregnant women with HIV in 1996 (figure 1.1.11).

Of the 222 paediatric cases (under 13 years old) seen in the AIDS Register in Catalonia up to 31st December 2008, the majority occurred via vertical transmission (VT) (91.9%), and within this group, 49% of the mothers were infected from the use of shared injecting drug material and 37.1% from sexual relations. The last reported case of AIDS in a child was reported in 2003.

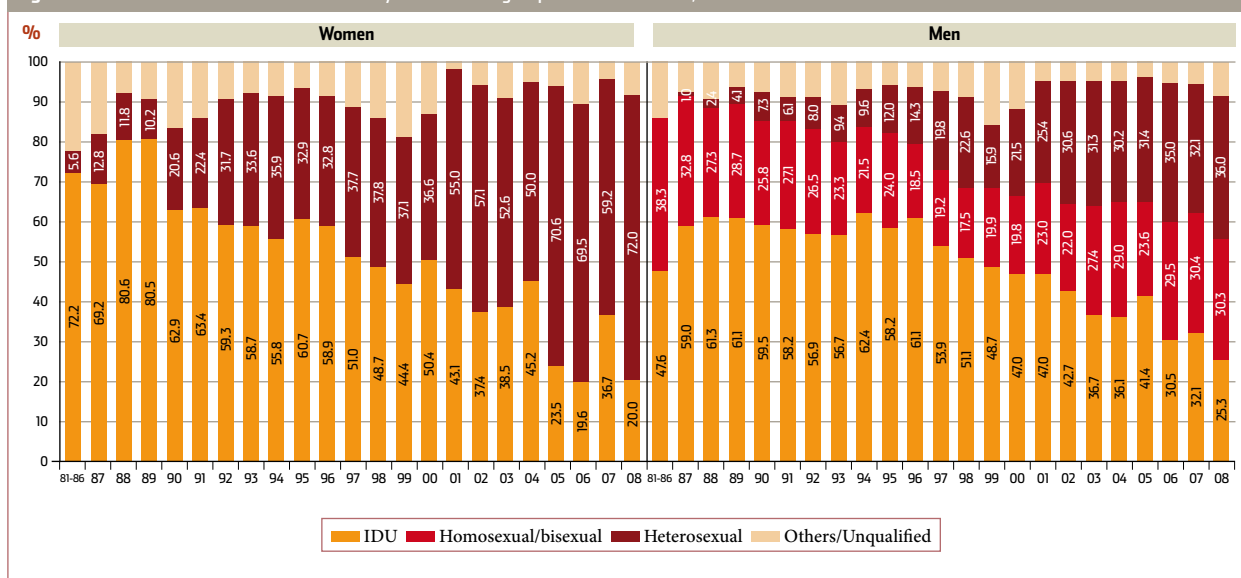
Figure 1.1.9. Percent evolution of AIDS cases by transmission groups and periods. Catalonia, 1981-2008.



1.1.2.4. HIV/AIDS Mortality

Until the end of 2008 there were 10,149 deaths recorded in the AIDS Register (64.4% of the total of reported cases). It is estimated that approximately 6,086 people are living with AIDS in Catalonia (4,737 men and 1,349 women) (figure 1.1.12).

Figure 1.1.10. Percent evolution of AIDS cases by transmission group and sex. Catalonia, 1981-2008.



82% of the deaths were men, 66.2% were subjects aged between 25 and 39 years, and 59.6% were IDUs. With the introduction of HAART in 1996 a marked decline in mortality to 50.4% has been seen starting in 1997, a figure which has been maintained to the present day.

riod 2000 to 2002, respectively. **Table 1.1.6** shows the proportion of people who survive longer than 12, 24 and 36 months after an AIDS diagnosis according to determined characteristics. Survival at 12, 24 and 36 months decreases in those diag-

nosed aged over 35 years in comparison with those younger than 35 years old. Survival is superior amongst those people whose route of transmission is sexual (heterosexual or homosexual) than those who either acquire the virus via in-

Table 1.1.5 shows the impact of the AIDS epidemic, measured in years of potential life lost in the population aged from 13 to 65 years in Catalonia. In 2007, deaths from AIDS were equivalent to 2.4% of potential life years lost due to all causes of death in this age group in Catalonia.

Long term survival of people with an AIDS diagnosis has also increased with the introduction of HAART in 1996 [14], going from a survival rate at 12, 24 and 36 months of 67.7%, 52.6% and 47.7% in 1995 to 81.4%, 76% and 73% for the pe-

Figure 1.1.11. Paediatric AIDS incidence by year of birth. Catalonia, 1986-2008.

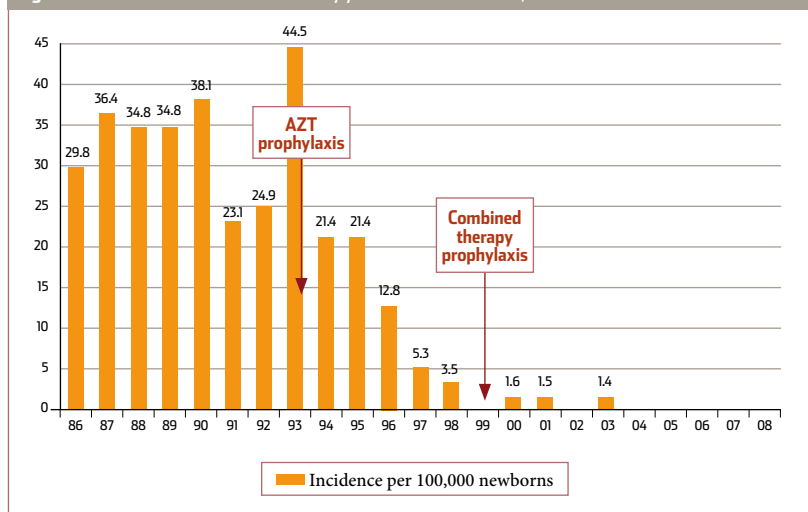


Table 1.1.4. Distribution of AIDS defining conditions of cases that reside in Catalonia by periods, 1981-2008.

Disease that indicates AIDS	1981-1987		1988-1993		1994-2008		Global	
	N	%	N	%	N	%	N	%
Pneumonia by <i>P. jiroveci</i>	105	26.1	1,261	21.6	1,915	19.2	3,281	20.2
Extrapulmonary Tuberculosis	-	-	1,225	21.0	1,416	14.2	2,653	16.3
Esophagus Candidiasis	88	21.9	745	12.8	953	9.5	1,786	11.0
Lung Tuberculosis	-	-	-	-	1,638	16.4	1,642	10.1
Wasting syndrome	-	-	707	12.1	772	7.7	1,479	9.1
Brain toxoplasmosis	45	11.2	518	8.9	607	6.1	1,170	7.2
Kaposi's sarcoma	45	11.2	370	6.3	487	4.9	902	5.6
Lymphomas	22	5.4	139	2.4	392	3.9	553	3.4
VCM infection	19	4.7	123	2.1	194	1.9	336	2.0
Progressive multifocal leucoencephalopathy	8	2.0	100	1.7	300	3.0	408	2.5
HIV encephalopathy	1	0.2	131	2.2	227	2.3	359	2.2
Recurrent pneumonia	-	-	4	0.1	288	2.9	292	1.8
Invasive cervix cancer	-	-	1	0.0	102	1.0	103	0.6
Cryptosporidiosis	18	4.5	137	2.4	132	1.3	287	1.8
Extrapulmonary cryptococcosis	9	2.2	91	1.6	171	1.6	271	1.7
Chronic mucocutaneous herpes simplex	8	2.0	77	1.3	76	0.8	161	1.0
Mycobacterium avium or kansasii	3	0.7	24	0.4	96	1.0	123	0.8
Mycobacterium other species, extrapulmonary	2	0.5	32	0.5	85	0.9	119	0.7
Múltiple recurrent bacteria infections	3	0.7	49	0.8	21	0.2	73	0.4
Salmonella septicemia	1	0.2	39	0.7	33	0.3	73	0.4
Isosporiasis with diarrhea	5	1.2	21	0.4	26	0.3	52	0.3
Trachea/bronchus or lung candidiasis	5	1.2	13	0.2	21	0.2	39	0.2
Bronchus, lung or esophagus herpes simplex	-	-	13	0.2	18	0.2	31	0.2
Lymphoid interstitial pneumonitis	3	0.7	14	0.2	10	0.1	27	0.2
Disseminated histoplasmosis	-	-	1	0.0	12	0.1	13	0.1
Disseminated coccidiomycosis	-	-	-	-	2	0.0	2	0.0
Total	402		5,839		9,994		16,235	

Figure 1.1.12. AIDS cases living in Catalonia, 1981-2007.

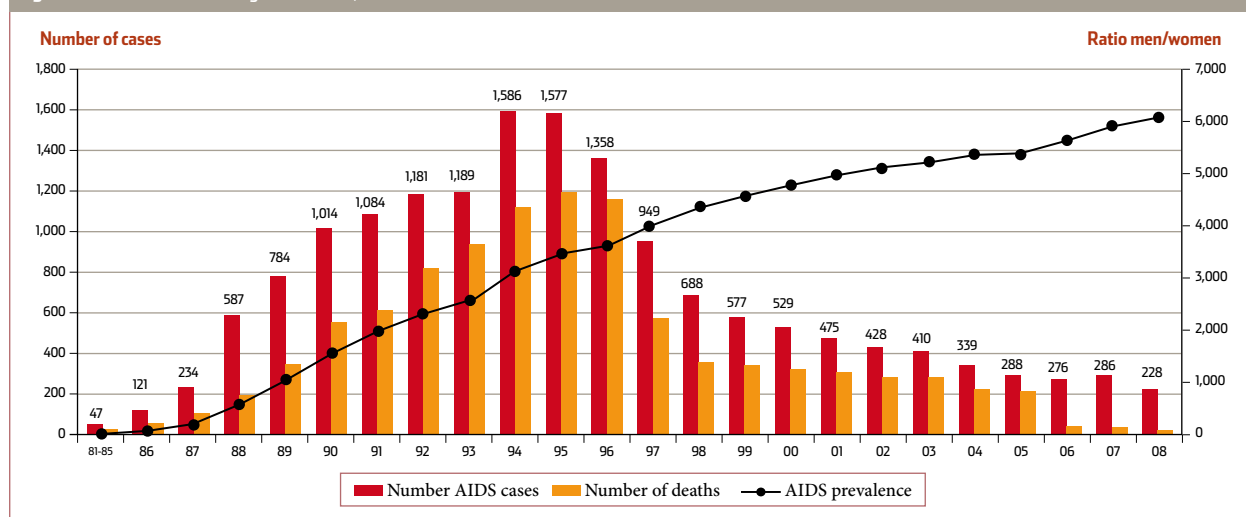


Table 1.1.5. Years of potential life lost (YPLL-65) attributable to AIDS mortality, Catalonia, 1992-2007.

Year	YPLL-65 AIDS		YPLL-65(%) On all death causes	
	Men	Women	Men	Women
1995	24,534	6,036	17.7	11.4
1996	20,199	5,642	15.0	10.0
1997	9,255	2,433	8.1	4.5
1998	5,077	1,348	4.4	2.6
1999	4,993	1,375	4.7	2.9
2000	4,853	1,164	4.7	3.0
2001	3,890	1,429	4.0	3.6
2002	4,346	1,371	4.5	3.5
2003	3,478	1,279	3.5	3.2
2004	4,015	880	2.9	1.6
2005	3,385	968	2.5	1.7
2006	2,758	780	2.1	1.5
2007	3,465	870	2.7	1.6

Table 1.1.6. Rate of persons that survive more than 12, 24 and 36 months after AIDS diagnosis by certain characteristics, 2000-2002.

	N	Survival in months (%)		
		>12	>24	>36
Age at diagnosis				
<15	4	100.0	100.0	100.0
15-19	2	100.0	100.0	100.0
20-24	33	93.9	84.8	81.8
25-29	136	87.5	83.1	80.9
30-34	322	86.6	82.6	80.1
35-44	622	81.0	75.7	73.5
>44	313	72.2	65.5	61.7
Origin country				
Spain	1,259	80.3	74.5	71.6
Not Spain	173	89.0	87.3	86.1
Way of transmission				
IDU	649	78.9	71.2	68.1
MSM	240	82.9	80.0	77.1
Heterosexual	440	85.2	81.8	79.8
Unqualified	99	76.3	72.2	70.1
Vertical transmission	4	100.0	100.0	100.0
Total	1,432	81.4	76.0	73.4

jecting drug use or whose risk is not defined. Although survival is higher amongst non-Spanish subjects compared to those from Spain, this data may not coincide with the real situation. People of non-Spanish ori-

gin probably return to their native country when they become ill, and therefore information about their health status may be underreported and not available in the Death Register of Catalonia.

1.1.2.5. HIV/AIDS infection in Barcelona*

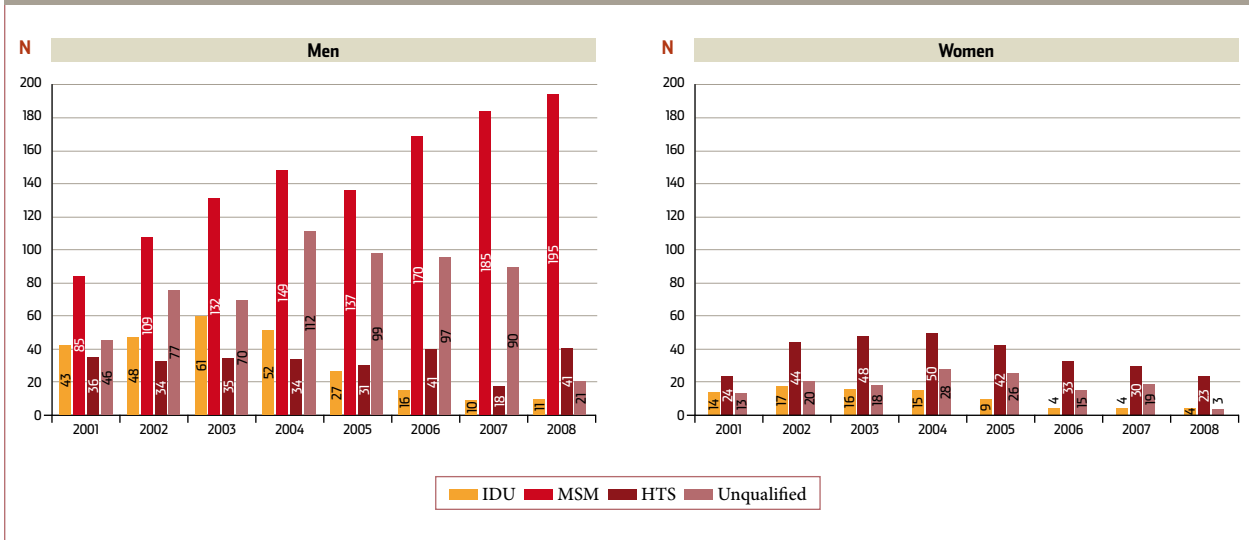
* Patricia García de Olalla, Roser Clos, Pilar Gorrindo, Juan A Caylá and the Epidemiology Service Nursing Team of the ASPB.

Since 2001 and until 2008 3,309 new diagnoses in over 18s were reported to the Voluntary Information System of HIV Infection in the city of Barcelona, of which 86% resided in Barcelona.

During 2008, 297 new cases of HIV were reported, which represents 17% less than in 2007. 90% of the new diagnoses were men. Of the 273 cases with known transmission route (92%), MSM accounted for 79% (193 cases) of men whilst 82% (23 cases) of women probably were of heterosexual sex transmission route (figure 1.1.13). 50% of patients a CD4 count lower than 350 cells/ml at the time of diagnosis. Up until 2008, 9,297 cases of AIDS had been reported, of which 6,786 (73%) resided in the city of Barcelona. During 2008, 92 cases of AIDS were reported, a decrease of 34.8% regarding 2007 (figure 1.1.14). This decrease was not evenly distributed between men and women, or according to routes of transmission. In the case of men, the largest fall was seen in IDUs (56%) and bisexual and homosexual men (35%), with respect to the previous year.

In 2008, 77% of HIV infection cases were men, the median age at diagnosis being 38 and 42 years in men and women, respectively. 38% of cases were people born outside Spain (45% of men and 14% of women). 77% of men were infected through sex (55% MSM and 22% HST). The route of transmission for 50% of women was heterosexual sex.

Figure 1.1.13. New HIV infection by transmission group and sex in Barcelona, 2001-2008.



The proportion of people who did not know they were infected with HIV the year before their diagnosis was 55%. This proportion was even higher in people infected by unprotected sexual relations (64% in MSM, 84% in heterosexual men and 50% in heterosexual women).

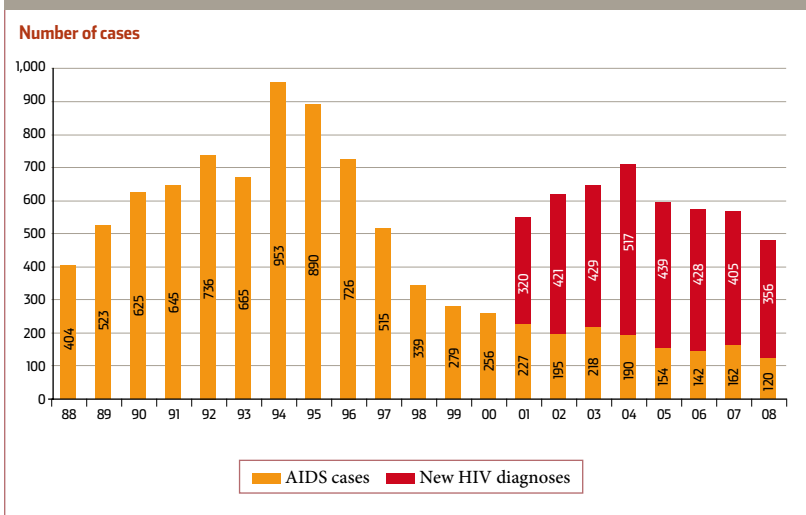
Tuberculosis and Pneumocystis pneumonia (PCP) were the most common defining illnesses at 27% and 24% respectively. HIV/AIDS infection continues to be a large public health problem in our sphere for various reasons. Amongst these we must cite the fact that a high per-

centage of people do not know they are HIV infected [15], because patients diagnosed later have a higher probability of developing AIDS and dying than those patients who are diagnosed early. At the same time, early diagnosis of the infection allows for the reduction of HIV transmission.

Conclusions:

1. For the time period analysed, there was an increase in new HIV diagnosis amongst MSM, necessitating the reinforcing of primary prevention of HIV infection through the promotion of healthy sexual habits and other interventions specifically directed at this group.
2. People of non-Spanish origin account for more than a third of new HIV diagnoses in Spain, in part as a result of increased immigration to Spain in recent years. This indicates the need to ensure access to health services for this group,

Figure 1.1.14. AIDS cases and new HIV diagnoses in Barcelona, 1988-2008.



with the facilitation of information about the centres where the HIV test can be taken, along with information about primary and secondary prevention measures.

3. The mandatory notification of HIV infection instigated in July 2010 allows for a reliable information system which will help in the correct evaluation of prevention programmes and the control of HIV infection.

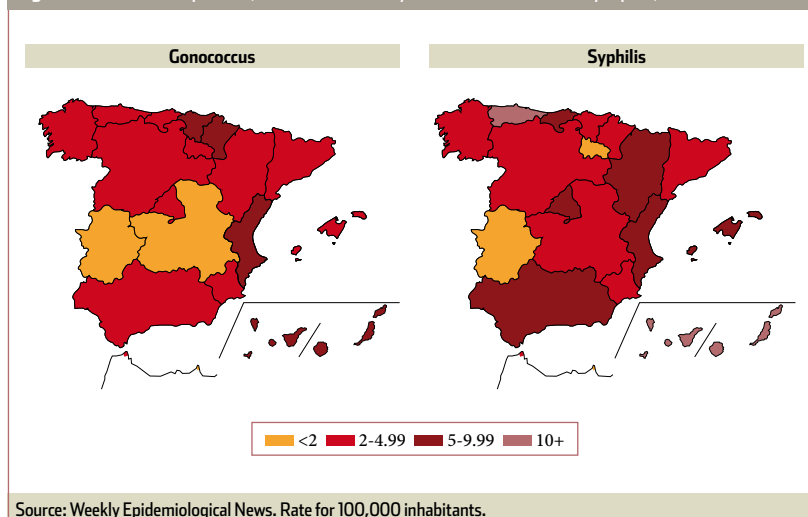
4. Although AIDS mortality has decreased over 50% since the introduction of HAART in 1996, it has been stable in the last few years. Whether this mortality is directly attributable to HIV infection or is due to other causes, related or not to AIDS must be analysed.

1.2. Morbidity rates of sexually transmitted infections in Catalonia

1.2.1. Epidemiology of sexually transmitted infections

Each year there are an estimated 340 million sexually transmitted infections (STIs) in the world. These infections can have important consequences, such as infertility, cancer, long-term incapacity, and even death [16-20]. Since the end of 1990, changes in the pattern and epidemiology of STIs and how they relate to HIV not just in the EU but all around the world have been observed, which makes these pathologies even more relevant as a public health problem.

Figure 1.2.1. STI rates per 100,000 inhabitants by autonomous community. Spain, 2008.



Source: Weekly Epidemiological News. Rate for 100,000 inhabitants.

In the EU and western countries, the groups most affected are young people aged 25 and under, MSM, of foreign origin or had recently arrived, people with HIV and women of reproductive age, amongst others. Since the end of the 1990s and the start of the last decade, an increase in the reporting of gonorrhoea, syphilis, chlamydia, as well as outbreaks of syphilis, lymphogranuloma venereum (LGV), hepatitis A and shigellosis, especially in MSM have been detected. The increase of co-infections of these pathologies with HIV via sexual contact is cause for concern. In Europe, the latest data places Spain in fourth place with respect to cases of syphilis, seventh place for gonorrhoea and sixteenth place for chlamydia [16-27].

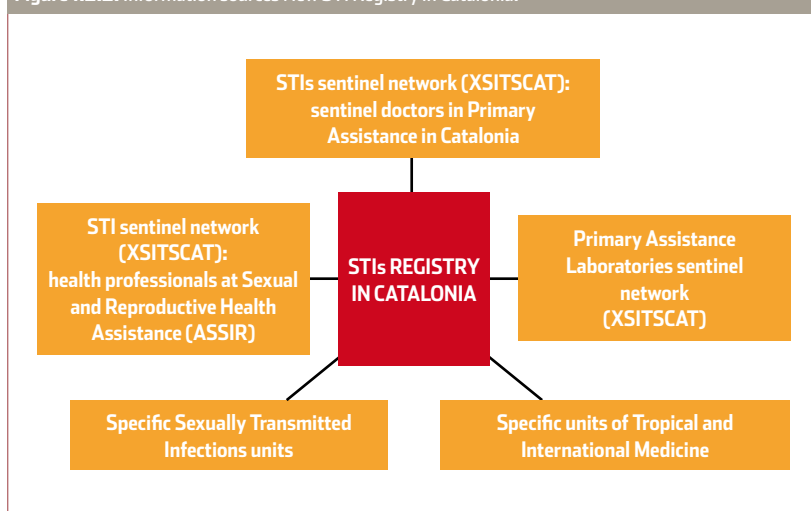
This information is important within the EU because of the interrelation between countries, the affected groups, types of sexual network and places where the infections are

spread, along with the appearance of resistance to treatments and variants which are difficult to detect and diagnose, as well as how they relate to HIV infection [19-21, 26-31].

As a consequence various European countries have begun to take measures through public health actions, increasing surveillance, and the monitoring and control of STIs. Likewise, at European level we have seen a unification of criteria, the emission of health warnings, press releases, publications and reports through the ECDC and the European Surveillance of Sexually Transmitted Infections (ESSTI) [17-18, 21, 23, 26-28].

STIs in Spain, just as in the rest of Europe, began to increase at the start of the new century. Cases of Syphilis have increased by 177%, increasing from an annual rate of 2.32 cases per 100,000 inhabitants in 2003 to 5.70 in 2008. The rate of infection with gon-

Figure 1.2.2. Information sources New STI Registry in Catalonia.



orrhoea has also increased by 77.5% (2003-2008), and jumped from 2.7 cases per 100,000 inhabitants in 2003 to 4.25 in 2008. During the period 2003 to 2008, ten cases of congenital syphilis have also been reported. In 2008 there were no reported cases.

The regions most affected by syphilis with respect to the total population (x 100,000 inhabitants) were the Canary Islands (12.85), Asturias (12.76) and the Balearic Islands (9.56). For gonorrhoea, the regions were Valencia (9.75), the Canary Islands (8.93) and Navarra (5.47) [32] (figure 1.2.1).

An increase in the microbiological reports of STIs beginning in the year 2000 for *Treponema pallidum*, *Neisseria gonorrhoea*, *chlamydia trachomatis*, and Herpes simplex 1-2 were also observed.

With respect to LGV, it is not currently an individualised MDD in Spain, although it is in Catalonia. In 2008 an outbreak of LGV within the

MSM group, mainly HIV-positive, related to the clients of 2 saunas in Barcelona (Catalonia) was reported to the National Centre of Epidemiology. Two cases were also reported in Bilbao (the Basque Country).

1.2.2. The epidemiology of STIs in Catalonia

Until now, the epidemiology of STIs in Catalonia had been based on information obtained from three information systems: The Register of MDD, the Microbiological Notification System of Catalonia (SNMC, according to the Catalan acronym) and the Register of STIs in Catalonia (RITS, according to the Catalan acronym) [33]. With the objective of better coordinating the answers to the health problems associated with STIs, starting with the Decree 445/2004, on 30th November, CEEISCAT began to bring together the epidemiologic information related to STIs in Catalonia [34]. In

2006, through the Decree 391/2006 of 17th October, the circuit of MDD and STI outbreaks were modified by the DS [35]. Specifically, syphilis, gonorrhoea and LGV were considered to be MDD individualised. Genital infections such as chlamydia, trichomonas, genital herpes, genital warts and other STIs were also added. Their incidence was to be reported numerically in a weekly basis. The reporting doctors send the reports to the UVE in each area, and in the case of Barcelona to the ASPB and finally to CEEISCAT.

The Register of MDD is based on the weekly report either numerical or individualised by health workers when a patient presents with clinical indications or suspects that they have one of the MDD [33].

The SNMC is based on the collection of microbiological information of the selected etiological diagnoses, which are reported voluntarily by various hospital laboratories. There are currently 40 hospital laboratories in Catalonia reporting to the system. The microorganisms reported in the file of STIs are: *Neisseria gonorrhoea*, *Treponema pallidum*, *Trichomonas vaginalis*, *Haemophilus ducreyi*, the Herpes simplex virus (VHS 1/2) and *chlamydia trachomatis*. Since 2005, CEEISCAT has used information from the etiological agents of STIs of the SNMC as a complementary source for the surveillance of STIs in Catalonia.

During 2006 CEEISCAT included the reinforced epidemiologic surveillance of STIs with the aim of improving strategic preventative

and welfare intervention measures. For this reason, during the same year, the process of the implantation

of a sentinel network of reinforced surveillance of STIs by doctors and health professionals in sexual

and reproductive health assistance (ASSIR, according to the Catalan acronym) programmes and primary

Figure 1.2.3. STI rates per 100,000 inhab. Compulsory notification. Catalonia, 1996-2008.

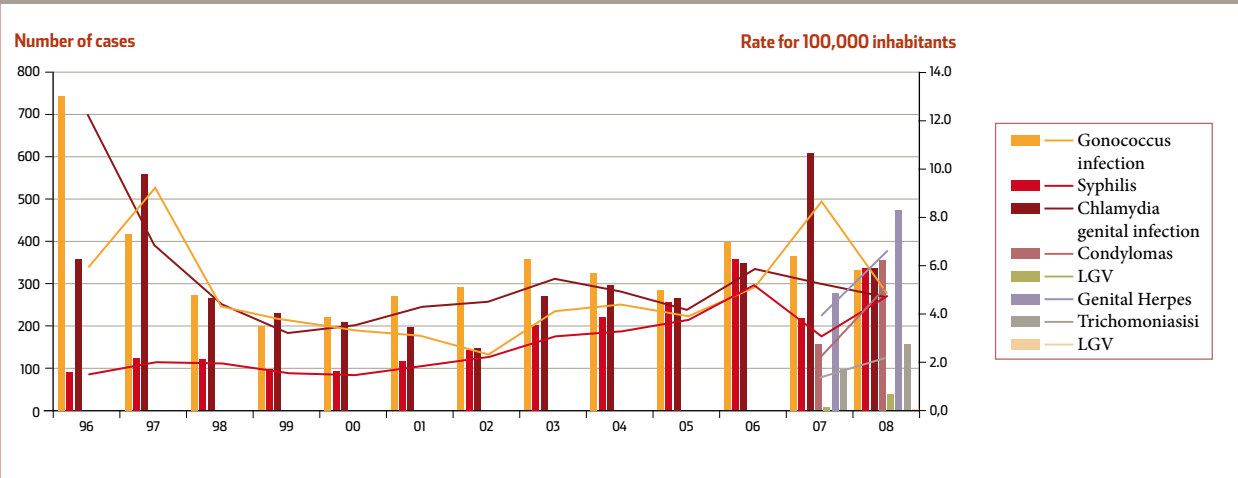
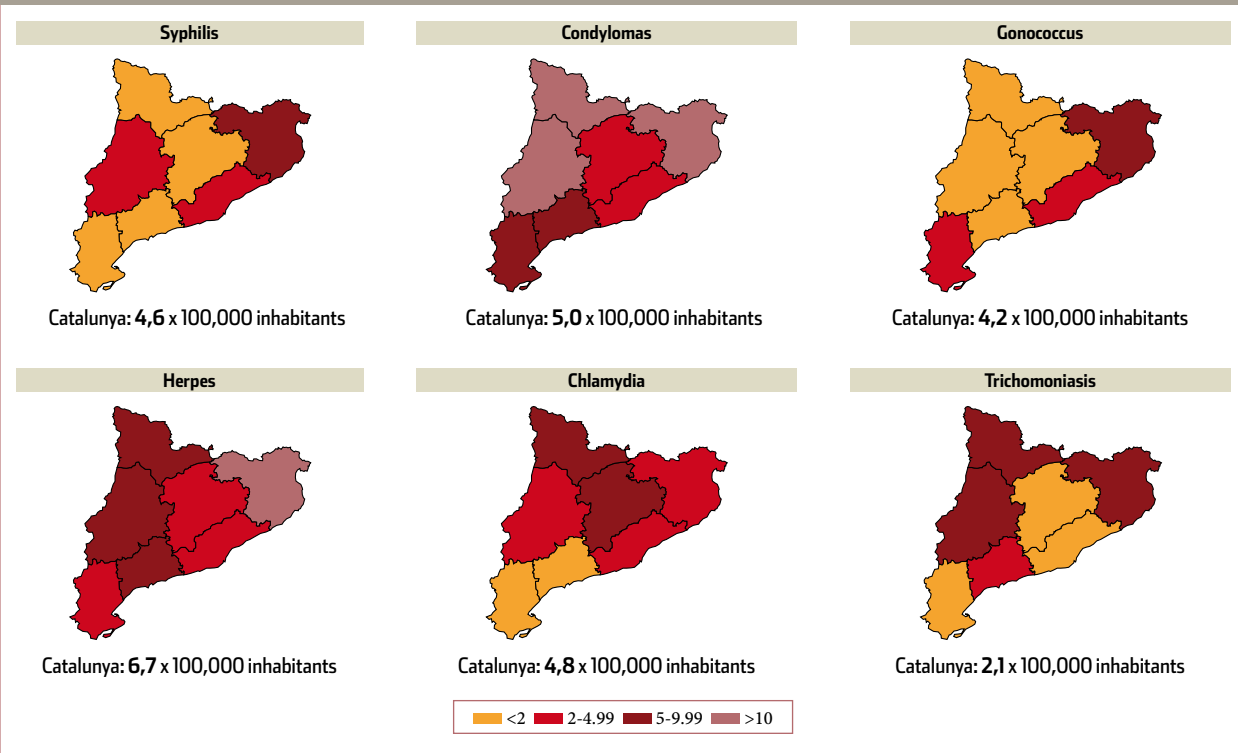


Figure 1.2.4. STI rates per 100,000 inhabitants by regions of Catalonia. 2008.



Source: Register of MDD.

health centre laboratories was initiated (figure 1.2.2) in order to be able to improve estimates of prevalence and detect changes in morbidity rates and the epidemiology of these infections. It also carries out estimates in each territory, and strengthens the thoroughness of mandatory declaration, which until that time had been a weekly numerical count.

During 2006-2007 the Register of Sexually Transmitted Diseases was renamed the RITS, with the expansion of the sources of declaration and participants, adding the network of sentinel health professionals of primary STI health care to the Units of sexually transmitted infections (UITS, according to the Catalan acronym).

1.2.2.1 Extent and distribution of STIs

By 2008, the main STIs surveyed in Catalonia maintained the increasing trend seen in the previous five years (table 1.2.1 and figure 1.2.3). This increase was observed in the whole of Spain and in other complementary information systems such as the reports to the SNMC and the RITS [27, 32-33].

Table 1.2.1. Frequency and rates* of mandatory declaration STIs per year. Catalonia, 1996-2008.

Year	Syphilis		Gonococcus infection		LGV		Chlamydia genital infection		Genital
	Freq.	Rate	Freq.	Rate	Freq.	Rate	Freq.	Rate	Freq.
1996	91	1.5	743	12.2	**	**	358	5.9	**
1997	124	2.0	416	6.8	**	**	557	9.2	**
1998	121	2.0	273	4.4	**	**	264	4.3	**
1999	97	1.6	199	3.2	**	**	229	3.7	**
2000	92	1.5	220	3.5	**	**	209	3.3	**
2001	117	1.8	270	4.3	**	**	196	3.1	**
2002	142	2.2	290	4.5	**	**	146	2.3	**
2003	202	3.1	356	5.4	**	**	268	4.1	**
2004	219	3.3	325	4.9	**	**	295	4.4	**
2005	255	3.7	283	4.2	**	**	265	3.9	**
2006	356	5.2	397	5.8	**	**	347	5.1	**
2007	217	3.1	365	5.2	7	0.1	607	8.7	277
2008	336	4.8	330	4.7	36	0.5	336	4.8	471
% change 2008	54.8		-9.6		414.3		-44.6		
% change 2003-2008	66.3		-7.3		**		25.4		
IEA 2008	1.5		0.9		5.1		1.1		

Source: Register of MDD. / * Rates calculated per 100,000 inhabitants from population projections based on the 2001 census for Catalonia and estimations between the 1991 and 2001 censuses for Catalonia,

Table 1.2.2. Frequency and rates* of notified cases of mandatory declaration STIs per year and health region. Catalonia, 2008.

Health region	Syphilis		Gonococcus infection		LGV		Chlamydia genital infection		Genital
	Freq.	Rate	Freq.	Rate	Freq.	Rate	Freq.	Rate	Freq.
Terres de l'Ebre	2	1.1	7	3.7	0	0.0	2	1.1	8
Camp de Tarragona	5	0.8	8	1.3	0	0.0	9	1.5	45
Barcelonès	240	4.9	228	4.6	34	0.7	237	4.8	217
Gironès	59	8.2	47	6.6	0	0.0	34	4.7	159
Catalunya Central	8	1.6	6	1.2	0	0.0	34	6.8	18
Lleida	13	3.7	3	0.9	1	0.3	15	4.3	20
Alt Pirineu i Arán	1	1.3	1	1.3	0	0.0	5	6.6	4
Total Catalunya	328	4.6	300	4.2	35	0.5	336	4.8	471

Source: Register of MDD. / * Rates calculated per 100,000 inhabitants from population projections based on the 2001 census for Catalonia and estimations between the 1991 and 2001 censuses for Catalonia,

Of the individualised MDD, syphilis remained on the rise with an increase of 66.3% in the last five years. In 2008 there were 336 cases reported (4.8 cases per 100,000 inhabitants). The same year there were 330 cases of gonorrhoea with a rate of 4.7 cases per 100,000 inhabitants. This rate was stable in 2008. Genital chlamydia is one of the most frequent STIs

in Catalonia, with an increasing trend of 30.9% in the previous five years (table 1.2.1).

As for the other STIs, a total of 5,904 suspected infections were reported, an increase of 24.7% in the previous five years and a high incidence in 2008 with a rate of 83.6 per 100,000 inhabitants. With regards to congen-

ital syphilis, in the last year no cases were reported (table 1.2.1).

Of the new incorporations to the weekly numerical reports (decreed 391/2006), there were 471 reports of genital herpes with a rate of 6.7 cases per 100,000 inhabitants and an increase of 70% with respect to the previous year, 2007. Cases of genital

Herpes	Condylomas		Trichomonas		Other STIs		Newborn ophthalmia		Congenital syphilis		
	Rate	Freq.	Rate	Freq.	Rate	Freq.	Rate	Freq.	Rate		
**	**	**	**	**	**	6,314	103.7	**	**	**	**
**	**	**	**	**	**	5,347	87.8	**	**	**	**
**	**	**	**	**	**	4,944	80.4	**	**	**	**
**	**	**	**	**	**	4,615	74.4	**	**	**	**
**	**	**	**	**	**	3,782	60.5	**	**	**	**
**	**	**	**	**	**	3,395	53.5	**	**	**	**
**	**	**	**	**	**	3,406	53.1	**	**	**	**
**	**	**	**	**	**	3,972	60.5	**	**	**	**
**	**	**	**	**	**	3,572	53.3	**	**	**	**
**	**	**	**	**	**	3,725	54.6	**	**	**	**
**	**	**	**	**	**	4,620	67.8	**	**	**	**
4.0	155	2.2	97	1.4	4,735	67.5	37	44.2	4	4.8	
6.7	355	5.0	155	2.2	5,904	83.6	45	50.5	0	0.0	
70.0	129.0		59.8		24.7		21.6		-100.0		
**	**		**		48.6		800.0		**		
**	**		**		1.5		3.8		0		

National Statistics Institute (INE). / ** Mandatory declaration STIs from 2007.

