SIVES 2012

Integrated Surveillance System
for STI and HIV
in Catalonia

Technical document Nº 21

CEEISCAT BIENNIAL EPIDEMIOLOGICAL REPORT

Generalitat de Catalunya
Agència de Salut Pública de Catalunya

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Barcelona, 2013

Generalitat de Catalunya
Agència de Salut Pública de Catalunya

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Prologue

I am pleased to present the latest report of the Integrated Surveillance System for STI and HIV in Catalonia (SIVES), which has become the standard reference on the state of the HIV epidemic in Catalonia and a crucial tool for knowledge dissemination.

The 2012 SIVES report has been released in a new format, which aims to more fully integrate information from the different systems currently available for surveillance of HIV and sexually transmitted infections (STI). We hope that this new format will be of greater use in the planning of health policies and the evaluation of subsequent interventions.

Once again, this report highlights the need for continued vigilance against STI as it is clear from the data presented that we have been witnessing a growing number of cases of both HIV and other STI in recent years, especially among men who have sex with men (MSM).

HIV and other STIs are a challenge for both clinical care and public health. That is why I wish to firmly restate the commitment of the Department of Health to maintaining our efforts in the prevention and control of these infections.

I hope that the report will be of interest and use to all those who are involved in any way in the prevention of HIV and STI. Once again I want to thank all the health professionals, agencies and community organizations working with the Department of Health, through CEEISCAT on the various projects published in SIVES 2012.

Boi Ruiz i García

Minister of Health

Foreword

It is with satisfaction that I introduce the new biennial report on Integrated Surveillance System for STI and HIV in Catalonia (SIVES) for the year 2012. The SIVES report is a reference document within Spain and in Europe, where it has been rated along with the Swiss surveillance system as one of the most comprehensive. Unlike other government reports, SIVES includes formal epidemiological surveillance systems, observational studies and other sources. The SIVES report has been published regularly since 1995, first annually and then biennially. The SIVES 2012 report is the first report written under the umbrella of the Public Health Agency of Catalonia (ASPCAT) and, I am therefore particularly pleased to write your foreword.

ASPCAT was born in difficult financial times, but monitoring health and the prevention and control of diseases are clear priorities of the Government in general and the Public Health Secretariat in particular. In this context it becomes necessary to have information systems that are up-to-date, comprehensive and have sufficient validity to rapidly detect changes in patterns of morbidity in order to inform the design and evaluation of preventive interventions. Sexually transmitted infections (STI) and HIV are no exception, requiring particularly complex surveillance systems.

As in previous editions, SIVES 2012 includes data on morbidity, mortality, behaviour, diagnosis and treatment of HIV and STI. This edition debuts two major features to improve the public health response to these infections. Firstly, we include some of the indicators used internationally to monitor the Dublin Declaration, a political agreement signed by 52 European countries. Catalonia is therefore a partner, along with signatory countries, in the fight against these infections. Secondly, for the first time in Spain, we have constructed a treatment cascade, a tool proposed by international agencies to estimate and monitor access to diagnosis and treatment of HIV. Both developments have been printed on a leaflet to make these tools more widely accessible to the health sector, NGOs, media and Government. I encourage everyone to use them for prevention, planning and advocacy.

Finally, I would again like to thank the public health professionals, NGOs and CEEISCAT staff for their efforts, and to congratulate them on the publication of this report and for maintaining the information systems and studies upon which it feeds.

Antoni Mateu

Director of the Public Health Agency of Catalonia

Introduction

This 2012 report on the Integrated Surveillance System for STI and HIV in Catalonia (SIVES) is the 21st Centre for Epidemiological Studies on HIV/STI in Catalonia (CEEISCAT) technical document. As in previous editions, it includes information, produced and managed by CEEISCAT, from both formal epidemiological surveillance systems and projects straddling the boundary between surveillance and applied research, including observational studies (enhanced surveillance).

In order to increase its usability, four years ago we first introduced an annex and then a chapter on the indicators generated by SIVES. This chapter has been expanded to include not only indicators generated by Integrated Surveillance System for STI and HIV in Catalonia (SIVES), but also indicators on sexual and reproductive health from other institutions and sources of information. Many of these indicators are included in the Global AIDS Response Progress (GARP[1]) reporting, a recent initiative to harmonize the various international indicators currently in use (UNGASS, Global Fund, etc.). Furthermore, where possible, we have included European maps with the magnitude of the indicator in each country, highlighting the value of the indicator for Catalonia within a separate textbox. This allows direct comparison with other European countries and helps contextualize the state of the epidemic in Catalonia.

In SIVES 2012 there are two further formal changes; firstly, the report has been structured into five main sections:

- HIV and AIDS
- Other sexually transmitted infections (STI)
- Behavioural surveillance
- Indicators
- Sources of information

Data on HIV and AIDS has been presented according to practical criteria instead of being structured according to the type of data (mortality, prevalence, behaviour, etc.), the following chapters being defined:

1. Number of people infected with HIV/AIDS. Magnitude and impact
2. Diagnosis of HIV/AIDS
3. HIV and co-infections
4. HIV testing
5. Chemoprophylaxis, treatment and impact

Information on other STI is organised by pathological condition:

1. Infectious and congenital syphilis
2. Gonococcus
3. Lymphogranuloma venereum
4. Chlamydia
5. Genital herpes
6. Ano-genital warts
7. Trichomoniasis

Behavioural information is presented by key populations: men who have sex with men (MSM), female sex workers (FSW), people who inject drugs (PWID), young people and people living with HIV. In the chapter on indicators, the originating documents for each indicator are given (UNGASS, GARP, ECDC, etc.) and finally in the chapter on information sources, a brief methodological description in given of where and how the data are generated.

These changes are intended to achieve a more readable text and to facilitate the applicability of the report for health professionals, the media and NGOs.

Furthermore, following the suggestions of some users, we have tried to be more specific in our conclusions and recommendations based upon the data analysed. With this in mind, each chapter begins with a summary of key points an, where appropriate, specific recommendations.

Notwithstanding the above, we believe the most important new feature is the HIV treatment cascade, an HIV[2] adaptation of the classic scheme by Piot that the international scientific community has quickly accepted as a tool for monitoring access to diagnosis and treatment of this infection. Few countries have the information needed to construct the different stages of the cascade, but all would have to make a series of assumptions and extrapolations and our cascade is no exception. Although the number of people currently living with HIV in Catalonia is estimated using a model developed by the World Health Organization (WHO)[3], the number of people linked to care in the health system, the number of people under follow-up, the number on treatment, and the number of people with an undetectable viral load relied on data from the PISCIS Cohort (www.pisciscohort.org). This cohort has therefore become a vital source of data on the quality of HIV screening programs and health care programmes. It is the aim of the Department of Health for the PISCIS Cohort to achieve coverage of 85% over the next two years.

Nevertheless, the treatment cascade should be interpreted with caution as the assumptions and estimations used in its construction are subject to continual review and therefore to change and improvement. I would encourage professionals and community workers in Catalonia to use this instrument to monitor the response to the epidemic.

In order to increase the usability of both the cascade and the indicators proposed by the European Center for Disease Control (ECDC) to keep monitor the Dublin Declaration[4, 5], these have been printed as a separate leaflet.

A new longitudinal study of which we are particularly proud of is the ITHACA Cohort, created in collaboration with Projecte dels NOMS-Hispanosida. This cohort has allowed us to have a first direct estimate of incidence in a large population, in this case men who have sex with men (MSM). This parameter complements other existing prevalence estimates in the city of Barcelona ("Saunas" program) and will enable closer monitoring of changes in the number of new infections and reasons for these changes.

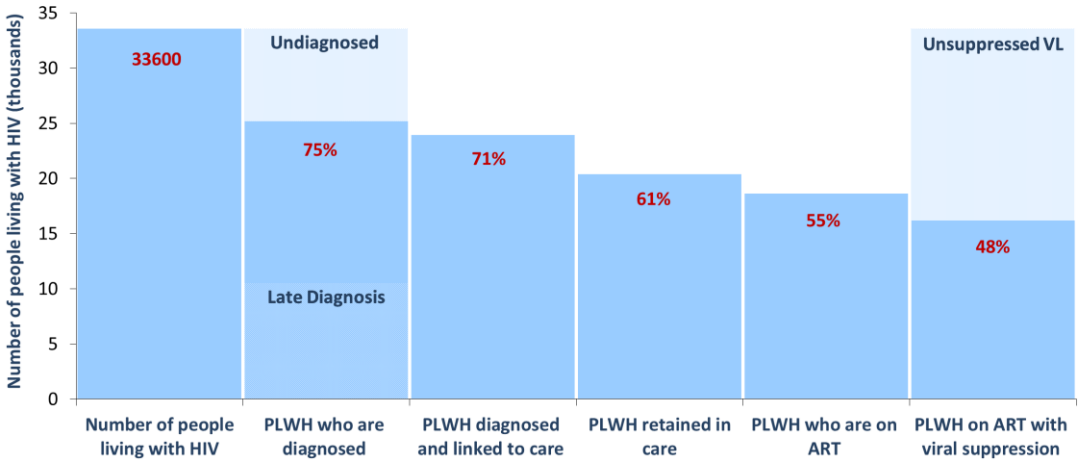
This report would not have been possible without the efforts of health professionals in primary care, hospitals and specialized centers, who day by day generate the necessary data, in particular those hospitals participating in the PISCIS Cohort, who have maintained the effort to provide available data and constantly improve upon its quality. No less important is the active participation of many community actors, who have helped us, from their frontline positions, understand the reality of the most vulnerable populations. Among these are Stop SIDA and Àmbit Prevenció, with whom we have been implementing bio-behavioural surveillance programmes for MSM and sex workers. We also thank all the NGOs involved in the DEVO network, the seed which gave rise to the European COBATEST project (www.cobatest.org). This report would not have been possible without the solidarity of all concerned, neither without the efforts and skills of the CEEISCAT professionals.

The best recognition of these efforts is confirmation that information in the SIVES report is useful to those working with HIV and STIs (Government, the media, NGOs, health professionals and social sciences in general). We, as professionals working in CEEISCAT, also invite you to submit any comments you may have to improve the report.

Jordi Casabona

CEEISCAT Scientific Director

HIV treatment cascade in Catalonia



1. Joint United Nations Programme on HIV/AIDS. Global AIDS Response progress reporting: monitoring the 2011 political declaration on HIV/AIDS: guidelines on construction of core indicators: 2012 reporting. Geneva: UNAIDS; 2011.

2. Gardner EM, McLees MP, Steiner JF, Del Rio C, Burman WJ. The spectrum of engagement in HIV care and its relevance to test-and-treat strategies for prevention of HIV infection. Clin Infect Dis. 2011 Mar 15;52(6):793-800.

3. Stover J, Johnson P, Zaba B, Zwahlen M, Dabis F, Ekpini RE. The Spectrum projection package: improvements in estimating mortality, ART needs, PMTCT impact and uncertainty bounds. Sex Transm Infect. 2008 Aug;84 Suppl 1:i24-i30.

4. European Centre for Disease Prevention and Control. Implementing the Dublin declaration on partnership to fight HIV/AIDS in Europe and Central Asia: 2010 progress report. Stockholm: ECDC; 2010.

5. World Health Organization. Regional Office for Europe [Internet]. Copenhagen: WHO; c2013. Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia; 24 Feb 2004.

HIV and AIDS in Catalonia

Other sexually transmitted infections

Surveillance of behaviours associated with HIV and STI

Sources of Information

Annexes

HIV and AIDS

1. Number of people living with HIV/AIDS. Magnitude and impact of the HIV epidemic

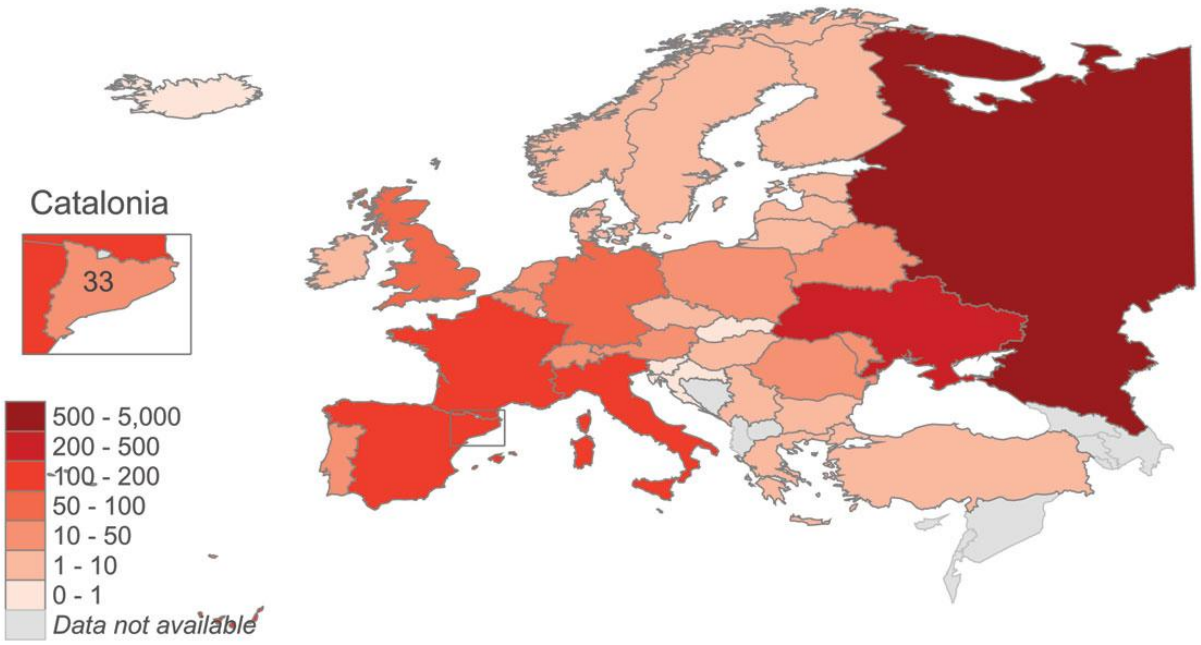
Key points

- By the end of 2011 it is estimated that up to 33,000 people were living with human immunodeficiency virus (HIV) in Catalonia, the majority of whom (79%) were men. The risk group that has increased most in recent years is men who have sex with men (MSM).
- The number of people living with HIV will continue to increase in the near future. If current trends continue, by 2017 about 24,000 people will meet current criteria for combination antiretroviral treatment (cART).
- The incidence of HIV in Catalonia has increased slightly between 2003 and 2011 and there are now approximately 700 new HIV infections every year.
- HIV incidence is especially high among MSM who attend community-based testing centres, having increased from 2.4 to 3.8 per 100 person-years between 2008 and 2011.
- HIV prevalence remains very high in people who inject drugs (PWID) and MSM (33.2% and 20.4%, respectively).
- Prevalence of HIV among migrant female sex workers (FSW) remains lower (1.4% in 2009) than that in local FSW (11.4%).
- Despite the robust decline in HIV prevalence in the prison population in recent years, it remains among the highest in Europe (at over 10%).
- Although AIDS deaths have declined by over 70% in recent years, HIV is still a major cause of premature mortality.
- The life expectancy of HIV-positive people on cART is about 14 years lower than that of the general population of Catalonia and varies considerably by key population.

1.1. Number of people living with HIV and prevalence

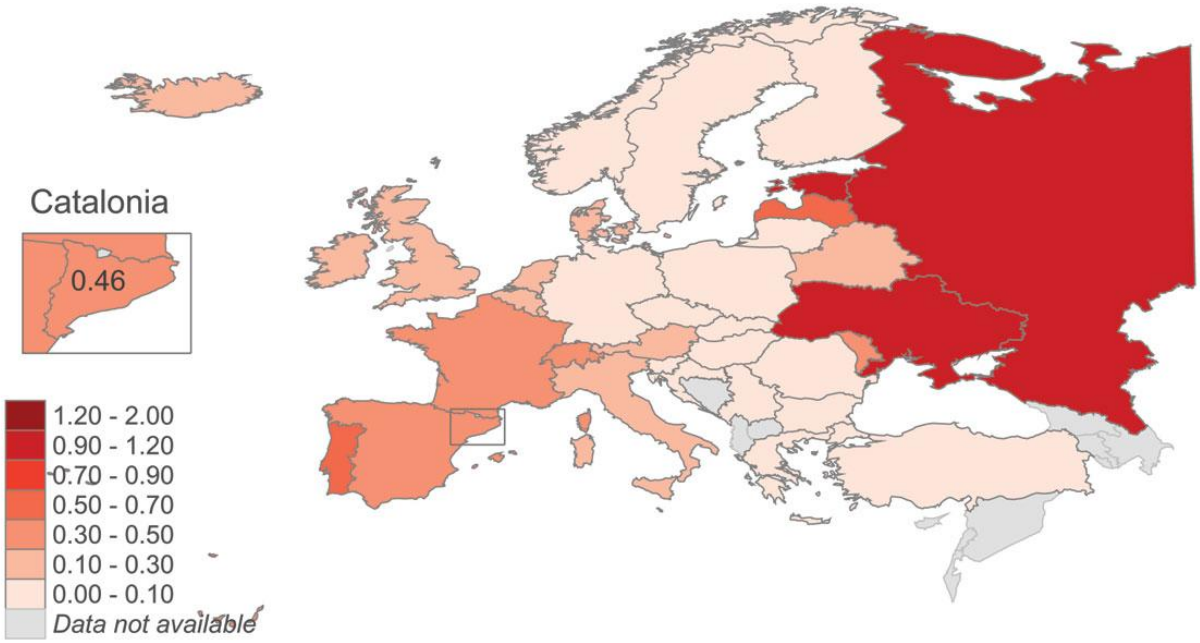
In Catalonia in 2009, approximately 33,000 people were living with HIV (**figure 1**). The prevalence of HIV in the general population was 0.46%, similar to that of France (0.40%) and higher than the prevalence in other Northern European countries such as Germany (0.10%) or the United Kingdom (0.20%) (**figure 2**).

Figure 1. Number of people living with HIV in Europe in 2009 (Thousands)



People living with HIV	
Catalonia	33,000
Denmark	5,300
France	150,000
Germany	67,000
Italy	140,000
Portugal	42,000
Spain	130,000
United Kingdom	85,000

Figure 2. Prevalence of HIV in Europe in 2009 (%)



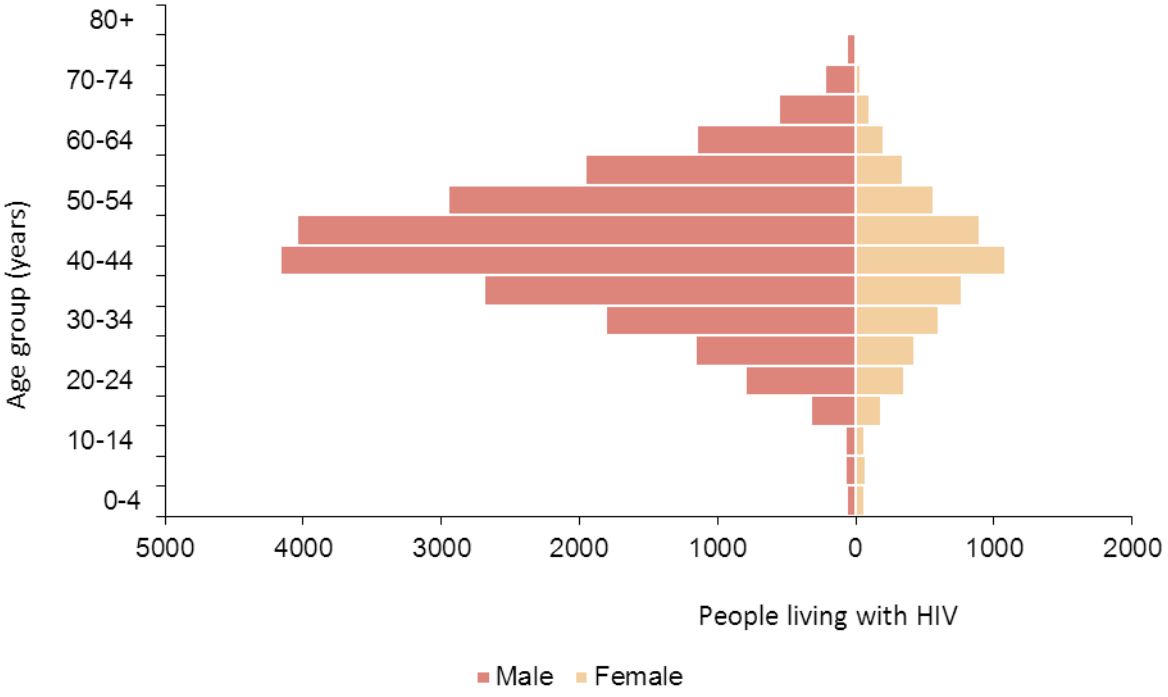
Prevalence of HIV (%)	
Catalonia	0.46
Denmark	0.20
France	0.40
Germany	0.10
Italy	0.30
Portugal	0.60
Spain	0.40
United Kingdom	0.20

By the end of 2011, approximately 33,000 people were living with HIV in Catalonia, 3,000 more than a decade earlier in 2002. The prevalence of HIV in the general population was 0.45%. The majority of people living with HIV (PLWH) are men and about 50% of the total are aged between 35 and 50 (**figure 3**).

An estimate of the proportion of undiagnosed HIV-infected MSM was made using data from the multi-centre Sialon project (The Capacity building in HIV/Syphilis prevalence estimation using non-invasive methods among MSM in Southern and Eastern Europe) (See "Methods"). In Barcelona, in 2008, this was estimated at 46,8%. Although there is no direct estimate of the number of

undiagnosed HIV infected people living in Catalonia with unknown serostatus, it is likely that this proportion is similar to that of the rest of Europe, in the region of 25-30%. [1]

Figure 3. Age and sex distribution of the population of people living with HIV. Catalonia, 2011



There have been important changes over time in the distribution of key groups among the population of PLWH aged between 15 and 49 (diagnosed and undiagnosed). Since 1995 there has been a decrease in the in the number of people who inject drugs (PWID) and a steady increase in the number of MSM. Although heterosexuals still form the bulk of PLWH (**figure 4**), HIV prevalence is highest in PWID (21.2 %) and MSM (14.7 %), much above that of heterosexual men and women (0.37 % and 0.32%, respectively) (**figure 5**).

1. Hamers FF, Phillips AN. Diagnosed and undiagnosed HIV-infected populations in Europe. HIV Med. 2008 Jul; 9(Suppl 2):6-12.

Figure 4. Risk group distribution in the population of people living with HIV aged 15-49. Catalonia, 1979 - 2011

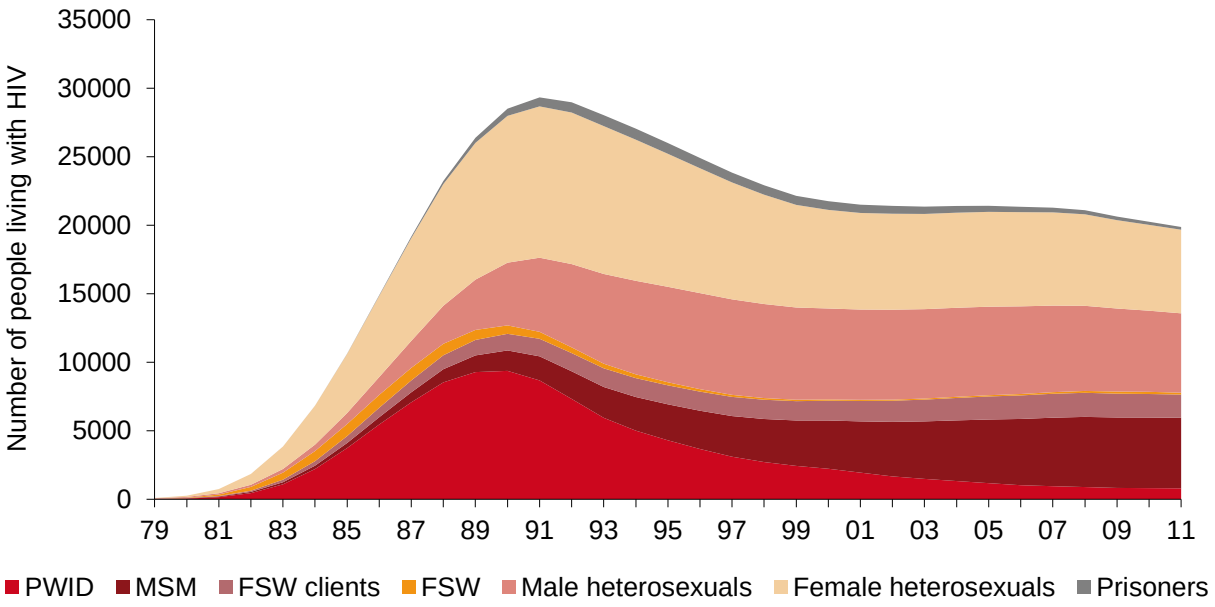
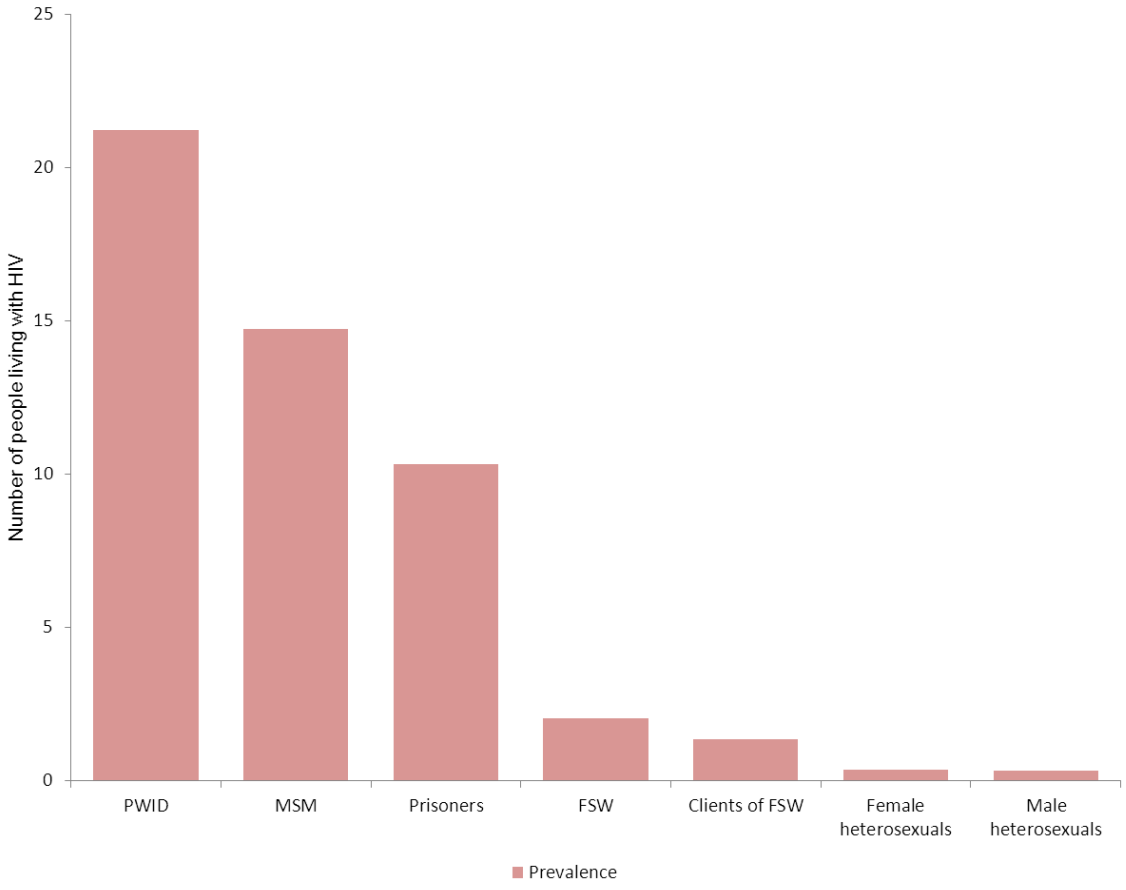


Figure 5. Estimate of the prevalence of HIV in different key populations aged between 15 and 49. Catalonia, 2011



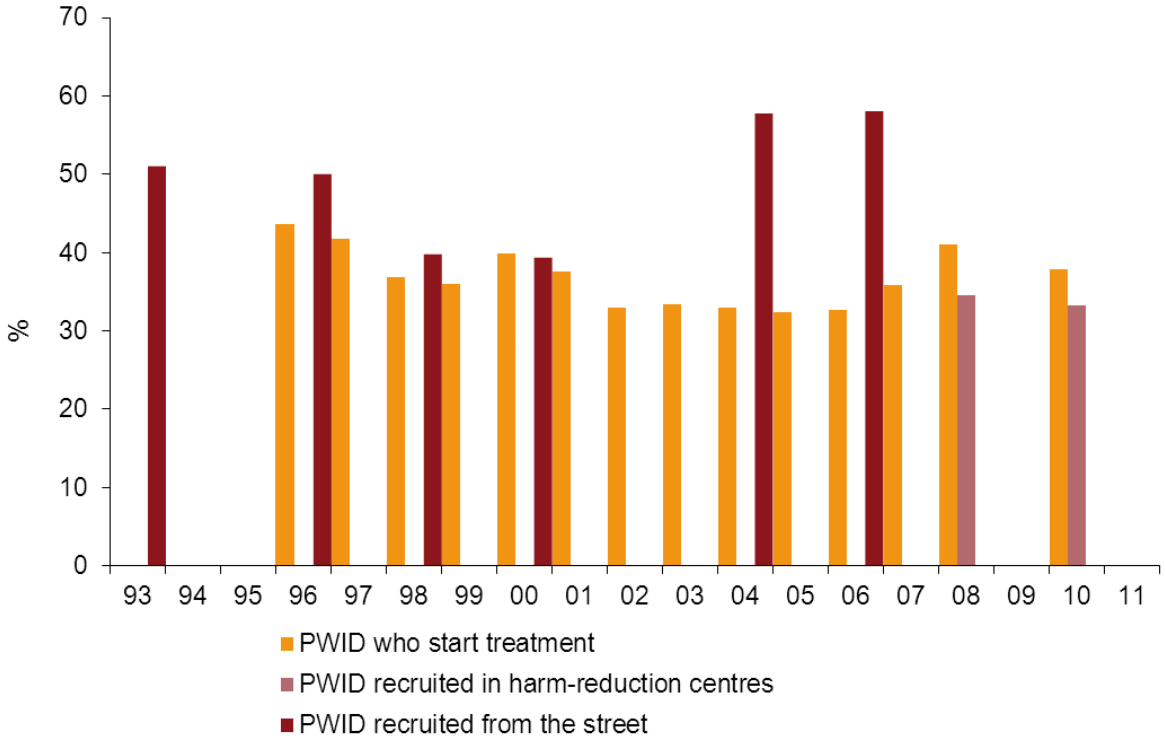
1.2. Prevalence of HIV in key populations

People who inject drugs

HIV prevalence in PWID, as measured in oral fluid samples collected in harm reduction centres, was 33.2% in 2010-2011, similar to the prevalence observed for the period 2008-2009.

The prevalence estimate among PWID recruited from the network of drug dependency treatment centres (Xarxa d'Atenció I Seguiment de les Drogodependències) was 37.8% in 2010. A previous cross-sectional study in 2006 among PWID recruited off the street measured the prevalence at 58.1% (**figure 6** and **table 1**).