Herpes	Condylomas		Trichomonas		Other STIs		Newborn ophthalmia		Congenital syphilis	
	Rate	Freq.	Rate	Freq.	Rate	Freq.	Rate	Freq.	Rate	
4.2	14	7.4	2	1.1	9	4.8	1	51.6	0	0.0
7.5	31	5.2	16	2.7	795	132.5	2	24.9	0	0.0
4.4	156	3.2	59	1.2	1,646	33.4	78	133.7	0	0.0
22.2	76	10.6	36	5.0	3,245	452.7	7	76.3	0	0.0
3.6	24	4.8	9	1.8	131	26.1	6	93.4	0	0.0
5.7	43	12.2	20	5.7	45	12.8	0	0.0	0	0.0
5.2	11	14.4	4	5.2	32	41.9	0	0.0	0	0.0
6.7	355	5.0	146	2.1	5,903	83.6	94	1.3	0	0.0

National Statistics Institute (INE). / ** Mandatory declaration STIs from 2007.

warts increased from 155 reports to 355 in 2008 (an increase of 129%), with a rate of five cases per 100,000 inhabitants. Trichomonas infection increased by 59.8% with respect to the previous year, with a total of 155 cases reported giving a rate of 2.2 cases per 100,000 inhabitants (**table 1.2.1** and **figure 1.2.3**).

Catalonia has incorporated LGV as an STI of individualised mandatory declaration. In 2007 seven cases were reported whilst in 2008 this number increased to 36, an outbreak of LGV being declared in Barcelona.

The regions with the highest rates per 100,000 inhabitants were (**table 1.2.2**

and **figure 1.2.4**): for syphilis – Girona (8.2), Barcelona (4.9), and Lerida (3.7), for gonorrhoea – Girona (6.6), Barcelona (4.6) and the Terres de l'Ebre (3.7), for genital chlamydia – Central Catalonia (6.8), Pyrenees-Aran (6.6) and Barcelona (4.8), for other STI – Girona (452.7), Tarragona (132.5) and Pyrenees-Aran (41.9),

Table 1.2.3. Yearly frequency of STIs notified to the SNMC, 1996-2008.

Year	<i>C. trachomatis</i>		<i>N. gonorrhoeae</i>		Herpes simplex		<i>T. pallidum</i>		<i>T. vaginalis</i>	
	Freq.	Change %	Freq.	Change %	Freq.	Change %	Freq.	Change %	Freq.	Change %
1996	30	-14.29	35	40.00	0	0.00	86	-27.12	0	0.00
1997	58	93.33	27	-22.86	0	0.00	63	-26.74	118	**
1998	43	-25.86	41	51.85	0	0.00	76	20.63	131	11.02
1999	26	-39.53	61	48.78	7	**	81	6.58	148	12.98
2000	32	23.08	67	9.84	52	642.86	51	-37.04	141	-4.73
2001	27	-15.63	87	29.85	28	-46.15	75	47.06	168	19.15
2002	14	-48.15	47	-45.98	26	-7.14	96	28.00	87	-48.21
2003	30	114.29	68	44.68	57	119.23	90	-6.25	141	62.07
2004	21	-30.00	102	50.00	109	91.23	239	165.56	145	2.84
2005	24	14.29	105	2.94	167	53.21	362	51.46	116	-20.00
2006	20	-16.67	222	111.43	122	-26.95	606	67.40	170	46.55
2007	21	5.00	330	48.65	99	-18.85	224	-63.04	131	-22.94
2008	126	500.00	354	7.27	82	-17.17	133	-40.63	160	22.14
Change % 2008	500.00		7.27		-17.17		-40.63		22.14	
Change % 2003-2008	320.00		420.59		43.86		47.78		13.48	

Source: SNMC.

Table 1.2.4. Distribution of STIs notified to the SNMC by sex and age group, 2008.

Year	<i>Chlamydia trachomatis</i>				<i>Neisseria gonorrhoeae</i>				Herpes simplex		
	Woman	Man	Freq.	%	Woman	Man	Freq.	%	Woman	Man	Freq.
<15	1	0	1	0.79	1	1	2	0.6	1	0	1
15-19	8	0	8	6.3	6	14	20	5.6	9	0	9
20-29	35	6	41	32.5	22	123	145	41	29	5	34
30-39	27	16	43	34.1	13	89	102	28.8	13	6	19
40-49	7	19	26	20.6	3	40	43	12.1	8	4	12
50-59	0	4	4	3.2	3	9	13	3.7	2	1	3
60+	0	0	0	0	4	5	9	2.5	3	1	4
Unknown	2	1	3	2.4	0	20	20	5.6	0	0	0
Total	80	46	126	100	52	301	354	99.9	65	17	82

Source: SNMC.

for neonatal ophthalmia – Barcelona (133.7), Central Catalonia (93.4) and Girona (76.3)

From the beginning of the AIDS epidemic until the end of the 1990s, cases of STIs were decreasing. In the case of syphilis the rate was always low (table 1.2.1 and figure

1.2.3). Between the end of the last century and the start of the new millennium (1998-2002), we began to see an increase in the reporting of STI of mandatory declaration. This increase was continuous during the period 1999-2008 with increases of 246.4% for syphilis, 65.8% for gonorrhoea, 46.7% for genital chlamydia, and 27.9% for the sum total of other STI (table 1.2.1)

ple from outside Spain was also observed (48.2%, n=247), of which the majority were from Latin American countries (46.5%), followed by those from Western Europe (17%), sub-Saharan Africa (12.5%), Eastern Europe (12.1%) and North Africa (7.7%).

Sexual orientation was mainly homosexual (47.1%), followed by heterosexual (28.1%) and bisexual (4.7%).

1.2.2.2. The characteristics of STI of individualised mandatory declaration

Infectious Syphilis

Between 1st January 2007 and 31st December 2008, the Register of MDD in Catalonia received reports of 512 cases (tables 1.2.1, 1.2.2 and figures 1.2.3, 1.2.5), 82.8% were men and 17.2% were women. The average age was 36.4 years and the most affected groups were men aged from 25 to 39 years old and women from 20 to 34 years old. During 2008, there was an increase of cases amongst people aged younger than 35 and from 45 to 49 years old. A high proportion of cases amongst peo-

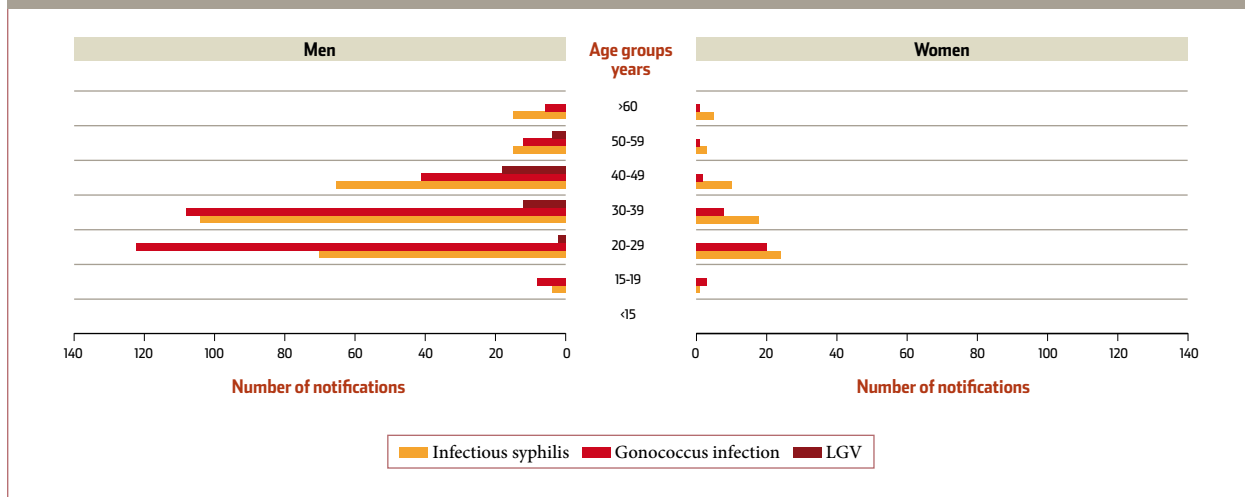
Of the cases with previous history of STIs, 18.6% (95/512) were infected with HIV at the time of diagnosis and 12% reported having had an STI diagnosed during the previous year and 4.7% (24/512) of all cases were diagnosed with HIV at the same time as they were diagnosed with syphilis.

The infectious period of syphilis, if not treated, is 12 months, which includes primary, secondary and early latent syphilis. Of the 512 cases diagnosed, 55.1% were declared as infectious syphilis (primary, secondary and early latent) and the rest of them

<i>H. ducreyi</i>		Total	
Freq.	Change %	Freq.	Change %
0	0	151	-15.17
0	0	266	76.16
0	0	291	9.40
0	0	323	11.00
0	0	343	6.19
1	**	386	12.54
0	0	270	-30.05
0	0	386	42.96
0	0	616	59.59
0	0	774	25.65
0	0	1,140	47.29
0	0	805	-29.39
0	0	855	6.21
0.00		6.21	
0.00		121.50	

%	<i>Treponema pallidum</i>				<i>Trichomonas vaginalis</i>				Total			
	Woman	Man	Freq.	%	Woman	Man	Freq.	%	Woman	Man	Freq.	%
1.2	0	1	1	0.8	0	0	0	0	2	2	4	0.0
11	0	1	1	0.8	3	0	3	1.9	26	15	41	1.9
41.5	9	17	26	19.5	38	0	38	23.8	133	151	284	23.8
23.2	16	29	46	34.6	53	0	53	33.1	123	140	263	33.1
14.6	4	17	21	15.8	29	1	30	18.8	51	81	132	18.8
3.7	2	9	11	8.3	19	1	20	12.5	26	24	50	12.5
4.9	4	6	10	7.5	4	0	4	2.5	15	12	27	2.5
0	3	14	17	12.8	12	0	12	7.5	17	35	52	7.5
100.1	38	94	133	100.1	158	2	160	100.1	393	460	853	100.1

Figure 1.2.5. Distribution of STIs notified to the Register of individualized MDDD by sex and age group, 2008.



were in the non-infectious phase or unspecified. The importance of the ability to specify the phase of the infection, due to the implications this has when reviewing sexual contacts must be emphasised.

As regards behavioural data, the cases diagnosed during this time period report high risk practices with an average of 16.8 (standard deviation (SD): 32.4) sexual partners during the previous 12 months (excluding commercial SW (SW)). 39.8% reported having had a new sexual partner during the previous 3 months and only 14.1% had used a condom in their last sexual relation. During the previous 12 months, 8.2% had maintained sexual relationships in sex venues, 7% in foreign countries, 5.1% had taken drugs, and 3.1% had engaged in sexual contact with prostitutes and 4.7% were SW.

Syphilis cases reported to have a high number of sexual partners, unprotected sexual practices and a high

proportion of them were infected with HIV. Reviewing sexual contacts is very important, but in only 47.7% of the 512 cases a sexual partner study had been initiated with an average of 2.1 sexual partners having been located by the patient.

Regarding the possibility of maternal-foetal exposure to or transmission of syphilis, three women were diagnosed during pregnancy. Of these, one had secondary phase syphilis, and the other two were in a non-specified phase.

Infection with gonorrhoea

During the same time period the Register of MDD in Catalonia received 695 reports of gonorrhoea, of which 330 had occurred in 2008 (tables 1.2.1, 1.2.2 and figures 1.2.3, 1.2.5).

Until 31st December 2008, 562 cases were diagnosed, of which 89.5% were men and 10.5% were women with an H/D (M/F) ratio of 8.5. The average age was 32.1 years (SD: 9.4 years) and

the most affected groups were men aged from 25 to 34 and women from 20 to 29. During 2008, there was an increase in cases within the group of young people aged 25 and under and the group aged from 30 to 39. A third of the cases were of foreign origin (30.8%, n=173), of which the majority (43.9%) were from Latin American countries, followed by western Europe (24.3%), north Africa (14.5%), Eastern Europe (9.8%) and Asia (4.6%).

The majority of patients with STIs were heterosexuals (32%), followed by homosexuals (25.3%) and a bisexual (4.1%). The sexual orientation was unknown in 38.6% of the cases.

During 2007 and 2008, the history of STIs in reported cases was the following: 8.2% (46/562) were co-infected with HIV at the time of diagnosis and 12% had been diagnosed with an STI during the previous year. Ten cases of gonorrhoea were concurrently diagnosed with another

STI of mandatory declaration: four cases with syphilis, five cases with LGV and one case with triple infection of syphilis-gonorrhoea-LGV. Of these ten cases, 80% were co-infected with HIV.

The cases diagnosed during this period, reported high risk sexual practices with an average of 13.2 (SD: 22.9) sexual partners during the previous 12 months (excluding commercial SW). In the previous three months 40.6% reported having had a new sexual partner and only 13.5% had used a condom in the last sexual relation.

Like syphilis, the cases of gonorrhoea declared stated having had a high number of sexual partners and unprotected sex, and there was a high proportion infected with HIV. Attempts to locate sexual partners had been initiated in only 32.9% of the 562 cases and an average of 1.49 (SD: 1.33) sexual contacts had been located by the patient.

With respect to risk behaviour during the previous 12 months, 9.9% reported having maintained sexual contact with prostitutes, whilst 4.5% were SW, 3.9% had maintained sexual relations in sex venues, 4% had maintained sexual practices in other countries, and 3.2% had taken drugs before engaging in sex. The type of practices and contacts reported indicated a heterosexual profile for this STI.

Lymphogranuloma Venereum (LGV)

Between 1st January 2007 and 31st December 2008 there were 43 cases

of LGV reported to the Register of MDD in Catalonia, of which 37 occurred in 2008 (tables 1.2.1, 1.2.2 and figures 1.2.3, 1.2.5).

All the cases were identified within a group of men who practised sex with men (one bisexual), with an average age of 39 (SD 1.0), mainly infected with HIV (39/43 cases, 90.7%), who had multiple sexual partners in the last year (an average of 47 partners, SD 9.1) and sexual contact in networks and sex venues such as saunas, bars, nightclubs, and Internet chat-rooms, amongst others.

There were 60.5% of the cases reporting to have had a new sexual partner in the previous 3 months and just over half reported having had unprotected sex in their last sexual relation. Half of the cases were diagnosed with a concurrent STI in the last year, being syphilis, gonorrhoea or genital warts. The infection status as regards Hepatitis B and C viruses (HCV) was unknown in the majority of cases. Most of the cases, (86%) resided in the city of Barcelona, 11.6% resided in the rest of Catalonia and one outside of Catalonia. 18.6% were from EU countries, 20.9% were from Latin America and 60.5% were Spanish.

The first cases of LGV were diagnosed in the UITS Drassanes. This UITS provided the majority of the cases, with 69.8% of the total, the rest having been diagnosed in the Germans Trias i Pujol Hospital (HUGTiP, according to the Catalan acronym). Thirty-seven of the cases were treated with Doxycycline for 21 days. In all 43 cases *C.trachomatis*

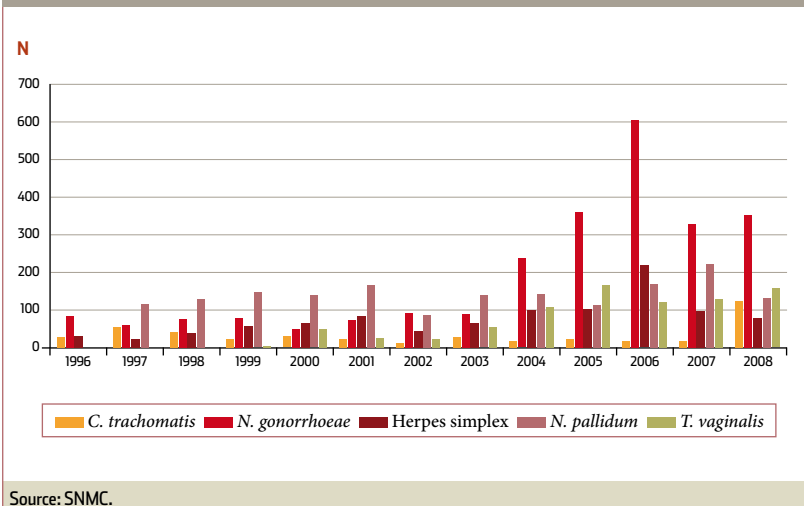
was detected and 41 of these were confirmed for serotypes L1-L3 with molecular genotyping techniques in the Microbiology Service of the Vall de Hebrón Hospital (34/43) and at the HUGTiP (9/43). Of the total of confirmed cases, 9 were serotype 2 (UHGTyP), and 34 were serotype L1-L3 non-specific (Vall de Hebrón). The average number of days between the onset of symptoms until the diagnosis was approximately 3.6 months (109.7 days, SD: 21.8 days).

Due to the increase in cases observed during the time period from December 2007 to May 2008, the ASPB declared an outbreak in the city of Barcelona on 5th June 2008 [21]. The epidemiological characteristics of the cases detected were similar to outbreaks in the rest of Europe. The approach to the investigation into sexual contacts was complicated by the type of relations and the high quantity of partners reported, which on many occasions were anonymous.

1.2.2.3. The characteristics of STIs reported to the Microbiological Notification System of Catalonia

A total of 855 incidents of causal etiological agents of STIs were reported in 2008. Of these, 15.6% correspond to *T. Pallidum*, 41.4% to *N. gonorrhoea*, 18.7% to *T. vaginalis*, 9.6% to the VHS, and 14.7% to *C. trachomatis*. The number of declarations of *C. trachomatis* increased (500%), followed by the VHS 1 and 2 (22.1%) and *T. pallidum* (7.3%) (table 1.2.3 and figure 1.2.6). The age groups most affected were women aged from 20 to 29 and from 30 to 39, and men

Figure 1.2.6. Annual distribution of STIs notified to the SNMC, 1996-2008.



Source: SNMC.

aged from 30 to 39 (table 1.2.4 and figure 1.2.7). An increase in cases notified in young people under 35 years old was also observed (table 1.2.4 and figures 1.2.7).

With regard to *N. gonorrhoea*, 105 strains were notified, of which 5.7% were Beta-lactamase positive, 30.5% were Beta-lactamase negative and in 63.8% there was no result.

Of the total of 855 declarations, 46% (393) were women with an average age of 36.8 years (SD: 18.2 years) with more notifications for *T. vaginalis* (40.2%), followed by *C. trachomatis* (20.4%), and by the VHS (16.5%). The age groups most affected in women were: young women aged from 20 to 29, followed by adults from 30 to 39 and from 40 to 49. In comparison with 2007, there was a slight increase of 12.3% in the total of the STIs declared, mainly in the declarations of *C. trachomatis*, *T. vaginalis*, and *N. gonorrhoea* (figure 1.2.8).

In women the age groups with most notifications for each etiological agent were the following:

- *C. trachomatis*: young women < 35 years
- *N. gonorrhoea*: young women < 35 years
- Herpes Simplex: young women < 35 years
- *T. pallidum*: 25-39 years
- *T. vaginalis*: mainly those aged 25-44 years.

With regard to men, of the total of declarations received during the year 2008, 460 (53.8%) notifications corresponded to men with an average age of 39 years (SD: 20 years) mainly affected by *N. gonorrhoea* (65.4%), *T. pallidum* (20.4%) and *C. trachomatis* (10%). The age groups mostly affected were: young men aged from 20 to 29 years, (32.8%) followed by the group aged 30 to 39 years (30.4%). During the year 2008, in men there was no overall change in the total of STIs declared

when compared with 2007, but there was an important increase in the number of declared cases of *C. trachomatis* (figure 1.2.8). This change in the number of declarations can be explained by the initiation of the sending of screening samples in the MSM group to the Vall de Hebrón Hospital laboratory by the UITs in Drassanes.

In men, the age groups with most notifications for each etiological agent were the following:

- *C. trachomatis*: 30-44 years
- *N. gonorrhoea*: young men <35 years
- Herpes simplex: adult men 30-59 years
- *T. pallidum*: adult men 30-49
- *T. vaginalis*: mainly those aged over 45 years

The trend from 2003 to 2008 shows a global increase of 121.5% with respect to 2003. The increase was observed mainly on *C. Trachomatis*, *T. pallidum* and Herpes Simplex notification (table 1.2.3 and figure 1.2.6). It must be emphasised that there was variability in the notification of *C. trachomatis* along with the difficulty in establishing patterns during this period and the increase in the notification of *T. pallidum* which was difficult to classify as infectious.

1.2.2.4. The characteristics of the STI declared to the Register of STIs (RITS) in Catalonia

From May 2007 until 2009 a total of 2,536 patients with STIs were recorded in the RITS (tables 1.2.5, 1.2.6 and 1.2.7). The majority of the cases were declared by the UITs of Drassanes

Figure 1.2.7. Distribution of STI notified to the SNMC by age-group and sex, 2008.

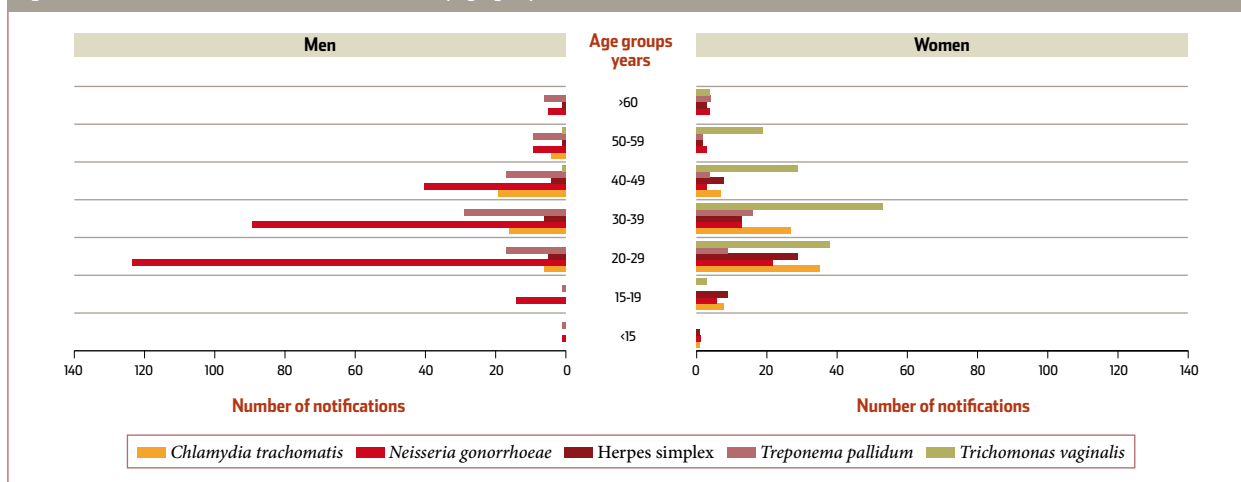
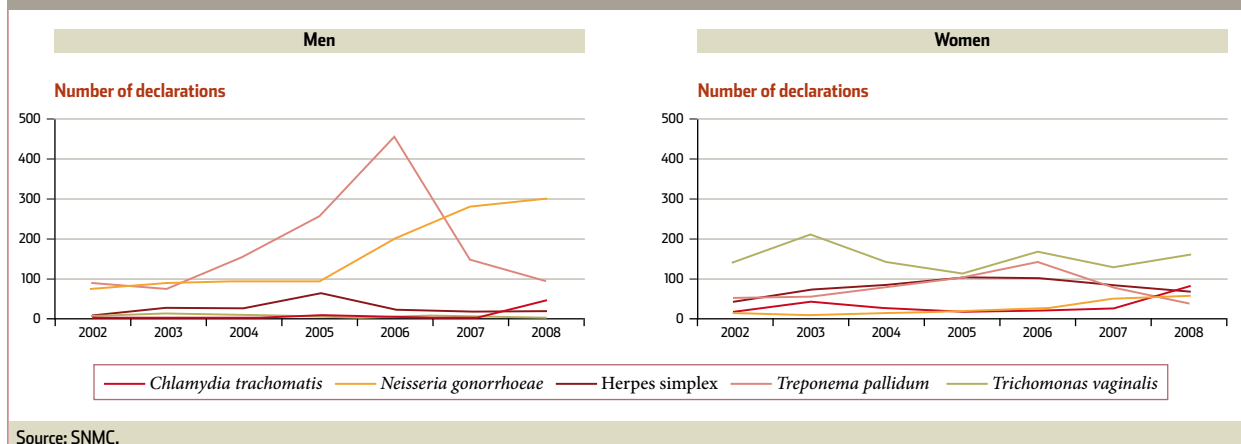


Figure 1.2.8. Annual distribution of STI notified to the SNMC by sex, 2002-2008.n



Source: SNMC.

(86.4%), followed by the ASSIR sentinel network (11.1%) and in a lower proportion by the network of family doctors (2.5%).

During this period, 68.2% of those registered were men (31.8% women) and 44% were of foreign origin. The average age was 31.5 years (SD 8.7). With regard to sexual orientation, the majority declared to be heterosexual 58.6%), but 38% of 2,536 re-

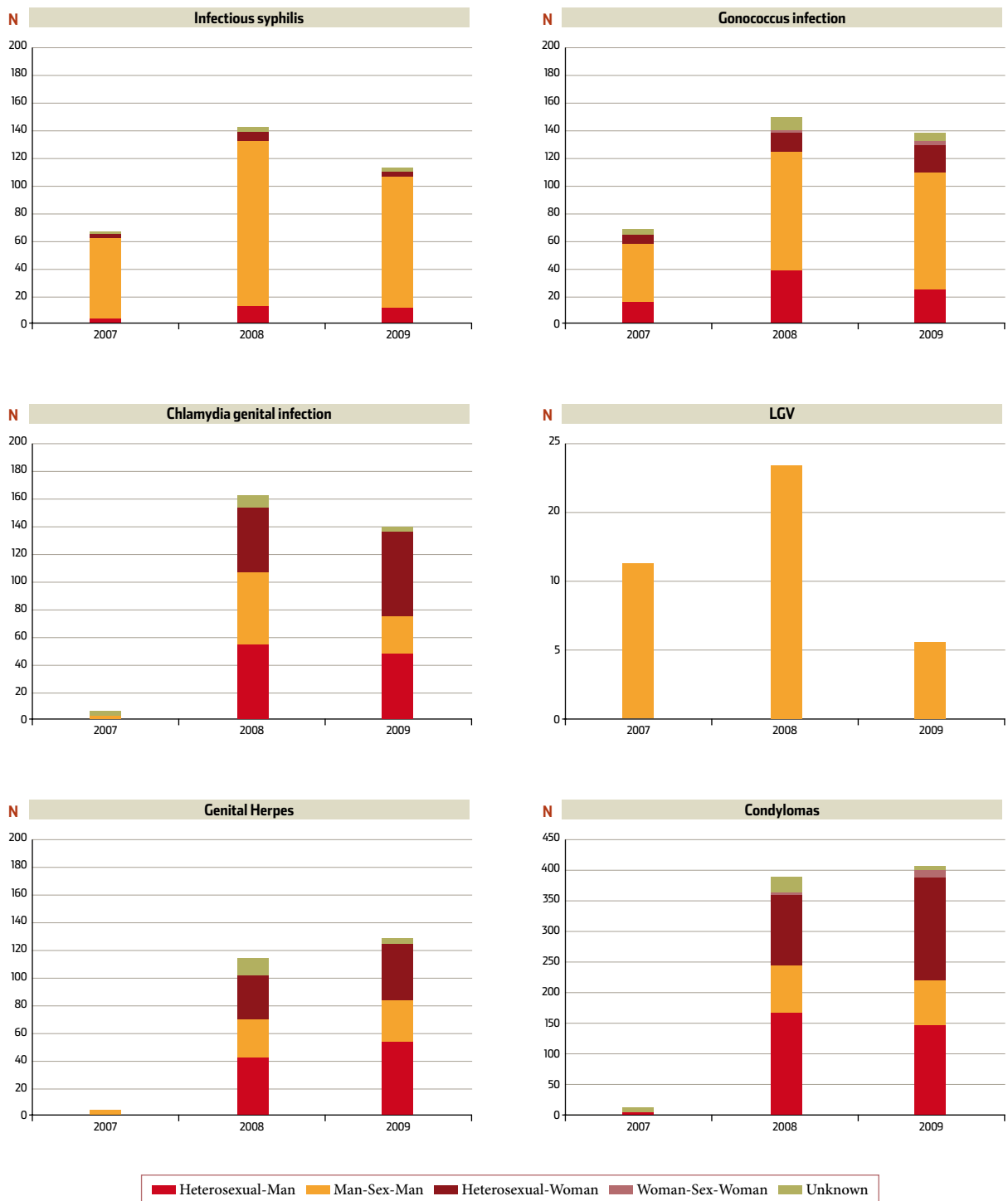
ported having maintained sexual relations with someone of the same sex (mainly MSM). A high proportion (37.5%) reported having had a new partner in the previous three months and 43.5% had not used a condom in their last sexual relation.

The most reported STIs were genital warts (31.7%), followed by syphilis (17%), gonorrhoea (14.1%), chlamydia (12.15%) and HSV (9.7%). The

overall data also shows a high proportion of co-infection (11.6%) with HIV in these patients (13.1% UITs, 2.1% ASSIR, 1.6% family doctors) and 6.8% with another concurrent STI at the time of diagnosis. In the previous 12 months 14.5% had been diagnosed with another STI previous to their current diagnosis (table 1.2.6).

Diferently from other STI, the LGV was diagnosed only in MSM (figure 1.2.9).

Figure 1.2.9. Distribution of STIs selected by sex and sexual orientation. RITS, 2007-2009.



Source: RITS.

With the exception of Trichomoniasis, the rest of STIs monitored by the RITS show an increasing trend along the years. Including to the series historical data from the ancient STI registry (1996-2006) allows to see this trend (figure 1.2.10 and 1.2.11)

STIs in the general population

Until 2009, the most frequent STIs in the general population were detected by the sentinel network of family doctors. This network provided a total of 64 patients who visited the primary health system with 2.5% of the total registered giving a total of 67 incidents of STIs. During the same period, a total of ten doctors coming from eight centres notified cases within the RITS (tables 1.2.5, 1.2.6 and 1.2.8).

The characteristics of the population included were: mainly men (78.1% ratio H/D: 3.6) with an average age of 33 years (SD 9.3) with a very high proportion being of foreign origin (64.1%). The majority declared themselves to be heterosexual (95.3%) and only 4.7% were MSM.

The most frequent incidents of STIs were genital warts (32.8%), non-specific urethritis (32.8%), Hepatitis B (12.5%), genital herpes (10.9%) and gonorrhoea (9.4%). With regard to HIV, co-infection was at 1.6%. The percentage who presented with symptoms of a concurrent STI at the time of diagnosis was 4.7%. In the previous 12 months 15.6% had been infected with an STI prior to their current diagnosis.

Regarding behavioural data, 29.7% of cases reported having had a new

Figure 1.2.10. Distribution of syphilis, gonococci, chlamydia and trichomonas. Register of Sexually Transmitted Diseases and RITS, 1996-2009.

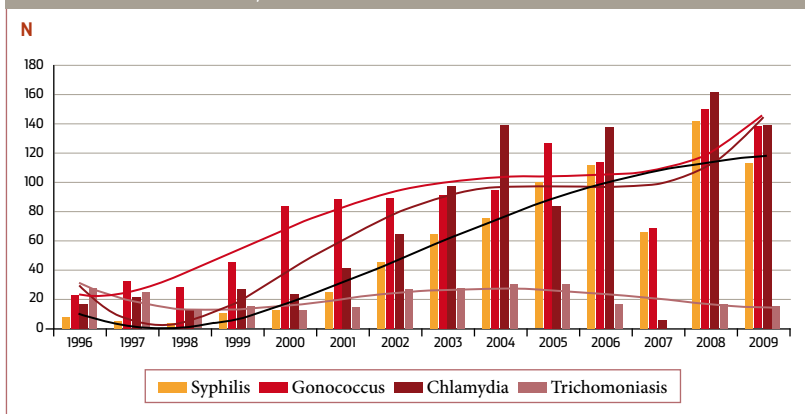
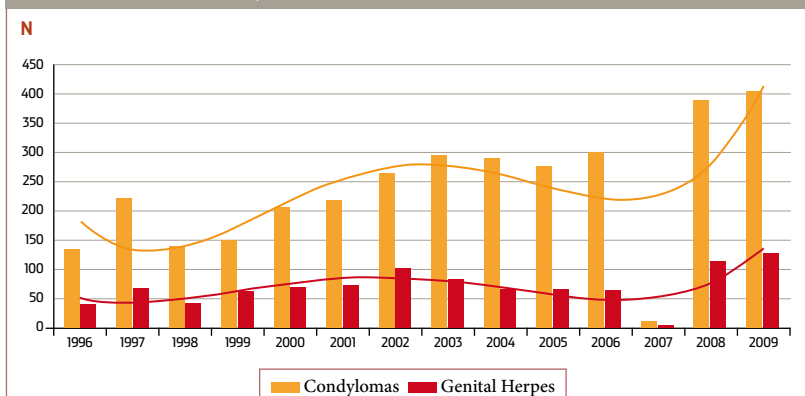


Figure 1.2.11. Distribution of condyloma acuminatum and genital herpes. Register of Sexually Transmitted Diseases and RITS, 1996-2009.



Source: Register of Sexually Transmitted Diseases (1996-2007) and RITS (2007-2009).
** In 2007: changes in the notification system.

sexual partner in the previous three months and 62.5% had not used a condom in the last sexual relation. The average number of sexual partners in the last 12 months was 3.02 partners (SD: 0.66). During the previous 12 months, 22% reported having maintained sexual relations in other countries, 15.6% had consumed drugs before maintaining sexual relations and 12.5% had engaged in sexual relations with prostitutes.

In 75% of the total of registered cases, a review of their sexual contacts had been initiated with an average of 1.69 (SD: 0.19) contacts or sexual partners in the previous three months, of which an average of 1.43 of the sexual contacts (SD: 0.24) were located.

- The profile of the cases declared within the network of sentinel doctors is one of adult heterosexual males with an average of three

Table 1.2.5. Number of notified STIs episodes by sex and sexual orientation. Register of STIs, 2007-2009.