Figure 6. Changes in HIV prevalence among PWID. Catalonia, 1993-2011



Source: HIVUDVPT-HIVUDVPC-REDAN

Among PWID recruited in harm reduction centres in 2010-2011, those from Spain had a higher prevalence of HIV (40.8%) than migrants (21.1%).

Men who have sex with men

Cross-sectional studies measuring the prevalence of HIV (in oral fluid) carried out since 1993 among MSM recruited from gay meeting venues show a global increase in the prevalence of HIV (from 14.2% in 1993 to 20.4% in 2008) (**figure 7** and **table 1**).

HIV prevalence in 2008 was higher in men aged 30 and over as compared to men younger than 30 (17.6% vs. 21.1%, respectively) (**figure 7**).

Figure 7. Change in the prevalence of HIV among MSM, by age group. Catalonia, 1995-2008

1. The same sampling venues were chosen in 2008 as had been used in previous years.
* Significant trend. Source: HIVHOM and SIALON.

Table 1. Latest available HIV prevalence results from the sentinel Surveillance populations in Catalonia

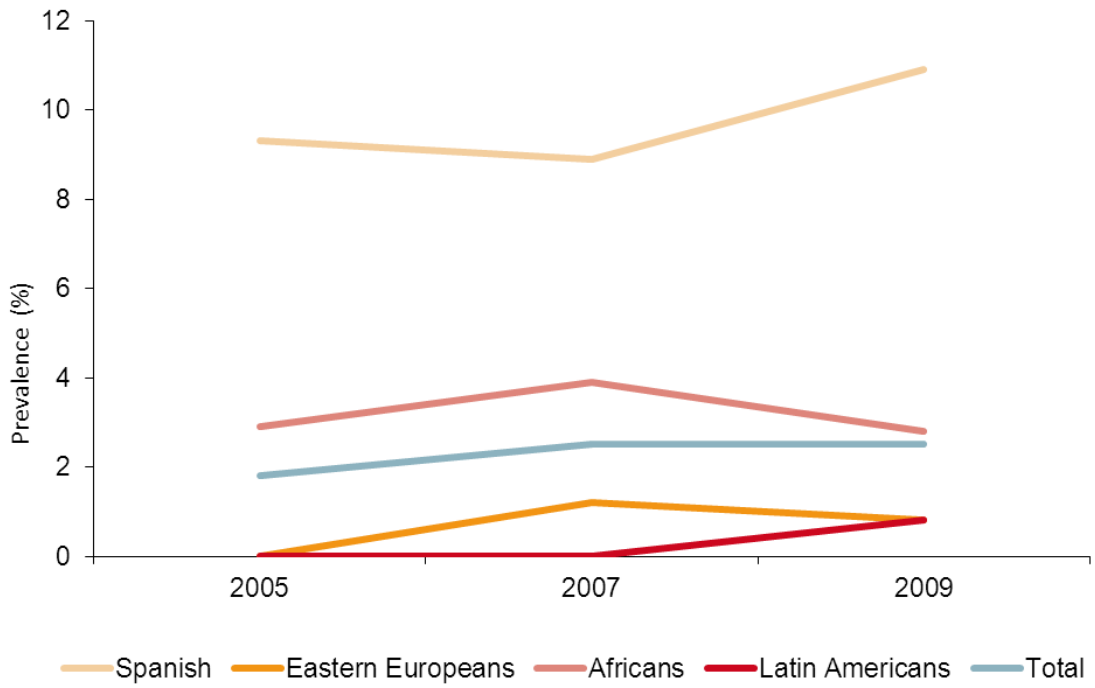
	First year	Periodicity	Biological specimen	Latest available data	Population	Prevalence (%)
General population						
Pregnant women	1994	Annual	Dry blood spot	2011	16,239	0.22
Blood donors	1987	Annual	Serum	2011	271,308	0.01
Key populations						
PWID recruited in harm reduction centres	2008	Biennial	Saliva	2010-2011	757	33.20
PWID who start treatment	1996	Annual	Serum	2010	465	37.80
PWID recruited off the street	1993	Biennial	Saliva	2006	296	58.10
MSM *	1995	Biennial	Saliva	2008	142	20.40
FSW	2005	Biennial	Saliva	2009	400	2.50
Prison population	1995	Annual	Serum	2011	4,027	10.90

* SIALON project (recruitment centres the same as in previous years)

Female sex workers

The prevalence of HIV among female sex workers (FSW) in Catalonia in 2009 was low (2.5%), similar to that of previous years (**table 1**). Prevalence among FSW born in Spain was significantly higher (11.4%) than in migrant FSW (1.4%). An analysis of trend by origin suggests prevalence may have stabilised in FSW in this period (2005-2009) (**figure 8**).

Figure 8. Prevalence of HIV among FSW, by region of origin. Catalonia 2005-2009



Pregnant women

Unlinked anonymous testing for HIV in pregnant women has been carried out in Catalonia since 1994 by using dried blood spots from a representative sample of live-borns included in the neonatal metabolic screening programme.

The prevalence of HIV in mothers of live-born infants in 2011 was 0.22%. The long-term trend is downwards (**figure 9**) despite isolated peaks of prevalence in some years, such as 2011. There are no significant differences between provinces (**table 2**).

Between June 2002 and 2010, there was a rise in HIV prevalence (0.22% al 0.30%) in women born abroad, but little change in Spanish women (0.15% al 0.17%).

Figure 9. Annual prevalence of HIV in pregnant women. Catalonia 1994-2011[2]

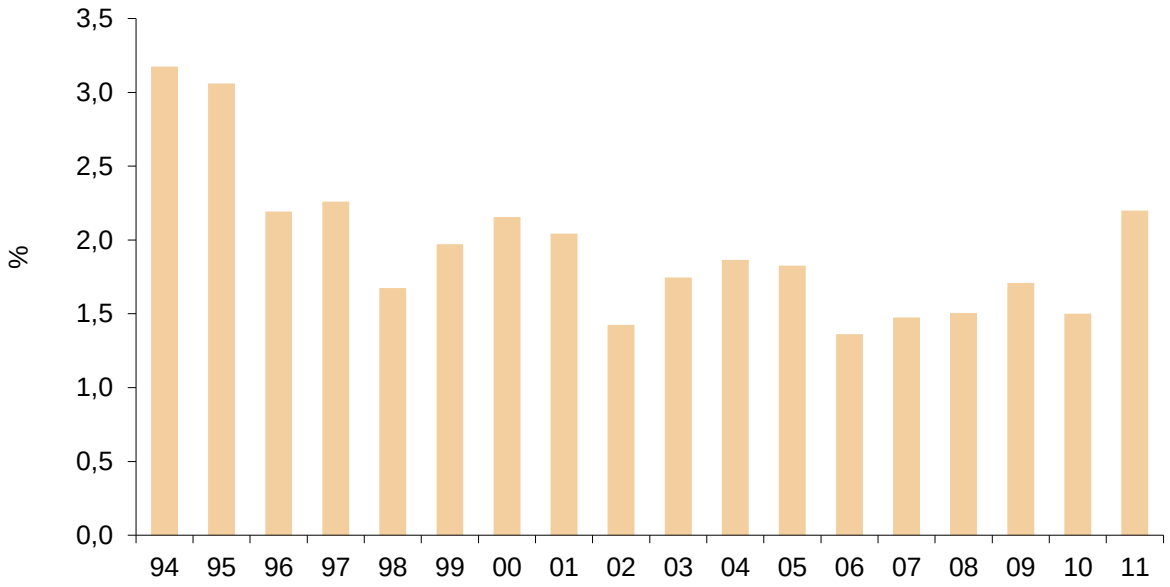


Table 2. Prevalence of HIV in pregnant women, by province. Catalonia 2011

Province	Newborns tested	HIV+	% prevalence	95% CI
Barcelona	11,789	26	0.22	0.14-0.32
Girona	1,707	3	0.17	0.04-0.51
Lleida	977	4	0.41	0.11-1.04
Tarragona	1,766	3	0.17	0.03-0.49

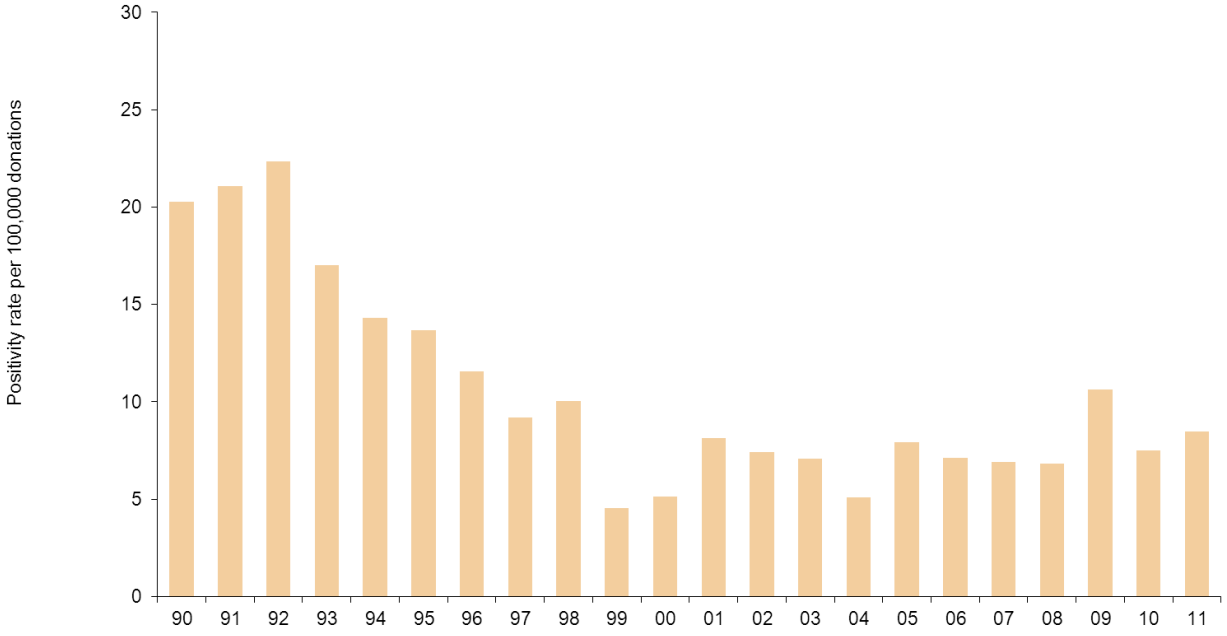
The median age of HIV positive pregnant women rose from 26 in 1994 to 31 in 2011, coming closer to the median age of uninfected women.

Blood donors

In Catalonia, every year the Blood and Tissue Bank (Banc de Sang i Teixits) processes over 250,000 voluntary blood donations. In 2011, the HIV positivity rate was 8.48/100,000 donations (95% CI: 5.5 – 12.4) (**table 1**). Men (13.55/100,000. 95% CI: 8.4 - 20.4) had a higher positivity rate than women (2.42/100,000. 95% CI: 0.6 – 6.4). Over the last decade, the HIV positivity rate has remained stable at about 7/100,000 (**figure 10**).

[2] Carnicer-Pont D, Almeda J, Luis Marin J, Martinez C, Gonzalez-Soler MV, Montoliu A, et al.; HIV NADO working group. Unlinked anonymous testing to estimate HIV prevalence among pregnant women in Catalonia, Spain, 1994 to 2009. Euro Surveill. 2011 Aug 11;16(32). pii: 19940.

Figure 10. HIV positivity rate in blood donations. Catalonia, 1990-2011



The HIV positivity rates among blood donors area lower than other low risk populations such as the working population and pregnant women as they are derived from a healthy population which is screened by questionnaire prior to donation and as such, these results cannot be extrapolated to the general population. Despite this caveat, the positivity rates in Catalonia are higher than in other European populations, although variation in exclusion criteria makes direct comparison difficult.[3]

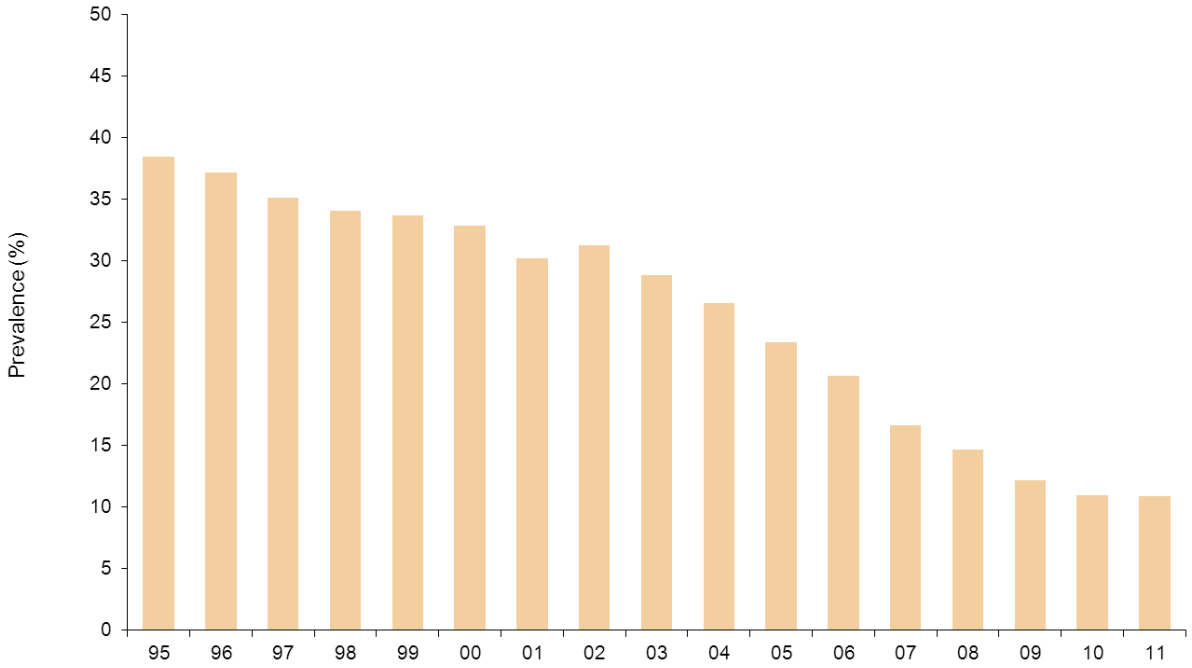
Prison population

In 2011, the prevalence of HIV infection among inmates of three prisons in Catalonia was 10.9% (95% CI: 9.9 to 11.9) (**table 1**). Although high, there has been a marked decline in the HIV prevalence in prisons over the last 10 years (**figure 11**).

In 2011 most of those infected were men (380 HIV positive), with a prevalence of 10.3% (95% CI: 9.3 to 11.3) and aged between 25 and 39 years. Although there were fewer HIV infected women (59), the prevalence was higher than in men (17%, 95% CI: 13.1 to 21.0) and they were older with a median age between 35 and 39.

3. Suligoi B, Raimondo M, Regine V, Salfa MC, Camoni L. Epidemiology of human immunodeficiency virus infection in blood donations in Europe and Italy. Blood Transfus. 2010 Jul;8(3):178–85.

Figure 11. Changes in the prevalence of HIV in the prison population. Catalonia, 1995-2011



The prevalence of HIV in the prison population in Catalonia is higher than that reported by other western European countries, with typical prevalence rates of under 1%[4][5][6]. These differences may be partly explained by the type of prison sampled, differences in the epidemiological profile of inmates, the length and type of sentence being served and the proportion of current and ex drug injectors.

1.3. Incidence of HIV

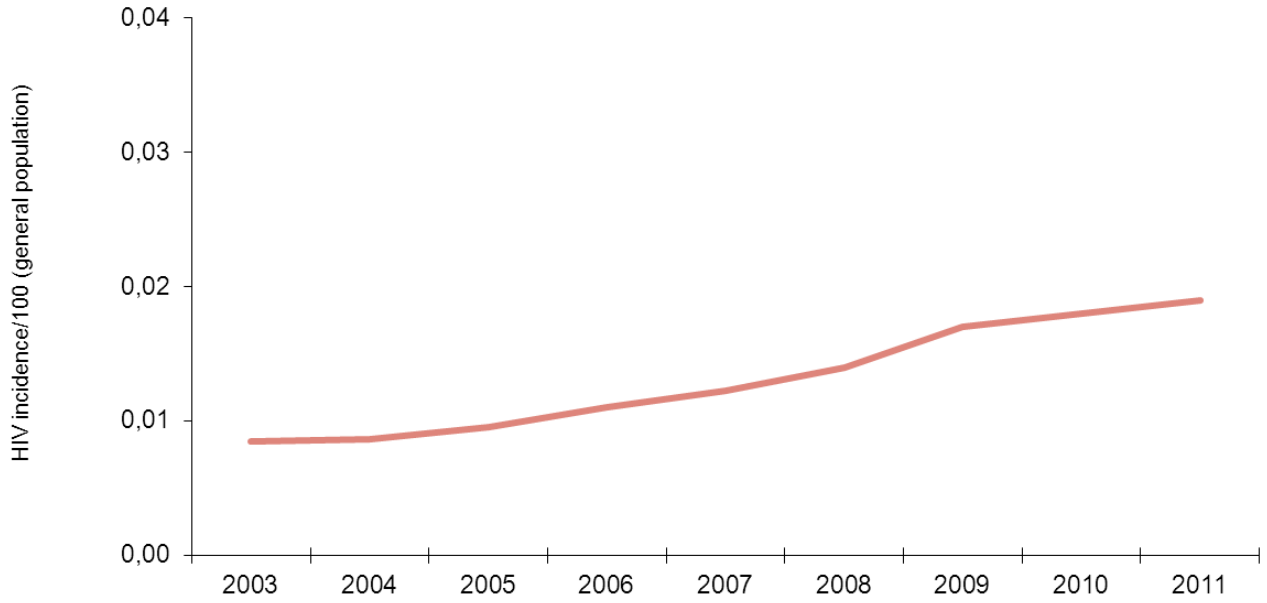
Given the impossibility of directly calculating the incidence rate of new HIV infections in the general population, incidence is estimated through the triangulation of multiple methods.

Estimates of incidence in the general population have been produced using a mathematical modelling package developed by UNAIDS (Spectrum Projection Package 2011) which incorporates data from the Integrated surveillance system for STI and HIV in Catalonia (SIVES).[7] Using this methodology, incidence estimates have increased from 0.09 new cases per 1000 in 2003 to 0.14 new cases per 1000 in 2008. The incidence rate estimate for 2011 is 0.2 per 1000,

4. Marco A, Saiz de la Hoya P, García-Guerrero J; Grupo PREVALHEP. Estudio multicéntrico de Prevalencia de Infección por el HIV and factores asociados en las prisiones de Spain. Rev Esp Sanid Penit. 2012 Jun;14(1):19-27.
5. World Health Organization. Global Health Sector Strategy on HIV/AIDS 2011-2015. Geneva: WHO; 2011.
6. World Health Organization. Status paper on prisons, drugs and harm reduction. Copenhagen: WHO; 2005.
7. Stover J, Johnson P, Hallett T, Becquet R, Timaeus IM. The Spectrum projection package: improvements in estimating incidence by age and sex, mother-to-child transmission, HIV progression in children and double orphans. Sex Transm Infect. 2010 Dec;86(Suppl 2):ii16–21.

equivalent to about 695 (450 – 1306) new cases in the population aged 15 to 49 (**figure 12**). Nearly half (48%) of all new infections occur in those aged 15 – 30, the majority are in men (78%) and 39% of all new infections are in MSM.

Figure 12. Annual HIV incidence estimates in the population aged 15 – 49. Catalonia, 2003-2011



In addition to the incidence estimates for the general population, incidence of HIV among MSM has been estimated at 2.4% (2.0 - 2.8%) for the period 2008 - 2009 3.8% (3.4 – 4.3%) in 2010 - 2011. This estimate used the ITACA cohort of HIV negative MSM established within the BCN Checkpoint community testing centre.

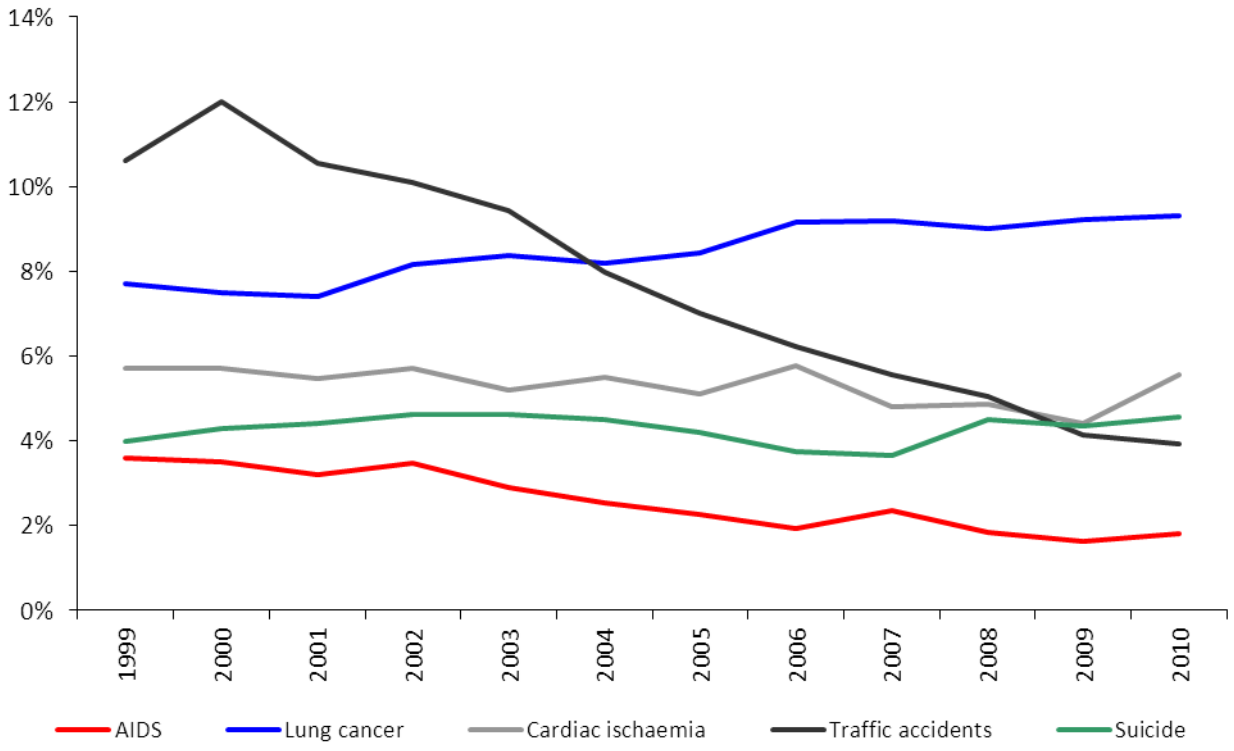
1.4. Life expectancy, survival and causes of mortality

By the end of 2011, 10,741 deaths had been recorded in the AIDS Register, 81.8 % of which were in men and 18.2% were in women. The peak number of deaths (1,193) was recorded in 1995, followed by a sharp decline until 1998 (70%) and then a slower but sustained decline since. In 2008, the number of deaths was 27% lower than in 2007.

In **figure 13**, a graph of potential years of life lost between the ages of 1 and 70, the impact of the HIV epidemic on premature mortality can be seen in comparison to other principal causes of death in Catalonia. In 2010, deaths due to AIDS accounted for 1.8 % of all potential years of life lost (using the top 73 causes of death)[8].

8. Servei d'Informació i Estudis, Anàlisi de la mortalitat a Catalunya, 2010. Barcelona. Departament de Salut, Generalitat de Catalunya, 2012.

Figure 13. Potential years of life lost between the ages of 1 and 70, attributable to the principal cause of death. Catalonia, 1999 - 2010



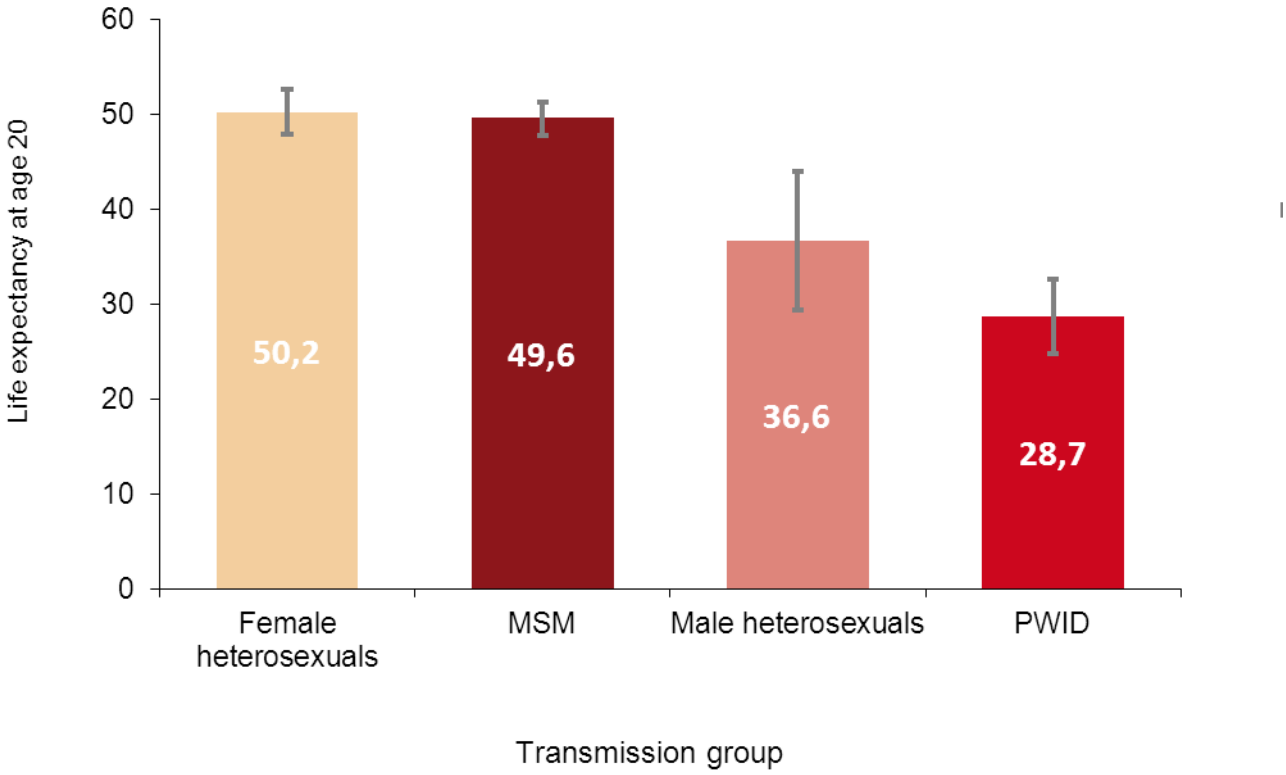
Source: Servei d'Informació i Estudis. Departament de Salut, Generalitat de Catalunya.

The introduction of ART has markedly increased the life expectancy of HIV infected people. Between 1998 and 2000, life expectancy at age 20 was estimated at 37.7, whereas for the period 2000 – 2006, it was estimated to be 47.2 years. There is, however, considerable variation between sub-groups. Life expectancy at age 20 is highest in heterosexual women (50.2 years) and MSM (49.6 years), and lowest in heterosexual men (36.6 years) and PWID (28.7 years) (**figure 14**).

Likewise, potential years of life lost under 65 also reduced, going from 420.9 years lost per 1,000 person-year of follow-up for the period 1998-2000, to 169,6 years lost per 1,000 person-year of follow-up for the period 2006-2011.

Using the Spectrum projection package, we have estimated that by 2011, ART he avoided a total of 1,364 deaths and there were 18,854 life years gained.

Figure 14. Life expectancy in patients on ART between 2006 - 2011, by HIV transmission group. PISCIS Cohort

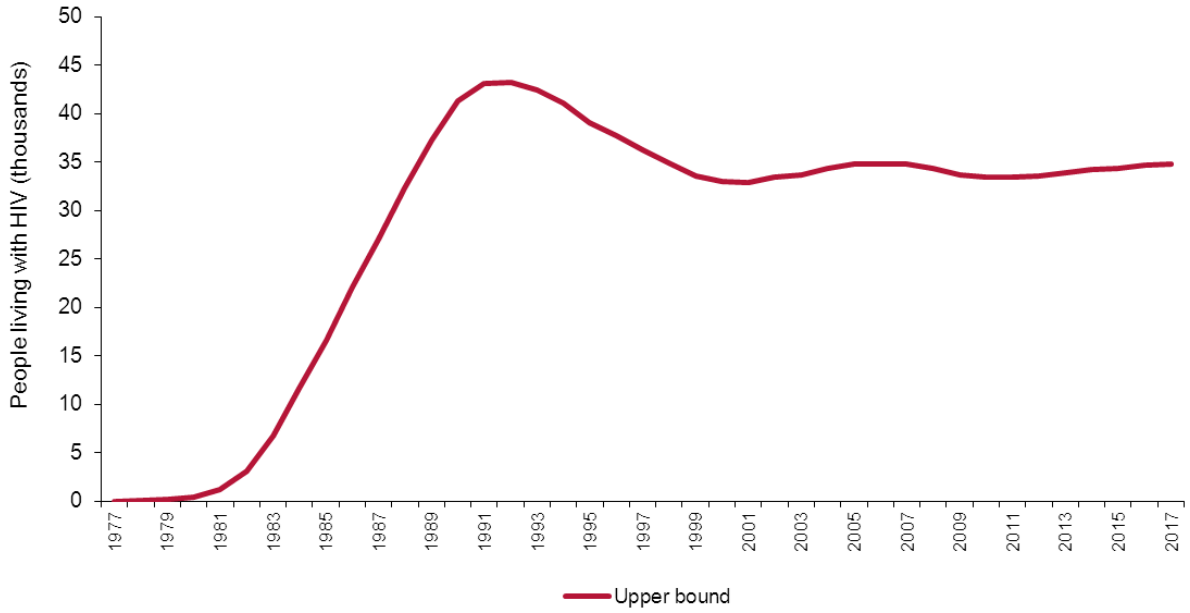


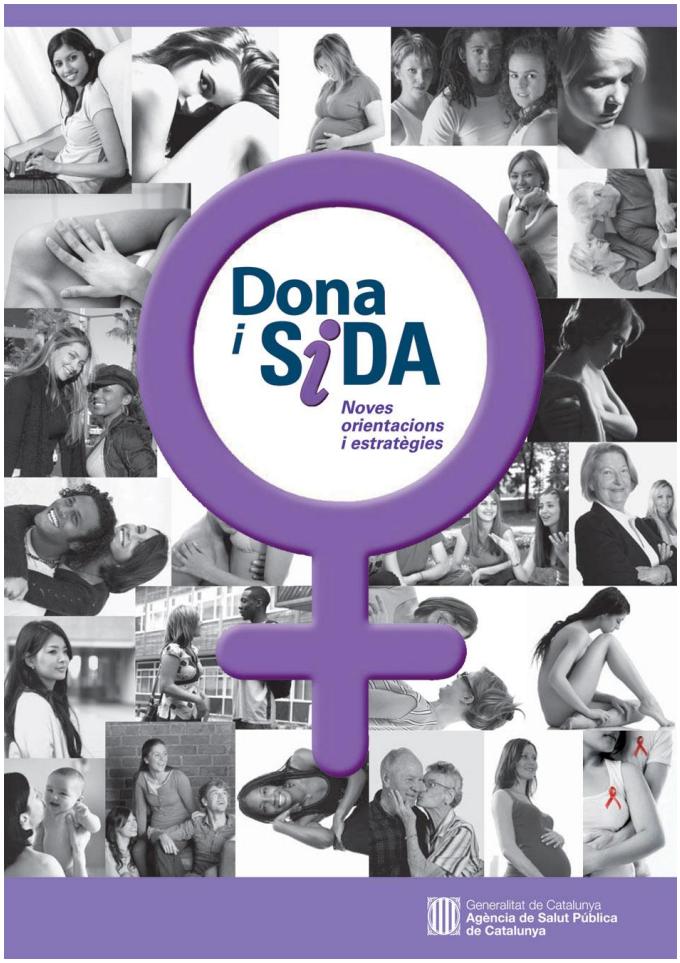
1.5. Projections

In Catalonia, it is estimated (Spectrum model) that by 2017 there will be 34,700 people living with HIV (**figure 15**), and that the prevalence of HIV in the population aged 15 – 49 will be 47 per 10,000. Of these, about 23,600 (18,100 – 26,500) will be eligible for ART. Using ART cost data provided by CatSalut, the total cost of ART in 2017 will be approximately € 210 million (160 – 235).