ASSIR (n=281 patients)	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Condylomas	12	60.0	0	0	95	35.7	5	83.3	0	0	112	39.9
Gonococcus	1	5.6	0	0	4	1.5	0	0	0	0	5	1.8
HBV	0	0	0	0	0	0	0	0	0	0	0	0
HCV	0	0	0	0	0	0	0	0	0	0	0	0
Chlamydia	2	10.0	0	0	25	9.6	0	0	0	0	27	9.6
Genital Herpes	1	5.0	0	0	7	2.7	0	0	0	0	8	2.8
Papillomavirus	0	0	0	0	14	5.4	0	0	0	0	14	50.0
LGV	0	0	0	0	0	0	0	0	0	0	0	0
Infectious syphilis (1,2, latent early syphilis)	0	0	0	0	0	0	0	0	0	0	0	0
Latent late syphilis	0	0	0	0	0	0	0	0	0	0	0	0
Unspecified syphilis	0	0	0	0	2	0.8	0	0	1	50.0	3	1.1
Trichomonas	0	0	0	0	16	60.0	1	16.7	1	50.0	18	6.4
Urethritis	1	5.0	0	0	0	0	0	0	0	0	1	0.4
Vaginosis	0	0	0	0	94	35.3	1	16.7	0	0	95	33.8
Soft chancre	0	0	0	0	0	0	0	0	0	0	0	0
Other STIs	3	15.0	0	0	11	4.2	0	0	0	0	14	50.0
Total	20	100.0	0	0	268	100.0	7	100.0	2	100.0	297	100.0

UIITS (n=2191 patients)	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Condylomas	291	43.5	154	16.5	188	380.0	12	52.2	27	32.5	672	30.7
Gonococcus	74	11.1	214	22.9	36	7.3	5	21.7	17	20.5	346	15.8
HBV	0	0	3	0.3	0	0	0	0	0	0	3	0.1
HCV	0	0	0	0	1	0.2	0	0	0	0	1	0
Chlamydia	100	14.9	83	8.9	83	16.8	2	8.7	10	120.0	278	12.7
Genital Herpes	93	13.9	59	6.3	65	13.1	1	4.3	13	15.7	231	10.5
Papillomavirus	1	0.1	0	0	3	0.6	0	0	0	0	4	0.2
LGV	0	0	41	4.4	0	0	0	0	0	0	41	1.9
Infectious syphilis (1,2, latent early syphilis)	26	4.2	276	27.1	14	2.6	0	0	5	5.4	321	13.6
Latent late syphilis	9	1.3	14	1.5	7	1.4	0	0	0	0	30	1.4
Unspecified syphilis	10	1.5	62	6.6	15	3.1	0	0	2	2.4	89	4.1
Trichomonas	0	0	0	0	10	20.0	1	4.3	0	0	11	0.5
Urethritis	41	6.1	61	6.5	1	0.2	0	0	7	8.4	110	50.0
Vaginosis	0	0	0	0	54	10.9	4	17.4	3	3.6	61	2.8
Soft chancre	0	0	0	0	1	0.2	0	0	0	0	1	0
Other STIs	47	70.0	50	5.4	54	10.9	1	4.3	8	9.6	160	7.3
Total	692	100.0	1,017	100.0	532	100.0	26	100.0	92	100.0	2,359	100.0





STI	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Condylomas	16	34.0	2	66.7	3	21.4	0	0	0	0	21	32.8
Gonococcus	5	10.6	0	0.0	1	7.1	0	0	0	0	6	9.4
HBV	5	10.6	0	0	3	21.4	0	0	0	0	8	12.5
HCV	0	0	0	0	0	0	0	0	0	0	0	0
Chlamydia	1	2.1	0	0	1	7.1	0	0	0	0	2	3.1
Genital Herpes	3	6.4	1	33.3	3	21.4	0	0	0	0	7	10.9
Papillomavirus	0	0	0	0	0	0	0	0	0	0	0	0
LGV	0	0	0	0	0	0	0	0	0	0	0	0
Infectious syphilis (1,2, latent early syphilis)	0	0	0	0	0	0	0	0	0	0	0	0
Latent late syphilis	0	0	0	0	0	0	0	0	0	0	0	0
Unspecified syphilis	1	2.1	0	0	0	0	0	0	0	0	1	1.6
Trichomonas	0	0	0	0	4	28.6	0	0	0	0	4	6.3
Urethritis	18	38.3	0	0	0	0	0	0	0	0	18	28.1
Vaginosi	0	0	0	0	0	0	0	0	0	0	0	0
Soft chancre	0	0	0	0	0	0	0	0	0	0	0	0
Other STIs	0	0	0	0	0	0	0	0	0	0	0	0
Total	49	100.0	3	100.0	15	100.0	0	0	0	0	67	100.0

STI	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Condylomas	319	44.93	156	16.03	286	34.84	17	51.52	27	31.03	805	30.68
Gonococcus	80	11.27	214	21.99	41	4.99	5	15.15	17	19.54	357	13.61
HBV	5	0.70	3	0.31	3	0.37	0	0.00	0	0.00	11	0.42
HCV	0	0.00	0	0.00	1	0.12	0	0.00	0	0.00	1	0.04
Chlamydia	103	14.51	83	8.53	109	13.28	2	6.06	10	11.49	307	11.70
Genital Herpes	97	13.66	60	6.17	75	9.14	1	3.03	13	14.94	246	9.38
Papillomavirus	1	0.14	0	0.00	17	2.07	0	0.00	0	0.00	18	0.69
LGV	0	0.00	41	4.21	0	0.00	0	0.00	0	0.00	41	1.56
Infectious syphilis (1,2, latent early syphilis)	26	3.66	276	28.37	14	1.71	0	0.00	5	5.75	321	12.23
Latent late syphilis	9	1.27	14	1.44	7	0.85	0	0.00	0	0.00	30	1.14
Unspecified syphilis	11	1.55	62	6.37	17	2.07	0	0.00	3	3.45	93	3.54
Trichomonas	0	0.00	0	0.00	30	3.65	2	6.06	1	1.15	33	1.26
Urethritis	9	1.27	14	1.44	7	0.85	0	0.00	0	0.00	30	1.14
Vaginosi	0	0.00	0	0.00	148	18.03	5	15.15	3	3.45	156	5.95
Soft chancre	0	0.00	0	0.00	1	0.12	0	0.00	0	0.00	1	0.04
Other STIs	50	7.04	50	5.14	65	7.92	1	3.03	8	9.20	174	6.63
Total	710	100.0	973	100.0	821	100.0	33	100.0	87	100.0	2.624	100.0

Source: RITS.

Table 1.2.6. HIV+ status by sex and sexual orientation. Register of STIs, 2007-2009.

ASSIR	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
HIV+	2	11.1	0	0.0	4	1.6	0	0.0	0	0.0	6	2.1
HIV unknown	5	27.8	0	0.0	70	27.5	1	16.7	1	50.0	77	27.4
Total	18	100.0	0	0.0	255	100.0	6	100.0	2	100.0	281	100.0
UITS	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
HIV+	15	2.2	261	28.0	5	1.0	0	0.0	5	6.0	286	13.1
HIV unknown	341	51.0	184	19.7	173	35.8	10	43.5	66	79.5	774	35.3
Total	669	100.0	933	100.0	483	100.0	23	100.0	83	100.0	2,191	100.0
EAP Sentinel network of health professionals	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
HIV+	0	0.0	0	0.0	1	7.1	0	0.0	0	0.0	1	1.6
HIV unknown	14	29.8	1	33.3	2	14.3	0	0.0	0	0.0	17	26.6
Total	47	100.0	3	100.0	14	100.0	0	0.0	0	0.0	64	100.0
TOTAL RITS	Sex and sexual orientation											
	Heterosexual-Man		Man-Sex-Man		Heterosexual-Woman		Woman-Sex-Woman		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
HIV+	17	2.3	261	27.9	10	1.3	0	0.0	5	5.9	293	11.6
HIV unknown	360	49.0	185	19.8	245	32.6	11	37.9	67	78.8	868	34.2
Total	734	100.0	936	100.0	752	100.0	29	100.0	85	100.0	2,536	100.0

Source: RITS.

partners in the last year with infrequent use of condoms and mainly diagnosed with genital warts and urethritis.

- Emphasis must be placed on the fact that 1.6% of patients diagnosed in primary health centres with an STI were infected with HIV.
- The doctors from the sentinel network had a highly positive awareness of the approach taken in the reviewing of sexual contacts.

STIs in women and young people

The group of women, young people and their partners treated during this period within the ASSIR sentinel network provided a total of 281 patients. Reports were received from nine centres participating in the ASSIR sentinel network (tables 1.2.5, 1.2.6 and 1.2.9). The population treated in these centres is made up of young adults with an average age of 29.6 years (SD: 9.5). Given the specific characteristics of the users of ASSIR centers, the contribution

within the RITS is mainly of women from the general population (93.6%, H/D ratio: 0.07). One third of those registered are from other countries with 32.7% of the total. The majority were heterosexuals, with few cases of women who have sex with women being observed.

The most frequent incidents of STIs were genital warts (39.9%), vaginosis (33.8%), chlamydia (9.6%) and trichomas (6.4%). With regard to HIV infection, the proportion was 2.1%.

Table 1.2.7. Main characteristics of the RITS patients, ASSIR, 2007-2009 (N=281 patients).

	Man		Woman		Total	
	n	%	n	%	n	%
Mean age (years)	27.5 (DE: 5.7)		29.7 (DE: 9.7)		29.6 (DE: 9.5)	
Education	Man		Woman		Total	
Primary schooling	2	11.1	64	24.3	66	23.5
High school	6	33.3	100	38.0	106	37.7
University	5	27.8	50	19.0	55	19.6
No studies	0	0.0	3	1.1	3	1.1
Unknown	5	27.8	46	17.5	51	18.1
Total	18	100.0	263	100.0	281	100.0
Origin	Man		Woman		Total	
North America	0	0.0	2	0.8	2	0.7
Latin America	4	22.2	62	23.6	66	23.5
Sub-saharan Africa	0	0.0	3	1.1	3	1.1
Middle East and North Africa	0	0.0	5	1.9	5	1.8
Western and central Europe	0	0.0	5	1.9	5	1.8
Eastern Europe and Central Asia	0	0.0	9	3.4	9	3.2
South and Eastern Asia	0	0.0	1	0.4	1	0.4
Eastern Asia	0	0.0	1	0.4	1	0.4
Oceania	0	0.0	0	0.0	0	0.0
Spain	14	77.8	175	66.5	189	67.3
Total	18	100.0	263	100.0	281	100.0
Sexual orientation	Man		Woman		Total	
Heterosexual	18	100.0	255	96.9	273	97.8
Same-sex relationship	0	0.0	6	2.3	6	2.2
Unknown	0	0.0	2	0.8	2	0.7
Total	18	100.0	263	100.0	281	100.0
Mean number of partners < 12 months*	Man		Woman		Total	
Number	2.7 (DE: 1.4)		1.9 (DE: 2.1)		1.9 (DE: 2.0)	
New sexual partner < 3 months	Man		Woman		Total	
Yes	5	27.8	67	25.5	72	25.6
No	13	72.2	193	73.4	206	73.3
Unknown	0	0.0	3	1.1	3	1.1
Total	18	100.0	263	100.0	281	100.0
Sex worker < 12 months	Man		Woman		Total	
Yes	0	0.0	2	0.8	2	0.7
Total	18	100.0	263	100.0	281	100.0
Mean number of clients during the previous week	0		4.0 (DE: 1.4)		4.0 (DE: 1.4)	





Sexual contact outside Spain < 12 months	Man		Woman		Total	
Yes	5	27.8	67	25.5	72	25.6
No	13	72.2	193	73.4	206	73.3
Unknown	0	0.0	3	1.1	3	1.1
Total	18	100.0	263	100.0	281	100.0

Drugs use before sexual contact < 12 months	Man		Woman		Total	
Yes	8	44.4	66	25.1	74	26.3
No	7	38.9	146	55.5	153	54.5
Unknown	3	16.7	51	19.4	54	19.2
Total	18	100.0	263	100.0	281	100.0

Sexual contacts in sexual venues < 12 months	Man		Woman		Total	
Yes	2	11.1	3	1.1	5	1.8
No	15	83.3	239	90.9	254	90.4
Unknown	1	5.6	21	8.0	22	7.8
Total	18	100.0	263	100.0	281	100.0

Contact tracing	Man		Woman		Total	
Yes	14	78	142	54	156	56
No	4	22	112	43	116	41
Unknown	0	0	9	3	9	3
Total	18	100.0	263	100.0	281	100.0

Source: RITS. / * Excluding sex workers.

Other concurrent STIs were present in 5.7% at the time of diagnosis. In the previous 12 months 16.4% had been diagnosed with an STI previous to the current infection.

A quarter of the cases declared having had a new sexual partner in the previous three months and three quarters of those registered had not used a condom in the last sexual relation. The average number of sexual partners in the previous 12 months was 1.9 sexual partners (SD: 2.0). Regarding practices in the previous year, 26.3% had consumed drugs before engaging in sexual relations.

The review of sexual contacts had been initiated in just over 50% of the cases

with an average of 1.5 sexual partners during the last three months (SD: 1.2), of which an average of 1.8 sexual contexts were located (DE: 1.3).

- The profile of cases declared within the ASSIR network was of young heterosexual women with infrequent use of condoms, with an average of two sexual partners in the previous year and with diagnosis of genital warts and vaginosis.
- Emphasis must be placed on the fact that 2.1% of the patients diagnosed with an STI within the ASSIR centres were HIV positive.

There is little attempt to investigate sexual contacts within the ASSIR

centres, and the need to improve this approach must be emphasised.

STIs in most vulnerable groups

The most vulnerable group for the infection with and transmission of STIs during the study period is seen in the contribution of Drassanes UITS in Barcelona (Table 6.2.7). This UITS has registered a total of 2,191 patients and 2,359 STIs events. This is 86.4% of the RITS (tables 1.2.5, 1.2.6 and 1.2.10).

The profile of the population treated in the UITS was of young adults with an average age of 31.6 years (SD: 8.6) and mainly men (75.8%, H/D ratio: 3.1). The average age was 32.5 years (SD: 8.6) and 28.9 years (SD: 7.8) in

Table 1.2.8. Main characteristics of the RITS patients, UITS, 2007-2009 (N=2191 patients).

	Man		Woman		Total	
	n	%	n	%	n	%
Mean age (years)	32.5 (DE: 8.6)		28.9 (DE: 7.8)		31.6 (DE: 8.6)	
Education	Man		Woman		Total	
Primary schooling	162	9.8	53	10.0	215	9.8
High school	410	24.7	143	27.0	553	25.2
University	441	26.6	120	22.6	561	25.6
No studies	20	1.2	6	1.1	26	26.0
Unknown	628	37.8	208	39.2	836	836.0
Total	1,661	100.0	530	100.0	2,191	100.0
Origen	Man		Woman		Total	
North America	9	0.5	5	0.9	14	0.6
Latin America	374	22.5	166	31.3	540	24.6
Sub-saharan Africa	17	1.0	8	1.5	25	1.1
Middle East and North Africa	56	3.4	9	1.7	65	3.0
Western and central Europe	178	10.7	53	10.0	231	10.5
Eastern Europe and Central Asia	36	2.2	23	4.3	59	2.7
South and Eastern Asia	36	2.2	7	1.3	43	2.0
Eastern Asia	3	0.2	3	0.6	6	0.3
Oceania	1	0.1	0	0.0	1	0.0
Unknown	951	57.3	256	48.3	1,207	55.1
Total	1,661	100.0	530	100.0	2,191	100.0
Sexual orientation	Man		Woman		Total	
Heterosexual	669	40.3	483	91.1	1,152	54.6
Same-sex relationship	933	56.2	23	4.3	956	45.4
Unknown	59	3.5	24	4.5	83	8.0
Total	1,661	100.0	530	100.0	2,191	100.0
Mean number of partners < 12 months*	Man		Woman		Total	
Number	12.7 (DE: 23.5)		2.7 (DE: 6.8)			
New sexual partner < 3 months	Man		Woman		Total	
Yes	726	43.7	134	25.3	860	39.3
No	266	16.0	143	27.0	409	18.7
Unknown	669	40.3	253	47.7	922	42.1
Total	1,661	100.0	530	100.0	2,191	100.0
Sex worker < 12 months	Man		Woman		Total	
Yes	37	2	73	14	110	5
Total	1,652	100.0	528	100.0	2,180	100.0
Sexual contact outside Spain < 12 months	Man		Woman		Total	
Yes	51	3.1	4	0.8	55	2.5
No	270	16.5	126	23.9	396	18.3



Unknown	1,320	80.4	398	75.4	1,718	79.2
Total	1,641	100.0	528	100.0	2,169	100.0

Drugs use before sexual contact < 12 months	Man		Woman		Total	
Yes	34	2.0	3	0.6	37	1.7
No	269	16.2	133	25.1	402	18.3
Unknown	1,358	81.8	394	74.3	1,752	80.0
Total	1,661	100.0	530	100.0	2,191	100.0

Sexual contacts in sexual venues < 12 months	Man		Woman		Total	
Yes	78	4.7	0	0.0	78	3.6
No	264	15.9	150	28.3	414	18.9
Unknown	1,319	79.4	380	71.7	1,699	77.5
Total	1,661	100.0	530	100.0	2,191	100.0

Contact tracing	Man		Woman		Total	
Yes	930	56.0	275	51.9	1,205	55.0
No	173	10.4	72	13.6	245	11.2
Unknown	558	33.6	183	34.5	741	33.8
Total	1,661	100.0	530	100.0	2,191	100.0

Source: RITS. / * Excluding sex workers.

men and women, respectively. With regard to origin, 44.8% were from other countries, with 51.7% of men and 42.6% of women being of non-Spanish origin. Sexual orientation was as follows: 52.6% heterosexual, 42.6% HSH and 1% WSW. There were 13.8% female sex workers (FSW).

Overall, the most frequent STIs in these vulnerable populations were genital warts (30.7%), gonorrhoea (15.8%), infectious syphilis (14.7%), chlamydia (12.7%) and HSV (10.5%). This distribution was very similar for men, whilst in women it was genital warts, chlamydia and HSV, vaginosis and gonorrhoea.

During this period, syphilis was mainly diagnosed at infectious phases (23.9% primary, 30.9% sec-

ondary and 18.2% early latent syphilis) and a minority with late latent infection. Until 2009 there were 23 new cases of HIV (1%), 20 of which were MSM. The UITTS has also seen 70% of all cases diagnosed of LGV in Catalonia.

Within the most vulnerable groups, the most frequent STIs in MSM (n=93) were infectious syphilis, gonorrhoea, genital warts, chlamydia and non-specific urethritis, with 28% being co-infected with HIV. Of the total of FSW registered (n=73), the most frequent diagnoses were gonorrhoea, vaginosis, chlamydia, genital warts and HSV, with 2.7% being co-infected with HIV. Clients of prostitution (n=69) mainly presented with gonorrhoea, followed by syphilis, HSV, genital warts and

chlamydia. The young heterosexual group <25, (n=299) presented with genital warts, chlamydia, gonorrhoea and HSV.

Table 1.2.9. Main characteristics of the RITS patients, sentinel network doctors in Primary Assistance in Catalonia, 2007-2009 (N=64 patients).

Mean age	Man		Woman		Total	
	n	%	n	%	n	%
Years	33.0 (DE: 8.8)		33.6 (DE: 11.4)		33.1 (DE: 9.3)	
Education	Man		Woman		Total	
Primary schooling	10	20.0	5	35.7	15	23.4
High school	18	36.0	3	21.4	21	32.8
University	2	4.0	1	7.1	3	4.7
No studies	7	14.0	2	14.3	9	14.1
Unknown	13	26.0	3	21.4	16	25.0
Total	50	100.0	14	100.0	64	100.0
Origin	Man		Woman		Total	
North America	0	0.0	0	0.0	0	0.0
Latin America	5	10.0	5	35.7	10	15.6
Sub-saharan Africa	12	24.0	3	21.4	15	23.4
Middle East and North Africa	5	10.0	0	0.0	5	7.8
Western and central Europe	0	0.0	0	0.0	0	0.0
Eastern Europe and Central Asia	2	4.0	0	0.0	2	3.1
South and Eastern Asia	6	12.0	1	7.1	7	10.9
Eastern Asia	0	0.0	2	14.3	2	3.1
Oceania	0	0.0	0	0.0	0	0.0
Spain	20	40.0	3	21.4	23	35.9
Total	50	100.0	14	100.0	64	100.0
Sexual orientation	Man		Woman		Total	
Heterosexual	47	94.0	14	100.0	61	95.3
Same-sex relationship	3	6.0	0	0.0	3	4.7
Unknown	0	0.0	0	0.0	0	0.0
Total	50	100.0	14	100.0	64	100.0
Mean number of partners < 12 months*	Man		Woman		Total	
Number	3.4 (DE: 4.9)		0.9 (DE: 0.3)		3.0 (DE: 4.6)	
New sexual partner < 3 months	Man		Woman		Total	
Yes	19	38.0	0	0.0	19	29.7
No	31	62.0	13	92.9	44	68.8
Unknown	0	0.0	1	7.1	1	1.6
Total	50	100.0	14	100.0	64	100.0
Sex worker < 12 months	Man		Woman		Total	
Yes	0	0.0	0	0.0	0	0.0
Total	50	100.0	14	100.0	64	100.0





Sexual contact outside Spain < 12 months	Man		Woman		Total	
Yes	13	26.0	1	7.1	14	21.9
No	35	70.0	11	78.6	46	71.9
Unknown	2	4.0	2	14.3	4	6.3
Total	50	100.0	14	100.0	64	100.0

Drugs use before sexual contact < 12 months	Man		Woman		Total	
Yes	10	20.0	0	0.0	10	15.6
No	35	70.0	11	78.6	46	71.9
Unknown	5	10.0	3	21.4	8	12.5
Total	50	100.0	14	100.0	64	100.0

Sexual contacts in sexual venues < 12 months	Man		Woman		Total	
Yes	5	10.0	0	0.0	5	7.8
No	39	78.0	11	78.6	50	78.1
Unknown	6	12.0	3	21.4	9	14.1
Total	50	100.0	14	100.0	64	100.0

Contact tracing	Man		Woman		Total	
Yes	37	74.0	11	78.6	48	75.0
No	7	14.0	1	7.1	8	12.5
Unknown	6	12.0	2	14.3	8	12.5
Total	50	100.0	14	100.0	64	100.0

Source: RITS. /* Excluding sex workers.

➤ There is an increasing trend of HIV infection in MSM, which indicates the need to strengthen primary prevention of HIV infection by promoting healthy sexual behaviours and other specific interventions to this population.

➤ One third of the new HIV diagnostics are in the foreign population. Geographical and language accessibility of this population to testing resources must be guaranteed, as well as to primary and secondary prevention.

➤ Mandatory notification of HIV infection that was implemented in July 2010 is supposed to enhance HIV infection control.

➤ AIDS mortality decreased by 50% after HAART introduction in 1996, but is showing a steady trend in recent years. Further monitoring to identify alternative causes of death has to be in place.

➤ Patients attending specific UITS like Drassanes are slightly different from other STIs patients.

Drassanes is attending mainly, young men, MSM and with HIV coinfection.

➤ The most relevant diagnoses among vulnerable groups are: genital warts, Chlamydia and gonorrhoea. Syphilis is affecting mainly MSM.

➤ In the fight against STIs in Catalonia and the rest of Europe, surveillance and monitoring are crucial. In specific populations such as youngsters below 25 years of age, MSM, new comers, child bearing

women and those at increased risk of HIV infection.

➤ Enhanced surveillance of STIs is justified by the increasing numbers of migrating populations, in Catalonia and the rest of Europe. This will allow alert systems and prompt interventions.

➤ The increased number of STIs in women at child bearing age indicates the need of strengthening prevention and control of STIs in this population.

➤ In order to improve prevention and control of STIs, specific formation of health professionals, specially those working at primary healthcare teams (EAPs, according to the Catalan acronym) and ASSIR, should be guaranteed.

Image 1.2. Continuous professional development improves abilities for prevention and early detection of HIV and other STI.

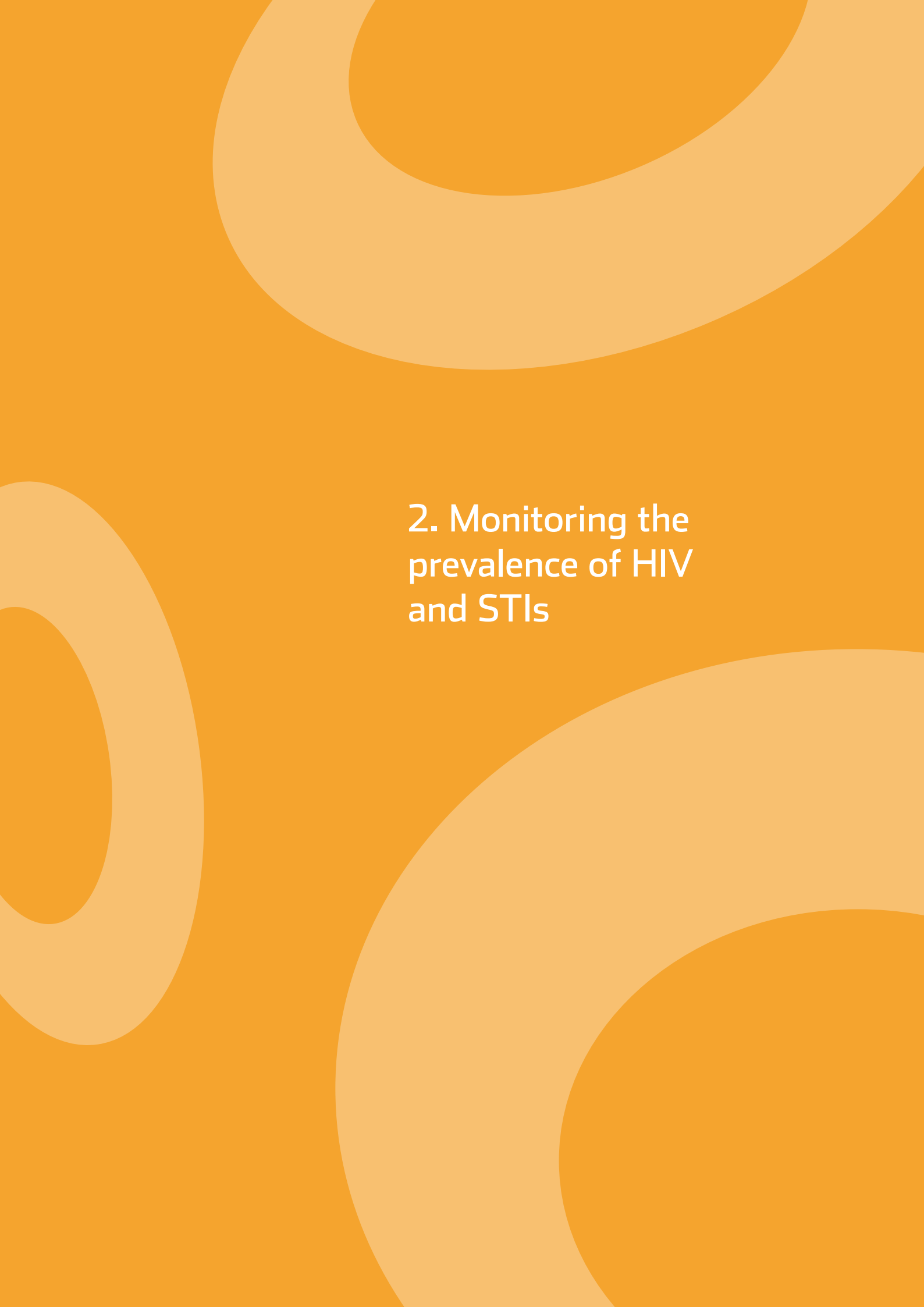


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The background is a solid orange color with several large, overlapping, semi-transparent circles and ovals in a lighter shade of orange. These shapes are scattered across the page, creating a layered, organic feel.

2. Monitoring the prevalence of HIV and STIs

2.1. Estimate of the overall prevalence of HIV infection in Catalonia

The difficulty in doing a transversal study on the whole population of Catalonia of an infection which is relatively infrequent obliges us to obtain data on prevalence using estimates and studies performed on selected groups. CEEISCAT carries out epidemiological transverse studies with the aim of finding out the prevalence of HIV infection in different groups. This measure allows us to estimate the total number of people infected with HIV at any given time.

Although it is only an approximation of an important piece of information in the planning of preventative interventions for HIV infection, the estimate of prevalence is justified because the system of declaration of new HIV diagnoses is not exhaustive (see 2.2.1). Given this fact, the estimate of prevalence cannot be obtained by subtracting the number of deaths from AIDS from the number of those diagnosed with HIV (prevalence = the number of diagnosed – AIDS deaths), and so it has been calculated starting from the summation of sector estimates (prevalence = risk population x estimated prevalence in each sector of the population) [1].

To make an estimate of the overall prevalence of HIV, just as in previous reports, data from the studies shown in table 2.1.1 was used as sector estimators of HIV prevalence (p): unrelated anonymous screening of newborn babies and working population, the systemat-

ic screening of donated blood and the transversal studies in IDUs, FSW and MSM. In the case of the IDUs, unlike previous years (see Integrated AIDS/HIV/STI Surveillance System of Catalonia (SIVES, according to the Catalan acronym) 2008), data of prevalence has been used from IDU recruited in harm reduction centres.

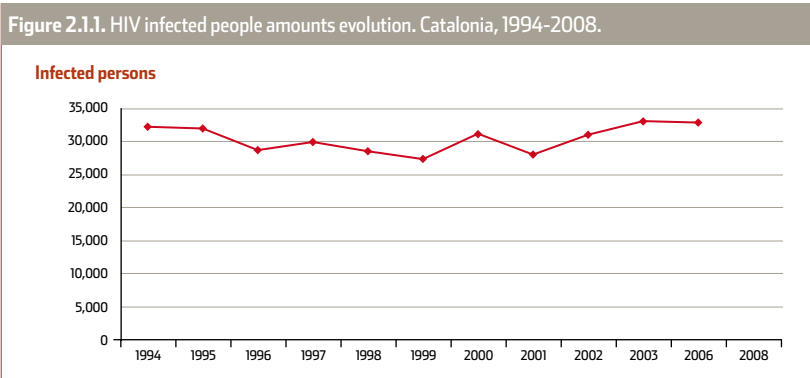
Estimates corrected and revised in accordance with the 1991 census of the National Institute of Statistics were used as denominators (n), on 1st July every year from 2001 [2] and the projections of population calculated initially in the 2001 census of the same institute and then for the following years [3]. To calculate the approximate number of MSM, the transversal national study of homosexuality in the United Kingdom was extrapolated [4], and to calculate the IDU group, both data from the capture-recapture studies carried out in Barcelona [5], and of the European Monitoring Centre of Drugs and Drug Addiction were used [6]. People aged over 65 years were excluded from the denominators in the estimations.

Data from the NENEXP study on the prevalence of HIV in children aged

below one year was used for the estimate of the number of infections in this age group (see section 5 for more information) [7-8], whilst for children aged from 1 to 14 years data provided by the Spanish Paediatric Collaborative Group was used.

From 1994 until 2008 the overall prevalence of HIV was estimated in Catalonia using the same methodology, applying the prevalence observed and the demographic estimates adapted to each year. The method of approximation of normal distribution was used for the calculation of confidence intervals of 95% (CI 95%), in the cases in which the population measurements (n) and the observed prevalence (p) fulfilled the conditions $np \geq 5$ and $n(1 - p) \geq 5$: the exact method was applied in the populations which did not verify previous conditions [9].

The number of people living with HIV in Catalonia in 2008 was estimated at 34,957 (CI 95%: 25,702 – 39,474) in the general population (figure 2.1.1); which is to say, 6 people out of every 1,000 aged between 15 and 64 years could be infected with HIV. This does not suppose a



significant decrease with regard to the estimates for 2003, which put the number at about 33,000 people (7 per 1,000). It is also important to emphasise that, in accordance with our estimates, there could be around 4,000 women of childbearing age infected with HIV. **Figure 2.1.1** shows the tendency for the global prevalence of HIV estimated in Catalonia for the period 1994-2008.

2.2. Prevalence of HIV in sentinel groups

As well as serving as the basis for the estimation of the number of people living with HIV infection in Catalonia, the monitoring of sentinel groups allows us to know the variations or trends of prevalence in these groups and the distribution of the infection, complementing the information received from the declaration of new HIV diagnoses. Representativeness, homogeneity and accessibility were the criteria used to select these groups which aim to reflect both the general population and the groups within it with the highest risk activities associated with acquiring HIV.

According to the methodology used for the collection of information, the following categories are included in the groups under research:

a) The prevalence of HIV infection detected through non-related anonymous screenings

This category included studies which use samples of dried blood, collected for objectives other than obtaining prevalence, in the following cases:

- A representative sample of living new born babies in Catalonia from the Neonatal Metabolic Screening Program taken each year.
- Routine annual medical check-ups of industry and service workers in Catalonia.

b) The prevalence of HIV infection through voluntary and anonymous transverse studies

This category comprised of transverse field studies carried out anonymously and voluntarily to monitor the prevalence of HIV infection in various groups at risk of exposure to the virus, testing for the virus in saliva samples. The groups studied were:

- IDUs recruited on the street.
- IDUs recruited in harm reduction centres.
- MSM recruited in gay bars, sex venues, and cruising areas.
- FSW recruited on the street, in apartments and sex joints.

c) HIV prevalence through systematic information collection

This category includes the information systems which systematically collect data on HIV in specific groups. Taking a HIV antibody tests is voluntary (excepting for blood donors) and confidential. Those groups studied included:

- All blood donations carried out in Catalonia.
- IDUs on initiating treatment for drug dependency in the Network of Drug Dependence Help Centres.

- Inmates of 3 penitentiary centres

Table 2.1.1 shows the overall results of the prevalence of infection according to the different studies mentioned in the general population and in especially vulnerable groups, whilst **figure 2.2.1** shows the trends of HIV infection prevalence in sentinel groups (new born babies, induced abortions (IA), blood donations, and the working population). The HIV infection prevalence studies via non-related anonymous screenings or voluntary transverse studies used the algorithms recommended by the WHO/UNAIDS for detection of antibodies in this type of study [10].

Figure 2.2.1 shows a slight increase in prevalence rates in blood donations in 2005, after they had stabilised between 5 and 7 HIV infections per 100,000 donations in previous years. There was a certain trend towards increasing seroprevalence in the last two years of the study of the working population, whilst prevalence halted its decline in the sentinel group of new born babies in the last two years (2007 and 2008).

On the other hand, in the case of IA, in spite of selection and participation bias resulting from the voluntary nature of the inclusion of women in this study, seroprevalence has stabilised after the decrease witnessed in 2003.

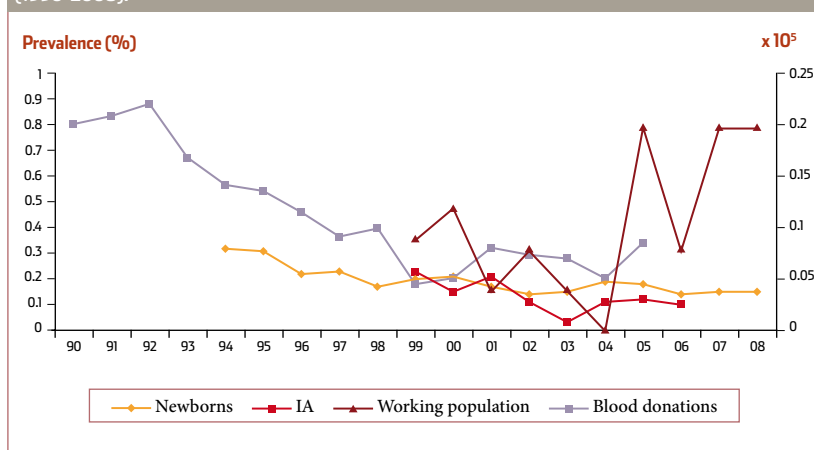
Regarding data from non-related anonymous screening of new born babies in Catalonia, in 2008 there was an overall seroprevalence of 0.15%, and Terres de l'Ebre was the region with the highest prevalence (0.46%) according to the latest available in-

Table 2.1.1. Summary of epidemiological surveillance of HIV infection in sentinel populations in Catalonia, 2007-2008.

Population	Start year	Regularity	Biological sample	Latest data available	Population volume	Prevalence (%)
General population						
Newborns (pregnant women)	1994	Yearly	Dry blood	2008	40,514	0.15
Women that voluntarily interrupt their pregnancy	1999	Yearly	Dry blood	2006	3,891	0.10
Workers during medical checkup	1999	Yearly	Serum	2008	3,035	0.20
Blood donors	1987	Yearly	Serum	2005	260,608	0.01
High risk populations						
IDU recruited on the street	1993	Every two years	Saliva	2006	296	58.10
IDU recruited on the harm reduction centres	2008	Every two years	Saliva	2008-9	745	34.50
IDU that start treatment	1996	Yearly	Serum	2008	446	41.00
MSM*	1995	Every two years	Saliva	2008	142	20.40
FSW	2005	Every two years	Saliva	2007	400	2.5
Penitentiary population	1995	Yearly	Serum	2008	4,241	14.70
Tuberculosis patients	1998	Yearly	Dry blood	2006	60	23.33

* SIALON Project, which used the same recruitment centres as previous years).

Figure 2.2.1. Changes in the prevalence of HIV infection in Catalonia in different Sentinel populations (1990-2008).



formation (table 2.2.1). Nonetheless, it should be noted that with the creation of the new health regions, there was a great variability in the measuring of samples obtained between the regions. Barcelona represents 67% of the samples analysed, whilst regions such as Alt Pirineu i Aran only represent 1% and 2% of all the regions. Therefore, the geographical differences are not statistically significant. Overall, 2 out of every 1,000 pregnant women in Catalonia are infected with HIV.

The evolution of seroprevalence according to age group of the mothers showed a decreasing trend until 2006 in the age groups 20-24 years and 30-34 years but in the most recent years (2007 and 2008), seroprevalence rose slightly again. In the newly born babies of mothers younger than 20 years old, the trends are erratic and rather variable over the time period 1994 to 2008. In mothers aged over 34 years seroprevalence has been progressively increasing over the

Table 2.2.1. Prevalence of HIV infection in pregnant women (HIVNADO) in Catalonia, 2008.

	2008			
	Analyzed newborns	HIV	Preval. %	CI 95 %
Barcelona	26,845	36	0.13	0.09 0.17
Catalunya Central	2,819	6	0.21	0.04 0.38
Girona	4,117	11	0.26	0.10 0.42
Lleida	1,944	3	0.15	-0.02 0.32
Alt Pirineu i Aran	364	1	0.27	0.26 0.80
Tarragona	3,511	3	0.08	-0.01 0.17
Terres de l'Ebre	6,862	4	0.46	0.30 0.62
Total	40,462	64	0.15	0.11 0.19

Figure 2.2.2. Seroprevalence evolution per mother age groups, 1994-2004. (HIVNADO study).

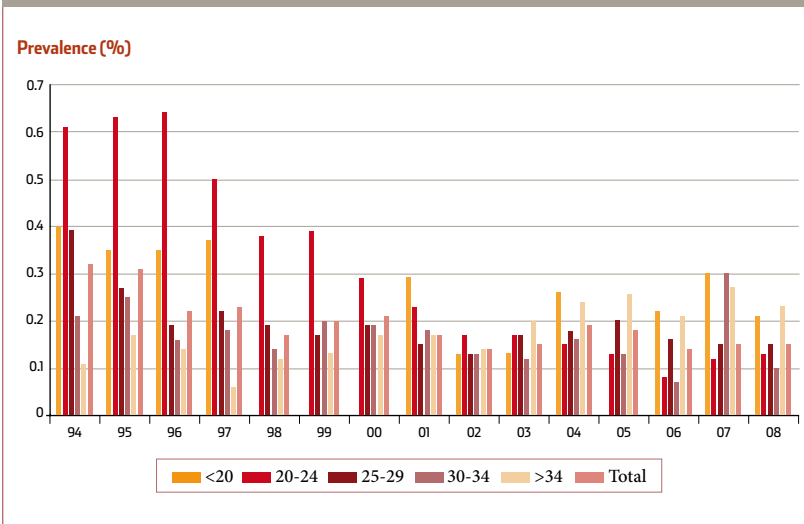


Figure 2.2.3. Seroprevalence evolution per mothers' country of origin, 2002-2008. (HIVNADO study).



years and there has been a stabilising of seroprevalence in the middle group, aged between 25 and 29 years.