Incidence estimates for the period 2012 – 2017 are in the order of 1 – 3 new HIV infections per 10,000/year, equivalent to between 300 and 1000 new cases per year. Assuming that ART coverage remains similar to 2009, we can expect incidence and prevalence of HIV to remain relatively stable during the next five years.

Figure 15. Estimation and projection of the number of people living with HIV. Catalonia, 1978 - 2017





2. HIV/AIDS diagnosis

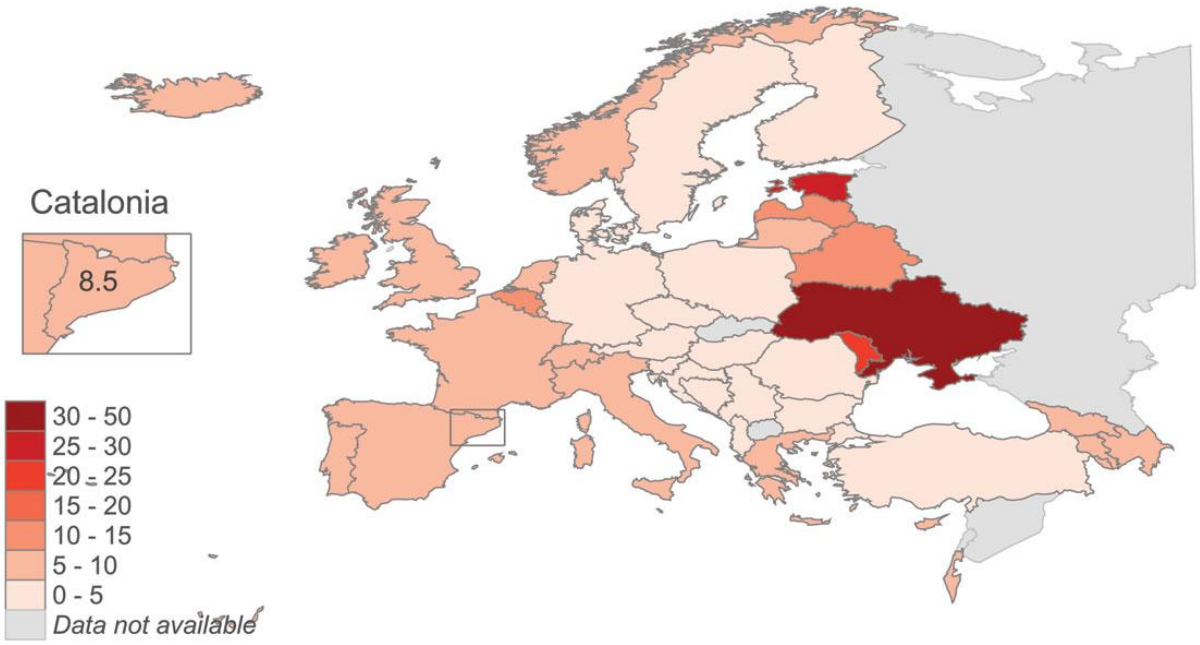
Key points

- During 2011 609 diagnoses of HIV were notified, a notification rate of 8.5 cases per 100,000 inhabitants, similar to the European mean (7.6 cases per 100,000 inhabitants)
- The number of new HIV diagnoses in MSM has increased by approximately 7.6% per year between 2001 and 2011.
- The proportion of migrants among new HIV diagnoses continues to rise, going from 24.4% in 2001 to 46.1% in 2011, highlighting the importance of ensuring access to HIV prevention, testing and health services for migrant populations.
- In the last 10 years, although the proportion of new diagnoses with a late presentation has decreased, it remains high (42% in 2011). Heterosexual men and PWID are the groups with the highest proportion of late presenters (55 % and 59 % respectively).
- Since 2006, there has been a rise in the proportion of new HIV diagnoses with recent infection. The proportion of recent infection among MSM is 27% while among heterosexual it is 15%.

2.1 HIV Notifications

A total of 53,974 HIV cases were notified in Europe in 2011, a notification rate of 7.6 per 100,000 inhabitants (**Figure 16**), although there is variation between countries. Estonia (27.3), Ukraine (38.0) and Moldova (20.3) reported rates over 20/100,000 inhabitants; a further seven countries rates over 10/100,000 inhabitants: Belarus (12.6), Belgium (10.7), Kazakhstan (12.5), Kyrgyzstan (11.1), Estonia (13.4), United Kingdom (10.0) and Tajikistan (13.7)[9].

Figure 16. HIV notification rate/100,000 inhabitants. Europe, 2011



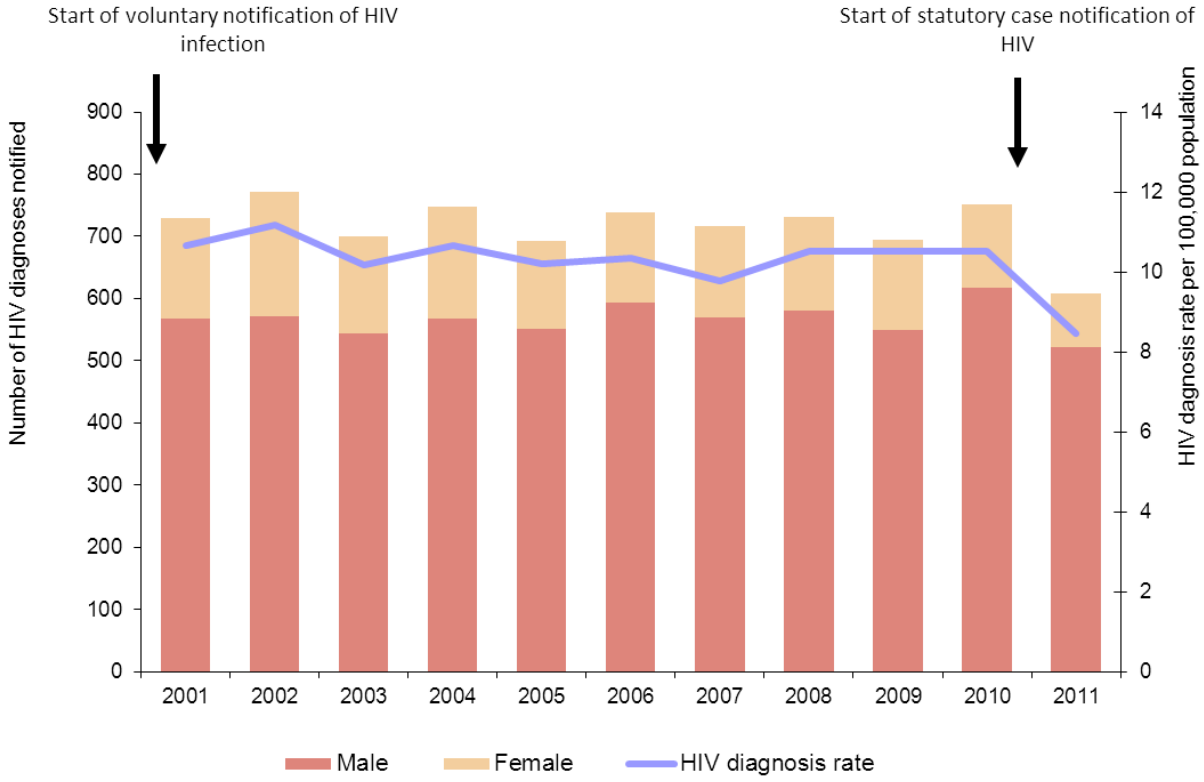
HIV diagnosis rate per 100,000 population	
Catalonia	8.5
Portugal	8.5
France	6.3
Spain	8.4
Italy	5.8
Denmark	4.8
United Kingdom	10.0
Germany	3.5

9. European Centre for Disease Prevention and Control/WHO Regional Office for Europe. HIV/AIDS surveillance in Europe 2011. Stockholm: ECDC; 2012.

In Spain, in 2011 there were 2,763 HIV diagnoses notified from all 17 autonomous regions, a rate of 8.4/100,000 inhabitants. Autonomous regions with rates over the mean were Balears, Madrid, Canary Islands, Basque country and Catalonia[10].

In Catalonia, 609 HIV diagnoses were notified to the HIV/AIDS Registry during 2011, a rate of 8.5/100,000 inhabitants. The HIV diagnosis rate was constant throughout the period (data from 2011 provisional and not adjusted for notification delay) (**figure 17**).

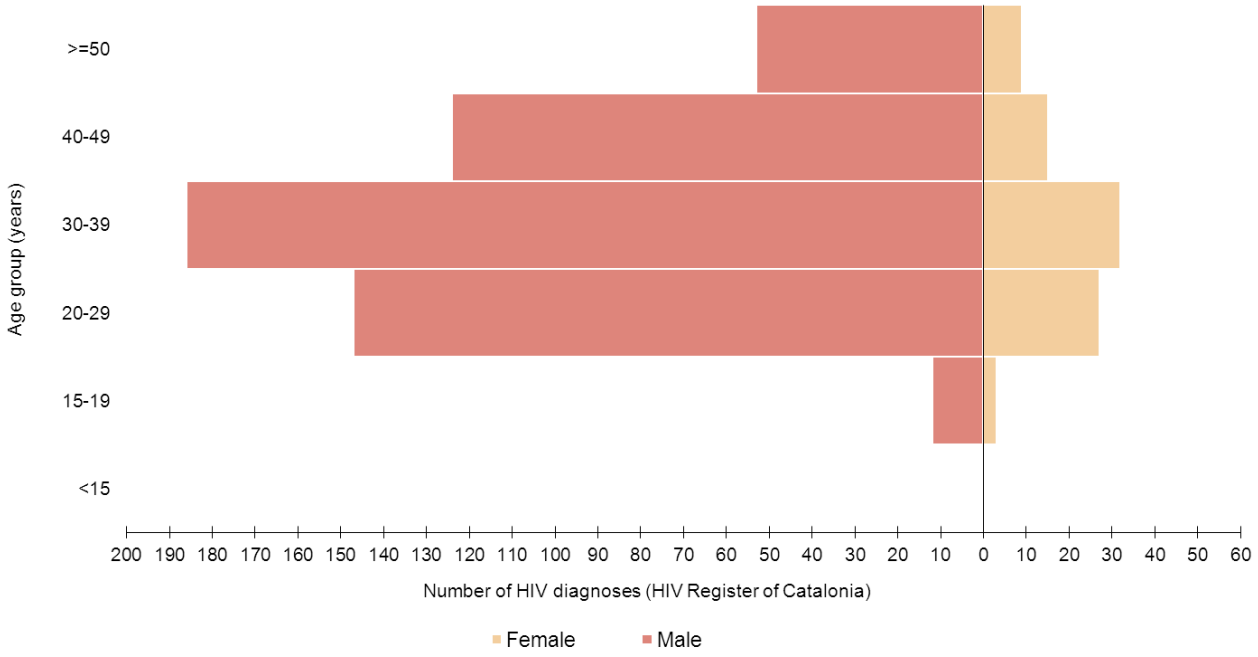
Figure 17. Frequency and notification rates of HIV.
HIV Register of Catalonia. 2001-2011



Most notified cases of HIV in 2011 were men (85.9%) versus 14.1% in women. Notification rates were 14.7 and 2.4/100,000 inhabitants in men and women, respectively, a male:female ratio of 6:1. Mean age was 35.96 years and slightly higher in men (36.08 years) than women (35.25 years). Two thirds (64.6%) of all notified cases were aged 20 – 39 (**figure 18**).

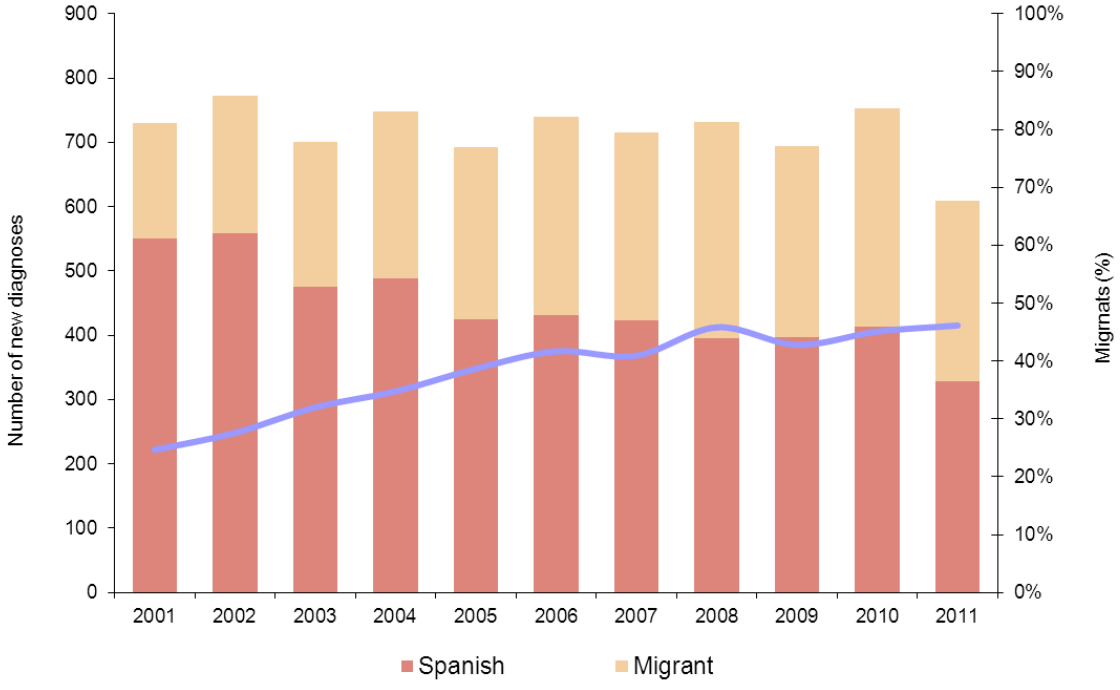
10. Centro Nacional de Epidemiología. Vigilancia epidemiológica del VIH/sida en Spain. Actualización 30 de junio de 2011. Madrid: Dirección General de Salud Pública and Sanidad Exterior; 2011.