This data could be as much a reflection of a real increase in prevalence of HIV infection in specific population groups, as an increase

in the desire to have children in older HIV-positive women. Since the introduction of HAART which has proven to be effective not only in the improvement of health and prognosis of the infection but in the prevention of VT of HIV, the situation and expectations of infected

women of child bearing age have changed completely (figure 2.2.2).

Since June 2002 the women participating in the study provide information on their country of origin. In this period statistically significant differences ($p < 0.5$) have been seen in the seroprevalence of HIV antibodies in women born in Spain and in women born in other countries. Figure 2.2.3 shows the differences and trends of seroprevalence in women according to country of origin based on the years available.

In 2008 the prevalence of HIV infection in samples of saliva collected in IDUs recruited in harm reduction centres was 34.5%. This prevalence is lower than that observed in previous evaluations of IDUs recruited on the street and lower than the prevalence seen in injectors recruited in the Network of Drug Dependence Help Centres, which was 41% in 2008 (figure 2.2.4). The differences in the recruitment methodology employed in each study may partially explain the differences observed in the prevalence of HIV. Of the 3 IDU sentinel groups, the one obtained from harm reduction centres is the most representative as it includes injectors who may or may not be in treatment for drug dependency, as well as a sample of IDUs from other countries (41.3% of the interviewees), and thus better reflects the reality of current injection drug-taking in Catalonia.

On the other hand, the transverse studies in MSM recruited on the street showed a significantly rising overall trend (from 14.2% in 1993 to 20.4% in 2008) (figure 2.2.4), concur-

rent with the increase in sexual risk behaviour seen in this group [11].

Finally, there was a low prevalence of HIV (2.5%) in FSW recruited in Catalonia, just as had been observed in the evaluation in 2005. If the country of origin is taken into account, prevalence is significantly greater amongst Spanish women (8.9% in Spanish women and 1.5% in immigrant women). This result is consistent with other studies where this group of FSW is associated with a higher frequency of injecting drug use [12].

2.3. Transverse Study of the Prevalence of STIs

Since 2005 CEEISCAT has incorporated the monitoring of STIs in transverse studies of prevalence in groups at risk [13-16]. In these biennial stud-

ies, the Department of Microbiology in the HUGTiP collects data on the behaviour and clinical-epidemiological characteristics of the group under study and tests are carried out in order to detect *Chlamydia trachomatis* and/or *gonorrhoea* using DNA amplification techniques (Real Time Polymerase Chain Reaction (PCR))

2.3.1. Young Offenders in penitentiary centres (CT/NG-Prisons)

A study was initiated during the course of 2008 of the prevalence of *C. trachomatis* and *N. gonorrhoea* in young people aged below 35 years in preventative penitentiary centres. The participating centres were Wad-Ras for women and Trinidad for young men.

478 young people aged below 35 years were included in the study,

distributed between two age groups (older and younger than 25 years old) and stratified via penitentiary centre. The overall prevalence obtained for *C. Trachomatis* was 5.4%, whilst the prevalence of gonorrhoea was 0.2%. The prevalence of *C. Trachomatis* in those aged under 25 years was 5.2% (4.4% in women and 6% in men) and in those of foreign origin aged under 25 years it was 4.5% ($p < 0.5$).

2.3.2. Injecting Drug Users (IDUs)

Within the behavioural monitoring studies which CEEISCAT has carried out since 1993, in the evaluation of 2008 the monitoring of STIs was included in the IDU group. With previous informed consent, urine samples were collected anonymously to determine the prevalence of *C. trachomatis* and *gonorrhoea*, respectively, using Real Time PCR (Abbott Real Time PCR CT/NG CE) (see section C).

Figure 2.2.4. HIV prevalence evolution in sentinel populations, high risk population. Catalonia, 1993-2008.

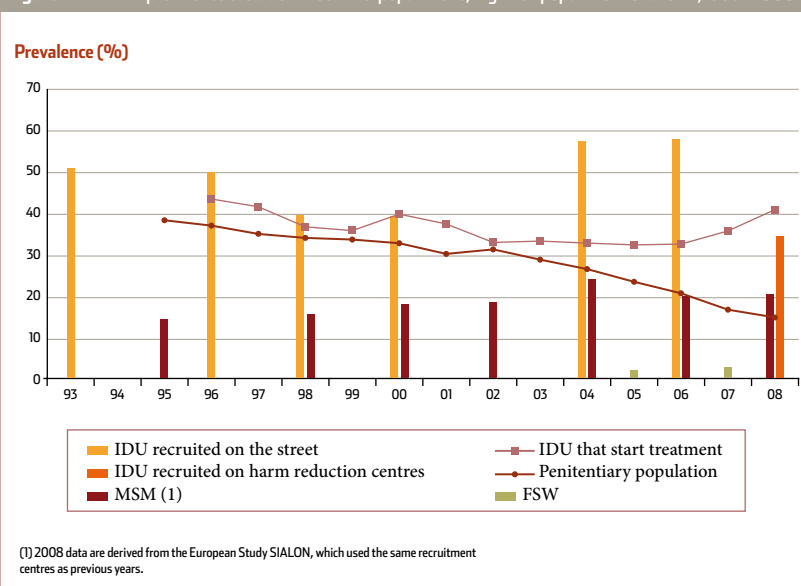


Image 2.1. Preventive interventions to IDUs should adapt to their social and cultural context.



Figure 2.3.1. *Chlamydia trachomatis* and *Neisseria gonorrhoeae* prevalence in urine samples, recruited in harm reduction centres.

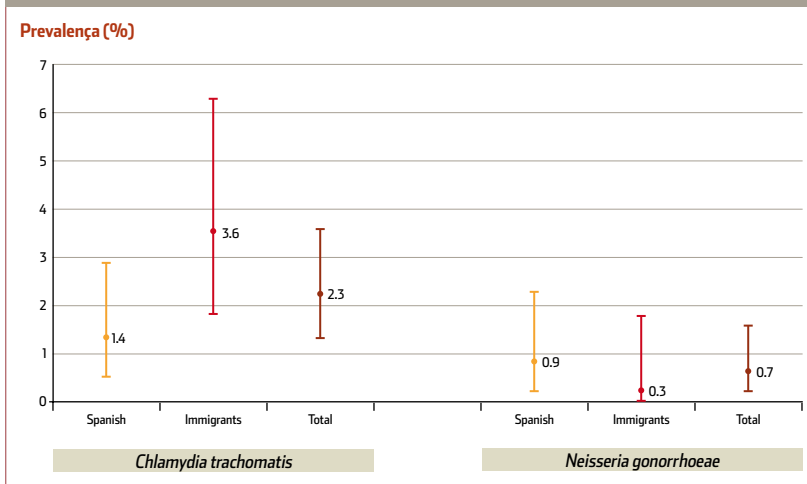
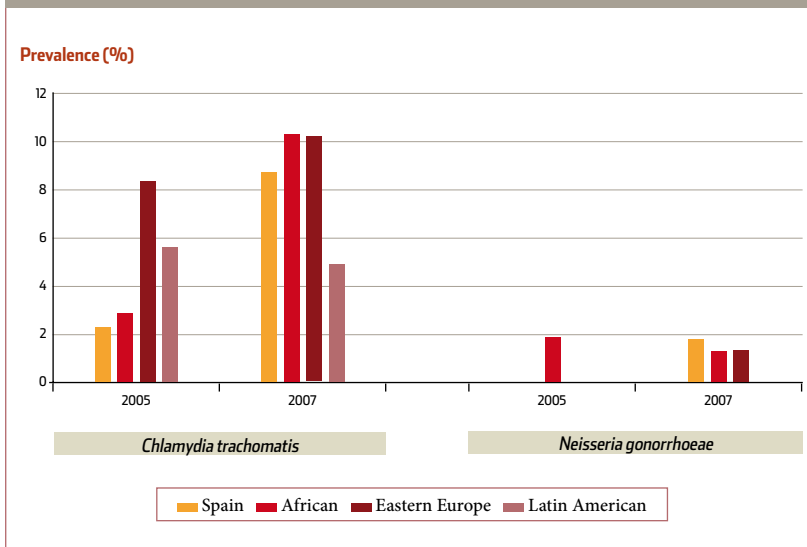


Figure 2.3.2. *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in FSW, Catalonia (2005-2007).



A total of 748 IDUs recruited in harm reduction centres participated in the study. 439 (58.7%) were Spanish, 176 (23.5%) were from Eastern European countries, 69 (9.2%) were from other European countries, 49 (6.6%) were from Africa and the rest were from the United States and the Middle East. The prevalence of

C. Trachomatis in the samples of urine analysed was 2.3%, being higher amongst immigrant injectors (3.6%, $p=0.049$). No significant differences were observed in the prevalence of *N. gonorrhoea* between natives and immigrants, with an overall prevalence of 0.7% (figure 2.3.1).

2.3.3. Female Sex Workers (FSW)

In 2005 behavioural monitoring of FSW was initiated in Catalonia with the aim of monitoring the prevalence of HIV, STIs and the risk behaviours associated. In the two evaluations carried out (2005 and 2007), and with previously informed consent, urine samples were collected anonymously to estimate the prevalence of *C. trachomatis* and *N. gonorrhoea*, respectively, using Real Time PCR (Abbott Real Time PCR CT/CG CE).

Of the 400 women interviewed in 2007, 56 were Spanish (14%), 76 were African (19%), 105 were Latin American (26.3%) and 163 were from Eastern Europe (40.8%). The overall prevalence of *C. Trachomatis* in 2007 was 8.8% and in *N. gonorrhoea* it was 1% with no differences according to country of origin. Regarding the previous evaluation, the prevalence of *C. trachomatis* showed a significant increase, especially amongst African women (2.9% and 10.5%, respectively in 2005 and 2007) (figure 2.3.2).

➤ The estimated number of living people infected with HIV in Catalonia in 2008 was 34,957. Just as has been observed since 2001, there has been a slight increase, although not significant, with respect to the previous estimates, which justifies continuing surveillance and mandatory declaration.

➤ It is estimated that there are currently about 4,000 women of child-bearing age, and at least 20% of

them were born outside of Spain. The prevalence observed in the latter group is significantly higher than that of Spanish women. The measures which guarantee access to health services for adequate prenatal control in this group in order to prevent the VT of HIV must be reinforced.

➤ The elevated prevalence of HIV observed in the IDU group along with the increase observed in the last few years in the number of injectors from other countries make it necessary not just to maintain preventative interventions directed at this group, but to adapt them to the group's social and cultural reality.

➤ Prevention programmes directed at the MSM group must be intensified and incorporate new risk reduction strategies, not just to avoid HIV infection but also other STIs.

➤ It is necessary to continue monitoring the prevalence of HIV and STIs in FSW given their elevated mobility and vulnerability to HIV. The cultural traits, irregular administrative situation and the difficulties in accessing help and resources justify additional efforts in the monitoring of this situation.

➤ Even though the prevalence of STIs seen in IDUs is not greater than that of the general population, the limited use of the condom reported in the behavioural surveys indicates the need to incorporate

messages related to risk behaviour in prevention programmes.

➤ The elevated presence of *C. trachomatis* amongst the group of inmates aged below 25 years in Preventative Penitentiary Centres, justifies the monitoring of this infection and the implementation of effective interventions which permit the reduction of this prevalence.

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In 1993, the monitoring of behaviours related to the transmission of HIV/STIs was introduced as part of SIVES. Up until the present, transverse biennial studies of MSM, IDUs and from 2005, FSW have been carried out.

3.1. The monitoring of the prevalence of HIV infection and the sexual behaviours associated with its transmission in men who have sex with men

3.1.1. The prevalence of risk behaviours associated with HIV/STI infection in men who have sex with men recruited on the Internet

The use of the Internet amongst MSM as a method of contacting sexual part-

ners has increased significantly in recent years. Diverse studies have found evidence of the association which exists between the use of the Internet to contact partners and risky sexual behaviours within this group [1-2]. As part of the studies of behavioural monitoring in MSM, from October 2008 until February 2009, an anonymous survey of MSM resident in Spain was carried out through www.sexhom.info by means of the diffusion of Banners on gay websites and links pages, advertisements in gay magazines, and newsletters to the members of the Coordinadora gaislesbiana (Gay and Lesbian Coordination Group of Catalonia). The objective of this study was to describe the socio-demographic and behavioural characteristics of the interviewees and to compare the socio-demographic, behavioural and self reported prevalence of HIV and STIs amongst those who reported having contacted sexual

partners through the Internet with those who had not. The comparison of proportions was carried out by means of Pearson's chi-square (χ^2) test and Fisher's Exact test, stratifying the variable age (≥ 30 years old vs. < 30 years old) [3].

Of the 1,268 people who entered in the website, 97 did not answer the survey, 32 surveys were eliminated and 1,138 participated in the study. The average age of the participants was 32 years old (DE: 10 years) and 70% reported having used the Internet to contact sexual partners in the previous 12 months (74.2% amongst < 30 years old and 66.3% amongst ≥ 30 years old). The main socio-demographic and behavioural characteristics and the prevalence of HIV and STIs according to age are shown in **table 3.1.1**.

In those younger than 30, those who had used the Internet had, in com-

Table 3.1.1. Sociodemographic and behaviour characteristics and HIV and STI prevalence in MSM interviewed through the internet.

	Younger than 30 years old			30 years old or older		
	Internet user n=388	Don't internet user n=135	P	Internet user n=399	Don't internet user n=203	P
	%	%		%	%	
Immigrants	12.4	10.4	ns	13.8	19.7	ns
Education: Secondary/Higher	93.8	90.4	ns	94.7	91	ns
Living in Catalonia	54.4	63.6	ns	66.2	78	0.003
Sexual orientation: homosexual	79.1	77.8	ns	83.5	82.8	ns
Drugs use before or during sexual intercourse*	42.1	30.4	0.016	54.3	36.5	<0.001
More than 10 male sexual partners*	46.0	11.9	<0.001	60.4	26.9	<0.001
UAI steady partner (1)*	60.9	71.3	ns	65.7	67.7	ns
UAI occasional partner (2)*	36.6	34.2	ns	36.8	32.6	ns
HA paid for sex*	4.9	1.5	ns	14.3	6.9	0.008
Have been paid for sex*	10.8	1.5	0.001	6.0	1.0	0.004
To met sexual partners in other places than the internet*	74.5	28.1	<0.001	82.2	42.4	<0.001
HIV testing (at least once)	59.5	52.6	ns	82.2	81.8	ns
Self reported HIV prevalence (3)	6.3	5.8	ns	18.7	20.9	ns
STI (at least once)	31.2	16.3	0.001	51.6	45.4	0.032

ns: non significant. / (1) Among those with steady partner. / (2) Among those with occasional partner. / (3) Among those who have been HIV tested and know the results.
* Last 12 months.

Image 3.1. New technologies are spreading quickly in our society and the internet is becoming as a new mean targeting prevention interventions, especially in MSM.



parison with those ≥ 30 years old, a higher number of partners (46% more than 10 partners vs. 11.9%), higher drug use before or during sexual relations (42.1% vs. 30.4%) and a higher proportion declared having charged money in exchange for having sexual relations (10.8% vs. 1.5%). In those of 30 years old or above, those who had used the Internet also had a higher number of sexual partners (60.4% > 10 partners vs. 26.9%), higher drug use before or during sexual relations (54.3% vs. 36.5%), and a higher proportion which stated that they had charged (6% vs. 1, 0%) and had paid (14.3% vs. 6.9%) in exchange for sexual relations. (14.3% vs. 6.9%). There was

no difference in unprotected anal intercourse (UAI) with regular partners and occasional partners amongst those who had contacted partners on the Internet and those who had not. Globally, the prevalence of UAI with occasional partners was 36% for both those younger than 30 years old and those who were 30 years old or above. In both age groups, those who had contacted sexual partners on the Internet also contacted sexual partners, in a higher proportion, in other places such as saunas and gay bars (74.5% in < 30 years old and 82.2% in those of 30 years or above), and with respect to those men who had not used the Internet (28.1% in < 30 years old and 42.4% in those of 30 years or above).

The prevalence of self reported HIV amongst those who had taken a HIV test and knew the result was also no different between those who had contacted partners on the Internet and those who had not. Globally, the prevalence of self-reported HIV was higher amongst the older group (6.1% in those younger than 30 and 19.7% in those aged 30 or older). On the other hand, the prevalence of having had an STI (at some time) was higher amongst those who contacted partners on the Internet than those who did not, both amongst the youngest group (31.2% vs. 16.3%) and the men of 30 years or above (5.6% vs. 45.4%).

Within the limitations of the study emphasis must be placed on not being able to generalise about the results of the whole group of MSM and the possible under-reporting of risk behaviours and the prevalence of HIV/STIs. However, it has been seen that the anonymity which the Internet offers improves the quality of the data collected [4].

3.1.2. Monitoring the prevalence of HIV infection and the associated behaviours with its transmission in men who have sex with men

Since 1993, and with a biennial periodicity, seven transverse studies have been carried out with the participation of a male homosexual community organisation (the association Stop Sida) [5]. The most recent evaluation was taken during the months of October, November and December 2008. The new develop-

ment of the latest study is that it was a multicentre study with the aim of obtaining valid and reliable information about the prevalence of HIV, syphilis, risk behaviours and cultural factors in MSM by means of the collection of non-invasive biological samples in countries in the Southern and Eastern Europe. (SIALON Project. *Capacity building in HIV/Syphilis prevalence estimation using non-Invasive methods among MSM in Southern and Eastern Europe, financed by the European Commission Public Health Programme 2003-2008*). This development supposes some methodological modification which can affect the comparability of the other evaluations presented in previous SIVES. In 2008, the Time-location Sampling (TLS) method was used; the difference to previous years being that it is a probabilistic method which assures a greater diversity of the MSM population [6-7]. 400 MSM who attended gay meeting places and cruising areas in the city of Barcelona participated during previously defined time slots in the collection of bio-behavioural information. They were given a self-administered questionnaire, which was voluntary, confidential and anonymous, in which they were asked about their behaviours in the 6 months prior to the study (the main difference to previous years is the reference period, which had been 12 months). Samples of oral fluid were also collected to estimate the prevalence of HIV and syphilis infection [8-9].

In 2008, the study population was younger than that measured in 2006, but a higher median age (38 years) was still observed amongst the par-

Table 3.1.2. Sociodemographic characteristics and HIV testing. MSM, 1995-2008.

	1995	1998	2000	2002	2004	2006	2008
	N=741	N=713	N=828	N=640	N=728	N=868	N=400
	%	%	%	%	%	%	%
Mean age [DE]**	33.7 [8.7]	34.8 [8.7]	36.1 [8.7]	37.4 [9.3]	38.6 [9.7]	41.2 [9.9]	38.2 [10.2]
Education							
Higher*	44.3	47.7	48.9	47.9	50.3	53.5	55.9
Employment							
Work*	83.1	71.2	76.1	73.8	85.1	85.4	83.5
Unemployment	8.0	4.4	3.5	5.2	3.9	4.1	6.1
Student*	8.8	6.3	6.3	4.3	3.8	1.5	4.6
Others*	–	16.9	14.2	16.7	7.1	9	5.9
Residence							
Big city	67.0	71.0	69.5	70.9	68.9	73.9	80.2
Sexual orientation							
Homosexual*	–	–	–	–	88.8	89.0	84.5
Bisexual*	–	–	–	–	8.3	8.5	14
Others	–	–	–	–	2.9	2.5	1.5
Nacionality							
Spanish	–	–	–	–	–	73.5 ^g	72.4
Others	–	–	–	–	–	26.5	27.6
Previous HIV testing							
Yes*	67.1	75.5	78.0	82.6	81	86.5	88
Self-reported HIV prevalence	16.4	16.6	18.8	17.1	17.3	19.7	11
HIV prevalence in oral fluid samples (1)	14.2	15.5	17.9	18.3	24.0	19.8	20.4

* Significant χ trend. / ** Significant ANOVA. / ^g 2006: Country of origin. / (1) Selection the same venues than last years.

ticipants. As in previous years, the majority of the participants had a high level of education (55.9% were university educated) and reported themselves to be working (83.5%). 80.2% lived in a large city. The majority of the men defined themselves as homosexual, this percentage being smaller with respect to 2006 (84.5%), while the percentage of MSM who defined themselves as bisexual increased (14%). A quarter of the MSM interviewed were of foreign nationality, mainly from Latin America

(68% of the total of foreigners) (table 3.1.2). The percentage of men who had on some occasion taken a HIV test showed a tendency to increase in successive studies (88% in 2008). Amongst these, the prevalence of self reported HIV in 2008 was 11%, notably less than the other figures. On the other hand, the prevalence of HIV infection based on the oral fluid samples presented a significant growing tendency during the period 1995-2008 (from 14.2% in 1995 to 20.8% in 2008). Of the HIV-positive

men, 38.5% stated having received a negative result in the last 12 months (table 3.1.2).

Forty-one point for percent (41.4%) of the men interviewed in 2008 had had more than 10 male sexual partners in the previous 6 months. The proportion of men who had had sexual relations with regular or occasional partners, respectively, was inferior to previous years (53.4% and 83% in 2008), possibly due in part to the difference in the reference periods. Although it does not follow

a statistically significant tendency, the percentage of men who had paid money for sex during the last year, as in previous years, was higher than the percentage of those who had charged for sex (7.5% and 5.9%, respectively) (table 3.1.3). The frequency of contacts made on the Internet was similar to that of 2006 (46.3% in 2006 and 2008, respectively).

In 2008, 94.5% of interviewed men practised anal penetration with the regular partner and 93.5% practised it with occasional partners. The least

frequent practise and the one which presented most differences according to the type of partner was oral sex with ejaculation in the mouth (57.7% with regular partner and 41.7% with occasional partner). The practice of UAI, or the occasional or none use of condoms, shows a rising tendency through the years, although the frequency is different depending on the type of partner. Sixty two point two percent (62.2%) of the men surveyed in 2008 had practised UAI at some time with their regular partner and 38% with an occasional partner (figure 3.1.1). UAI with the regular partner varied according to the serostatus of the partner. It was a frequent practice above all amongst the concordant negative couples (74.7%), but also amongst the concordant positive couples (66.7%) or amongst those in which one or both of the couple did not know their serostatus (61.3%). It should be emphasised that a quarter of discordant couples had practised UAI in the previous 6 months (26.1%).

Table 3.1.3. Sexual behaviour. MSM 1995-2008.

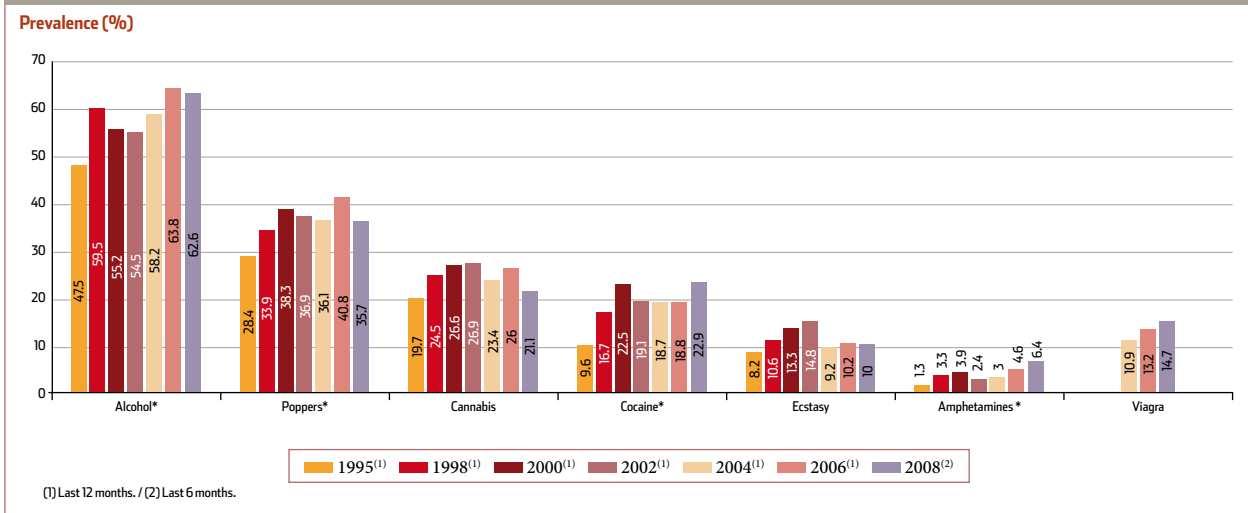
	1995 (1)	1998 (1)	2000 (1)	2002 (1)	2004 (1)	2006 (1)	2008 (2)
	N=741	N=713	N=828	N=640	N=728	N=868	N=400
	%	%	%	%	%	%	%
Steady sexual partner*	63.7	65.4	63.8	57.9	56.5	55.4	53.4
Occasional sexual partner*	85.2	87.4	89.9	90.1	91.4	91.7	83.0
Have paid for sex	14.5	13.2	13.4	14.6	13.3	15.5	7.2
Have been paid for sex	5.4	2.9	4.0	7.7	5.6	4.0	5.9

(1) Last 12 months. / (2) Last 6 months. / * Significant χ^2 trend.

Figure 3.1.1. Condom use frequency in anal sex with steady and occasional partners. MSM, 1995-2008.



Figure 3.1.2. Drugs use prevalence before or during sexual intercourse. MSM 1995-2008.



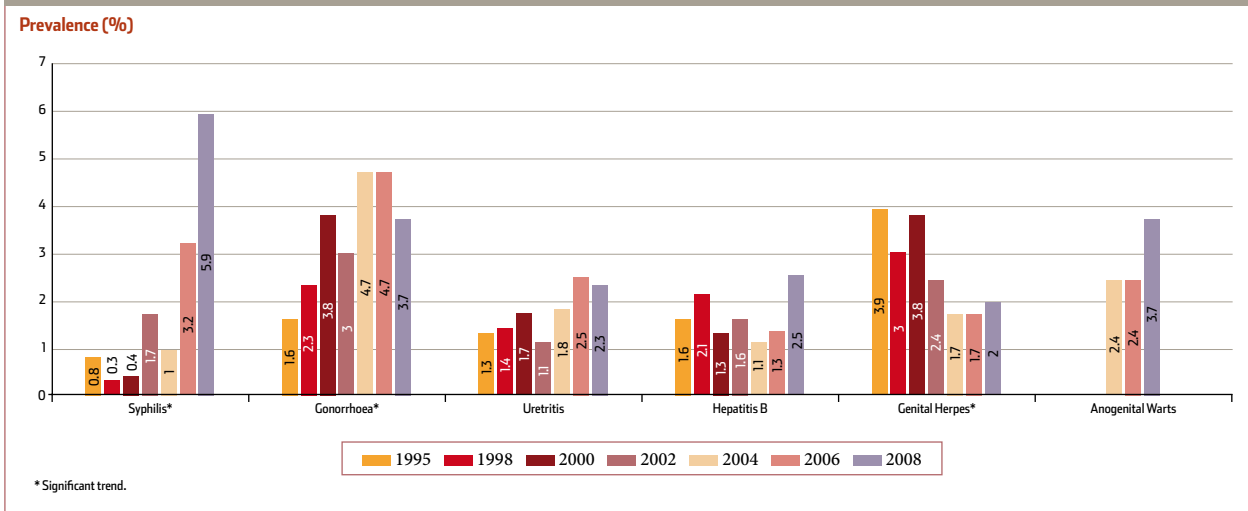
Alcohol consumption before or during sexual relations within the last 6/12 months tended to increase significantly over the years, more clearly than for other substances (62.2% in 2008). However, drug-use also increased significantly, such as inhaled nitrates or poppers, cocaine and amphetamines, poppers, being as in previous years the most consumed substance. (35.7%)

(figure 3.1.2). At least 15% of the interviewed MSM had had an STI in the previous year. The proportion of men who had been diagnosed with syphilis in the last 12 months demonstrated a significant increase in successive studies (0.8% in 1995 to 5.9% in 2008), contrary to what happened with the proportion of herpes which decreased. The frequency of gonorrhoea was also

amongst the highest over time (3.7% in 2008) (figure 3.1.3).

The main limitation of the study is the difficulty to extrapolate the results to the MSM population which does not go to gay meeting places and cruising areas, despite the change of methodology which offered a more representative sample of the popu-

Figure 3.1.3. STI diagnosed last 12 months. MSM, 1995-2008.



lation which did go. Likewise, the change of methodology makes comparability with data from previous years difficult. Other limitations, in common with previous evaluations, are memory biases and the under-reporting of risk behaviours and the prevalence of self-reported HIV.

3.2. The monitoring of the prevalence of HIV/HCV/STIs and the behaviours associated with their transmission in injecting drug users (IDUs)

The different behavioural monitoring studies carried out in CEEISCAT have since 1993 employed samples of IDUs on the street, in areas where drugs are sold and consumed. Analysing the current situation of drug-taking, through the methodology used in these studies, each time a more deteriorated injecting population with more years of drug-use was selected, as they are usually more visible in these areas. In this context, the measurement most recently taken between October 2008 and March 2009 varied the inclusion criteria and selection methodology of the participants to obtain a more representative sample of the injecting population of Catalonia, including a subsample of IDUs from other countries. In contrast to previous years, the IDUs were selected from all Catalonia in harm-reduction centres, through a stratified multi-phase sampling stratifying by centre type (according to the estimated percentage of immigration it was > or not than 5%) and by country of ori-

Table 3.2.1. Sociodemographic characteristics and HIV and HCV testing in IDU.

	Spanish N=439	Immigrants N=309	Total N=748	p
	%	%	%	
Mean age [DE]	38.5 [7.1]	33.4 [6.9]	36.4 [7.5]	<0.0001
Men	78.1	88.0	82.2	<0.0001
Education				<0.0001
Primary or less	31.7	15.7	25.1	-
Secondary	67.1	66.0	66.7	-
Higher	1.1	18.3	8.2	-
Employment (last 6 months)				<0.0001
Salaried	22.6	24.1	23.2	-
unemployed	40.6	56	47	-
Pension	28.1	4.9	18.5	-
Other situations: prison, burglar, sex work, etc.	8.8	15	11.3	-
Homeless (last 6 months)	19.1	35.3	25.8	<0.0001
HIV testing (ever tested)	94.5	81.4	89.1	<0.0001
Self-reported HIV prevalence (1)	40.0	14.6	30.5	<0.0001
Self-reported HCV prevalence	90.8	85.2	88.5	0.051
Self-reported HCV prevalence (1)	78.3	67.3	74.0	0.002

(1) Among those who have been tested and know the results.

gin within each centre. The inclusion criteria were that participants had injected drugs at some time during the previous 6 months. For the behaviour study, a standardised and anonymous interviewer-administered questionnaire was used, developed by the WHO [10]. With previous informed consent, samples of oral fluid were anonymously collected, to determine the prevalence of HIV [11] and HCV [12] infection, and urine to determine the prevalence of *Chlamydia trachomatis* and *N. gonorrhoea*, respectively, through the real-time PCR technique (Abbott RealTime PCR CT/CG CE).

This section describes the main indicators collected in this last study,

comparing according to the country of origin of the injectors (Spanish and immigrants) by means of Pearson's χ^2 test and Fisher's Exact test for the qualitative variables and Student's t test for the quantitative variables.

A total of 748 injectors were interviewed (50.7% recruited in centres in Barcelona city, 36.6% in the Barcelona metropolitan area and 12.7% in other provinces of Catalonia). According to place of origin, 439 (58.7%) were Spanish, 176 (23.5%) were from Eastern European countries, 69 (9.2%) came from other European countries, 49 (6.6%) from Africa and the rest (2%) from the USA and the Middle East. The in-

jectors' median age was 36 years, the immigrants being the youngest (33 years). The percentage of men was greater amongst the immigrants (88% vs. 78.1%), as well as the percentage which reported having studied at university (18.3% vs. 1.1%). Almost half of the interviewees were receiving unemployment benefits and 25.8% lived on the street, the percentages being greater amongst the immigrants. Almost the majority of the injectors had taken a HIV test at some time and amongst these, the self-reported prevalence of HIV was 40%. Amongst the immigrants who had taken the test and knew the result (81.4%), the prevalence of HIV was less (14.8%). The prevalence of HCV was not shown to be statistically significantly different amongst the native injectors and the immigrants (a global prevalence of 74.9%) (table 3.2.1).

At the time of the interview, almost half of the interviewees were in treatment for their drug addiction, the percentage being lower amongst the immigrants (32.5%). The Spanish injectors had been injecting drugs for on average 18.1 years, while the immigrants had been injecting for less time (10.8 years). The most injected drug amongst Spanish injectors was cocaine (42.5%) and amongst the immigrants it was heroin (40.3%) and the frequency of injection was higher amongst the immigrants (57.6% of the immigrants and 43.7% of the Spanish injected daily) (table 3.2.2).

With regards to the risk behaviours related to the injection of drugs, the prevalence of accepting and passing on syringes in the last six months was 19.4% and 22.9%, respectively, with-

out observing differences according to country of origin. Neither was the prevalence different of sometimes sharing injection material indirectly, such as the practice of often giving or receiving drugs dissolved in another syringe which had been previously used (known as front/back loading) (49.9%) and the sharing of other material such as the spoon, the filter, or the water used to prepare the dose (54%) (figure 3.2.1).

Approximately half of the injectors had sexual relations with regular partners (48.3%) and 34.4% with occasional partners. A significant proportion of the regular partners were also IDU (42.6%). Of the total interviewees, 7.4% reported having had sexual relations in exchange for money or drugs in the last 6 months, women forming the larger group in this case: 2.1% of men and 31.6% of women (table 3.2.2). The prevalence of the consistent use of condoms, which is to say

the percentage who reported having always used them in sexual relations in the last 6 months, was not seen to be significantly different between the native injectors and the immigrants. In general, 29.2% used condoms consistently with regular partners, 66.9% with occasional partners and 69.1% with clients (figure 3.2.2).

The prevalence of HIV in the samples of oral fluid collected was higher amongst the Spanish (43%) in comparison with the immigrants (22.4%). On the other hand, the prevalence of HCV showed no significant difference according to country of origin (global prevalence of 74.9%). As for the prevalence of *Chlamydia trachomatis* in the urine samples analysed, it was 2.3%, being slightly higher amongst the immigrant injectors (3.6%). No significant differences in the prevalence of *N. gonorrhoea* according to country of origin was observed, with a global prevalence of 0.7% (table 3.2.3).

Table 3.2.2. Drugs use characteristics and sexual behaviour (last 6 months) in IDU.

	Spanish N=439	Immigrants N=309	Total N=748	p
	%	%	%	
Addiction treatment	59.7	32.5	48.5	<0.0001
Years (mean) of injection of intravenous drugs consumption [DE]	18.1 [8.7]	10.8 [6.7]	15.1 [8.7]	<0.0001
More frequent injected drugs				<0.0001
Heorine	41.3	40.3	40.9	-
Cocaine	42.5	23.1	34.5	-
Speedball (heroin+cocaine)/Others	16.2	36.6	24.6	-
Everyday injection of intravenous drugs	43.7	57.6	49.5	<0.0001
Sexual intercourse with steady partner	47.2	50	48.3	ns
IDU steady parnter	41.5	44.2	42.6	ns
Sexual intercourse with occasional partner	31.9	37.9	34.4	ns
Sexual intercourse with clients	8.5	5.8	7.4	ns

Figure 3.2.1. Prevalence of sharing injection of intravenous drugs material in IDU (last 6 months).

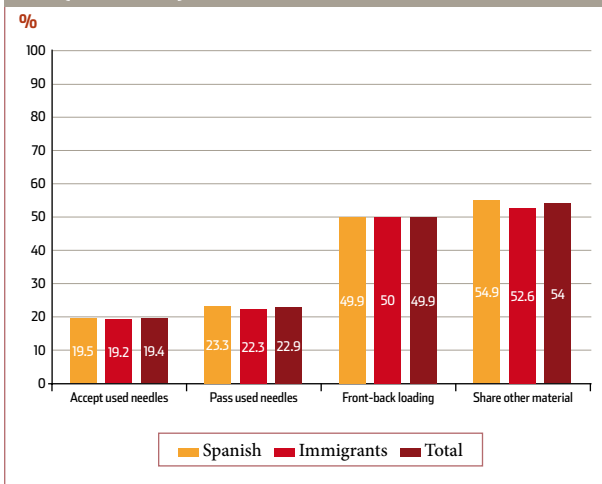
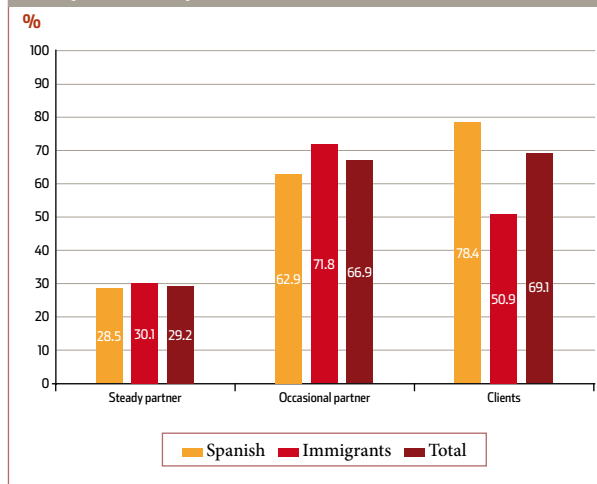


Figure 3.2.2. Prevalence of consistent condom use with steady partners in IDU (last 6 months).