Figure 18. Age and sex distribution of notifications. HIV Register of Catalonia, 2011



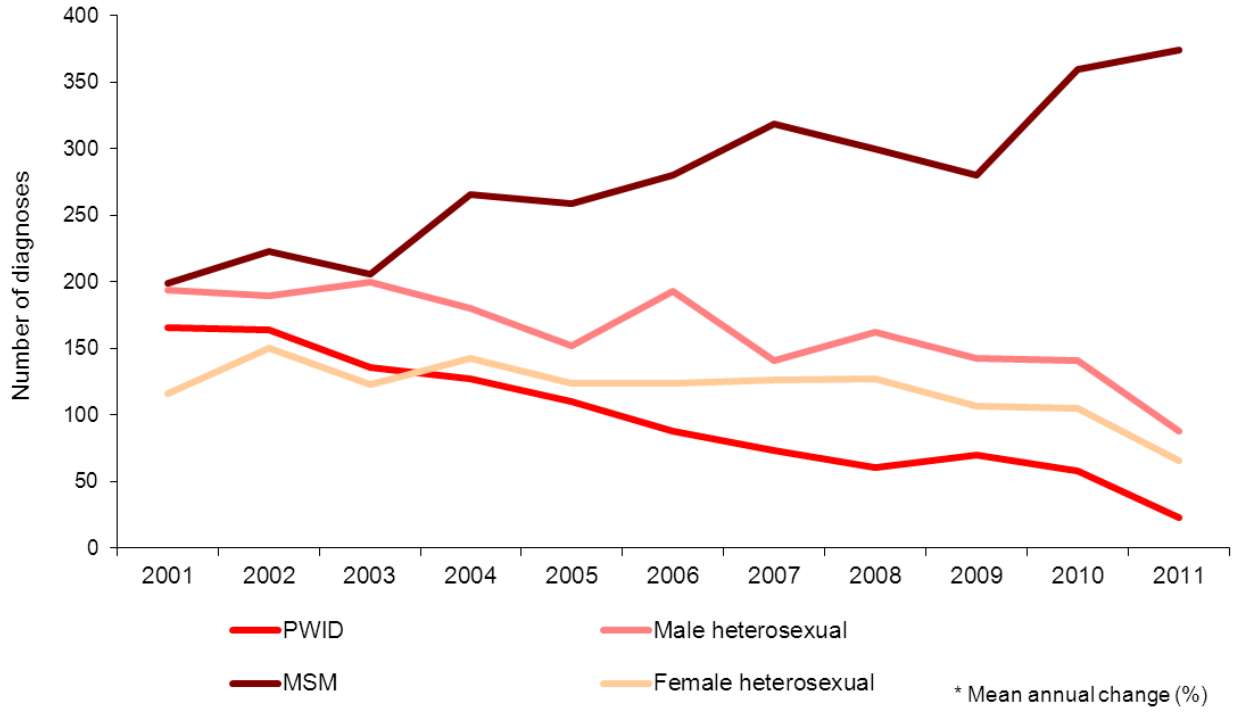
Nearly half (46.1%) of all notifications were born outside Spain. Most migrants were from Latin America (62.3%), followed by Eastern Europe (14.6%) and Sub-Saharan Africa (13.2%). The proportion of migrants increased steadily throughout the period, rising from 24.7% in 2001 to 46.1% in 2011 (**figure 19**).

Figure 19. Annual number of cases of HIV notified by origin. HIV Register of Catalonia, 2001-2011



The HIV transmission group most commonly notified was MSM (61.5%), followed by male heterosexuals (14.5%), female heterosexuals (10.9%) and PWID (3.8%). Transmission group was unknown for 9.4% of notifications (**figure 20**).

Figure 20. Annual notifications by transmission group. HIV Register of Catalonia, 2001-2011



Among migrants, the HIV transmission pattern was similar to that of the region of origin. The most frequently reported transmission group among migrants from Western Europe and Latin America was MSM, whereas in those from Eastern Europe it was PWID. Heterosexual transmission was most common in African migrants.

The number of MSM notified has increased from 199 cases in 2001 to 374 in 2011, a rise of 88%. Notifications in males heterosexuals has fallen from 194 in 2001 to 116 in 2011, a drop of 55%, whereas notifications of female heterosexuals dropped by 43%, going from 116 in 2001 to 66 in 2011. Finally, notifications of PWID has fallen by 86%, going from 166 in 2001 to 23 in 2011 (**figure 20**).


LA PROVA
DEL VIH
NO ESPERIS
MÉS!
ALGUNES PERSONES DESCOBREIXEN QUE ESTÀN INFECTADES PEL VIH MASSA TARD, QUAN JA TENEN LA SIDA. EL DIAGNÒSTIC PRECOÇ DEL VIH ÉS MOLT IMPORTANT PER A UN BON PRONÒSTIC DE LA INFECCIÓ. DESPRÉS D'UN RISC FES-TE LA PROVA DEL VIH TAN AVIAT COM SIGUI POSSIBLE.
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933 182 056
BCN CHECKPOINT: COMTE BORRELL 164-166, 08015 BARCELONA
• SERVEI ANÒNIM, GRATUÏT I CONFIDENCIAL
• PROVES RÀPIDES
• HORARI ININTERRUMPUT (DE DILLUNS A DIVENDRES D'11 A 20H)
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2.2. Recent infections and subtypes

Recent infection

The identification of recent infection (RI) in new diagnoses provides a more accurate estimate of the current dynamics of the epidemic, since people with a new HIV diagnosis may have been infected several years previously. The detection of RI has therefore been incorporated into routine surveillance systems in many developed countries, and in Catalonia since 2006.

In the period 2006 – 2009, the proportion of new diagnoses that were recently infected was 22.3% (95% CI: 20.4 - 24.3). Recent infections were more common among men than among women (22.9% and 19.2%, respectively). A higher proportion of those aged under 30 years (26.8 %) compared with those over 59 (9.1%) was recently infected. The proportion of RI was highest in MSM (27.5%) and lowest in heterosexuals (15.4%). In migrants, the proportion of RI was lower than in people born in Spain (20.5% vs. 23.3%, respectively), with the highest proportion being in people from Latin America (22.8%), followed by sub-Saharan Africa (11.7%) (**figure 21**). 13.3% of people with a RI reported had been diagnosed with a sexually transmitted infection (STI) during the previous 12 months. The mean CD4 count among persons with recent infection was 541, while among new diagnoses without recent infection it was 381, a statistically significant difference.

The percentage of new diagnoses with a RI increased from 16.7% in 2006 to 32.4 % in 2009 (**figure 22**), with a similar trend observed by age, sex and risk group.

Figure 21. Proportion of recent infection in selected age, migrant and risk groups. Catalonia, 2006-2011

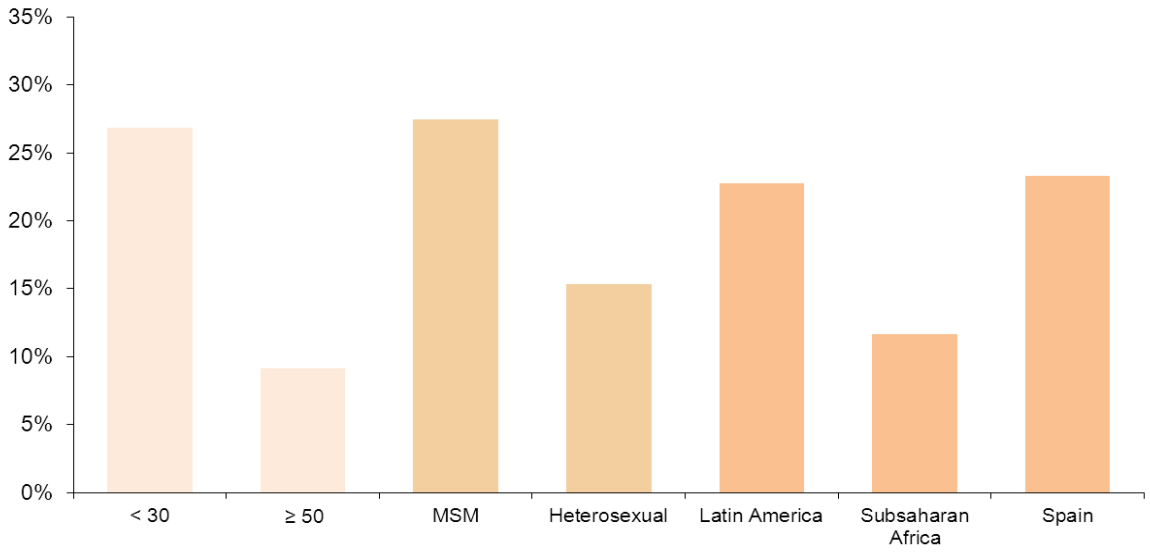
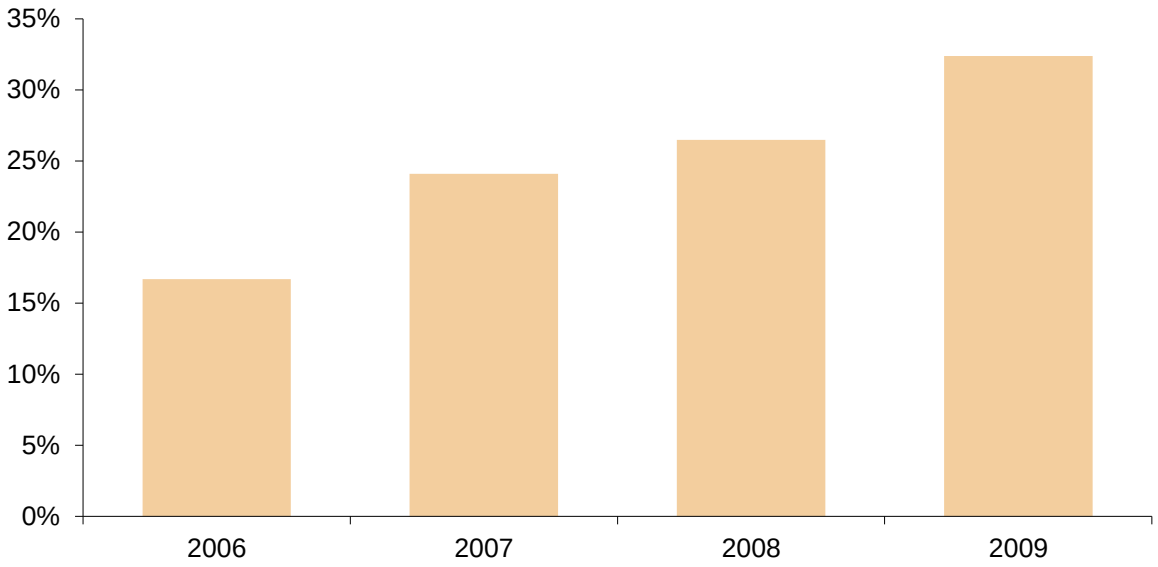


Figure 22. Annual proportion of new HIV diagnoses with recent infection. Catalonia 2006-2009



HIV subtypes

In Spain, like other countries in Western Europe and North America, the HIV-1 subtype B is the most prevalent, although recent papers describe an increase in other non-B subtypes[11]. Knowledge of the prevalence of non-B subtypes in our midst will allow a better estimate of likely problems in the use of diagnostic tests and viral load measurements (VL).

Between 2003 and 2005, of 182 HIV-1 subtype sequences analysed, 35 (19.2%) were identified as non-B subtypes. Individuals aged between 40 and 50 had a higher prevalence of non-B subtypes (47.6%) compared to the other groups. Stratifying by transmission group, PWID had the highest prevalence of non-B subtypes (41.7%) and among patients of immigrant origin, 30% were infected with a non-B subtype.

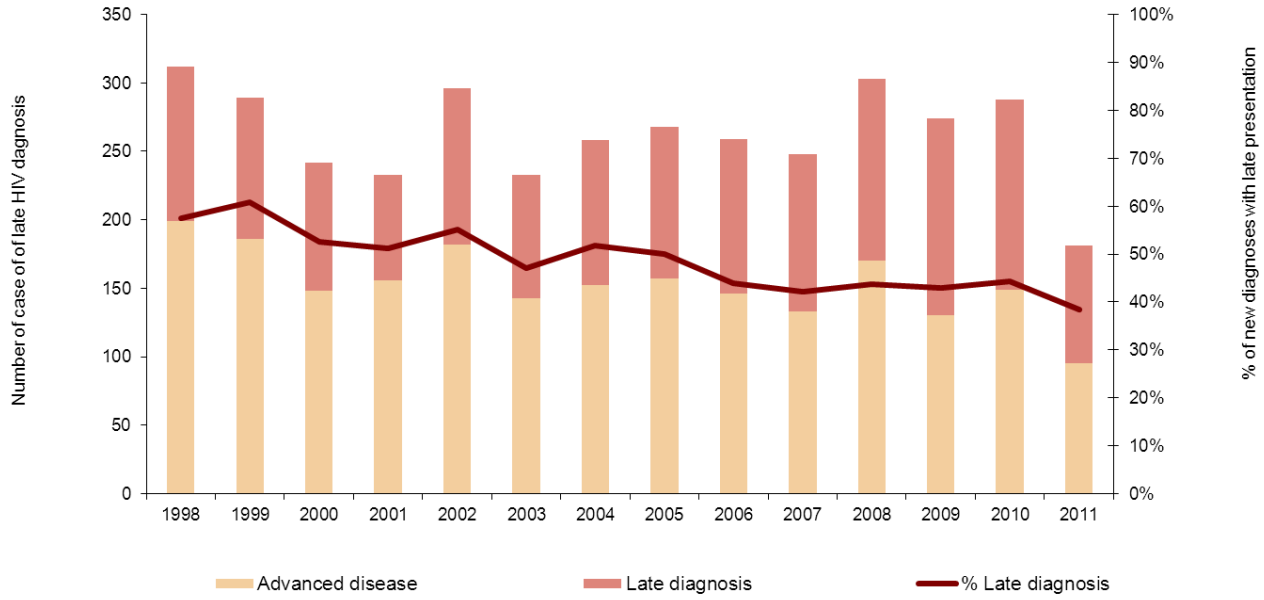
2.3. Late presentation

Late presentation of HIV is defined as diagnosis with a CD4 count below 350 cells/µL and/or the presence of an AIDS-defining illness. Presentation with advanced HIV disease is defined as diagnosis with a CD4 count below 200 cells/µL and/or the presence of an AIDS-defining illness.

In 2010, among people newly diagnosed with HIV in the PSICIS Cohort (see “Methods”), 41.8% were late presenters and 21.8% presented with advanced HIV.

11. García F, Pérez-Cachafeiro S, Guillot V, Alvarez M, Pérez-Romero P, Pérez-Elías MJ, et.al.; Cohort of the Spanish AIDS Research Network (CoRIS). Transmission of HIV drug resistance and non-B subtype distribution in the Spanish cohort of antiretroviral treatment naïve HIV-infected individuals (CoRIS). Antiviral Res. 2011 Aug;91(2):150-3.

Figure 23. Number and proportion of late and advanced HIV presenters among people newly diagnosed with HIV in the PISCIS Cohort, 1998-2011



The proportion of late presentation was similar between men (41.0%) and women (46.1%) and increased with age; it was 25% in those <25, 37.7% in those aged 25 – 44, 45.5% in those aged 45 – 49 and 51.7% in those >49. The highest proportions of late presentation were in male heterosexuals (54.8%) and PWID (58.7%), followed by female heterosexuals (45.9%). MSM had the lowest proportion of late presentation (35.9%).