It must be emphasised that amongst the limitations of the study is the lack of being able to generalise about the results of the group of injectors in Catalonia, as the sample was obtained exclusively in harm reduction centres. Also, memory biases and under-reporting of the self-reported risk practices cannot be excluded.

3.3. The monitoring of the prevalence of HIV infection and other STI infections and the behaviours associated

with their transmission in female sex workers (FSW)

In 2005 behavioural monitoring of FSW was initiated as part of SIVES and in collaboration with the association Àmbit Prevenció. Two transverse studies were carried out in 2005 and 2007 with a convenience sample of 400 women aged over 18 years. The participants were selected by stratifying each autonomous region and country of origin, considering proportional assignation in each stratum. Recruitment was carried out on the street, in flats, clubs and bars all through Catalonia.

The behavioural information was collected via an anonymous structured questionnaire, adapted from the one used by Doctors of the World in the Foundation for the Research and Prevention of AIDS in Spain (FIPSE, according to the Spanish acronym) study carried out in 2002 [13]. The questionnaire was translated into Romanian, Russian and English, and asked about the behaviours of the last 6 months. With previously informed consent, oral fluid and urine samples were anonymously collected in order to determine the prevalence of HIV [11] and the prevalence of *Chlamydia trachomatis* and *N. gonorrhoea*, respectively, through the real-time

Table 3.2.3. HIV HCV *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in biological samples collect in IDU.

	HIV			p	HCV			p	CT			p	NG			p
	Spanish	Immigrants	Total		Spanish	Immigrants	Total		Spanish	Immigrants	Total		Spanish	Immigrants	Total	
Min CI	38.4	17.7	31.1		71.1	69.5	71.7		0.5	1.8	1.3		0.2	0	0.2	
Max IC	47.7	27.1	37.9		79.2	79.3	78		2.9	6.3	3.6		2.3	1.8	1.6	
Prevalence	43	22.4	34.5	<0.0001	75.2	74.4	74.9	0.818	1.4	3.6	2.3	0.049	0.9	0.3	0.7	0.41

PCR technique (Abbott RealTime PCR CT/CG CE).

This section describes the socio-demographic and behavioural characteristics and prevalence of HIV in the women interviewed in 2007, and at the end these are compared with the main indicators collected in the 2005 study.

Of the 400 women interviewed in 2007, 56 were Spanish (14%), 26 were African (19%), 105 were Latin American (26%) and 163 were from Eastern Europe (40.8%). The median age was 29.1 years, the women from Eastern Europe being the youngest (23.8 years). 48.4% of the women had studied to secondary education level or higher, the Spanish and Africans being the groups who reported a lower level of education (33.3% and 27.4% less than grammar school level, respectively). Of the immigrants, the Africans and those from Eastern Europe were those who had been living for less time in Catalonia (30.3% and 28.2% arrived during 2007) (table 3.3.1). Of the 192 non-European immigrant women, 60.5% were illegal immigrants. The median age of starting work as a SW was 24.2 years and the median time since beginning sex work was 5 years. The women from Eastern Europe were those who started work younger (21.3 years) and who had been working less time (median 2.6 years) (table 3.3.1).

A quarter of the women had consumed illegal drugs at some time (26.6%) and only 2% had taken them via injection. The Spanish showed a higher level of illegal drug-taking (48.2% at some time) and of injecting drugs (12.5%) (table 3.3.1).

Image 3.2. Female SW are one of vulnerable groups to HIV and other STI infections. Improve targeting education and information about reproductive and sexual health will be important in order to help avoiding those infections in this group.



The majority of the women “always” used condoms during sexual relations with regular and non-regular clients (93.6% and 98.2%, respectively), on the other hand, of the 190 women with a regular partner, only 13.2% had used condoms consistently in sexual intercourse relations without observing differences of country of origin (figure 3.3.1). Half of the interviewees (50.3%) reported the condom splitting during sexual relations in the last 6 months. Three quarters of the women had been pregnant at some time, the percentage being higher amongst the Spanish (94.6%). The majority of women went for gynaecological check-ups at least once a year, the Africans being those who went least (62.7%) and half of the women reported having had an IA. With regards to the HIV test, 84.8%

of the women reported having taken one, with a higher rate amongst the Spanish women (98.2%) (table 3.3.1).

The global prevalence of *Chlamydia trachomatis* was 8.8% and of *N. gonorrhoea* 1%, without there being differences according to country of origin. The global prevalence of HIV (2.5%) was higher amongst the Spanish women (8.9%) (figure 3.3.2). Of the 10 HIV-positive women, only 2 reported knowing their HIV-positive status at the time of the interview. HIV infection was associated with injecting drug use: 40% of the HIV-positive women had injected drugs as opposed to 1% of the HIV-negative women, $p < 0.05$.

The main socio-demographic and behavioural characteristics of the wom-

en interviewed in 2007 were similar to those who had been measured before (2005). Of the samples collected, the prevalence of *Chlamydia trachomatis* increased with respect to 2005, above all amongst the African women (2.9% and 10.5%, respectively in 2005 and 2007) (table 3.3.2).

It must be emphasised that amongst the limitations of the study was the impossibility of obtaining a probabilistic sample of FSW and therefore the sample was not representative of the population of FSW in Catalonia. Secondly, the prevalence of some risk behaviours and HIV/STIs could be underestimated. Lastly, the study shows an elevated acceptability of the alternative techniques to detect *Chlamydia trachomatis* and *N. gonorrhoea* in urine samples, due to their being less invasive than conventional techniques and easier to use in healthcare settings, even though they are not the techniques of choice for the diagnosis of these infections.

Table 3.3.1. Sociodemographic, sexual work, drug use and health status characteristics in female SW by country of origin.

	Spanish n=56 %	Latin n=105 %	African n=76 %	Eastern Europe n=163 %	Total n=400 %
Mean age [DE]*	43.4 (10.4)	31.7 (7.8)	26.2 (4.2)	23.8 (4.8)	29.1 (9.4)
Education*					
< Primary	33.3	4.8	27.4	6.8	13.7
Primary	44.4	28.6	35.6	42.9	37.9
Secondary or more	22.3	66.6	37.0	50.3	48.4
Time in Catalonia*					
Arriving on 2007	np	21.0	30.3	28.2	26.5
Mean age at starting SW (DE)*	28.8 (11.4)	26.7 (7.4)	23.6 (3.7)	21.3 (4.6)	24.2 (7.2)
Mean years working as SW (DE)*	14.9 (11.2)	4.9 (5.7)	3.0 (2.5)	2.6 (2.0)	5.0 (6.8)
Illegal drugs use*					
At least once	48.2	32.4	6.7	24.5	26.6
Injection drugs use*					
At least once	12.5	0.9	0	0	2
Pregnant at least once*	94.6	84.8	68.4	68.5	76.5
Yearly gynecology checkups*	89.3	81.9	62.7	80.4	78.7
Induced abortion at least once	56.4	41.9	50.7	52.8	50
HIV testing at least once*	98.2	82.2	80.3	84.8	84.8

* p<0,05. / np: it's not appropriate.

Figure 3.3.1. Prevalence of consistent condom use by type of partner in female FSW (last 6 months).

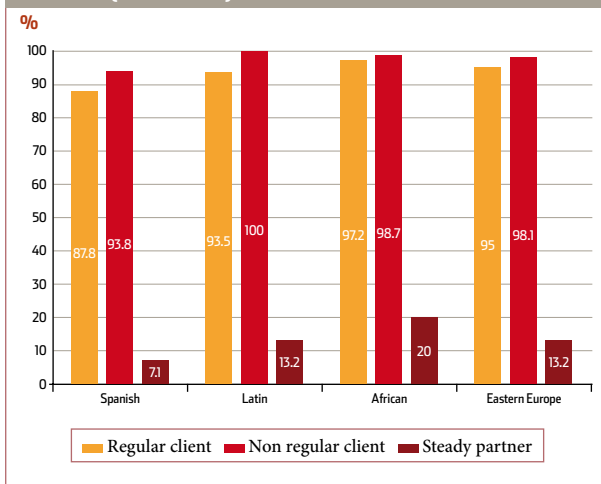
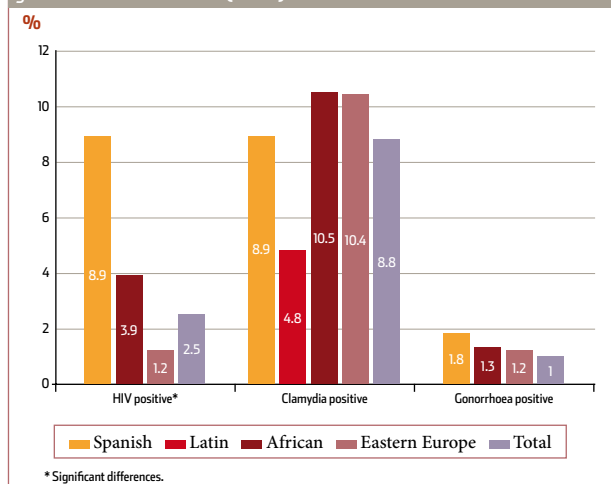


Figure 3.3.2. Prevalence of HIV, *Chlamydia trachomatis* and *Neisseria gonorrhoea* in female FSW (2007).



* Significant differences.

Table 3.3.2. Comparison of main indicators collected in interviews to female FSW in Catalonia and HIV chlamydia and gonorrhoea prevalences by country of origin (2005-2007).

	Spain		Latinamerica		Africa		Eastern Europe	
	2005	2007	2005	2007	2005	2007	2005	2007
Sample size	43	56	123	105	104	76	130	163
Age (mean)	42.1 anys	43.4 anys	32.2 anys	31.7 anys	26.7 anys	26.2 anys	25.1 anys*	23.8 anys*
Time working as SW (years)	15.7 anys	14.9 anys	5.6 anys	4.9 anys	2.9 anys	2.9 anys	2.9 anys	2.6 anys
Drugs use (at least once)	37.2	48.2	31.7	32.4	8.7	6.7	26.2	24.5
Consistent condom use (clients)								
Vaginal sex	83.7	87.5	96.7	95.2	99.0	98.7	95.4	96.7
Anal sex	100.0	84.6	88.5	88.5	66.7	100.0	80.0	68.8
Consistent condom use (partner)								
Vaginal sex	13.3	7.1	10.5	12.7	20.4	19.2	7.8	13.2
Anal sex	14.3	9.1	18.5	21.4	25	0	12.5	23.5
HIV (oral fluid)	9.3	8.9	0	0	2.9	3.9	0	1.2
<i>C. trachomatis</i> (urine)	2.3	8.9	5.7	4.8	2.9*	10.5*	8.5	10.4
<i>N. gonorrhoeae</i> (urine)	0	1.8	0	0	1.9	1.3	0	1.2

*Significant differences between proportions.

➤ The high prevalence of risk behaviours in MSM interviewed online, especially amongst those over 30 years old, and also in gay meeting places/cruising areas highlights the need to intensify HIV and STI prevention in this group. It is pertinent and necessary to include the Internet in these interventions in Spain.

➤ Within the MSM group there is a certain prevalence of unprotected sexual practices amongst serodiscordant stable couples (26%) and there is a high prevalence amongst seroconcordant positive couples (66.7%), making it necessary to reinforce prevention amongst those people diagnosed with HIV and their sexual partners, not just to

decrease the transmission of HIV but also to avoid reinfection and/or the acquisition of other STIs.

➤ The maintained and in some cases increasing prevalence of the use of drugs before and during sexual relations in MSM, along with the association observed in different studies between the use of drugs and risky sexual behaviours highlights the necessity to intensify interventions to decrease the risk of HIV/STI infection.

➤ The high percentage of HIV-positive MSM who do not know their HIV status confirms the importance of promoting the early diagnosis of HIV in this group.

➤ Although the prevalence of HIV is lower amongst immigrant IDUs, this group is younger and is shown to have less of a social network, factors which can increase its vulnerability in the face of HIV and other STIs.

➤ Prevention messages should not only be centred on the risk practices related to drug injection, but should also include risky sexual practices given the scarce use of condoms reported by the injectors, especially with their regular partners.

➤ The prevalence of *Chlamydia trachomatis* has shown an increase with regards to that measured in

2005 in the group of FSW, making it necessary to strengthen education and information for the prevention of these infections in this group.

➤ There is a low prevalence of the use of condoms amongst FSW and their regular sexual partners; therefore it is necessary to study more profoundly the determining factors and the barriers to the use of condoms according to the type of couple in order to be able to design more effective interventions.

➤ Although the use of injected drugs in the group FSW is in the minority, there is an association between having injected drugs and HIV infection, also making the maintenance of harm reduction programmes especially amongst Spanish women necessary.

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The monitoring of HIV diagnosis in Catalonia forms part of the epidemiologic surveillance of HIV/AIDS maintained since 1992, and is based on data from different information sources such as the voluntary notifications of a network of laboratories from the whole of Catalonia (HIV-LABCAT), the information collected from centres which offer the HIV test along with counselling (HIVDEVO project), the Register of AIDS cases, the system of voluntary reporting of new HIV diagnoses and also on the data collected on more specific projects [1] (figure 4.1).

The main objectives of this monitoring are to:

- Describe the activity of the centres which perform the HIV antibody test.
- Describe the epidemiologic pattern both in those people who take the test and in those who test HIV-positive.
- Estimate the extent of diagnosis in vulnerable groups.
- Estimate the delay in the diagnosis of HIV infection.

4.1. Monitoring through laboratory declarations

In 1992 a network of laboratories was created in Catalonia which voluntarily notifies the performing of HIV tests and the results obtained. Currently, this network is made up of hospital laboratories, Primary Healthcare Centre laboratories and

private laboratories (HIVLABCAT). These all send a monthly report to CEEISCAT communicating both the number of HIV tests performed and the quantity of new diagnoses (excluding the screening tests performed on donated blood).

The number of diagnostic tests reported during 2008 for each 1,000

inhabitants of Catalonia was 39.8, oscillating between 16.5 registered in the Central Catalan Health Region and 53.6 registered in the Lleida Health Region (figure 4.1.1). In table 4.1.1 we can compare the number of HIV tests performed per each 1,000 inhabitants of Catalonia with those performed in other EU countries [2]. We see that the rate of tests

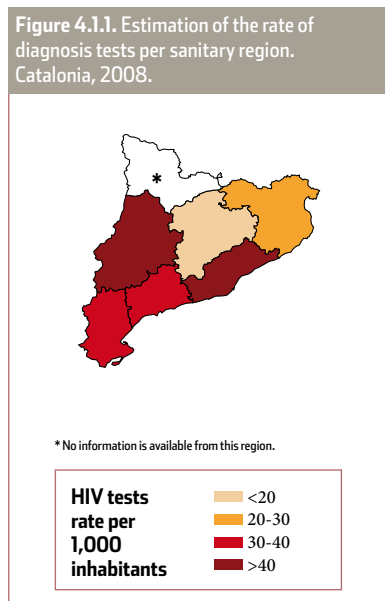
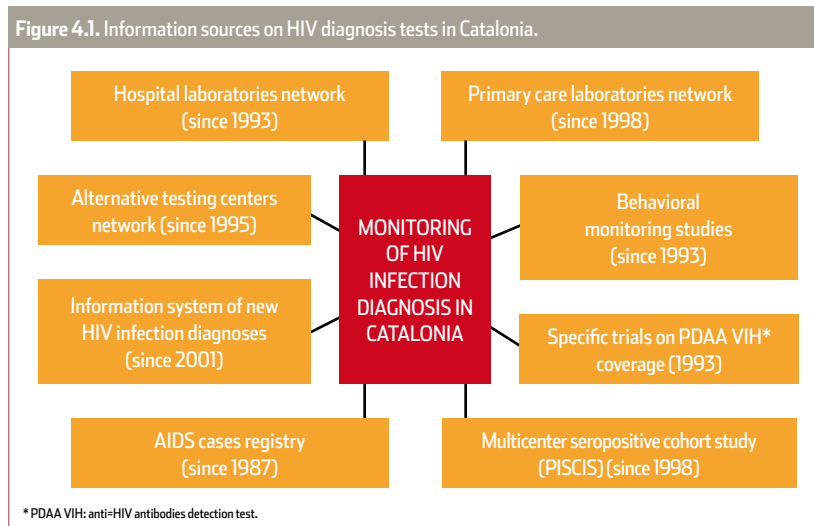


Table 4.1.1. Number of anti-HIV tests carried out per 1,000 inhabitants in European countries, 2008.

Country EU	Tests/1,000 inhabitants
Austria	90.4
France	78.1
Belgium	58.1
Estonia	55.5
Cyprus	53.6
Lithuania	48.2
Catalonia	39.8
Czech Republic	33.0
Slovakia	30.9
Luxemburg	27.6
Slovenia	15.5
Hungary	8.3
Poland	5.1

Source: HIV/AIDS Surveillance in Europe, 2008.

Figure 4.1.2. Number of HIV diagnosis tests carried out and rate of positive results. Catalonia laboratories network, 1993-2008.

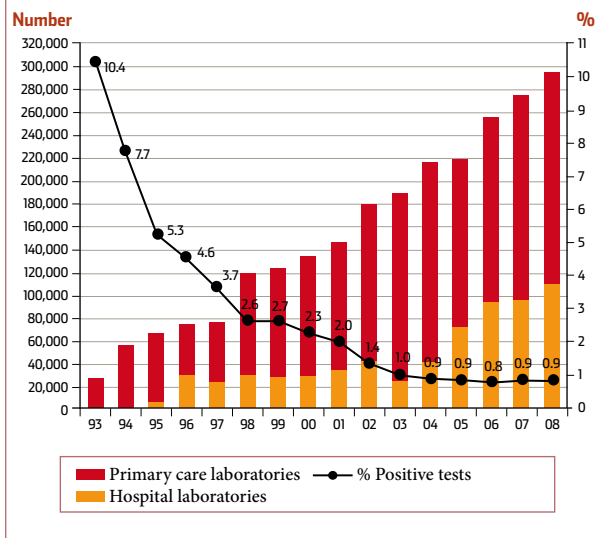
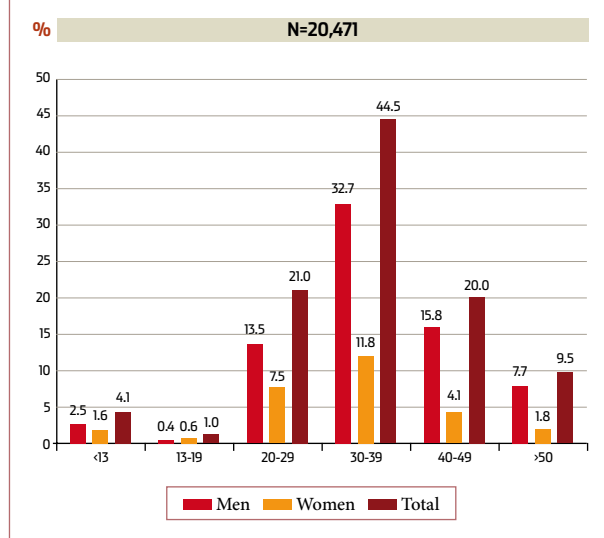


Figure 4.1.3. HIV positive tests rate per sex and age group. Catalonia laboratories network, 1997-2008.



in Catalonia is still much lower than in countries such as Austria and France which have rates of 90.4 and 78.1 respectively.

The annual number of tests performed and reported by the laboratories has been increasing progressively over the years, starting with 52,005 in the year in which the study was initiated, to 293,304 in 2008. In the last few years the increase has occurred, above all, in the tests performed in Primary Healthcare Centre laboratories. The percentage of tests with a positive result in this period (1992-2008) has been decreasing (figure 4.1.2), maintaining stable in the last few years (0.8 to 0.9%). The fact that the proportion of data which each laboratory provides is often significantly different, with reference to both the number of tests performed and the percentage of positive results must also be taken into account [3].

In order to be able to describe the characteristics of the people diagnosed with HIV infection, starting in 1997, each laboratory has collected the age and gender of the new diagnoses it has identified.

With regard to the new cases diagnosed in the period 1997-2008, 72.6% were men, and the most numerous group, both in men and women, is that aged between 30 and 39 years (figure 4.1.3).

4.2. Monitoring through anonymous HIV detection centres

Since 1994 those centres where people can take a voluntary HIV antibody test (HIVDEVO) have collected epidemiologic data from the people who make use of these services. In Catalonia, there are currently ten centres with these characteris-

tics which offer, along with counselling, voluntary HIV tests, which are free, anonymous and confidential. These centres are located in Barcelona (Citizens AIDS Association of Catalonia (ACASC, according to the Catalan acronym), Sexually and Contraception Youth Centre (CJAS, according to the Catalan acronym), BCN-Checkpoint, Prevention and treatment service for health and social care (SAPS, according to the Catalan acronym) Creu Roja, Stop Sida, Àmbit Prevenció and Gays Positius), Sabadell and Terrassa (Actúa Vallès), Lleida (Associació Antisida de Lleida) and Girona (Community AIDS Association of Catalonia (ACAS, according to the Catalan acronym) Girona). The test is funded by the DS of the Catalan government.

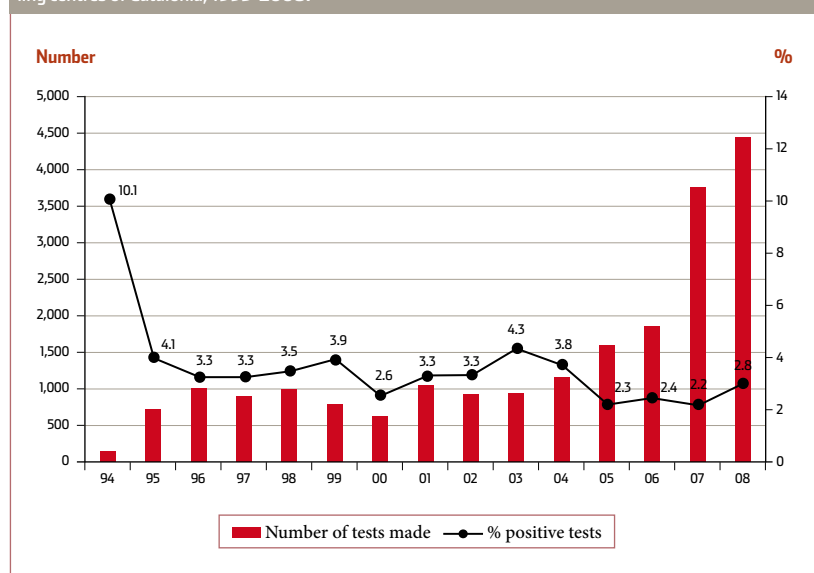
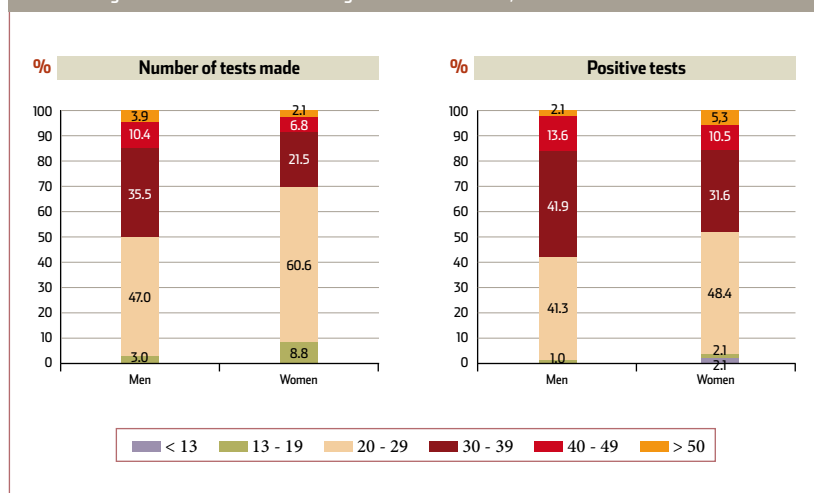
From the initiation of the project until 2008 20,817 tests were performed, with a prevalence of infec-

Table 4.2.1. Number of tests carried out, number of positive tests and positive rate. Diagnosis and assisted counselling centres of Catalonia, 2006-2008.

Year	Number of tests made	Positive tests	% positive tests
2006	1,849	45	2.4
2007	3,752	81	2.2
2008	4,431	126	2.8

Table 4.2.2. Number of anti-HIV tests carried out and positive rate per kind of test. Diagnosis and assisted counselling centres of Catalonia, 2007-2008.

	Kind of test	Number of tests made	% positive tests
2007	Standard test	382 (10.2%)	2.9
	Rapid test	3,345 (89.8%)	2
2008	Standard test	315 (7.2%)	1.9
	Rapid test	4,080 (92.8%)	2.8

Figure 4.2.1. Number of anti-HIV tests carried out and positive rate. Diagnosis and assisted counselling centres of Catalonia, 1995-2008.**Figure 4.2.2.** Percent of HIV diagnosis tests reported and percent of positives. Distribution per age and sex. Diagnosis and assisted counselling centres of Catalonia, 1995-2008.

tion of 3.0%. The yearly evolution of the number of tests performed in these centres was relatively small until 2006, oscillating between 716 performed in 1995 to 1,849 performed in 2006 (figure 4.2.1). At the end of 2006 the rapid HIV test was introduced into alternative diagnostic and counselling centres which increased the demand for the HIV test in these centres. On comparing the number of tests performed in 2007 with respect to those performed in 2006, an increase of 102.9% is seen [4]. The increase in the number of tests performed during 2008 is 18% with respect to 2007, and if this is compared with 2006, the increase is 139.6%. (table 4.2.1). Despite this increase in the number of tests performed, the percentage of positive tests detected has not varied significantly [5]. Over the years 2007 and 2008, the use of the standard test decreased considerably, in favour of the use of the rapid tests (table 4.2.2).

In the time period between 1994 and 2008, 65.3% of the people who took the test were men. Both in men and women, the group who took most tests were those aged between 20 and 29 years (figure 4.2.2). Amongst the positive group, the age groups ranging between 30 and 39 years in men and between 20 and 29 in women were largest (figure 4.2.2).

Figure 4.2.3. Changes in the distribution of tests and positive tests by risk group, 1995-2008.

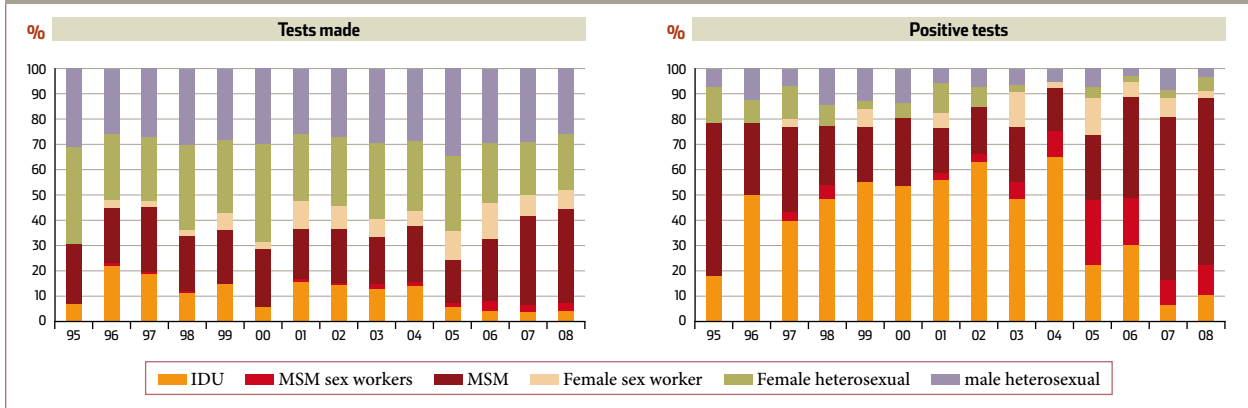


Figure 4.2.3 shows the evolution over time of the distribution of the percentage of tests performed and the positive results classified by transmission groups. The proportion of MSM who take the test in these centres has been increasing, and at the same time the proportion of IDUs has been decreasing. Regarding positive tests, from 1996 until 2004 the largest group was that of IDUs, but from 2005 the proportion of IDUs was decreasing and

that of MSM was increasing, reaching 78.6% of the total of positives detected in 2008 (66.6% MSM and 12.6% male SW). The transmission group with the highest percentage of positive results over the whole period was that of IDUs, followed by MSM, and the heterosexual group was the one which had the lowest percentage (figure 4.2.4).

With regard to the year 2008, 2.8% (126/4,431) of the tests performed

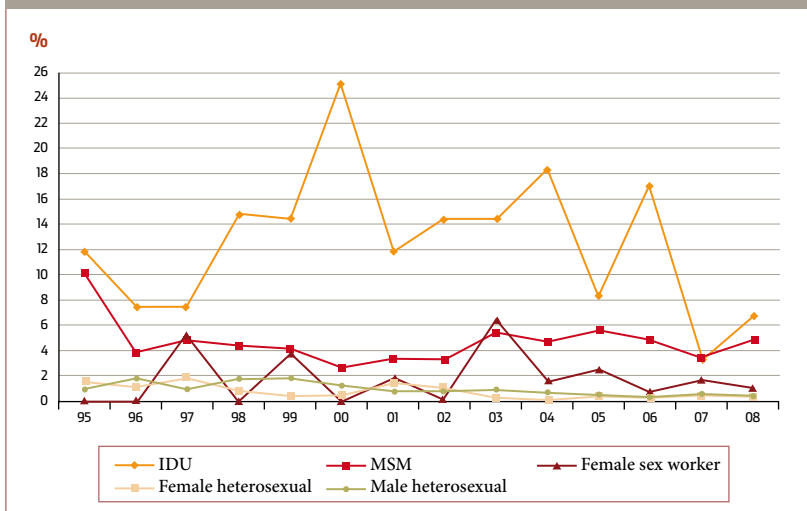
gave positive results. 63.8% had taken the test previously at least once. Of the total of positive cases, 60.8% had at least one previous test with a negative result. 34.7% of the tests were performed on people from other countries, and amongst the positive cases the percentage was 56.2%.

4.3. The extent of the HIV diagnostic test in special interest groups

This section presents the extent of the HIV diagnostic test in the following groups: pregnant women, IDUs, MSM and FSW (table 4.3.1).

With regard to the first group, in 2000 a transverse study was performed which included 2,230 women recruited after giving birth, in 9 public and 2 private hospitals [6]. Trained personnel interviewed the selected women personally and revised their medical histories. Data about the taking of the HIV test was collected from both sources of information. According to the result of

Figure 4.2.4. Annual evolution of the percentage of positive tests by risk group, 1995-2008.



the personal interview, 67% of the women stated that they had taken a HIV test during the pregnancy, whilst the percentage of tests taken collected from the revision of medical histories was 89%.

In the IDU group, 7 transverse studies were done with a biennial periodicity between 1993-2006 in IDUs recruited on the street, and during 2008 a study was initiated of a sample of IDUs recruited in harm reduction centres in Catalonia (for more details see chapter C). The proportion of IDUs who reported having taken the HIV test, at least once, increased starting from the second evaluation of the study, being at 89.1% in the evaluation of 2008. In this last study, between those who gave a positive result from the samples of oral fluid collected (n = 257), 26% did not know their HIV status at the time

of the interview (or indeed they either self-reported as being HIV-negative, or they had not taken the HIV test).

In the MSM group 7 biennial transverse studies have been carried out between 1993 and 2008. The participants were recruited in saunas, sex-shops, bars, public parks and also via the posting of a questionnaire to members of a gay community association. In the evaluation of 2008, the sample recruitment methodology was modified on its incorporation into a European study called SIALON (for more details, see chapter 3). In these studies, the proportion of men who had taken the HIV diagnostic test at least once increased from 61% in 1993 to 88% in 2006. In this last study, the total of MSM who gave a positive result from the samples of oral fluid collected (n = 65), 46.7% did not know their HIV status at the

time of the interview (either they self reported themselves as HIV-negative or they had not taken the HIV test). On the other hand, another study of MSM, in which behavioural information was collected via the Internet, showed that of the men living in Catalonia (n = 718), 73.1% reported having taken the HIV test on some occasion.

Finally, in 2005 the monitoring of behaviours in FSW was initiated in Catalonia, and during 2007 a second evaluation of the study was made. Of the 400 women recruited in each study, the majority were immigrants (89% and 86% in 2005 and 2007, respectively). The global prevalence of the taking of the HIV test in each study was approximately 85%. The immigrant women had taken the HIV test in less proportion than the women native to Catalonia (82.6% and 98.2% in 2007, respectively).

Table 4.3.1. Coverage of the diagnostic test in certain special interest groups. Catalonia, 1993-2008.

Groups	1993	1995-6	1998	2000	2002	2004	2005	2006	2007	2008
Pregnant women										
Diagnostic test for HIV during pregnancy (self-reported)										
Hospitals public	-	-	-	68	-	-		-		
Hospitals private	-	-	-	65	-	-		-		
Diagnostic test for HIV during pregnancy (case notes)										
Hospitals public	-	-	-	93.8	-	-		-		
Hospitals private	-	-	-	71.2	-	-		-		
IDU										
HIV diagnostic test ever	79	95	93	95	83	82		95		89.1
MSM										
HIV diagnostic test ever (SIALON)	61	67.1	75.5	78	82.6	81		86.6		88
HIV diagnostic test ever (Internet)										73.1
Female sex worker										
HIV diagnostic test ever							85.3		84.8	

4.4. Estimation of the delay in the diagnosis of HIV infection in Catalonia

The early diagnosis of HIV infection allows for the improvement of survivability of those affected and at the same time allows for the modification of behaviours which favour the transmission of the virus to other people [7]. To this end, in Catalonia, in the year 2000 CEEISCAT incorporated the estimation of delayed HIV diagnosis as another parameter in its continued epidemiologic surveillance of HIV.

To estimate the delay in the diagnosis of HIV infection, data originating from three information systems was used: the AIDS case register, the New HIV Infection Diagnoses of Catalonia Information System and the PISCIS project, a prospective observational study.

4.4.1. Aids case register

Delay in diagnosis is defined as when the AIDS diagnosis is given in a time period shorter or equal to twelve months after the HIV infection diagnosis.

In the AIDS case register, of the 16,235 cases reported during the period 1981 to 2008 both dates were known (HIV and AIDS diagnosis) in 15,334 cases; of these, 46.2% (7,506 cases) showed delayed diagnosis.

The proportion of cases of delayed diagnosis was higher in men (50.7%) compared to women (41.7%). Delayed diagnosis increased with age, being 44.9% in men younger than 35 years old, 47.7% in those aged between 35 and 49 years and 75.8% in those over 49 years old. Regarding routes of transmission, globally, sexual transmission showed a higher proportion of delayed diagnosis (65.4%), being 67.8% in heterosexuals and 65.2% in MSM.

Figure 4.4.1. Percentage of AIDS cases with late diagnosis per transmission group and period. Catalonia, 1981-2004.

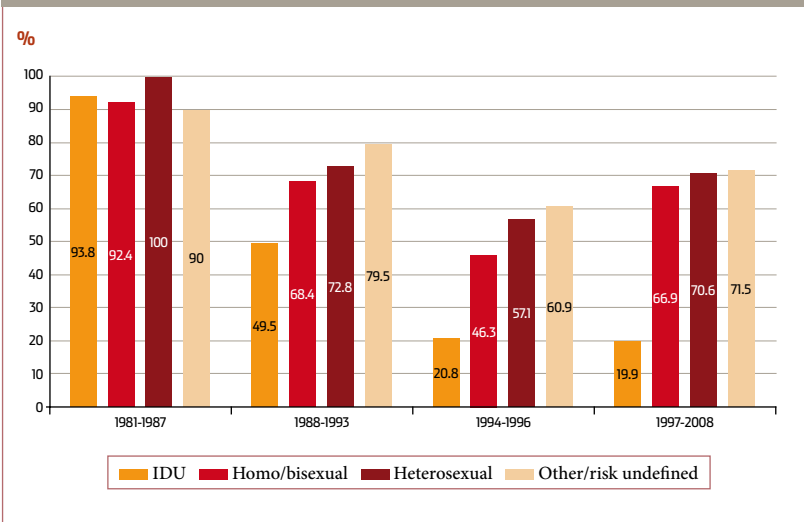


Figure 4.4.2. Characteristics late diagnosis in new cases of HIV infection. Catalonia, 2001-2008.

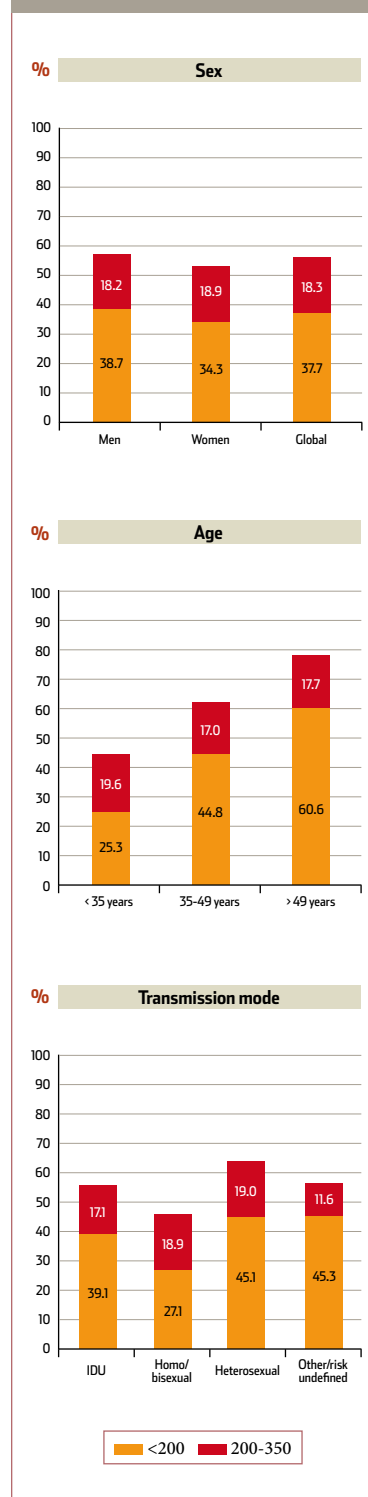


Figure 4.4.1 shows the distribution of delayed diagnosis according to transmission routes and is grouped into time periods.