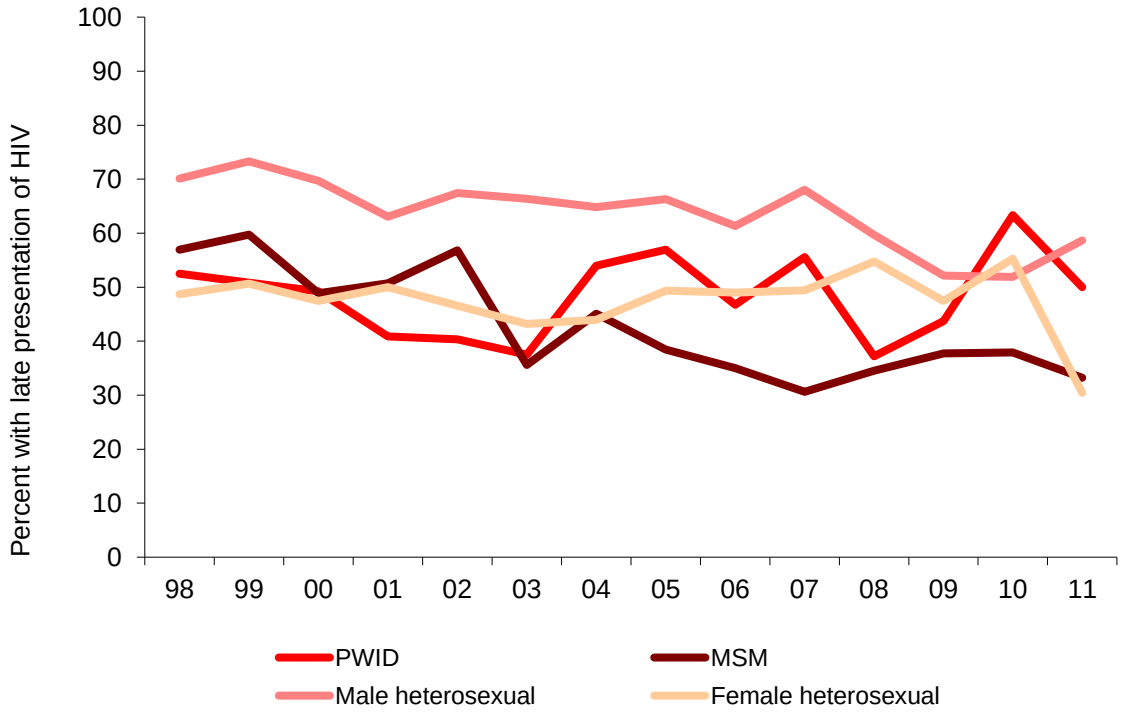
Over time, the proportion of people with late presentation has reduced, dropping from 57.5% in 1998, through 44.4% in 2010 to 38.3% in 2011. When stratified by transmission group, the only significant decreasing trends were in MSM (from 56% in 2001 to 33% in 2011) and heterosexual males (from 70.1% in 2001 to 58.2% in 2011) (**figure 24**).

2.4. AIDS diagnosis

During 2011, there were 107 cases of AIDS notified, a global notification rate of 1.5 cases per 100,000 inhabitants (**figure 25**). Data from 2011 have not been adjusted for reporting delay.

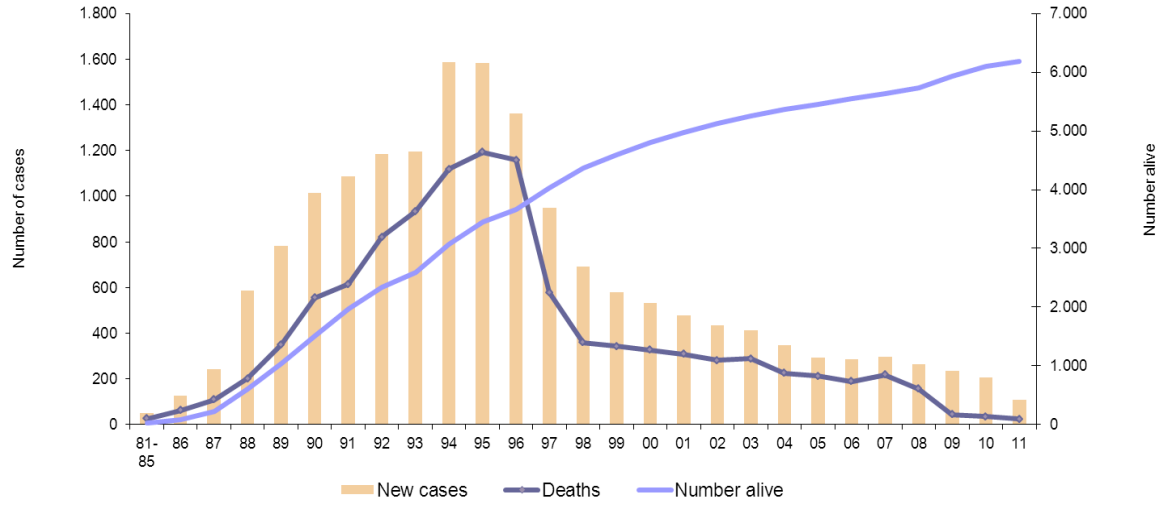
Men made up 83.2% of AIDS diagnoses and women, 16.8%, corresponding to notification rates of 2.5 and 0.5 cases per 100,000 inhabitants, respectively. The male: female ratio was 5.

Figure 24. Proportion of late presentation among new HIV diagnoses, by transmission group. PISCIS Cohort, 1998-2011



Among AIDS notification in 2011, the most frequent AIDS-defining illness was *Pneumocystis jirovecii*, with 26 cases notified (24,3% of all notifications), followed by pulmonary or extra-pulmonary tuberculosis with 15 cases (14.0% of notifications). Since its inclusion in the list of AIDS-defining illnesses in 1993, TB has been the most frequently notified defining illness, until it was surpassed by *Pneumocystis jirovecii* in 2010 (23.3% PJP vs. 22.3% for TB).

Figure 25. AIDS notifications and deaths among residents of Catalonia, 1981-2011



Trends for the period 1981-2010

The total number of AIDS cases notified from 1981 to 31st December, 2011 is 16,916. Since the diagnosis of the first case in 1981, annual incidence rate increased progressively from 0.8 cases per 100,000 inhabitants in 1983 to 26.0 cases per 100,000 inhabitants in 1994, coinciding with the expanded case definition of AIDS. Between 1996 and 1998 there was a sharp decline in the number of AIDS cases notified per year from 1,361 to 691 cases, a decrease of 49%. Since then, the annual decrease in the number of AIDS cases has been more gradual as the effects of ART on mortality and incidence of AIDS have stabilised. In 2011 the number of reported AIDS cases decreased by 42% compared to 2010, although this figure has not been adjusted for reporting delay (**figure 25**).

AIDS cases in children have declined sharply from 1996, when zidovudine (AZT) prophylaxis was introduced for pregnant women infected with HIV. Of the total 224 paediatric cases (under 13 years of age) notified to the Catalonia AIDS Register by 31st December 2011, most (92%) were the result of vertical transmission from mother to child, although a small proportion were infections through blood products (5.4%) or blood transfusion (1.3%). The last case of AIDS in a child was reported in 2009.

2.5. HIV/AIDS infections in Barcelona*

* Patricia Garcia de Olalla, Roser Clos, Pilar Gorrindo, Joan A. Caylà and the nursing team of the "Servei d'Epidemiologia de l'Agència de Salut Pública de Barcelona".

HIV/AIDS is a major public health problem that is increasingly concentrated in big cities like Barcelona, and that without treatment, leads to a higher probability of HIV transmission, AIDS and death.

HIV infection

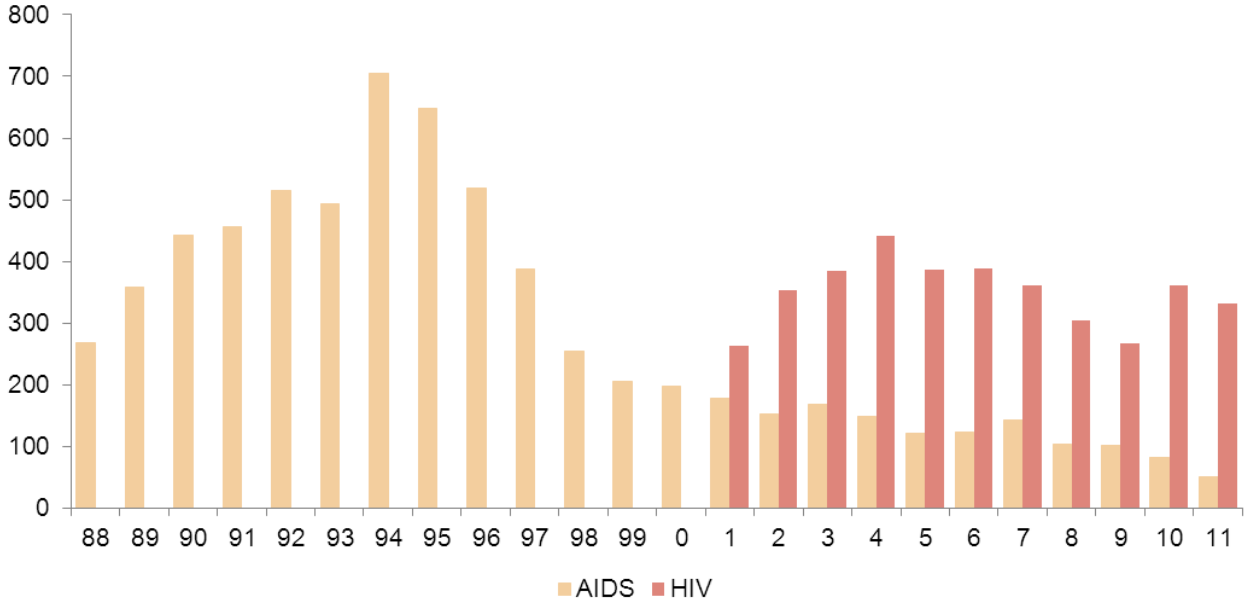
Between 2001 and 2011, 4,070 cases of HIV infection were notified. Between 2009 and 2010, notification rose by 24%, probably due to the introduction of mandatory reporting of HIV (**figure 26**).

A majority of notified cases 76.9% (3,131) were residents of Barcelona and the number of notifications ranged from 216 in 2001 to 361 by 2010.

In 2011 there were 332 HIV cases notified, including 309 (93%) men and 23 (7%) women, an annual rate of 40.1 per 100,000 male residents and 2.7 per 100,000 female residents. About 70% of cases were aged between 20 and 40, with a mean age of 34 in both men and women.

Thirty one percent (31%) of patients were diagnosed with a CD4 count of less than 350 cells/µl.

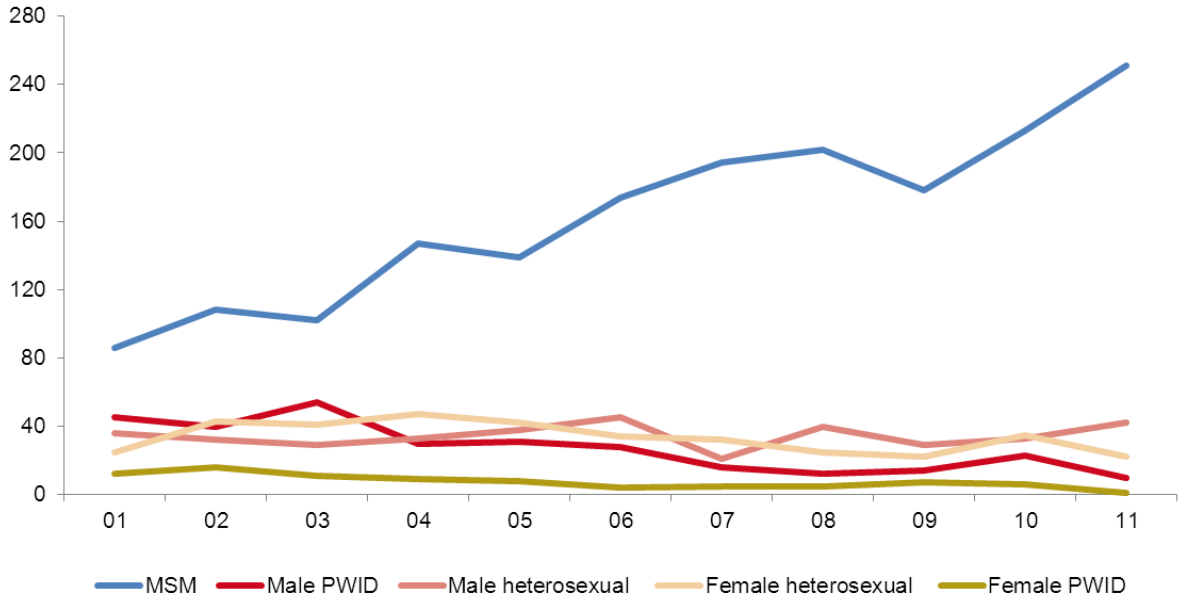
Figure 26. New diagnoses of HIV and AIDS among residents of Barcelona, 1988-2011



Forty six percent (46%) of men and 44% of women were born in Spain.

The most common male transmission group was MSM 81% (251), followed by heterosexuals 14% (42), with PWID accounting for only 2.3% (7) of cases. Among women, 96% of infections occurred through unprotected heterosexual sex (**figure 27**). Late presenters made up 31% of all new diagnoses.

Figure 27. Annual number of new HIV diagnoses in residents of Barcelona, by sex and transmission group, 2001-2011



AIDS diagnosis

Since the introduction of ART there has been a significant reduction in the notification of AIDS cases, dropping from 180 in 2001 to 68 in 2011, a drop of 62% (**figure 26**). This decline is different by sex and transmission group. In male PWID there was a decrease of 89%, but among MSM the decrease was only 27%.

Of the 68 cases notified in 2011, 85% (58) were male and 15% (10) female. The median age at diagnosis was 42 for men and 40 for women. Sixty four (64%) of men and 60% of women were born in Spain. The most common transmission route in men was sexual (69 % of cases), with most of these being MSM (60%) and the remaining 9% heterosexual. In women, 50% of transmission was heterosexual.

Nearly half of cases 44% only became aware of their HIV infection at the time of AIDS diagnosis or in the preceding year.

The most frequent AIDS-defining illnesses were tuberculosis (17%), Kaposi's sarcoma (16%) and *Pneumocystis jirovecii* pneumonia (15%).

3. HIV and co-infections

Key points

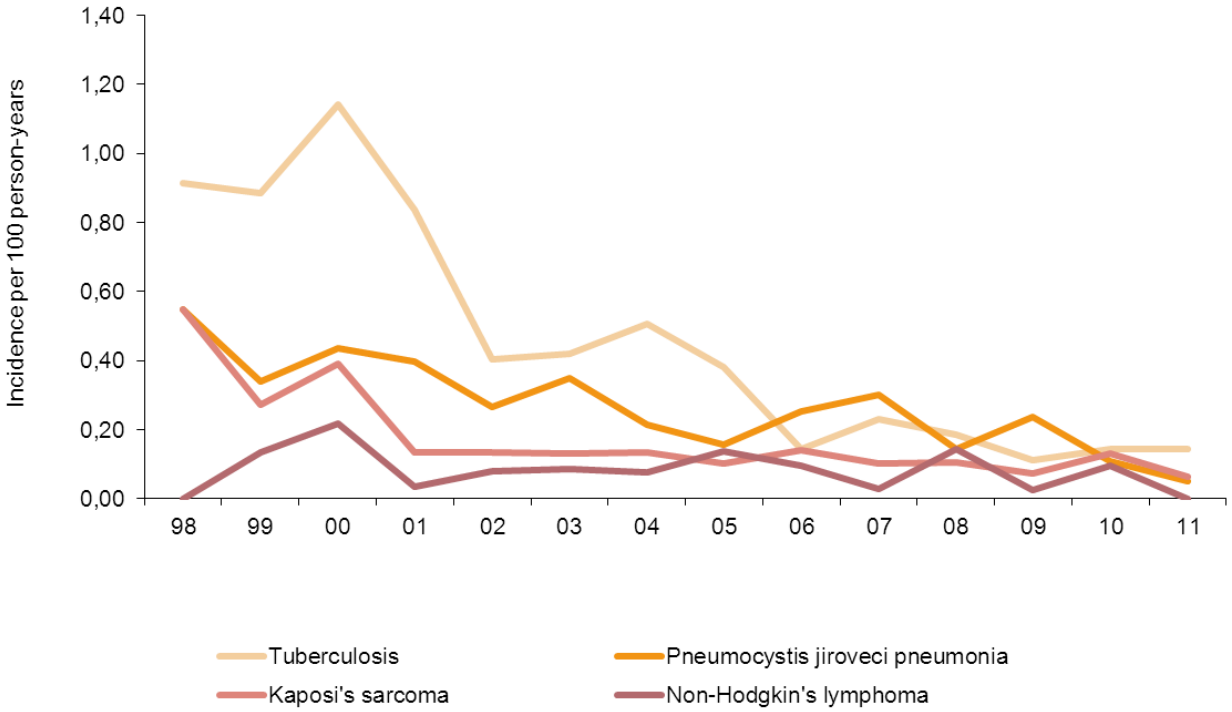
- The incidence rate of tuberculosis in the HIV infected population was six times lower in 2011 compared to 1998.
- Hepatitis C virus (HCV) co-infection rates in HIV infected people have remained relatively stable in the last few years. Given the rise in HCV co-infection rates seen among MSM in other European countries, the surveillance of HCV in this population should be strengthened.
- The burden of disease (mortality and disability) of HCV co-infection increases over time and the life-expectancy of HIV/HCV co-infected patients is 20 years less than that of the HIV mono-infected population.
- HIV prevention programmes for PWID should intensify efforts aimed at treatment and prevention of HCV, given the high prevalence in this group.
- The high prevalence of STI in people with newly diagnosed HIV reinforces the need to promote early HIV diagnosis in people who have STI.