4.4.2. Information system of new HIV infection diagnoses

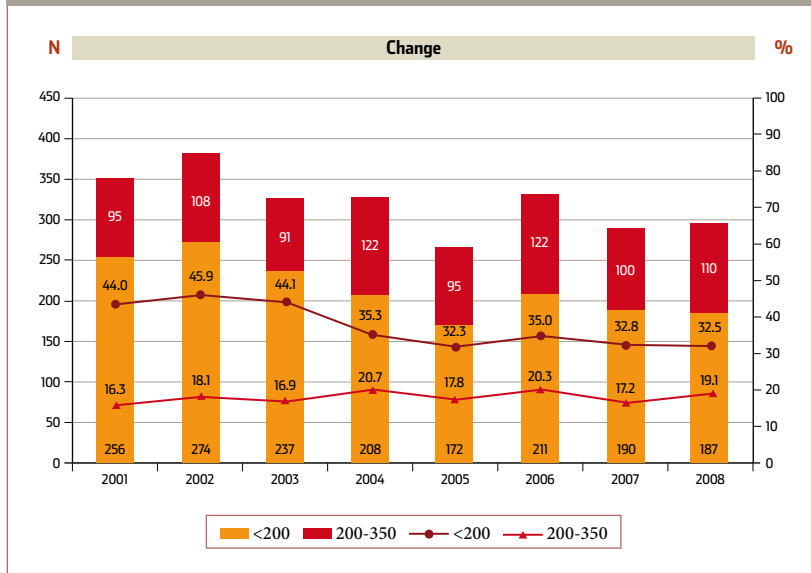
The delay in HIV diagnosis is defined as the presence of a number of CD4 lymphocytes closest to the diagnosis inferior to $200 \times 10^6/l$.

Along with this serious immunosuppression, the group with between 200 and 350 CD4s was monitored given its epidemiological importance and the possibility that the patients were in need of antiretroviral therapy (ART).

Of the 5,506 new diagnoses reported in the system of notification of new HIV infection diagnosis during the period 2001-2008, in 4,597 information about the CD4 lymphocyte count was recorded and of these, 37.7% (1,735) of the cases showed delayed diagnosis (CD4 <200). Also, 15.3% (843) had between 200 and 350 CD4s. Adding up these percentages. We can say that 56.1% of cases were already in need of ART at the time of their HIV diagnosis.

The proportion of late diagnosis was higher in men (38.7%) than in women (34.3%). The proportion of late diagnosis increased with age, being 25.3% in those younger than 35 years old, 44.8% amongst those aged between 35 and 49 and 60.6% in those aged over 49 years old. Regarding routes of transmission, there was a higher proportion of heterosexual

Figure 4.4.3. Changes in late diagnosis in new HIV infection diagnoses. Catalonia, 2001-2008.



cases of delayed diagnosis (45.1%) (figure 4.4.2).

With respect to the evolution of delayed diagnosis for the time period analyzed, a significant decrease ($p = 0,001$) from 44% in 2001 to 32.5% in 2008 was observed (figure 4.4.3).

4.4.3. Evidence of late diagnosis in the PISCIS cohort study

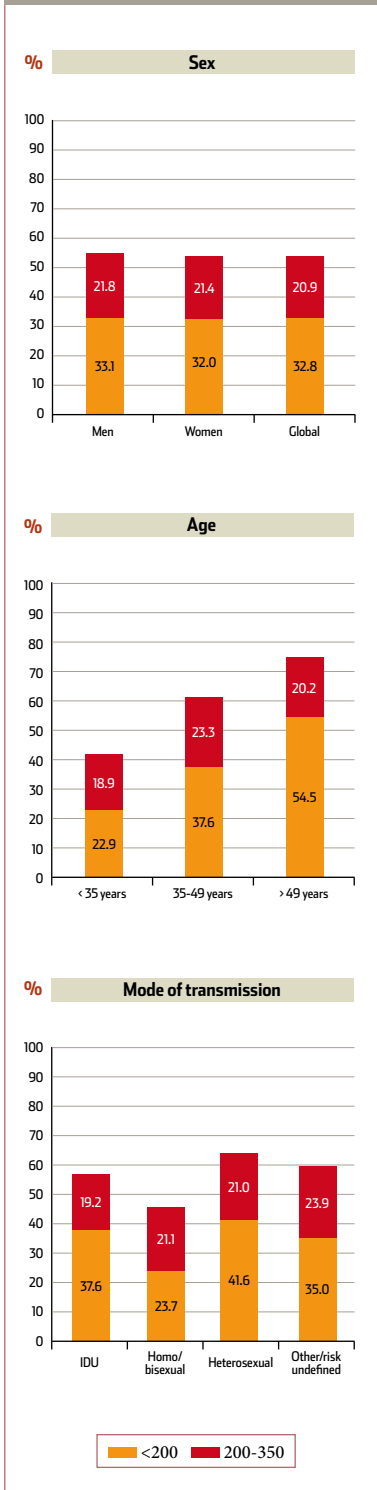
The PISCIS cohort (Project for the computation of the clinical-epidemiological monitoring of HIV infection and AIDS) is an open and multicentre cohort of adult patients infected with HIV, coordinated by CEEISCAT. There are 9 participating hospitals in Catalonia and 1 in the Balearics. The cohort includes all those individuals over 16 years, with a confirmed HIV-positive serological status who visited the participating hospitals for the first time starting from 1st January 1998.

Due to the existence of diverse definitions used in the different surveillance studies, as in the prospective studies of late diagnosis [8-9] and the increasing evidence of the cost-effective

Image 4.1. Late diagnosis observed among new diagnoses of HIV infection remains high. It is necessary to continue promoting early diagnosis of HIV in general population and especially in vulnerable groups with high prevalence of HIV infection.



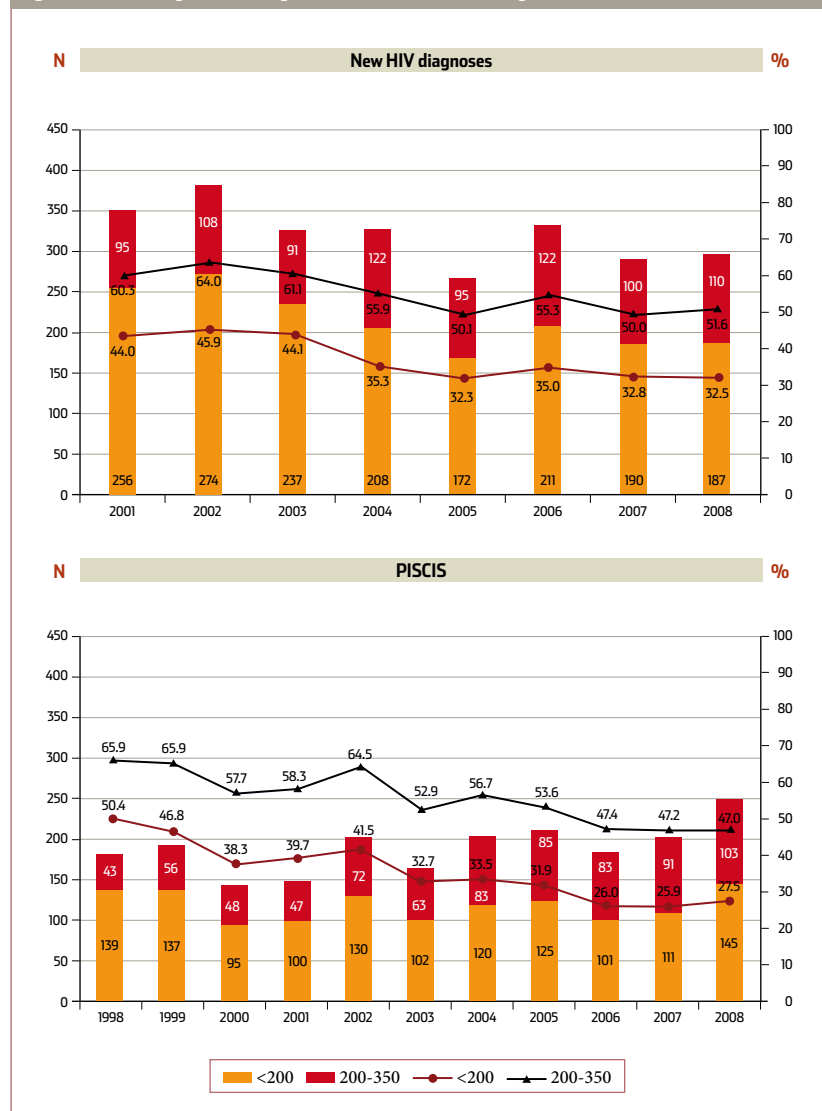
Figure 4.4.4. Characteristics of late diagnoses in new cases of HIV infection in PISCIS cohort, period 1998-2009.



benefits of starting treatment early, for this analysis two levels of CD4+ counts were considered: the patients with a basal CD4+ count <350 were considered to be late diagnosis (since it is necessary not to make the treatment difficult) and those who had a basal count of CD4+ cells <200 were considered to be very late diagnosis or of advanced HIV infection [10].

Amongst those newly diagnosed patients in PISCIS where it was possible to obtain a basal CD4+ count, 53.6% showed a CD4+ count <350 and 32.8% had a more compromised immunity on having a CD4+ count <200 cells. Figure 4.4.4 shows the profile by age, gender and routes of transmission in both groups of patients. Likewise, figure 4.4.5 shows the

Figure 4.4.5. Changes in late diagnosis in new HIV infection diagnoses. Catalonia, 2001-2008.



yearly evolution of both late diagnosis (<350 CD4+ cells) and very late diagnosis (<200 CD4+ cells)

The age group with the highest percentage of late diagnosis was the group aged over 49 years. Despite monitoring and the resultant optimum viral response to treatment and immunological recovery after six years [11], this group, due to their characteristics amongst many other reasons, could have a higher probability of complications related to morbimortality not associated with AIDS [12] and, in agreement with other studies, more difficulty to achieve immunological recovery, especially in those who begin combination ART late [13].

➤ The number of HIV diagnostic tests reported in Catalonia through the network of laboratories has been increasing, but it is still much lower than the rates of other European countries. The general population has to be made aware, so that service users themselves ask for the test, and the availability of the test in Primary Healthcare Centres must be increased.

➤ The number of HIV diagnostic tests performed in the alternative centres has greatly increased since the introduction of the rapid HIV test, although the number continues to be low with respect to the total number of tests performed in Catalonia and the percentage of positive tests has not varied significantly. There is a need to diversify

the places where the test is offered in order to reach most vulnerable groups (outreach programs).

➤ There is evidence that there are new infections amongst those who repeat the test in alternative centres. Counselling needs to be reinforced in order to modify risk behaviours.

➤ The extent of the test in IDUs and MSM continues to increase, but remains low. Both in IDUs and MSM there has been a progressive increase in the percentage of those who had taken the test on some occasion, but the promotion of the repetition of the test in those groups at higher risk must be undertaken.

➤ Delayed diagnosis observed amongst those newly diagnosed with HIV and in the PISCIS cohort study continues to be high. The promotion of the early detection of HIV in the general population and especially in vulnerable groups with a high prevalence of HIV must be continued, not just in order for them to access treatment, but also to adopt the necessary preventative measures to avoid the transmission of the virus and possible reinfections.

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5.1. Non-occupational post exposure prophylaxis

Non-occupational exposure to HIV is defined as coming into accidental contact with blood and/or other biological fluids either through sexual or parenteral contact outside of a strictly defined health environment, whereas occupational exposure to HIV is defined as when health professionals accidentally come into contact with blood or biological fluids whilst they are working [1].

The belief that non-occupational post exposure prophylaxis (NPEP) to HIV can avoid infection is based on biological plausibility. There is data which indicates the efficiency and effectiveness of NPEP for HIV in animal models [2-3], in VT [4] and in the health environment [5]. Due to the fact that for ethical reasons it is not possible to perform authorised controlled clinical tests on NPEP, various observational studies have been carried out which suggest that it can be effective [6-7]. Currently, in this environment, there are state recommendations on the management of these exposures [1].

In 2001 a state project financed by “La Marató de TV3” Foundation was initiated in Spain with the aim of evaluating the viability of the efficiency of NPEP for HIV, as an integral part of an European register (NONOPEP project), financed by the European Commission and coordinated by CEEISCAT [8]. Once the project was finalised in 2005, in Catalonia a registry of non-occupa-

Table 5.1.1. Distribution of notified cases by centre, 2001-2008.

Center	N	%
Hospital Clínic i Provincial de Barcelona	905	56.1
Hospital del Mar	261	16.2
Hospital General Universitari Vall d'Hebron	173	10.7
Ciutat Sanitària Universitària de Bellvitge	141	8.7
Hospital Universitari Joan XXIII	29	1.8
Hospital General de Granollers	28	1.7
Hospital Verge de la Cinta	22	1.4
Hospital Universitari Germans Trias i Pujol	18	1.1
Hospital de Mataró	10	0.6
Hospital de Terrassa	10	0.6
Hospital Universitari Arnau de Vilanova	8	0.5
Hospital Creu Roja de Barcelona	3	0.2
Hospital Mutua de Terrassa	2	0.1
Creu Roja de Catalunya	1	0.1
Hospital Provincial de Santa Caterina	1	0.1
Total	1,612	100.0

tional exposures to HIV has been maintained voluntarily [9].

The registry includes non-occupational exposures to HIV, whether or not they have received ART, and information is collected anonymously and voluntarily on the characteristics of those individuals exposed and the sources of infection, along with the characteristics of the exposure, categorising infection according to risk (low, medium, high), serology and clinical monitoring, the ART prescribed, and tolerance and adherence to these treatments.

The objectives of the registry are:

- Report the demand and the practice of NPEP with antiretroviral drugs in HIV negative people.
- Monitor the suitability of clinical practice for the existing recommendations regarding the use of NPEP.

- Report the adherence and the side effects of ART in HIV negative people who have received NPEP.

This section reports the cases reported in Catalonia from 2001-2008.

During the period 2001-2008 1,612 cases were reported in the registry, of which 59.1% were men. **Table 5.1.1** indicates the distribution of cases according to the notifying centre. The average age was 30 (interquartile range (IQR) 24-38) and the average time between exposure and first consultation was 12.4 hours (IQR 60-60). In 909 cases (56.4%) NPEP was prescribed. In 63% (1,015) the accidental exposure was through sexual contact, in 31.6% (509) it was through parenteral contact and in 5.4% (88) through other types of exposure (**table 5.1.2**). The source was identified in 1436 cases (89.1%). Of these, in 82.1% the initial serological status with regards to HIV was unknown. Of the total exposures, the

Table 5.1.2. Distribution of notified exposure types.

	N	%
Sexual		
Anal reception	67	6.6
Anal insertion	99	9.8
Vaginal reception	66	6.5
Vaginal insertion	125	12.3
Oral sex	44	4.3
Unspecified	614	60.5
Subtotal	1,015	63.0
Parenteral		
Accidental pricking	394	77.4
Aggression	42	8.3
IDU material sharing	3	0.6
Unspecified	70	13.8
Subtotal	509	31.6
Others		
Blood contact with non intact skin	22	25.0
Human bite	12	13.6
Blood contact with mucosae	9	10.2
Blood contact with intact skin	12	13.6
Unspecified	33	37.5
Subtotal	88	5.5
Total	1,612	100

Table 5.1.3. Distribution of treatments and patterns by exposure risk category.

TAR	Risk category							
	Alt		Mig		Baix		Desconegut	
	N	%	N	%	N	%	N	%
No	47	21.5	101	27.4	405	64.3	150	38.0
Yes	172	78.5	267	72.6	225	35.7	245	62.0
Single therapy	3	1.7	11	4.1	15	6.7	13	5.3
Double therapy	89	51.7	112	41.9	108	48.0	170	69.4
Triple therapy	72	41.9	135	50.6	95	42.2	58	23.7
Four drugs	7	4.1	8	3.0	7	3.1	4	1.6
More than four	1	0.6	1	0.4	0	0.0	0	0.0
Total	219		368		630		395	

evaluation of grade of risk carried out by the notifying doctor was stated in 1217 cases (75.5%), distributed in the following way: 630 (51.7%) low risk cases, 368 (30.3%) medium risk cases

and 219 (18%) high risk cases.

The guidelines of ART prescribed were 2 drugs in 52.7%, 3 drugs in 39.6% and 4 or more drugs in 3.1%.

Table 5.1.3 indicates the distribution of treatment guidelines according to the grade of risk. It should be stressed that ART was prescribed in 62% of cases where no evaluation of risk is stated. It was also prescribed in 35.7% of low risk cases.

71.3% of the 1,037 who received ART and 55.7% of those untreated attended the follow up visit which took place one month after the first visit. 714 cases (44.3%) attended six months later, 45% of those who received treatment and 43.5% of those who did not receive it, respectively. In relation to adherence to ART, amongst those receiving treatment with proof of a subsequent visit, 22 cases (3.5%) interrupted the treatment. In the table 5.1.4 we can see the causes of the treatment interruption. Amongst those people exposed who received treatment and who visited subsequently, 169 (16.3%) presented some kind of adverse side effect. Gastro-intestinal symptoms were the most frequent (66.1%), followed by non-specific symptoms such as generally feeling unwell and fatigue (11.3%) and effects on the nervous system (10.2%). The rest of the side effects (12.4%) were fever, skin changes, and distortions in results of laboratory tests of the genitourinary system (table 5.1.5).

During this period, 3 HIV seroconversions were identified (0.3%) in 2003, 2004 and 2005 respectively. They occurred in MSM with unprotected sexual relations which gave a negative result for HIV at the time of the consultation. The 3 cases received the triple combination of AZT

Table 5.1.4. Causes of interrupted treatment in treated persons and one-month follow-up.

Causes	Interruptions	%
Negative effects	7	31.8
HIV source person negative once PEP had started	3	13.6
Patient's own decision	5	22.7
Other causes*	7	31.8
Total	22	

* Reevaluation of the doctor, pregnancy, interactions with other drugs.

Table 5.1.5. Number and type of side effects in ART treated persons that come to a following visit.

Number of side effects per person	N	%
One	84	49.4
Two	62	36.9
Three or more	23	13.7
Type of side effects		
Nausea and / or vomiting	90	31.8
Diarrhea	62	21.9
Malaise and fatigue	32	11.3
Headache	19	6.7
Abdominalgia	18	6.4
Other gastrointestinal alterations	17	6.0
Other nervous system alterations	10	3.5
Others *	35	12.4

* Anorexia, fever, renal colic and laboratory alterations.

+ Lamivudine and Nelfinavir for four weeks without treatment interruptions. The time between the visit made due to the exposure and the initiation of the prophylaxis was 2, 24 and 40 hours respectively. Each case had all had previous exposures, one case before and two cases after the exposure which lead to the consultation. In all three cases the HIV status of the source was unknown.

5.2. Project for the computerisation of clinical epidemiological monitoring of HIV

infection and AIDS (PISCIS Cohort)

2011 marks three decades of the reporting of the first cases of opportunistic infections in previously healthy people which lead the world's scientific community to consider the appearance of a new disease, which until that moment had been unknown [10]. Since then, observational studies have played a fundamental role in HIV infection and AIDS. Important issues such as understanding the natural history of the infection, trying to resolve the question of the best moment

to begin ART as well as how to explain the progression of the disease in the age of HAART, amongst other things, have been considered through the development of this type of epidemiological study.

The PISCIS Project was created with the aim of resolving these types of questions and understanding the performance of the epidemic using the advantages that cohort studies offer. This project was initially conceived with the design of a computer programme which, like a systemised clinical history, collected the necessary information which it was able to translate using special computer programmes (FIPSE, 3084/99). Within this the creation of a network of clinical epidemiological information was attempted between the main hospitals which offer specialised clinical attention to patients living with the infection (FIPSE; 36354/02) in Catalonia and the Balearics.

From that time, the PISCIS project has been made up of a prospective multicentre cohort study made up of seropositive patients over 16 years of age and who have been seen for the first time in some of the main hospitals (9 in Catalonia and 1 in the Balearics) starting from 1st January 1998 [11]. Since 1998 data has been collected retrospectively and from 2000 the main data in the cohort has been collected prospectively.

Since 1st January 1998 until 31st October 2009 the PISCIS Cohort has recruited a total of 11,359 people, monitoring for an average of 51 months. Amongst the total of people recruited, 8,778 were men (77.2%),

Table 5.2.1. Description of patients at the time of inclusion. PISCIS cohort January 1998-October 2009.

	Total PISCIS Cohort (n=11,359 n (%))	New diagnoses (n=7,023) n (%)
Sex (male)	8,778 (77.2)	5,515 (79.1)
Age on inclusion		
<35	4,942 (43.5)	3,248 (46.3)
35-55	5,766 (51.0)	3,259 (46.4)
> 55	568 (5.0)	442 (6.3)
Mode of transmission		
MSM	3,652 (32.4)	2,743 (39.4)
Heterosexual	3,122 (27.7)	2,297 (33.0)
IDU	3,504 (31.1)	1,327 (19.0)
Others	991 (8.8)	586 (8.4)
Naive on inclusion	6,934 (61.0)	5,320 (75.8)
CD4+ baseline		
<200	2,692 (32.0)	1,737 (32.8)
200-350	1,794 (21.3)	1,106 (20.9)
>350	3,932 (46.7)	2,451 (46.3)
CD4+ baseline (average) (1)	325 [152-525]	322 [141-521]
HIV1-RNA baseline (log10) (average) (1)	4.4 [3.0-5.1]	4.6 [3.7-5.2]
HCV coinfection	2,684 (37.3)	1,279 (27.0)
HBV coinfection*	659 (6.9)	438 (7.5)
AIDS diagnosis at the time of inclusion	2,352 (20.7)	1,287 (18.3)
Person-years of follow-up	47,936	29,446
On follow-up	7,167 (63.4)	4,857 (69.7)
Deaths	1,041 (9.2)	502 (7.2)

* Excluding Son Dureta Hospital. / (1) Interquartile range.

the most frequent group of informed transmission was (32.4%), followed by the drug users (31.1%) and heterosexual groups (27.7%).

Amongst the total of patients recruited, 7,023 patients (61.8%) were newly diagnosed with HIV/AIDS, these being the patients with the time period between diagnosis and the date of inclusion in the cohort of less than one year. The main epi-

demiological and clinical characteristics of the total of patients recruited in the PISCIS Cohort and the group of new diagnoses is seen in **table 5.2.1**.

5.2.1. Progression of HIV Infection

Figure 5.2.1 shows the clinical evolution of HIV infection to diagnosis of AIDS and death. Of the total of

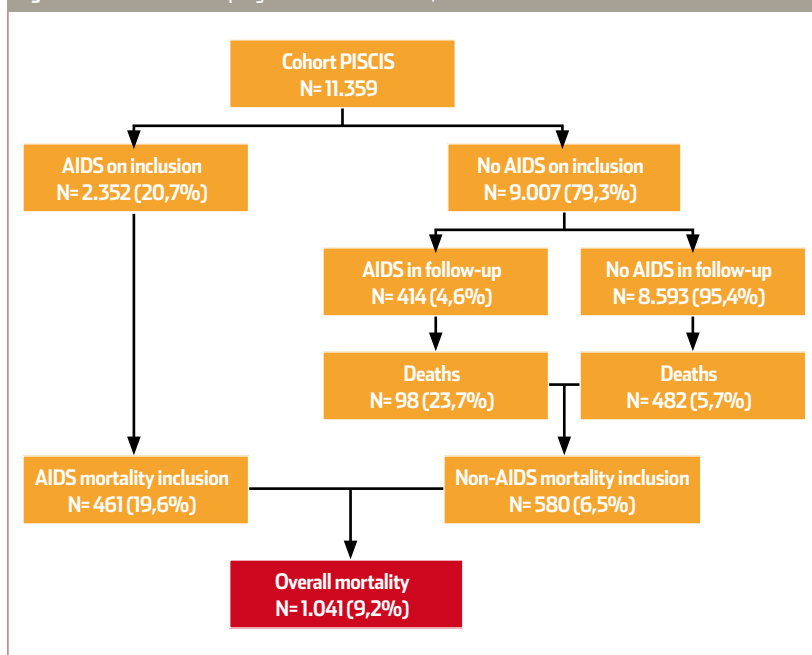
11,359 patients, 2,352 (20.7%) had at that time or had previously had an AIDS defining condition. Of the 9,007 (79.3%) patients who did not present AIDS defining symptoms at the time of inclusion in the cohort, 414 (4.6%) developed an AIDS defining illness during the monitoring. A total of 1,041 people (9.2%) died during the study period, the highest level of mortality being amongst those who had AIDS at the time of inclusion (19.6%) compared to those who were asymptomatic (6.5%).

5.2.2. Treatment for HIV Infection

Since the mid-1990s, with the initiation of HAART, diverse observational studies have shown the favourable change in the natural history of the infection. However, the optimum moment to initiate treatment has always been subject to debate. In the last 15 years, international HIV management guidelines have oscillated between proposing very early initiation of treatment, stimulated mainly by the publication of the first proposed models of the eradication of the infection in the short term [12], and deferring treatment for as long as possible. This last fact can be highlighted by two probable motives: the appearance of serious side effects to ART and the necessity of having to continue this treatment practically indefinitely due to persistent viral replication in cellular reservoirs [13].

Currently, the improved profile of toxicity in certain treatment guidelines [14], the higher effectiveness of the new medications, and the epi-

Figure 5.2.1. HIV infection progression. PISCIS cohort, 1998-2009.



dence gathered in studies showing similar mortality rates of seropositive patients who respond adequately to treatment compared to the general uninfected population [15], has determined that early initiation of treatment is once again proposed. The PISCIS cohort has contributed to this discussion and a recent publication, via specific statistical analysis, concluded that the best moment to start HAART is before the CD4+ cell count falls below 350 [16].

Amongst the total of patients recruited in the cohort, 9,178 (80.7%) received ART at some time during their monitoring. Amongst these, 5,447 (59.4%) were treatment naïve and initiated it for the first time in a PISCIS participating hospital. Although with the appearance of new, stronger medications in recent years, it is becoming more and more difficult to use the classic

definition of HAART (a minimum of three medications from at least two different classes), if we maintain this concept, we find that 96.2% of treatment naïve patients used a regimen which fulfilled these HAART criteria.

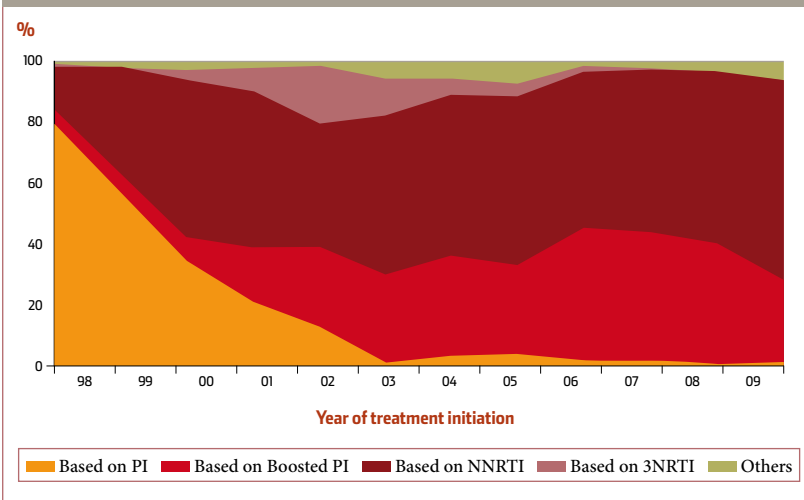
75% of patients initiated ART with a baseline CD4+ count below 350 and 21.3% had already had an AIDS defining condition. The preferred regimen for the initiation of treatment was based on non-nucleoside reverse transcriptase inhibitors (NNRTI), at 45.7%, followed by the regimen based on Protease inhibitors (PI) (25.9%), adding both regimens with the backbone consisting of 2 Nucleoside/nucleotide reverse transcriptase inhibitors (NRTI) (table 5.2.2). Figure 5.2.2 shows the evolution of the first line treatment regimen used in the cohort year by year.

Table 5.2.2. Description of naive patients initiating treatment. PISCIS cohort, January 1998 - October 2009.

	Naive initiating treatment (n=5,447) n (%)
Sex (male)	4,273 (78.6)
Age on inclusion	
<35	2,502 (45.9)
35-55	2,585 (47.5)
>55	341 (6.3)
Mode of transmission	
MSM	1,940 (35.7)
Heterosexual	1,722 (31.7)
IDU	1,407 (25.9)
Others	366 (6.7)
CD4+ on treatment initiation	
<200	1,665 (42.9)
200-350	1,425 (32.8)
>350	1,056 (24.3)
CD4+ on treatment initiation (average) (1)	231 [103-346]
HIV RNA on treatment initiation (log 10) (average) (1)	4.9 [4.3-5.4]
HCV coinfection	1,036 (31.0)
HBV coinfection*	455 (7.6)
AIDS diagnosis on inclusion	1,160 (21.3)
Initiating HAART	4,924 (96.2)
HAART regimen on inclusion	
Based on PI	1,036 (21.0)
Based on Boosted PI	1,276 (25.9)
Based on NNRTI	2,252 (45.7)
Based on 3NRTI	247 (5.0)
Others	113 (2.3)
Person-years of follow-up	26,583
On follow-up	3,972 (72.9)
Deaths	464 (8.5)

* Excluding Son Dureta Hospital. /
(1) Interquartile range.

Figure 5.2.2. Annual evolution of the regimen of starting ART in naive patients. PISCIS cohort (1998-2009).



5.3. Clinical epidemiological study of mothers and children exposed to HIV and/or antiretroviral drugs (NENEXP Project)

The NENEXP Project (FIPSE 36535/05) is a multicentre cohort study of pregnant HIV positive women and their children, coordinated by CEEISCAT, which began in January 2000 and has received the support of FIPSE in successive renewals (FIPSE 3081/99, FIPSE 36352/02). This project has contributed to awareness about the evolution of VT of HIV in Catalonia, as well as the progress of the infection in pregnant women in recent years.

The main objectives of NENEXP Project are:

- Identify and monitor the apparition of adverse side effects from the use of ART during the pregnancy, birth and neonatal period on mother, foetus and new born baby, in the short, mid and long term.
- Describe the socio-demographic profile of the women infected with HIV who do not receive prenatal attention until the time of the birth.
- Identify the maternal factors of the pregnancy and the newly born related to the appearance of adverse effects of ART in the children exposed during the pregnancy, birth and the first weeks of life.

Currently, the participating hospitals are: Hospital San Joan de Déu (Esplugues de Llobregat), HUGTiP (Badalona), Hospital Valle d'Hebrón (Barcelona), Hospital del Mar (Barcelona), Hospital de Mataró (Mataró), Hospital Granollers (Granollers), Hospital Arnau de Vilanova (Lleida), Hospital Parc Taulí (Sabadell), and

during 2008 Hospital Joan XXIII (Tarragona) and the University Hospital Joan de Reus. Together, the obstetric and paediatric units of these centres attend to the majority of pregnant mothers infected with HIV and their children.

In this study information is collected on all new born babies in the participating centres which have been exposed to HIV and/or to therapeutic or prophylactic treatment with antiretroviral drugs during the pregnancy, the birth or the 28 days after the birth, as well as their respective mothers. The data collected refers to the ART and to the clinical monitoring of the pregnancy and birth of HIV infected women, along with the ART (be it prophylactic or not), and the long term clinical and analytical monitoring of their children. The children receive medical check-ups at regular intervals (at birth, 2 and 6 weeks, 3, 6, 12, 18 and 24 months and later, one control each year), where information relevant to the antiretroviral prophylaxis, and the state of health (growth and illnesses) and also the results of the complementary tests). The corresponding results of the 10 hospitals in Catalonia which participated in the study until 2009 are presented here. Up until 31st December 2009, data on 803 children from 806 pregnancies of 683 women has been collected in Catalonia.

With regards to the country of origin of the mothers, 61% were Spanish, 21% were from elsewhere and 18% were of unidentified origin. Amongst the foreign mothers, 69% were from

Figure 5.3.1. VT rate evolution in Catalonia, NENEXP Project 2000-2009.

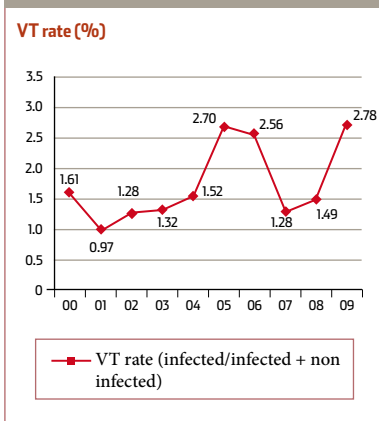
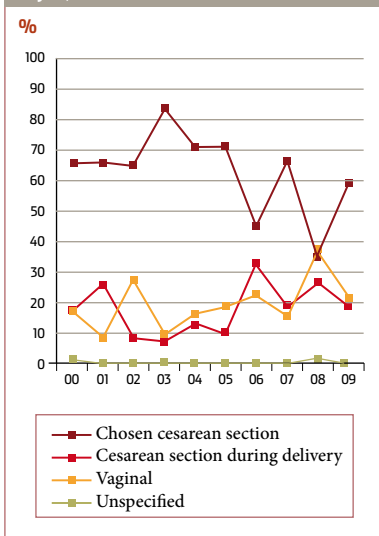


Figure 5.3.2. Evolution of the mode of delivery in HIV-positive mothers newborns. NENEXP Project, 2000-2009.



Sub-Saharan Africa, 34% were from Latin America and 13% were from EU countries.

The rate of transmission in the group of children included was 2.26%. Figure 5.3.1 shows the evolution of the rate of VT in the last 9 years in Catalonia. It is important to stress that there are still women who are diagnosed with the infection at the moment of

Table 5.3.1. Time of diagnosis of HIV infection in the mother.

Time of diagnosis	Number of pregnancies	%
Before pregnancy	624	80.31
During pregnancy	128	16.47
During delivery	11	1.42
Post-delivery	12	1.54
Without information	2	0.26
Total pregnancies	777	100.00

childbirth or after and therefore, have not taken any of the prenatal measures to prevent HIV transmission. Up until 2009, cases of 23 women were reported, of whose children 6 (26%) were infected with HIV.

ART was administered during the pregnancy to 597 of the 683 pregnant women (87.4%), of whom 85% were given HAART. The average gestational age at birth was 37.08 weeks, with an IQR between 36.92 and 37.25 weeks. Four hundred and ninety two children (61.2%) were born by elective caesarean section. One hundred and thirty eight (17.1%) were born by caesarean section performed during the course of the birth and 151 (18.1%) by natural vaginal birth, with no definite trends appearing over the period studied (figure 5.3.2). Antiretroviral prophylaxis after the birth was initiated within the first 48 hours of life in 753 children (95%). Eight of the new born babies were breastfed.

During the first 5 days of life congenital anomalies were diagnosed in 50 (6.22%) of the new born babies included in the cohort. The 9th edition of the International Classification of Diseases was used to define these anomalies. The majority of the anomalies detected were mild or

corrected themselves spontaneously over time. By groups, the most frequent problems were musculoskeletal, genitourinary and the closure of the foramen ovale. These findings are not significantly more important than in the general population, and do not differ from those reported in similar groups [17-18]. They have to be interpreted in the context of the tests performed on these children, a fact which aids the diagnosis of anomalies which could have gone undetected.

5.4. Recent HIV Infections: AERIVIH (2006-2007)

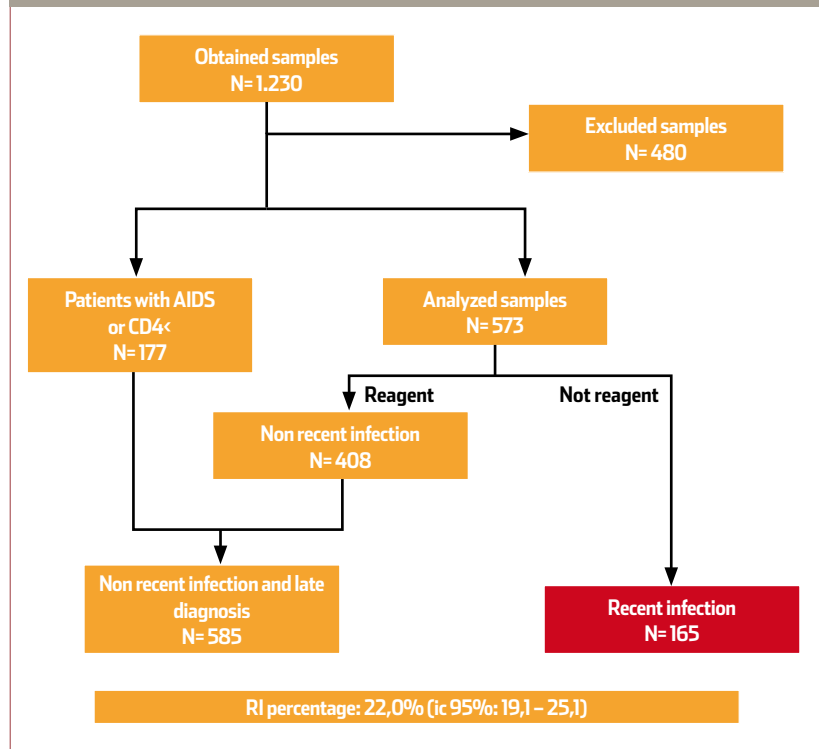
The identification of new infections provides a more precise estimation of the current dynamic of the epidemic, the information being more useful to design appropriate intervention strategies. Given that new HIV diagnoses can include infections which occurred some years before the diagnosis, these diagnoses do not reflect the extent and characteristics of new infections. With this objective, in 1998 the standardized algorithm for the recently infected was defined (STARHS: Serological Testing Algorithm for Recent HIV Seroconversions) as a means of differentiating

recent infections (RI) of less than 170 days from seroconversion (with a CI 95% of 144 to 200 days), from the non-RI [19].

Since it was defined for the first time in Europe, many countries have incorporated the STARHS technique into their HIV surveillance systems [20-25]. In the United States, the CDC has also implemented a national surveillance system for the HIV epidemic [26] incorporating the STARHS technique. Since 2001, CEEISCAT and the Microbiology Service of the HUGTiP participate in the external quality assurance for STARHS, run by CDC, with 100% satisfactory results.

On the other hand, CEEISCAT has coordinated the AERIVIH project (Standardized Algorithm for Recent HIV Infections Study Group), a study in which the STARHS technique has been used (Vironostika-LS) to identify those individuals who were recently infected amongst those recently diagnosed with HIV. The samples analyzed were new known HIV diagnoses, during the period from 2003 to 2005, and came from laboratories from primary health centres, hospitals and alternative screening centres/NGOs, and an STI clinic (Project number: 022.010 Marató TV3) [27]. In accordance with the results of this study, the percentage of recently infected (RI) amongst the new HIV diagnoses was 19.2%. The majority of RI patients were men (79.8%), with a median age of 33.1 years, and 62.5% were MSM. Immigrants made up 26.5% of RI cases, the majority being from South America. Amongst the RI cases, at least 16.5%

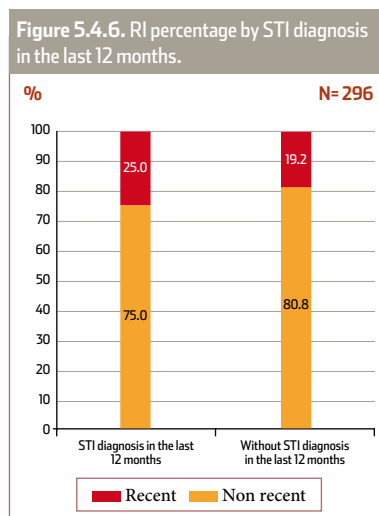
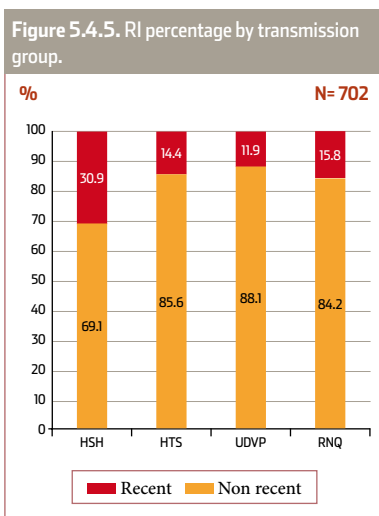
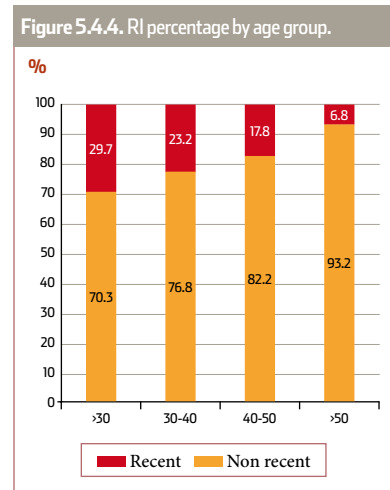
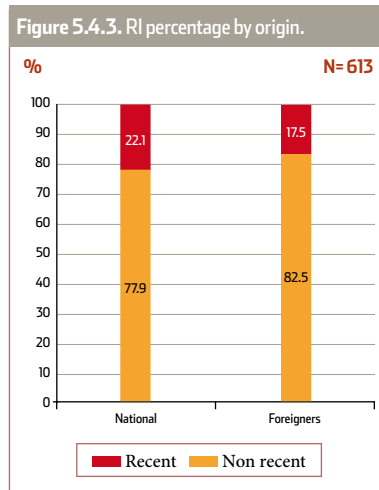
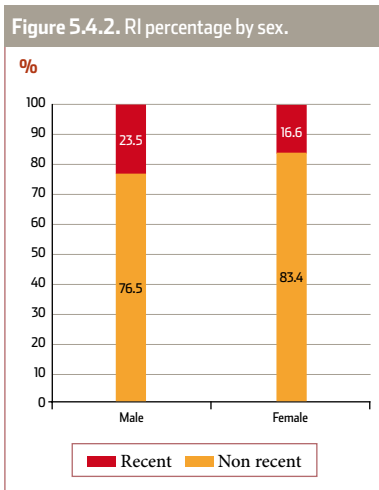
Figure 5.4.1. Algorithm for the identification of samples with recent infection.



reported the diagnosis of another STI during the year previous to their HIV diagnosis. This study demonstrated that the implementation of STARHS in our area was feasible and, as a consequence, from 2006 it has been included in SIVES. The monitoring of RI has been systematically implemented in the centres which participated in the AERIVIH project (2003-2005) and those which, voluntarily have decided to maintain participation since 2006. The Microbiological Department of HUGTiP continues to carry out analyses of samples in this new period. There are 14 Catalonian hospitals and 8 screening centres participating in the new AERIVIH project. Of the 14 hospitals, 9 already participate in the

PISCIS project. Meanwhile, the 8 alternative screening centres also form part of the network of centres participating in the HIVDEVO project (voluntary declaration of HIV) and which, along with counseling, offer free HIV tests voluntarily, anonymously and confidentially [28].

During 2006 and 2007 1,230 HIV positive samples were collected, of which, 480 samples were excluded for not fulfilling the inclusion criteria. Of the samples which were not excluded, 177 cases were patients diagnosed late (CD4+ counts lower than 200, or with clinical criteria indicating AIDS), therefore they were not analyzed. In total, 573 samples were analyzed, of which 408 were not recent diagnoses and 165



were more frequent amongst MSM (23.5%) (figure 5.4.2), the native patients (22.1%) (figure 5.4.3), patients under 30 years of age (29.7%) (figure 5.4.4) MSM (30.9%) (figure 5.4.5) and patients diagnosed with an STI in the 12 months prior to HIV diagnosis (25%) (figure 5.4.6). The differences in proportions were statistically significant in the variable ages and risk groups.

5.5. Monitoring the resistances transmitted to antiretrovirals in patients recently infected with HIV (2003 - 2005)

In spite of the success of ART against HIV-1 [29], there is still a group of individuals with treatment failure who are potentially at risk of transmitting resistant viruses. The phenomenon of transmitted resistance, when an individual is infected by a strain of HIV-1 with one or more mutations associated with resistance

were RI. The overall percentage of RI cases was 22% (CI95%: 1.19 - 1.25) (figure 5.4.1). For each year of diagnosis, the percentage of RI cases was 18.7% (CI95%: 14.6 - 23.4), and in 2007 it was 24.5% (CI95%: 20.5 - 28.9). The characteristics of new diagnoses, according to RI cases are described in table 5.4.1. 78.3% of new diagnoses were men, 19.6% were immigrants (44.2% coming from South America) and 48.8% of cases were MSM. The median age was

35.6 (IQR: 29.4 - 43.4) and 39.7% of new diagnoses were in the age group ranging from 30 - 40 years old. Information on STI diagnoses during the 12 months previous to the HIV diagnosis was obtained in 296 cases, and 12.2% had been diagnosed with some type of STI during the 12 months before their HIV diagnosis.

Those cases identified as RI with HIV, according to the STARHS technique,

Table 5.4.1. Characteristics of new HIV diagnoses, according to have been identified as RI (N=750).

	Total	Recent	P
	N (%)	N (%)	
Sex			
Male	587 (78.3)	138 (23.5)	0.106
Female	163 (21.7)	27 (16.6)	
Origin (N=613)			
National	493 (80.4)	109 (22.1)	0.540
Foreigners	120 (19.6)	21 (17.5)	
South America	53 (44.2)	13 (24.5)	
Central and Western Europe	12 (10.0)	0 (0.0)	
North Africa and Middle East	5 (4.2)	1 (20.0)	
Sub-Saharan Africa	16 (13.3)	1 (6.3)	
Eastern Europe and Russia	4 (3.3)	0 (0.0)	
Asia	2 (1.7)	2 (100.0)	
Unknown	27 (22.5)	4 (14.8)	
Age*			
<30	35.6 [29.4 - 43.4]	32.2 [27.8 - 38.8]	<0.005
30 - 40	212 (28.3)	63 (29.7)	
40 - 50	298 (39.7)	69 (23.2)	
>50	152 (20.3)	27 (17.8)	
Transmission group (N=702)			
MSM	343 (48.8)	106 (30.9)	<0.005
HTS	298 (42.5)	43 (14.4)	
IDU	42 (6.0)	5 (11.9)	
Risk undefined	19 (2.7)	31 (15.8)	
STI** (N=296)			
Yes	36 (12.2)	9 (25.0)	0.503
No	260 (87.8)	50 (19.2)	

* Median and IQR. / ** Having had a STI in the last 12 months.

to antiretroviral drugs, implies a threat to treatment [30].

Population level surveillance of transmitted resistance in RI patients is an essential element in the global evaluation of resistance to ART [31]. The RI patients with transmitted resistance act as sources of the transmission of resistant HIV variants. The prevalence of resistance is high-

er in RI patients, provoked by the gradual disappearance of transmitted resistance of the dominant quaspecies over the course of time. For this reason, the prevalence of transmitted resistances in RI patients is a clear indicator of the rate of current transmitted resistances [30]. The epidemiologic surveillance of transmitted resistances provides us with relevant information to evaluate and adapt

the therapeutic recommendations in the context of HAART.

In Spain, as in other Western European countries and North America, B was the most prevalent subtype of HIV-1, although recent articles describe the rapid progression of subtypes other than B [32]. Awareness of the prevalence of subtypes other than B in our area will permit the estimation of what problems exist when using diagnostic tests and measurements of viral load (VL) validated for subtype B. The objectives of this study were to estimate the prevalence of transmitted resistances, and identify the HIV-1 subtypes in a group of RI VIH-1 patients who had been identified using STARHS, in Catalonia between 2003 and 2005.

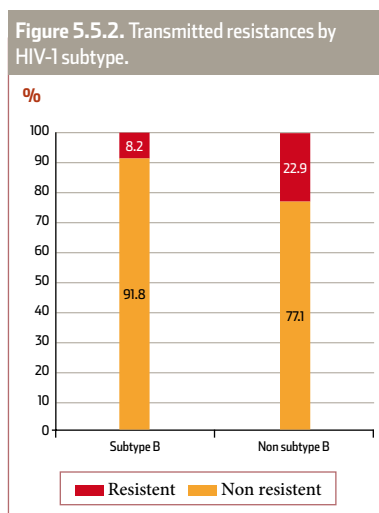
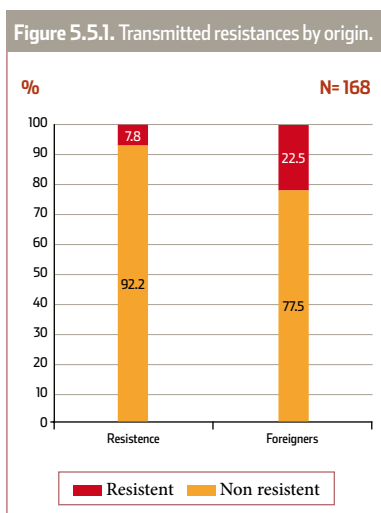
The study group consisted of 182 samples identified as RI, of which 20 cases (11%) showed mutations associated with resistance. Table 5.5.1 describes the characteristics of the RI cases. The prevalence of transmitted resistances was highest amongst immigrants (22.5% vs 7.8% in native cases, $p = 0.019$) (figure 5.5.1) and in patients with non B subtypes (22.9% vs 8.2% in subtype B, $p = 0.030$) (figure 5.5.2). Ten individuals (4.9%) had evidence of transmitted resistances to NRTI; six (3.3%) to NNRTI, two (1.1%) to PI, and only two individuals (1.1%) showed mutations associated with more than one type of drug. The most prevalent mutations were found in the reverse transcriptase gene: A62V (2.7%), K103N (2.7%) and M41L (1.6%) (figure 5.5.3).

Regarding HIV-1 subtypes, of the 182 sequences analyzed, 35 (19.2%) were

Table 5.5.1. Epidemiological characteristics of patients with mutations associated to resistances.

	Total	Resistant	P
	182	20 (11.0) 95% CI: 6.8–16.5	
Sex*			
Male	147	18 (12.2)	0.374
Female	35	2 (5.7)	
Age (years) (N=181) §			
<30	69	7 (10.1)	0.571
30 - 40	78	8 (10.3)	
40 - 50	21	2 (9.5)	
>50	13	3 (23.1)	
Transmission group*			
MSM	88	9 (10.2)	0.053
Heterosexual	41	6 (14.6)	
IDU	24	5 (20.8)	
Risk undefined	29	0 (0.0)	
Origin* (N=168) †			
National	128	10 (7.8)	0.019
Foreigners	40	9 (22.5)	
Subtype VIH-1*			
B	147	12 (8.2)	0.030
Non-B	35	8 (22.9)	
Geographical area*			
Barcelona metropolitan area	165	16 (9.7)	0.098
Rest of Catalonia	17	4 (23.5)	

*N (%). / † P value calculated for 168 patients with available information. / § Median and IQR. Metropolitan area of Barcelona (Àmbit Metropolità: Barcelona, l'Hospitalet de Llobregat, Badalona, Sabadell, Mataró, Cornellà i Granollers. Rest of Catalonia: Lleida, Tortosa, Reus, Vic i Palamós.



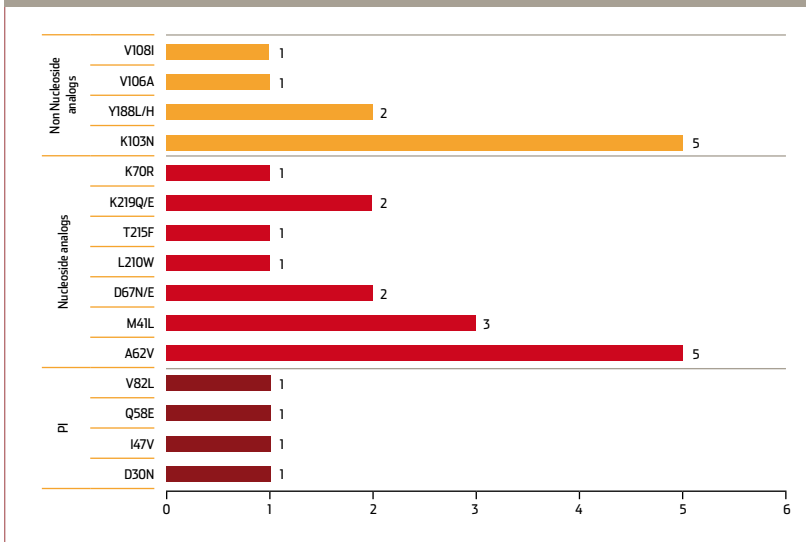
identified as subtype B. In age groups, the individuals aged between 40 and 50 years displayed a higher prevalence of non-B subtypes (47.6%) (figure 5.5.4) compared to other groups. In transmission group, IDUs showed a higher prevalence of non-B subtypes (41.7%) (figure 5.5.5). Amongst immigrant patients, 30% were infected by a non-B subtype (figure 5.5.6).

5.6. Project: “Synergies between HIV infection and the Human Papillomavirus: Cervical cancer and its prevention in HIV infected women”

The Human Papillomavirus (HPV) is considered to be a cause of pre-malignant lesions and cervical cancer. The DNA of HPV has been detected in more than 99% of all cases of cervical cancer [33]. HPV is an STI, and has been associated with risk factors similar to other STIs (multiple sexual partners, premature initiation of sexual activity, and sexual relations with highly promiscuous men, low socio-economic status, and the non-use of barrier contraceptives). The papillomaviruses are classified in accordance with their oncogenic potential or the relation they have with cancer of the cervix and its precursor lesions.

Thus, those related with invasive cervical cancer are named as high-risk (HR-HPV) and those which have been isolated more frequently from low-grade squamous intraepithelial lesions (LSIL) and from the

Figure 5.5.3. Number of mutations associated to resistances by drug family.



acuminate warts are designated as low-risk (LR-HPV). The most common types of LR-HPV are 6 and 11, which are detected more frequently in benign genital and cervical warts. HPV types 16, 18, 31 and 45 are detected more frequently in high-grade squamous intraepithelial lesions (HSIL) and cervical cancer, HPV type 16 being the predominant

type in the cases of invasive cancer of the cervix [34-36].

Premalignant precursor cervical cancer lesions continue to be an unresolved public health problem in HIV positive women. Invasive cervical carcinoma is an AIDS defining condition, incorporated into the new classification of 1993.

HIV positive women have a higher prevalence of HPV infection and a higher prevalence of multiple type infections, compared to HIV negative women [37-40].

In 2007 CEEISCAT started a project with the aim of studying the synergies between HIV and HPV in order to improve the prevention of cancer of the cervix, through the establishment of a cohort of women infected with HIV. It received funding from FIPSE (32620/06) and the Institute for Women which belongs to the Ministry of Work and Immigration (81/06)

The objectives of the project were:

- Estimate the prevalence of HR-HPV in HIV positive women.
- Estimate the prevalence of cervical lesions in HIV positive women.
- Report the frequency and distribution of the types of HR-HPV in HIV positive women.

Figure 5.5.4. Distribution of HIV-1 subtypes, by age group.

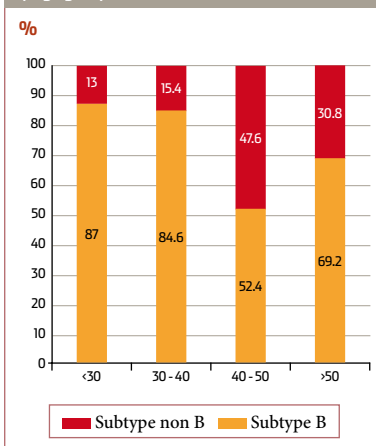


Figure 5.5.5. Distribution of HIV-1 subtypes, by transmission group.

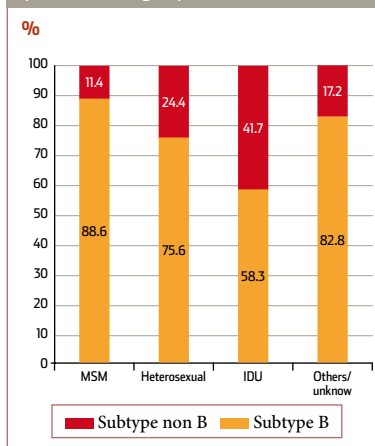
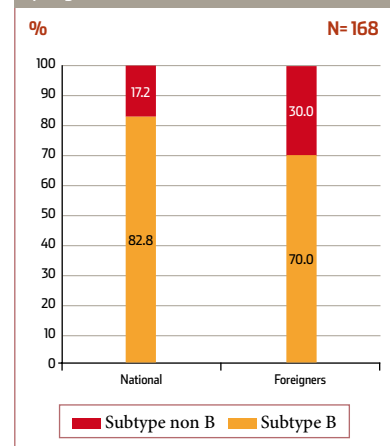


Figure 5.5.6. Distribution of HIV-1 subtypes, by origin.



- Describe the clinical-epidemiological characteristics of HIV positive women infected with HR-HPV.
- Report the screening history of HIV positive women.
- Identify the factors associated with HR-HPV infection and the development of cervical lesions.

A closed multicentre cohort established for the prospective monitoring of HIV/AIDS infected women was embedded in the PISCIS cohort monitoring the HIV infected patients. For the purpose of the proposed objectives, a transverse analysis was carried out. The study group was taken from the participating hospitals which were:

Hospital Clínica-IDIBAPS (Barcelona), University Hospital of Bellvitge (Hospitalet de Llobregat), Hospital Consorci Sanitario Parc Taulí (Sabadell), HUGTiP (Badalona), Hospital General de L'Hospitalet (Hospitalet de Llobregat), Hospital de Palamós (Palamós), Hospital Comarcal del Alt Penedès (Vilafranca del Penedès) and Hospital de la Santa Creu i Sant Pau (Barcelona). Between September 2007 and March 2009, 479 HIV positive patients were recruited. Recruitment was carried out in the HIV units of each one of the participating hospitals and the patients referred to the gynecological service where they were seen at least once and a maximum of twice a year. The diagnostic algorithm defined for the study was followed (based on the proposal for the DS of the Catalanian Parliament). In each visit a clinical-epidemiological survey was carried

out. A gynecological revision was performed on all the patients and an endocervical sample was taken for a smear test, to determine the presence of HPV DNA (Screened with second generation Hybrid Capture, HC2, Digene) and viral genotyping (Roche Linea Array). In the cases where necessary, a colposcopy and cervical biopsy were also carried out. **Figure 5.6.1** shows the algorithm followed during the study.

479 endocervical samples were analyzed (100% of the samples collected) which were obtained during

the first visit of the patients participating in the study. 159 samples were positive for HR-HPV infection (33.2% prevalence) and 320 samples were negative (**figure 5.6.1**). This prevalence is considerably higher than in the general population and is consistent with other studies performed on HIV positive women in Catalonia [38]. We can see a high prevalence of cervical lesions both LSIL and HSIL, 13.8% and 3.8% respectively (**figure 5.6.2**). Amongst the HIV positive women, those who were HPV positive had a higher prevalence of cervical le-

Figure 5.6.1. Algorithm for detection of HPV infection and cervical lesions in HIV positive women participating in the study.

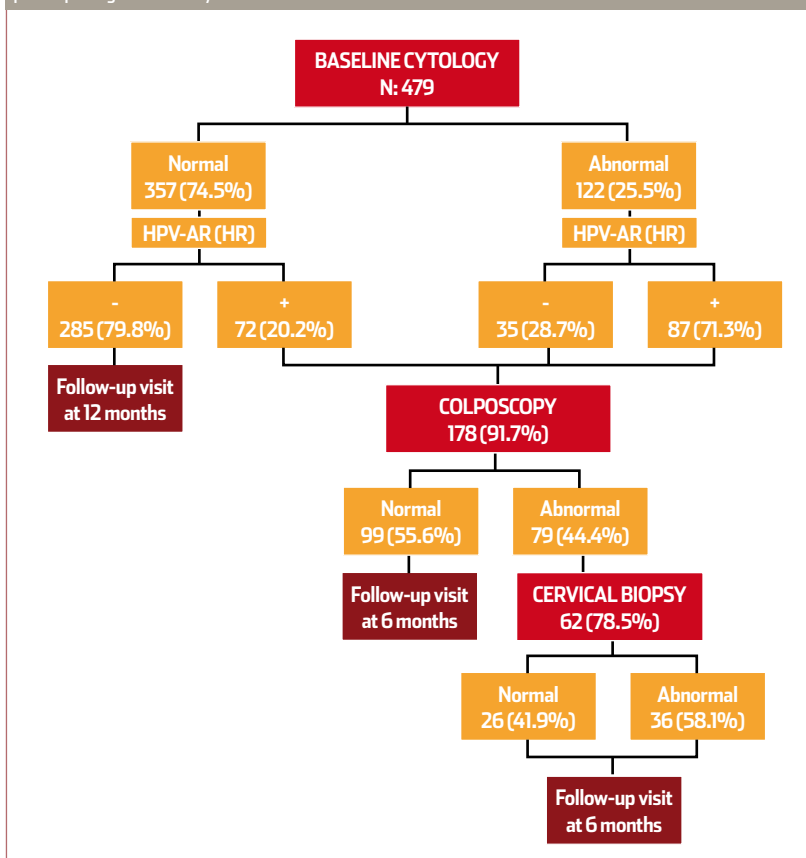


Table 5.6.1. Distribution of HPV types.

High Risk HPV types	
16	34 (23.0)
18	15 (10.1)
31	19 (12.8)
33	10 (6.8)
35	15 (10.1)
39	11 (7.4)
45	12 (8.1)
51	18 (12.2)
52	24 (16.2)
56	17 (11.5)
58	21 (14.2)
59	15 (10.1)
68	8 (5.4)
73	6 (4.1)
82	4 (2.7)
Probable High Risk HPV types	
53	30 (20.3)
66	15 (10.1)

sions, 35.2% of LSIL and 11.3% of HSIL. 78% of women co-infected with HIV and HPV had multiple infections. The types of HR-HPV most prevalent were 16, 52 and 53 with 23%, 16.2% and 20.3% respectively (table 5.6.1).

By 31st March 2010, 331 patients (69.1%) had attended a follow up visit. The prevalence of HR-HPV infection at the second visit was 33.53% (111/331). The prevalence of cervical lesions detected in the follow up visits was: 12.1%, 17.9% and 2.7% for atypical squamous cells of undetermined significance (ASCUS), LSIL and HSIL respectively.

The socio-demographic characteristics of the patients co-infected with HR-HPV and HIV are resumed in table 5.6.2. The majority of women infected with HR-HPV

Table 5.6.2. Main sociodemographic, behavioural, and clinical characteristics of the HIV and HPV co-infected women.

Sociodemographic Characteristics	Total n (%)	HPV+ (HR) n (%)
Age (years)		
<30	37 (7.7)	22 (13.8)
30-40	164 (34.2)	57 (35.8)
>40	278 (58.0)	80 (50.3)
Place of birth		
Spain	348 (72.7)	116 (73.0)
Other	131 (27.3)	43 (27.0)
Marital status		
Single	133 (27.9)	51 (32.3)
Stable partner	220 (46.2)	65 (41.1)
Widow	53 (11.1)	21 (13.3)
Divorced/separated	70 (14.7)	21 (13.3)
Study level		
Without studies	32 (6.7)	9 (5.7)
Primary Education	206 (43.2)	70 (44.3)
Secondary Education	113 (23.7)	30 (19.0)
Vocational training	71 (14.9)	29 (18.4)
Higher Education	55 (11.5)	20 (12.7)
Employment situation		
Unemployed	206 (43.0)	77 (48.4)
Businesswoman	22 (4.6)	6 (3.8)
Professional	36 (7.5)	7 (4.4)
Salaried	215 (44.9)	69 (43.4)

were aged over 40 (50.30%). The percentage of foreign women was 27% and most of the co-infected patients were married or had a partner (41.1%). 50% had a level of infection no higher than basic level and as for the type of work they carried out, 48.4% reported not being in work at that time.

82.3% of the HR-HPV positive women had begun sexual relations before 18 years of age. The majority

had only one sexual partner during the last 6 months (63.3%). The frequency of the use of condoms, both with the regular and sporadic partner, was similar; 33.1% and 33.3% respectively (table 5.6.3).

The lack of adherence to screening programs for cervical cancer has been identified as one of the most common contributing factors in the development of cervical cancer.

The Protocol for the Screening for Cervical Cancer in Catalonia recommends that HIV positive women take an annual smear test [41-43]. A shorter interval may be considered, if CD4 are below than 500 cel/mm³, or if there is abnormal cytology. In this study, the proportion of women who was screened for cervical cancer was low.

In this study, 54.9% of coinfecting women did not take an annual smear test, 41.2% of women with no pre-

Figure 5.6.2. Cervical lesions prevalence of the HIV positive women participating in the study.

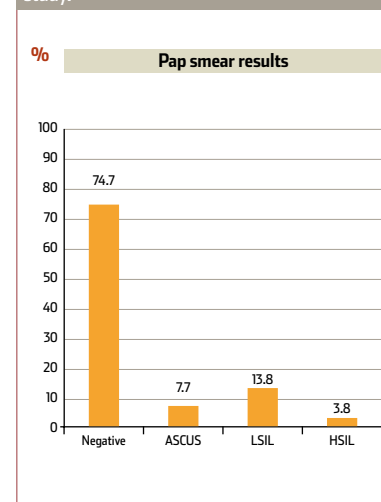


Table 5.6.3. Behavioural characteristics of women co-infected with HIV and HR-HPV.

behavioural characteristics	Total n (%)	HPV+ (HR) n (%)
Age at first sexual intercourse (years)		
≤18	379 (79.5)	130 (82.3)
>18	98 (20.5)	28 (17.7)
Number of sexual partners lifetime		
1	46 (9.7)	9 (5.8)
2-3	121 (25.6)	39 (25.2)
4-5	89 (18.8)	34 (21.9)
6-10	76 (16.1)	27 (17.4)
11-20	74 (15.6)	22 (14.2)
>20	67 (14.2)	24 (15.5)
Number of sexual partners during the last 6 months		
None	127 (27.3)	43 (27.9)
1	308 (66.1)	98 (63.6)
2-3	28 (6.0)	11 (7.1)
4-5	2 (0.4)	1 (0.6)
6-10	1 (0.2)	1 (0.6)
Use of condom in last 6 months with stable partner		
Always	175 (58.7)	58 (61.1)
Regularly	30 (10.1)	6 (6.3)
Occasionally	36 (12.1)	11 (11.6)
Never	57 (19.1)	20 (21.1)
Use of condom in last 6 months with occasional partner		
Always	39 (63.9)	13 (61.9)
Regularly	6 (9.8)	2 (9.5)
Occasionally	4 (6.6)	1 (4.8)
Never	12 (19.7)	5 (23.8)

vious smear test were infected with HR-HPV and 23.5% showed smear test abnormalities (table 5.6.4).

The main route of transmission of 77.3% of co-infected HIV positive women was heterosexual. The average time of HIV infection was 89 months. 90.3% of the women were taking HAART and the average time on treatment was 63 months. The average CD4 count and VL was 409

Table 5.6.4. History of cervical cancer screening for women coinfecting with HIV and HR-HPV.

History of cervical cancer screening	Total n (%)	HPV+ (HR) n (%)
Number of pap smear lifetime		
0	24 (5.2)	11 (7.2)
1	22 (4.8)	10 (6.5)
2-5	137 (29.7)	66 (43.1)
6-10	109 (23.6)	20 (13.1)
+11	169 (36.7)	46 (30.1)
Age at first pap smear (years)		
<25	297 (75.0)	102 (77.3)
25-35	75 (18.9)	23 (17.4)
>35	24 (6.1)	7 (5.3)
Pap smear frequency		
Once a year	210 (50.6)	60 (45.1)
One every 2-3 years	105 (25.3)	30 (24.1)
One every 4-5 years	39 (9.4)	16 (12.0)
One every 6-10 years	34 (8.2)	14 (10.5)
Less than one every 10 years	27 (6.5)	11 (8.3)

cells/mm³ and 50 copies/ml, respectively (table 5.6.5).

The factor associated with HPV infection was age (Odds Ratio (OR): 0.9 CI 0.94-0.99), with women younger than 35 years having a higher prevalence of infection than those who were older. The factors associated with the existence of cervical lesions (ASCUS, LSIL and HSIL) were: Having started sexual relations before 18 years of age (OR: 2.3 CI: 1, 1-5, 0) as opposed to having started after 18 years of age. Having CD4 levels lower than 200 cells/mm³ (OR 5.7 CI: 2.2-14.8) and between 200 and 500 cells/mm³ (OR: 1.8 CI: 10, 1-3, 4) compared with those women with a count of CD4 > 500 cells/mm³. A HIV VL of > 10,000copies/ml (OR 3.1 CI: 1.4-6.9) compared with those women who had a VL of <400 copies/ml.

Table 5.6.5. Clinical characteristics of women co-infected with HIV and HR-HPV.

Clinical characteristics	Total n (%)	HPV+ (HR) n (%)
CD4 T lymphocyte count (cells/mm³)		
<200	43 (9.5)	27 (17.9)
200-500	196 (43.1)	68 (45.0)
>500	216 (47.5)	56 (37.1)
Mean time on treatment (months)	90	63
VL		
<400	313 (74.5)	88 (64.7)
400-5.000	45 (10.7)	17 (12.5)
5.000-10.000	13 (3.1)	5 (3.7)
>10.000	49 (11.7)	27 (19.9)
Currently on treatment	413 (86.2)	134 (84.3)
On HAART +	354 (85.7)	121 (90.3)
No on HAART	59 (14.3)	13 (9.7)
Time on treatment (months)		
<60	139 (33.7)	65 (48.5)
60-120	139 (33.7)	32 (23.9)
>120	135 (32.7)	37 (27.6)
Mean CD4 T lymphocyte count (cells/mm³)	480 (RIQ: 331-702)	409 (RIQ: 267-570)
Average of time on treatment (months)	90 (RIQ: 43-132)	63 (RIQ: 24-131)
Mean HIV-1 viral load (copies/mL)	50 (RIQ: 40-584)	50 (RIQ: 40-4320)
Mean time since HIV infection	119 (RIQ: 59-191)	89 (RIQ: 34-185)

5.7. Cohort of HIV negative men who have sex with men (MSM) for the study of early HIV and STI diagnosis and their determining factors

The ITACA project is a longitudinal study which began in 2008 with the collaboration of BCN Checkpoint, a community based alternative centre for the detection of HIV and other STIs for MSM. The purpose of the study is to establish a cohort of seronegative MSM from which to prospectively collect socio-demographic, behavioural and clinical data, also facilitating and encouraging the taking of a regular HIV test as promoted by other similar studies [44-45]. In 2008, the project was co-financed by the Ministry of Health and Consumer Affairs/ National Plan

Image 5.1. Rapid tests for detection of antibodies against HIV.



for AIDS thus forming part of the programmes for the prevention and control of HIV/AIDS in 2008. From 2009 and until the end of 2010, the main source of funding is the pharmaceutical company Gilead.

The general objectives to be considered are:

- Contribute to the activities for the prevention of HIV and other STIs in BCN Checkpoint.
- Facilitate the early diagnosis of HIV.
- Evaluate the impact of peer counselling in the changing of risk behaviours and identifying potentially effective preventative interventions.
- Create a stable platform of seronegative MSM for the development of preventative interventions and investigative programmes directed at this group.
- Carry out a pilot study in Catalonia to monitor serostatus and behaviour of MSM that will be extrapolated to other geographical areas within Spain.

In the basal visit, and every 6 or 12 months in the follow up visits, biological information is collected for the detection of HIV antibodies and of syphilis through rapid blood tests (Determine® HIV-1/2 and Determine® Syphilis TP, respectively) and socio-demographic and behavioural data along with the information from the participants in the cohort gained from a specific questionnaire which

Image 5.2. The highest percentage of RI is observed among MSM. Continuing to promote HIV testing in this group is essential.



the assessor completes subsequent to the HIV test and the counselling session.

Since the introduction in 2006 of the rapid HIV test in alternative community based centres in Catalonia, the demand for the HIV test has continued to rise and BCN Checkpoint is a good exponent, the number of annual tests having increased from 281 to 1,513 (2006 and 2009 respectively). In 2007 10% of all HIV positive test results reported in Barcelona were from tests taken at BCN Checkpoint.

The total number of HIV tests carried out in the ITACA cohort from 1st December 2008 until 31st December 2009 was 2,323, with the corresponding retention of follow up visits from December 2009 of 77.9%. The total of HIV positive participants who could not continue in the cohort was 4 by the end of 2009.

Based on the current data available, it is important to highlight both the notable increase of the number of HIV tests carried out at BCN Checkpoint since the introduction of the rapid HIV test in 2006 and the high retention of the ITACA cohort of seronegative MSM.

➤ Longitudinal studies are a necessary complement for a thorough knowledge of the natural history of HIV and other STIs.

➤ The clinical monitoring of patients is one of the weak points in the compliance with the current recommendations of NPEP, as only half of the cases (independent to the risk of exposure and the indication of ART) attend the test at the six month stage. Measures to assure the complete monitoring of all cases must be reinforced.

➤ During the study period, three seroconversions were identified which, after detailed and thorough study, could not be attributed to an error in the PEP prescribed. It is essential to remember that this practice is only to be used in exceptional circumstances. It must not at any time be used instead of first line HIV prevention, which has to continue to be the priority in both community and individual interventions.

➤ The most frequent route of transmission amongst the patients

included in the PISCIS cohort is sexual, with the MSM group the most common group both in total in the cohort and in new diagnoses. Therefore it is important to strengthen prevention measures in this group by promoting condom use, as well as access to the HIV test.

➤ One fifth of the patients recruited in the PISCIS cohort already had an AIDS defining condition or had previously had one at the time of inclusion in the cohort. Early diagnosis of the infection must be promoted to be able to access treatment and to adopt preventative measures to avoid the transmission of the virus and possible reinfections.

➤ After the decrease which the introduction of antiretroviral prophylaxis and other preventative measures implied during pregnancy, the rate of VT has stabilised in the last few years, with a rate of 2%. Despite all this, and with the resources available in the health field, there is room for improvement and therefore maintaining preventative measures will be necessary.

➤ The arrival of immigrant populations from countries with a high prevalence of HIV may introduce subtle variations in the context of VT in Spain. New efforts must be made to identify vulnerable groups and interventions which guarantee access to preventative measures.

➤ The congenital anomalies found in children exposed to ART during pregnancy do not appear to justify, neither by their frequency nor their seriousness, a change in the guidelines for antiretroviral prophylaxis or ART in the mother.

➤ The results obtained from the integration of STARHS in the integrated system of HIV surveillance has shown that the algorithm is a useful tool to be able to describe the epidemiological characteristics of the infections which are being produced in our area. On the other hand, the identification of the factors associated with the RI can be incorporated into the different programmes and campaigns for the prevention and control of HIV and STIs, thus contributing to the decrease in the number of new infections for these pathologies.

➤ The highest percentage of RI was found in the MSM group (30.9%). The greater risk of RI amongst MSM may have a double interpretation: on the one hand it is a known fact that this group takes more HIV tests (increasing the probability of being identified as RI), but an increase in risk behaviour and STIs has also been observed, a fact which would indicate a higher incidence of HIV in this group. A key piece of information to interpret the results would be to know the testing pattern of our study population.

➤ The prevalence of transmitted resistances in RI patients in Catalonia (11%) is similar to those observed in other studies carried out in other regions of Spain and Europe. It will be important to reinforce prevention messages in HIV positive patients and assure the correct adherence to treatments to decrease this percentage in the future.

➤ Immigrant patients and those infected with non B subtypes have a higher prevalence of associated mutations and resistances, and this suggests that these are already circulating in the environment under study.

➤ The systematisation of epidemiological surveillance resistances to ART is the key to the correct monitoring of these parameters (prevalence of transmitted resistances and of subtypes).

➤ The high number of HIV positive women incorrectly screened for cervical cancer, along with the high prevalence of HR-HPV cervical lesions, means that it is vital to promote the screening of this group. The screening should be complemented with diagnostic techniques which allow for the detection of asymptomatic HPV infections in HIV positive women.

➤ Taking into consideration the high prevalence of the detection

of HPV 16, the genotype which causes 60% of the cases of cervical cancer in HIV positive women, once the effectiveness, safety and immunogenicity of the HPV vaccine has been demonstrated, the vaccination of HIV positive women is recommended.

➤ In spite of the fact that the concluding results of the ITACA project are not available, the high retention of the cohort corroborates the potential of alternative centres in the promotion of the rapid HIV test and the introduction of counselling as strategies, the aims of which are the early diagnosis of HIV and the reduction of risk behaviours.

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6. Indicators from
Integrated Aids/HIV/STIs
Surveillance System of
Catalonia (SIVES) and other
sexual and reproductive
health (SRH) indicators

Next tables includes indicators which appear into the document from SIVES and, as an innovation in new edition It is including a selection of indicators which takes into account SRH aspects (contraception, fertility, IA, access to health settings). The aim is having a core of indicators comparable at national and international level. Indicators underlined in green are UNAIDS recommendations (UNGASS indicators) applicable in our context [1].

The main topics to classify core of indicators:

- Level of Politics Development and Implementation
- HIV/AIDS Morbi-mortality
- HIV Diagnosis
- Knowledge, Attitudes and Behaviours
- STI
- Other SHR Indicators

In “Knowledge, attitudes and behaviours” and STI tables, indicators are disaggregated by population:

- General population
- MSM
- FSW
- IDUs
- Young People

1. Level of Politics Development and Implementation.			
Indicator	Source	Last data available	Figure
UNGASS 4. Percentage of adults aged >16 with advanced VIH infection receiving ART*	PISCIS Cohort	Accumulate 1998-2009	80.70
UNGASS 5. Percentage of HIV-positive pregnant women who receive antiretroviral medicines to reduce the risk of mother-to-child transmission	NENEXP Project, Register of vertical transmission (RTV, according to the Catalan acronym)	2009	87.40
UNGASS 24. Percentage of adults aged >16 with HIV known to be on treatment 12 months after initiation of ART*	PISCIS Cohort	Accumulate 1998-2009	88.90
UNGASS 7. Percentage of people aged 18-49 who received an HIV test in the last 12 months and who know the results*	Health and Sexual Habits Survey (ESHS, according to the Spanish acronym) [2]	2003	23.80
UNGASS 8. Percentage of MSM that have received an HIV test in the last 12 months and who know the results*	Behavioural surveillance (CEEISCAT) SIALON Project†	2008	60.00
UNGASS 8. Percentage of IDU that have received an HIV test in the last 12 months and who know the results*	Behavioural surveillance (CEEISCAT)	2008-2009	46.10
UNGASS 8. Percentage of FSW that have received an HIV test in the last 12 months and who know the results*	Behavioural surveillance (CEEISCAT)	2007	67.40
UNGASS 9. Percentage of MSM reached with HIV prevention programmes*	Behavioural surveillance (CEEISCAT). SIALON	2008	85.60
UNGASS 11. Percentage of schools which implement Salut i Escola Program*	Salut i Escola Program (Generalitat de Catalunya)‡	Until June of 2008	88.90

* UNGASS indicator adaptation; / † Sialon Project. Capacity building in HIV/Syphilis prevalence estimation using non-invasive methods among MSM in Southern and Eastern Europe. European multicentric project included in MSM behavioural surveillance of CEEISCAT; / ‡ Salut i Escola Institutional program borned in 2004 and motivated for both Health and Education Departments of Generalitat de Catalunya.

2. HIV/AIDS Morbi-mortality.				
Indicator	Source	Last data available	Disaggregate	Figure
UNGASS 23. Prevalence of most-at-risk populations who are HIV infected	HIV sentinel surveillance	2006	By sentinel populations	Newborns: 0.15
		2008		Workers in routine medical tests: 0.20
		2005		Blood donor: 0.01
		2006		IDU recruited on the street: 58.10
		2008-09		IDU in harm reduction centers: 34.50
		2008		IDU at the beginning of treatment: 41.00
		2008		MSM*: 20.40
		2007		FSW: 2.50
		2008		Jailed population: 14.70
		2006		Patients with tuberculosis: 23.33
UNGASS 25. Percentage of infants born to HIV-infected mothers who are infected	NENEXP Project, RTV	2009		2.18
VT rate in Catalonia	NENEXP Project, RTV	2009		1.45
Rate HIV-infected pregnant women that have been diagnosed before delivery	NENEXP Project, RTV	2009		96.48
Rate of newborns of HIV infected women that have been exposed to antiretroviral prophylaxis during pregnancy, birth and the first 48 hours post-partum	NENEXP Project, RTV	2009		93.77
Incidence rate of new HIV diagnosis global, by sex, by age group†	New HIV diagnosis information system in Catalonia	2008	Global	8.64
			By sex	Men: 13.79 Women: 3.54
			By age group	16-24: 7.85 25-44: 17.77 45-49: 5.85 >=65: 1.23
Percentage (number) of new HIV diagnosis by transmission group‡	New HIV diagnosis information system in Catalonia	2008	By sentinel populations	IDU: 6.00 (38) Homo/bisexuals: 43.90 (279) Heterosexual: 42.10 (268) Other: 8.00 (51)
Percentage (number) of new HIV diagnosis by country of origin†	New HIV diagnosis information system in Catalonia	2008	By country of origin	Spain: 52.80 (336) Other: 47.20 (300)
HIV incidence rate global, by sex, by age group (per 100,000 inhabitants)	AIDS registry in Catalonia	2008	Global	3.10
			By sex	Men: 4.86 Women: 1.35
			By age group	<15: 0.00 16-24: 1.18 25-44: 5.39 45-64: 4.08 >=65: 0.57
Years of potential life lost due to HIV (per 1,000 inhabitants/year)	AIDS registry in Catalonia	Accumulate 1998-2009		347.10
Percentage of survivor among HIV infected	PISCIS Cohort	Accumulate 1998-2009		90.80
Percentage of survivors among AIDS cases at 18th month	PISCIS Cohort	Accumulate 1998-2009		80.40





Indicator	Source	Last data available	Disaggregate	Figure
HIV mortality rate global and by age (per 1,000 inhabitants/year)	PISCIS Cohort	Accumulate 1998-2009	Global	17.10
			By age group	20-24: 9.50 25-29: 5.80 30-34: 11.20 35-39: 15.00 40-44: 20.50 45-49: 20.70 50-54: 23.10 55-59: 24.60 60-64: 24.80 >65: 38.60
Life expectancy of HIV infected at the age of 20	PISCIS Cohort	Accumulate 1998-2009		39.20

* Sialon Project: The same centres of recruitment than previous years has been selected; / † Available disaggregate by health region inside the document; / ‡ Available disaggregate by health region and sex inside the document.

3. HIV diagnosis.

Indicator	Source	Last data available	Disaggregate	Figure
Rate of carried out HIV diagnosis tests per year (per 1,000 inhabitants) global and by health region	HIVLABCAT	2008	Global	Catalonia: 39.80
			By health regions	Barcelona: 44.50 Tarragona: 32.40 Lleida: 53.40 Girona: 29.70 Terres de l'Ebre: 32.60 Cat. Central: 16.50 Alt Pirineu i Aran: -
Rate of positive tests in Catalonia laboratories inhabitants general and by health region	HIVLABCAT	2008	Global	Catalonia: 0.85
			By health regions	Barcelona: 0.95 Tarragona: 0.80 Lleida: 0.46 Girona: 0.36 Terres de l'Ebre: 0.54 Cat. Central: 0.71 Alt Pirineu i Aran: -
Number of yearly carried out HIV tests	HIVDEVO	2008		4,431
Rate of positive tests in anonymous detection centres	HIVDEVO	2008		2.80
Percentage of new HIV cases with delay in diagnosis by sex, by age and transmission group	New HIV diagnosis information system in Catalonia	2008	Global	32.50
			By sex	Men: 33.40 Women: 28.80
			By age group	16-24: 14.80 25-44: 30.90 45-64: 52.90 >=65: 42.90
			By sentinel population	IDU: 29.00 Homosexual/Bisexual: 23.90 Heterosexual: 41.00 Other/without label: 37.80

4. Knowledge, attitudes and behaviours.			
Indicator	Source	Last data available	Figure
General population			
UNGASS 16. Percentage of people aged 18-49 who have had sexual intercourse with more than one partner in the last 12 months*	ESHS	2009	19.40
UNGASS 17. Percentage of people aged 18-49 who have had sexual intercourse with more than one partner in the last 12 months who report using of a condom during their last intercourse *	ESHS	2003	40.20
Percentage of people aged 18-49 who have had occasional partners in the last 12 months and report consistent condom use	ESHS	2003	50.65
Percentage of MSM (some time in their life)	ESHS	2003	6.00
Percentage of people aged 18-49 who have received information about sexual topics by information source	ESHS	2003	Relatives and teachers: 20.50 Peers: 58.80 Professionals: 2.80 Media: 10.80 Nobody: 6.90
Percentage of people who have had a satisfactory communication about sexuality with parents	ESHS	2003	39.20
Percentage of people aged 18-49 who wouldn't work or study with people HIV infected	ESHS	2003	27.34
Percentage of people who have had paid for sex (some time in their life)	ESHS	2003	27.20
MSM			
UNGASS 14. Percentage of MSM who both correctly identify ways of preventing the sexual transmission of HIV and who reject misconceptions about HIV transmission*	Behavioural surveillance (CEEISCAT) SIALON	2008	63.61
UNGASS 19. Percentage of MSM who report the use a condom during last anal sex	Behavioural surveillance (CEEISCAT) SIALON	2008	57.20
Prevalence of consistent condom use in anal sex with stable partners (last 6 months)	Behavioural surveillance CEEISCAT SIALON	2008	37.40
Prevalence of consistent condom use in anal sex with occasional partners (last 6 months)	Behavioural surveillance CEEISCAT SIALON	2008	64.00
Prevalence of UAI during last intercourse with stable partner who has unknown or discordant serologic status (last 12 months)	Behavioural surveillance CEEISCAT SIALON	2008	46.02
Percentage of MSM who have consumed alcohol or other illegal drugs before or during last intercourse (last 6 months)	Behavioural surveillance (CEEISCAT) SIALON	2008	Alcohol: 41.00 Illegal drugs: 56.45
Percentage of MSM who have paid for sex (last 6 months)	Behavioural surveillance CEEISCAT	2008	7.20
Percentage of MSM who have been paid for sex (last 6 months)	Behavioural surveillance CEEISCAT	2008	5.90
FSW			
UNGASS 18. Percentage of FSW reporting the use of condom with last non stable client (last 6 months)*	Behavioural surveillance CEEISCAT	2007	98.70





Indicator	Source	Last data available	Figure
UNGASS 18. Percentage of FSW reporting the use of condom with last stable client (last 6 months)*	Behavioural surveillance CEEISCAT	2007	96.80
Prevalence of consistent condom use in sexual intercourse with clients (last 6 months)	Behavioural surveillance CEEISCAT	2007	94.50
Prevalence of consistent condom use in sexual intercourse with stable partner (last 6 months)	Behavioural surveillance CEEISCAT	2007	13.00
IDU			
UNGASS 20. Percentage of IDU reporting the use of condom at last sexual intercourse with stable partner*	Behavioural surveillance CEEISCAT	2008-09	37.90
UNGASS 20. Percentage of IDU reporting the use of condom at last sexual intercourse with occasional partner*	Behavioural surveillance CEEISCAT	2008-09	78.80
Prevalence of consistent condom use during sex with stable partner (last 6 months)	Behavioural surveillance CEEISCAT	2008-09	29.20
Prevalence of consistent condom use during sex with occasional partner (last 6 months)	Behavioural surveillance CEEISCAT	2008-09	66.90
UNGASS 21. Percentage of IDU who accept shared needles (last 6 months)*	Behavioural surveillance CEEISCAT	2008-09	19.40
UNGASS 21. Percentage of IDU who exchange indirect injecting material (last 6 months)*	Behavioural surveillance CEEISCAT	2008-09	54.00
Young People			
UNGASS 13. Percentage of young people aged 15-24 who correctly identify ways of preventing the sexual transmission of HIV*	ESHS	2003	10.00
UNGASS 15. Percentage of young people aged 15-24 who had their first sexual intercourse before the age of 15	ESHS	2003	4.30
Percentage of young people aged <35 sexually active who report using a condom during last sexual intercourse recruited in CJAS and ASSIR (last 12 months)	HIV prevalence monitoring by <35 years old sentinel population (CT/NG-ASSIR/CJAS project)	2008	53.70
Percentage of young people aged <35 sexually active who report using a condom during last sexual intercourse recruited in jails (last 12 months)	HIV prevalence monitoring by <35 years old sentinel population (CT/NG-Jail Project)	2009	25.90
Percentage of young people aged <35 who have abused of alcohol or illegal drugs recruited in CJAS and ASSIR	CT/NG-ASSIR/CJAS project	2008	Alcohol: 26.50 Illegal drugs: 60.30
Percentage of young people aged <35 who have abused of alcohol or illegal drugs recruited in jails	CT/NG-Jail Project	2009	Alcohol: 49.20 Illegal drugs: 48.90

* UNGASS indicator adaptation.

5. Sexually Transmitted infections (STI).			
Indicator	Source	Last data available	Figure
General population			
Syphilis incidence rate (per 100,000 inhabitants) per year†	Register of individualised MDD	2008	4.60
Gonococcus Syphilis incidence rate (per 100, inhabitants) per year †	Register of individualised MDD	2008	4.20
LGV incidence rate (per 100,000 inhabitants) per year†	Register of individualised MDD	2008	0.50
Congenital syphilis incidence rate (per 100,000 inhabitants) per year†	Register of individualised MDD	2008	0.00
Genital Chlamydia incidence rate (per 100,000 inhabitants) per year‡	Register of MDD	2008	4.80
Condilomes acuminats incidence rate (per 100,000 inhabitants) per year‡	Register of MDD	2008	5.00
Tricomones incidence rate (per 100,000 inhabitants) per year‡	Register of MDD	2008	2.10
Ophthalmia neonatal incidence rate (per 100,000 inhabitants) per year‡	Register of MDD	2008	1.30
Genital herpes incidence rate (per 100,000 inhabitants) per year‡	Register of MDD	2008	6.70
Other numerical declaration STI (per 100,000 inhabitants) per year‡	Register of MDD, SNMC	2008	83.60
STI prevalence of STI in sexually active women aged 18-70 (some time in life)	Afrodita Study [3]	2009	6.40
MSM			
STI prevalence (last 12 months)	Behavioural surveillance CEEISCAT SIALON	2008	15.00
FSW			
Chlamydia Prevalence	Behavioural surveillance CEEISCAT	2007	8.80
Gonococcus Prevalence	Behavioural surveillance CEEISCAT	2007	1.00
IDU			
Chlamydia Prevalence	Behavioural surveillance CEEISCAT	2008-09	2.30
Gonococcus Prevalence	Behavioural surveillance CEEISCAT	2008-09	0.70
Young people			
Chlamydia Prevalence in young people aged <35 recruited in CJAS or ASSIR	CT/NG-ASSIR/CJAS project	2008	4.00
Chlamydia Prevalence in young people aged <35 recruited in jails	CT/NG- jails Projecte	2009	5.40
Gonococcus Prevalence in young people aged <35 recruited in CJAS or ASSIR	CT/NG-ASSIR/CJAS project	2008	0.20
Gonococcus Prevalence in young people aged <35 recruited in jails	CT/NG- jails Projecte	2009	0.20

† Available disaggregate by sex and age inside the document; / ‡ Available disaggregate by health region inside the document.

6. Other Sexual and Reproductive Health (SHR) Indicators.			
Indicator	Source	Last data available	Figure
Contraceptive prevalence in sexually active women aged 18-70 who have used some method (some time in their life)	Afrodita Study	2009	87.40
Percentage of women who have used some contraceptive method by regular method (some time in their life)	Afrodita Study	2009	Oral: 61.80 IUD: 16.10 Condom: 6.00 Female sterilisation: 6.60 Other: 7.00
Age-specific fertility rate (births per 1,000 women by age group)	Statistical Institute of Catalonia (Idescat, according to the Catalan acronym) [4]	2008	15-19: 12.90 20-24: 44.20 25-29: 73.30 30-34: 102.40 35-39: 64.60 40-44: 12.40 45-49: 0.80
Percentage of teenage pregnancy (aged <19)	Reproductive Health Observatory [5]	2007	4.35
Percentage of repeat use of emergency contraception (EC) (from total users in 2004-2008 period)	Maternal and child health Program (Generalitat de Catalunya)†	2008	22.20
Age-specific IA rate (IA per 1,000 women by age group)	Idescat	2008	15-19: 8.83 20-24: 15.44 25-29: 11.78 30-34: 7.83 35-39: 5.40 40-44: 2.10 45-49: 0.18
Total abortion rate	Idescat	2008	0.26
Percentage of caesarean	Basic core of data from acute hospitals (CMBD-HA)	2008	21.30
Percentage of women who have had a pap test (some time in their life)	Afrodita Study	2009	89.20
Percentage of FSW who have had violence sex (some time in their life)	Behavioural surveillance-CEEISCAT	2007	15.90

† Maternal and child health takes part of DS strategy in Catalonia. Public health general section has an EC deliver data registry in Catalonia.

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Interesting websites

Public Health Agency. Consorci Sanitari de Barcelona
<http://www.aspb.es/>

Centers for Disease Control and Prevention
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention-
<http://www.cdc.gov/nchhstp/>

Sexually Transmitted Diseases
<http://www.cdc.gov/std/>

HIV / AIDS
<http://www.cdc.gov/hiv/>

Centre Européen Sida
<http://www.eurohiv.org/>

European Centre for Disease Prevention and Control (ECDC)
<http://www.ecdc.europa.eu/en/Pages/home.aspx>

European Centre for the Epidemiological Monitoring of AIDS
<http://www.eurohiv.org/>

The Global Fund to Fight AIDS, Tuberculosis and Malaria
<http://www.theglobalfund.org/en/>

Health Sciences Research Institute of the "Germans Trias i Pujol" Foundation (IGTP)
<http://www.germanstrias.org/>

Fundació Sida i Societat
<http://www.sidaisocietat.org/>

Foundation for the Research and Prevention of AIDS in Spain
<http://www.fipse.es/>

Generalitat de Catalunya. Health Department
<http://www.gencat.cat/salut/>

Working Group on HIV Treatment
<http://gtt-vih.org/>

Hospital Universitari Germans Trias i Pujol (HUGTiP)
<http://www.gencat.cat/ics/germanstrias/>

Infosida

<http://www.gencat.cat/salut/depsalut/html/ca/dir2138/index.html>

Joint United Nations Programme on HIV/AIDS. UNAIDS

<http://www.unaids.org/en/default.asp>

World Health Organization (WHO)

<http://www.who.int/es/>

Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC)

<http://www.seepidemiologia.es/>

Spanish Epidemiology Society (SEE)

<http://www.seepidemiologia.es/>

Spanish Interdisciplinary Society of AIDS (SEISIDA)

<http://www.seisida.net/>

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<http://www.aids2008.org/>

XVIII International AIDS Conference. Vienna (Austria), 2010 July 18-23

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II. Abbreviations list

ACAS	Community AIDS Association of Catalonia	DS	Health Department	IA	Induced abortion
ACASC	Citizens AIDS Association of Catalonia	EAP	Primary healthcare team	IDESCAT	Statistical Institute of Catalonia
AERI-VIH Project	Standardized Algorithm for Recent HIV Infections Study Group	EC	Emergency contraception	IDU	Injecting drug user
ART	Antiretroviral therapy	ECDC	European Centre for Disease Prevention and Control	IQR	Interquartile range
ASCUS	Atypical Squamous Cells of Undetermined Significance	ESHS	Health and Sexual Habits Survey	ITACA Project	Cohort of HIV negative MSM for the study of early HIV and STI diagnosis and their determining factors
ASPB	Barcelona Public Health Agency	EU	European Union	LGV	Lymphogranuloma Venereum
ASSIR	Sexual and reproductive health assistance	FIPSE	Foundation for the Research and Prevention of AIDS in Spain	LR-HPV	Low-risk Human Papillomavirus
AZT	Zidovudine	FSW	Female sex worker	LSIL	Low-grade squamous intraepithelial lesion
CAP	Primary healthcare centre	HAART	Highly active antiretroviral therapy	MDD	Mandatory declaration diseases
CAS	Health and social services centre	HCV	Hepatitis C virus	MSM	Men who have sex with men
CDC	Centers for Disease Control and Prevention	HIVDEVO Project	Monitoring of voluntary detection of HIV antibodies in NGO alternative diagnosis and assisted counseling centres	NENEXP Project	Clinical and Epidemiological Study on HIV and Antiretroviral Drugs Exposed Mothers and Children
CEEISCAT	Centre for Epidemiological Studies on Sexually Transmitted Infections and HIV/AIDS of Catalonia	HIVLABCAT Project	Declaration of all tests and new HIV infection diagnoses carried out in the laboratory network of Catalonia	NNRTI	Non-nucleoside reverse transcriptase inhibitor
CI	Confidence interval	HPV	Human Papillomavirus	NONOPEP Project	State epidemiological information system on non occupational post-HIV exposure prophylaxis
CJAS	Sexuality and Contraception Youth Centre	HR-HPV	High-risk Human Papillomavirus	NPEP	Non-occupational post exposure prophylaxis
CT/NG- Presons Project	Prevalence study of <i>Chlamydia trachomatis</i> and <i>Neisseria gonorrhoeae</i> and its determinants among young people under 25 years old inmates in preventive prisons	HSIL	High-grade squamous intraepithelial lesion	NRTI	Nucleoside reverse transcriptase inhibitor
		HSV	Herpes simplex virus	OR	Odds ratio
		HUGTiP	Germans Trias i Pujol Hospital		

PCR	Polymerase chain reaction
PI	Protease inhibitor
PI/b	Boosted protease inhibitor
PISCIS Project	
	Project for the computation of the clinical-epidemiological monitoring of HIV infection and AIDS
RI	Recent infections
RITS	Register of STIs in Catalonia
RTV	Register of vertical transmission
SAPS	Prevention and treatment service for health and social care
SD	Standard deviation
SIALON Project	
	Capacity building in HIV/Syphilis prevalence estimation using non-invasive methods among MSM in Southern and Eastern Europe
SIVES	Integrated AIDS/HIV/STI Surveillance System of Catalonia
SNMC	Microbiological Notification System of Catalonia
SRH	Sexual and reproductive health
STARHS	Serological Testing Algorithm for Recent HIV Seroconversion
STI	Sexually transmitted infection
SW	Sex worker
UAI	Unprotected anal intercourse
UITS	Units of sexually transmitted infections

UVE	Epidemiological Surveillance Units
VL	Viral load
VT	Vertical transmission
WHO	World Health Organization

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VI. Contributors from the diverse information systems

AIDS/HIV/STIs epidemiological surveillance

Public Health Emergencies Survey and Response General Subdirectorate

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SIALON

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HIVITS-TS

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HIVUDVPT

Drug Adiction Office. Public Health General Directorate. DS (J.M. Suelves, X. Ayneto).

RITS: Register of STIs in Catalonia

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Catalonia STIs Sentinel Network

CAP Fondo. Santa Coloma de Gramenet (E. Martin, S. Rodoreda); CAP Sant Martí. Barcelona (B. Escorihuela); CAP Can Bou. Castelldefels (M. Urbano); CAP El Remei. Vic (P. Aguilà, R. Codinach); CAP Santa Tecla-Llevant. Tarragona (J. Montoya, S. Borrás, M.C. Nolla); CAP Larrard. Barcelona (F. Díaz, A. Santiveri, J.M. Casermeiro, S. Barro, M.C. Prado); CAP Salt (M.D. Rivero); CAP Baix Ebre. Tortosa (G. Batlle); CAP Salou (M.C. Rubio); CAP Puigcerdà (B. Fontecha); CAP Sardenya. Barcelona (J. Sellarès, A. Casasa); CAP Doctor Carles Ribas. Barcelona (M.A. De la Poza); CAP La Florida. L'Hospitalet de Llobregat (R. Carrillo, J. Mascort); CAP La Mina. Barcelona (J.M. Mendives, M. Garcia, J.M. Baena); CAP Sant Fruitós de Bages (X. Puigdemogols); CAP Vila Seca (A. Fallada); CAP Josep Torner i Fors. Malgrat de Mar (M. Tejedor);

CAP Arenys de Mar (R. Hueso); CAP Premià de Mar (A. Valls); CAP Baix-a-Mar. Vilanova i la Geltrú (G. Torrell, J. Milozzi); CAP Calella (S. Curós); CAP Gornal. L'Hospitalet de Llobregat (C. Pérez); CAP Mataró 1 (P. Paulo); EAP Guillem Masriera. Vilassar de Mar (C. Viñas, J. Gerhard); EAP-5 Santa Rosa. Santa Coloma de Gramenet (S. Montesinos); Barcelona and Maresme International Health Unit. Santa Coloma de Gramenet (L. Valerio).

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ASSIR groups

City of Barcelona:

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Metropolitan area:

ASSIR CAP Sant Fèlix. Sabadell (G. Falguera, L. Grado, Sola); ASSIR CAP Mare de Déu de Llorda. Badalona (A. AVECILLA, M. de Sebastián, M. Teixido); ASSIR Maresme. Mataró (C. Coll, Castro).

Tarragonès:

ASSIR CAP Tarragonès. Tarragona (J. Boronat).

Central Catalonia:

ASSIR Cerdanyola Ripollet (P. Soteras, A. Acera, C. Basset, R. Contero, F. Casas, J. Jiménez, I. Rosa, D. Rodríguez, M. Llucià); ASSIR CAP II Granollers (D. Guix, J. Relat, F. Abella, R. Hernández, M. Vila, C. Serra, S. Corchs); ASSIR CAP Osona (J. Grau Galtés, A. Masoliver Jordana, R. Subirats Alberich); ASSIR CAP Bages (R. Forn Guilanyà, R. Oller Bellmunt, C. Ramos Ratrero, M. Vendrell Brià); AS-

SIR Hospital d'Igualada (T. Garcia, J. Rovira, Z. Colman); ASSIR CAP Berguedà (A. Benavidez, C. Comellas, C. Rincón); ASSIR CAP II Plana Lledó (M. Casajoana, M. Manzanarez); ASSIR Mútua de Terrassa (O. Ezquerro, G. Coll, X. Urquizu); ASSIR CAP II Mollet del Vallès (E. López, M. Ayuso).

Primary healthcare laboratories

L'Hospitalet clinical laboratory (E. Dopico, E. Greznzer); Maresme clinical laboratory (P. Planells, P. Felipe); Bon Pastor clinical laboratory (R. Lopez, R. Juve, P. Felipe); Manso clinical laboratory (A. Tirado, J. Bove); Alt Penedès, l'Anoia i el Garraf laboratory consortium (F. Corcoy, R. Angrill, M.A. Benítez).

CT/NG/VPH-PRESONS

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Monitoring HIV prevention and behavior

SIALON

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HIVITS-TS

Associació Àmbit Prevenció (C. Sanclemente, C. Lazar and interviewers: C. Jaques, C. Lazar, A. Stoicescu, M. Bessa, M. Castro, S. Lopez, S. Fernández, C. Rives, D. Faixó, A. Rafel, M.P. Aedo, B. Alsina, C. Benítez) and the associations: Associació Antisida de Lleida, Mercè Fontanilles, Programa Carretera (Hospital Sant Jaume de Cal·lella - Corporació de Salut del Maresme i La Selva), ACAS Girona, Actua Vallès i Creu Roja, Tarragona.

Monitoring HIV diagnosis

Catalonia laboratories (HIVLABCAT)

Clinical testing service. Hospital Universitari Arnau de Vilanova (J. Farré); Tarraco clinical laboratory (A. Vilanova, L. Guasp, C. Sarvisé); Clinical laborator. CAP Just Oliveres, L'Hospitalet (E. Dopico); Cornellà clinical laboratory (R. Navarro); El Maresme clinical laboratory (C. Vilanova); Barcelonès Nord i Vallès Oriental clinical laboratory (J. Ros, C. Guar-

dià); Bon Pastor clinical laboratory (R. López); Manso clinical laboratory (I. Rodrigo); Alt Penedès, l'Anoia i el Garraf laboratory consortium (A. Bosch, M.A. Benítez); Microbiology service. Hospital Universitari de Sant Joan de Reus (J. Joven); Servei d'Hematologia. Hospital de Tortosa Verge de la Cinta (X. Ortin); Clinical laboratory. Hospital Universitari de Girona Dr. Josep Trueta (M.J. Ferri); Hospital Santa Caterina (M.L. Urcola); Clinical testing service. Hospital Sant Jaume de Calella (I. Caballé, J. Massa); Microbiology service. Hospital de Mataró (G. Sauca); Microbiology service. HUGTIP (L. Matas); Microbiology laboratory. Hospital Universitari de Bellvitge (A. Casanova); Clinical laboratory. Hospital General de l'Hospitalet (D. Dot, E. Márquez); Microbiology laboratory. Fundació Hospital Sant Joan de Déu de Martorell (M.A. Gasos); Biochemistry service. Hospital General de Granollers (M.C. Villa); Microbiology laboratory. Hospital General de Vic (J.M. Eurás); Hospital General de Manresa (J. Franquesa); Hospital de Sant Joan de Déu de Manresa (M. Morta); Immunology laboratory. Corporació Sanitària Parc Taulí (M.J. Amengual); Microbiology laboratory. Hospital de la Santa Creu i Sant Pau (N. Margall); Microbiology laboratory. Hospital Clínic i Provincial de Barcelona (T. Pumarola, J. Costa); Microbiology laboratory. Catalonia referente laboratory (M. Salvador); Microbiology service. Hospital Universitari Vall d'Hebron (E. Caballero); Dr. Echevarne laboratory (J. Huguet).

Diagnosis and assisted counseling centers of Catalonia (HIVDEVO)

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ACASC (E. Caballero, J. Becerra, L.A. Leal); Actua Vallès (A. Avellaneda, M. Sité, B. Alsina); Projecte dels Noms (J. Saz, F. Pujol, M. Meulbroeck); Associació Àmbit Prevenció (M. Meroño, C. Jacques, C. Lazar, S. Silva); Gais Positius (V. Mateu, J. Roquetam R. Araneda); ACAS Girona (A. Lara).

COBEMB

Hospital Clínic i Maternitat, Barcelona (R. Ros, V. Cararach, S. Pisa); Hospital de Sant Joan de Déu (J.M. Lailla, I. Bombi, E. Gómez); HUGTIP (O. Gamisans, A. Asensio, M. Luna); Hospital de Terrassa (J. Sáez, M. Aznar, C. Rigau); Corporació Sanitària Parc Taulí (C. Foradada, C. Grau, S. Moros); Hospital Universitari Joan XXIII de Tarragona (R.M. Miralles, E. Aguilar, E. Segura); Hospital Universitari Arnau de Vilanova (M. Muñoz, E. de Diego, A. González); Hospital Universitari de Girona Dr. Josep Trueta (J. Sabria, A. Montells); Hospital de Barcelona (C. Humet, C. Vila); Institut Universitari Dexeus (J. Mallafre, A. Suris, X. Murciano).

Other projects

PISCIS Cohort

Hospital Clínic - IDIBAPS (J.M. Miró, J.M. Gatell, F. Agüero, I. Pérez, M. Sanchez, J.L. Blanco, F. Garcia-Alcáide, E. Martínez, J. Mallolas, M. López-Dieguez, J.F. García-Goz); Hospital Universitari de Bellvitge (D. Podzamczar, E. Ferrer, M. Olmo, P. Barragan, M. Saumoy, F. Bolao, C. Cabellos, C. Peña); Hospital Universitari Son Dureta (J. Murillas, M. Riera); HUGTIP (C. Tural, B. Clotet, G. Sirera, J. Romeu, A. Jou, E. Negredo, C. Miranda, M.C. Capitán); Corporació Sanitària Parc Taulí (F. Segura, G. Navarro, M. Sala, M. Cervantes, M.J. Amengual, M. Navarro, E. Penelo); Hospital de

Mataró (L. Force, P. Barrufet); Hospital General de Vic (J. Vilaró); Hospital de Palamós (A. Masabeu); Hospital General de L'Hospitalet (I. García); Hospital Comarcal de l'Alt Penedès (M. Guadarrama).

AERIVIH

Laboratories

Manso clinical laboratory. Barcelona (I. Rodrigo); Intercomarcal de l'Alt Penedès, l'Anoia i el Garraf laboratory consortium (M.Á. Benítez, A. Cebollero); Hospital Clínic - IDIBAPS (T. Pumarola); Hospital Universitari de Bellvitge - Institut d'Investigació Biomèdica de Bellvitge (IDIBELL) (A. Casanova); HUGTIP (E. Martró, L. Matas, V. González, V. Ausina); Hospital Universitari Vall d'Hebron (E. Caballero); Hospital de la Santa Creu i Sant Pau (N. Margall); Hospital Universitari Arnau de Vilanova (J. Farré); Hospital de Mataró (M.G. Saucá); Hospital de Tortosa Verge de la Cinta (X. Ortín); Corporació Sanitària Parc Taulí (M.J. Armengual); Hospital de Palamós (J.M. Prats); Hospital General de Vic (M. Navarro); Hospital Universitari de Sant Joan de Reus (J.M. Simó); Hospital General de l'Hospitalet (E. Márquez).

Clinicals

Hospital Clínic - IDIBAPS (J.M. Miró, F. Agüero, O. Sued, M. López-Diéguez, C. Manzardo, J.M. Gatell); Hospital Universitari de Bellvitge - IDIBELL (E. Ferrer, D. Podzamczzer); HUGTIP (C. Tural, B. Clotet); Hospital Universitari Vall d'Hebron (E. Ribera); Hospital Comarcal de l'Alt Penedès (J.M. Guadarrama); Hospital de la Santa Creu i Sant Pau (P. Domingo, M.M. Gutiérrez, M.G. Mateu, J. Martínez); Hospital Universitari Arnau de Vilanova (T. Puig); Hospital de Mataró (P. Barrufet, L. Force); Hospital de Tortosa Verge de la Cinta (A. Ortí); Corporació Sanitària Parc Taulí (G. Navarro, F. Segura); Hospital de Palamós (A. Masabeu);

Hospital Universitari de Sant Joan de Reus (B. Coll, C. Alonso Villaverde); Hospital General de l'Hospitalet (I. García).

Community-based testing sites

Sabater Tobella laboratory (R. Sala); SAPS - Creu Roja, Barcelona (O. Díaz, E. Adan); Associació Stop Sida (K. Zaragoza, B. Gil); Projecte dels Noms - Joves positius, Barcelona (F. Pujol, J. Saz, M. Meulbroek); Associació Àmbit Prevenió, Barcelona (M. Meroño, S. Silva, C. Lazar); ACASC (J. Becerra, L. Leal); CJAS (R. Ros, A. Gutiérrez, M. Pérez); Actua Vallès (B. Alsina, A. Avellaneda, M. Sité); Gais Positius (J. Roqueta, V. Mateu, R. Araneda).

Primary resistances to ARV and subtype determination in recent infections (AERIVIH subproject)

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Laboratories

Manso clinical laboratory (I. Rodrigo); Cornellà de Llobregat clinical laboratory (R. Navarro); El Maresme clinical laboratory (C. Rovira); Hospital Universitari de Bellvitge - IDIBELL (A. Casanova); Microbiology service. HUGTIP (E. Martró, L. Matas, V. González, V. Ausina); Hospital Universitari Vall d'Hebron (E. Caballero); Hospital de la Santa Creu i Sant Pau (N. Margall); Hospital Universitari Arnau de Vilanova (J. Farre); Hospital de Mataró (M.G. Saucá); Hospital de Tortosa Verge de la Cinta (X. Ortín); Corporació Sanitària Parc taulí (M.J. Armengual); Hospital de Palamós (J.M. Prats); Hospital General de Vic (J.M. Euras); Hospital Universitari de Sant Joan de Reus (J.M. Simó); Hospital General de Granollers (M.C. Villa).

Clinicals

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Alternative screening centres

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HPV-PISCIS

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NENEXP

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