3.1. Tuberculosis, *Pneumocystis jirovecii* and other opportunistic infections

HIV prevalence among TB cases reported to the Catalonia Tuberculosis Register in 2010 was 4.9%. This is the lowest figure in recent years, having dropped from 20% in 1996 to 11.8% in 2011.

The incidence rates of tuberculosis and *Pneumocystis jirovecii* pneumonia in HIV-infected patients (PISCIS Cohort) also decreased between 1998 and 2011, and are currently 0.14 and 0.08 per 100 person-years, respectively. Since 2001, however, the incidence rates of Kaposi sarcoma and non-Hodgkin lymphoma have remained stable at around 0.10 and 0.05 per 100 person-years, respectively (**figure 28**).

Figure 28. Changes in the incidence of the principal AIDS-defining illnesses. PISCIS Cohort, 1998 - 2011



3.2. Hepatitis C virus

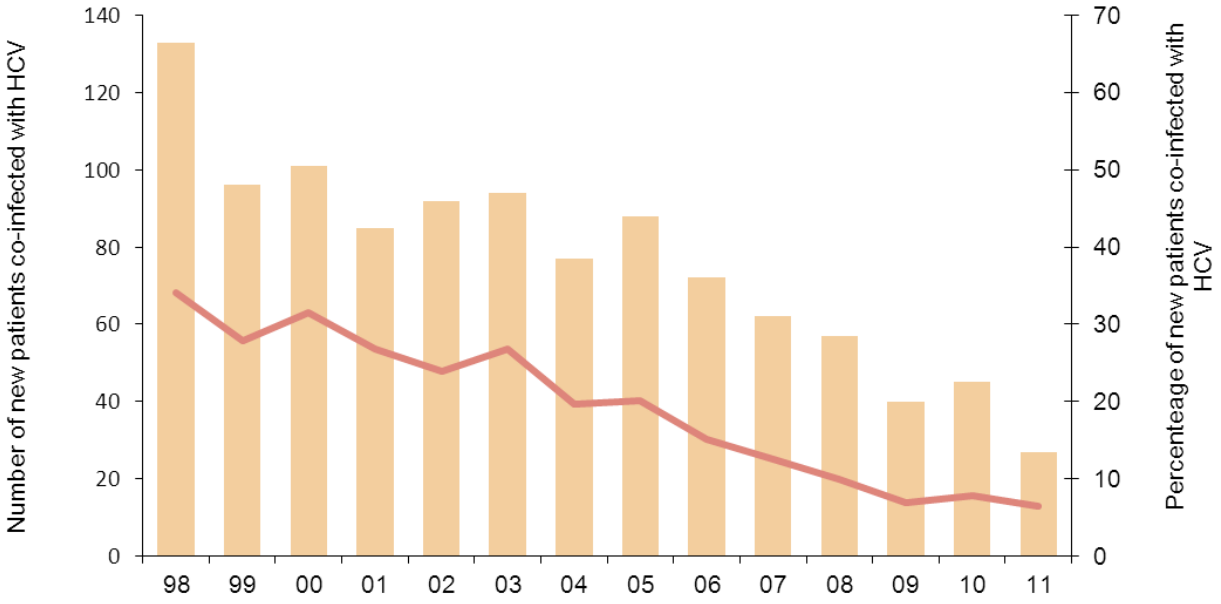
Of 609 HIV cases notified in 2011 to the Notifiable Diseases Register (EDO), 6.6% were also co-infected with HCV. This proportion was higher among PWID (69.6%).

Between January 1998 and December 2011, the proportion of patients with positive HCV serology included in the PISCIS Cohort was 32.4%. Among patients with newly diagnosed HIV infection, this ratio was lower (17.7%) and has fallen between 1998 and 2011 (**figure 29**).

The cumulative frequency of HCV co-infection by 2011 was 1,203 (**figure 30**). The group most affected by HCV co-infection was PWID, with a co-infection rate of 83.9% in 2010 and 2011, versus 2.1% in MSM, 8.9% in heterosexual men and 12.4% in heterosexual women (**figure 31**).

In HCV co-infected patients who started antiretroviral therapy (ART), life expectancy at age 20 was nearly 20 years less compared to mono-infected patients (29.2 and 48 years, respectively).

Figure 29. HCV co-infection at enrolment in patients newly diagnosed with HIV. PISCIS Cohort,1998-2011



The prevalence of HCV infection, as measured in oral fluid samples collected from PWID recruited in 2010/2011 in harm reduction centres, was 72%, similar to that observed in the PISCIS Cohort. Among HIV-infected PWID (34.5% in 2008/2009 and 33.2% in 2010/2011), HCV prevalence was approximately 83% in both studies.

Figure 30. Cumulative frequency of HCV co-infection in patients with a new HIV diagnosis followed up. PISCIS Cohort, 1998-2011

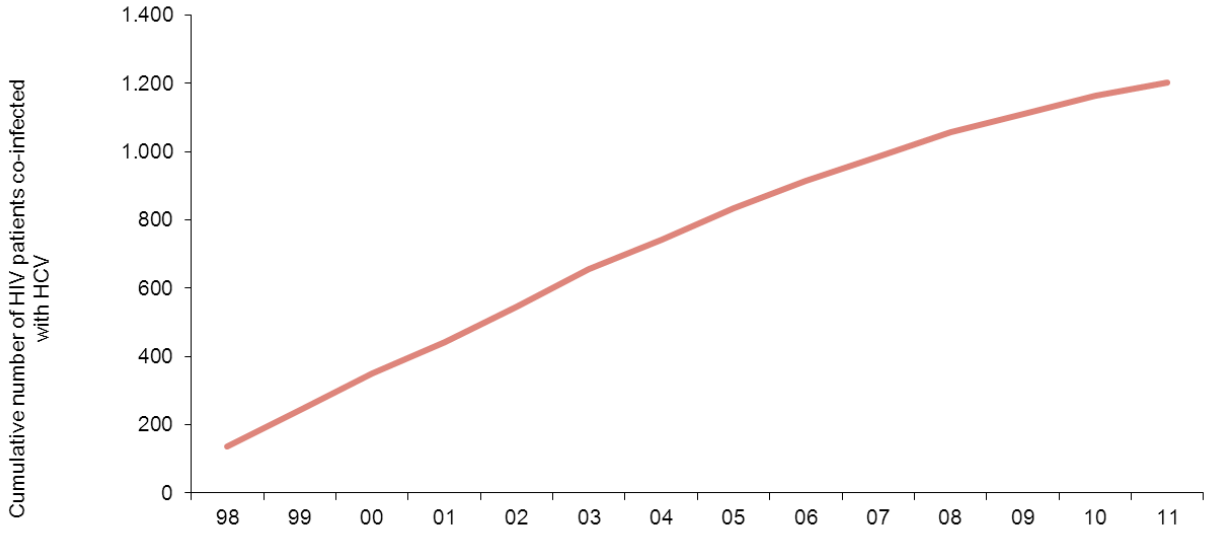
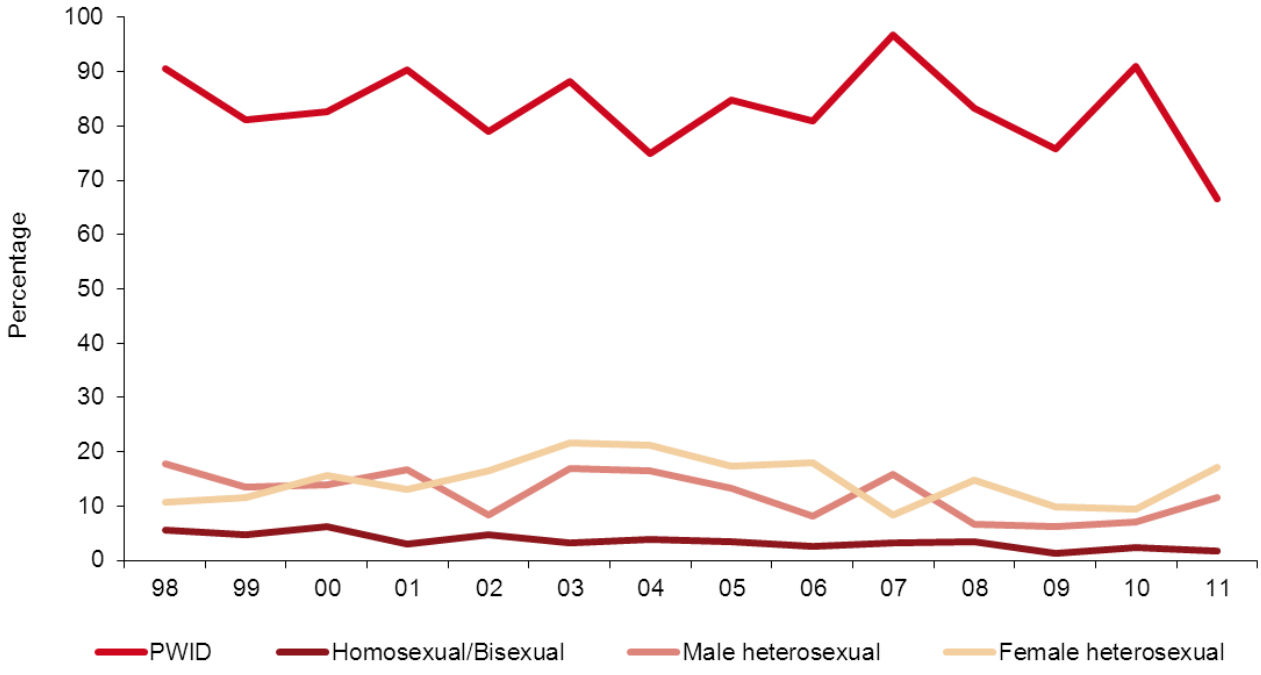


Figure 31. HCV co-infection at enrolment into the PISCIS Cohort by year and transmission group, 1998 - 2011



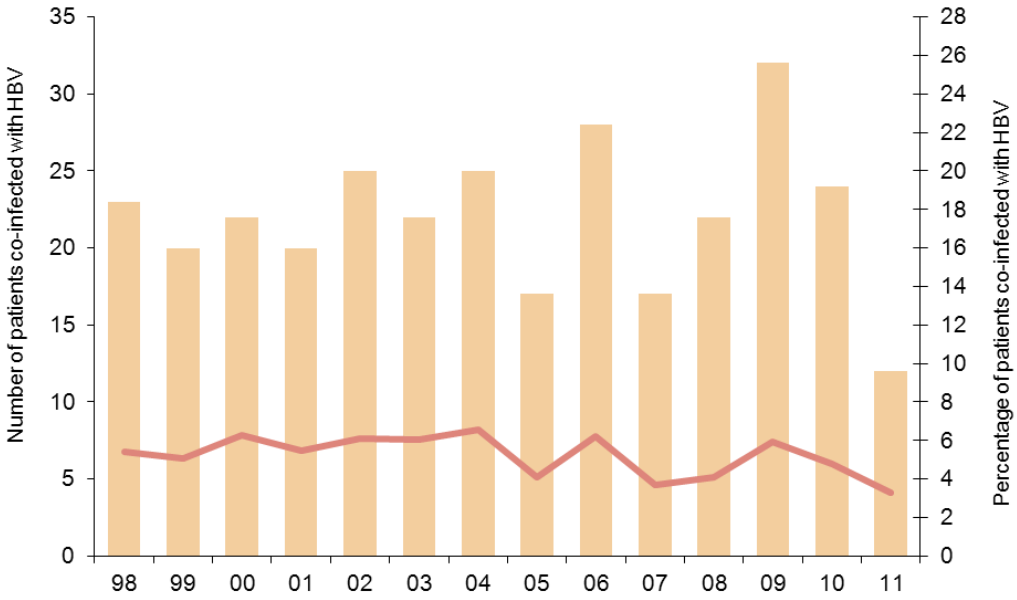
3.3. Hepatitis B virus

Of 609 HIV cases notified in 2011 to the Notifiable Diseases Register (EDO), 3.6% were co-infected with HBV.

Between January 1998 and December 2011, the proportion of patients with positive HBV serology (surface antigen) included in the PISCIS Cohort was 5.4%. Among patients with newly diagnosed

HIV infection, this ratio was 5.2%, a figure which has remained stable between 1998 and 2011 (**figure 32**).

Figure 32. HBV co-infection at enrolment in patients newly diagnosed with HIV. PISCIS Cohort 1998-2011



3.4. Other sexually transmitted infections

Of 609 HIV cases notified in 2011 to the Notifiable Diseases Register (MDO), 10.2% had had an STI in the year prior to HIV diagnosis. This proportion was slightly higher among MSM (13.4%), although it should be noted that in 41.1%, it was unknown whether an STI had been diagnosed.

New cases of STI co-infected with HIV are described in section 2, "Other sexually transmitted infections".

Of 229 patients with a new diagnosis of HIV who took part in a behavioural study within the PISCIS Cohort, a biological sample was available for 177. The prevalence of gonorrhoea and chlamydia in urine was 0.6% and 2.8%, respectively. Furthermore, in 169 patients with a test result for syphilis, the prevalence of syphilis antibodies was 14.8%. On the other hand, 62 of 198 people (31%) who were newly diagnosed with HIV reported having had at least one episode of STI in the previous 12 months.

Of the 31 people who gave specific information, 13 (41.9%) reported having had syphilis, 7 (22.6%) reported genital warts, 2 (6.4%) reported gonorrhoea and 1 (3.2%) reported chlamydia.

Other STIs reported were: genital herpes in 1 (3.2%), hepatitis A in 2 (6.4%), hepatitis B in 2 (6.4%), hepatitis C in 1 (3.2%) and *Molluscum contagiosum* in 1 (3.2 %).

4. HIV testing

Key points

- While the number of diagnostic HIV tests performed in Catalonia has been increasing (data available from 1993 onwards), the testing rate per 1,000 population (46.2) remains low with compared to the rates reported by other European countries.
- Despite the increase in the number of tests carried out in Catalonia, the percentage of positive tests remains stable. Testing interventions should be increased in order to increase access to those key populations with the highest prevalence and incidence of HIV infection.
- Since the introduction of rapid HIV tests in 2007, the number of tests in community testing centres has increased annually by an average of 47%, although the proportion of positive tests has not changed significantly. Testing sites should diversify through proximity programmes in order to gain access to key populations with the highest prevalence and incidence of infection by HIV (proximity programs).
- There is evidence of new infections occurring among repeat HIV testers attending community testing centres. The determinants of transmission should be identified and the most appropriate interventions selected.
- The coverage of HIV testing in PWID and FSW is lower among immigrants than the Spanish born population. It is important to improve the access of these vulnerable groups to HIV testing services.
- We should continue to promote annual HIV testing in MSM, in line with guidelines on HIV testing in the key population.
- Introducing rapid HIV test into primary care would increase the number of tests performed. Rapid HIV testing in primary care is feasible and would be accepted by health care professionals, but would require simplification of the counselling and further training on the use of these tests.
- HIV screening in non-healthcare settings is subject to large differences in performance. These HIV screening programmes should be limited to most-at-risk populations and be undertaken in the environments where they are most likely to be effective.

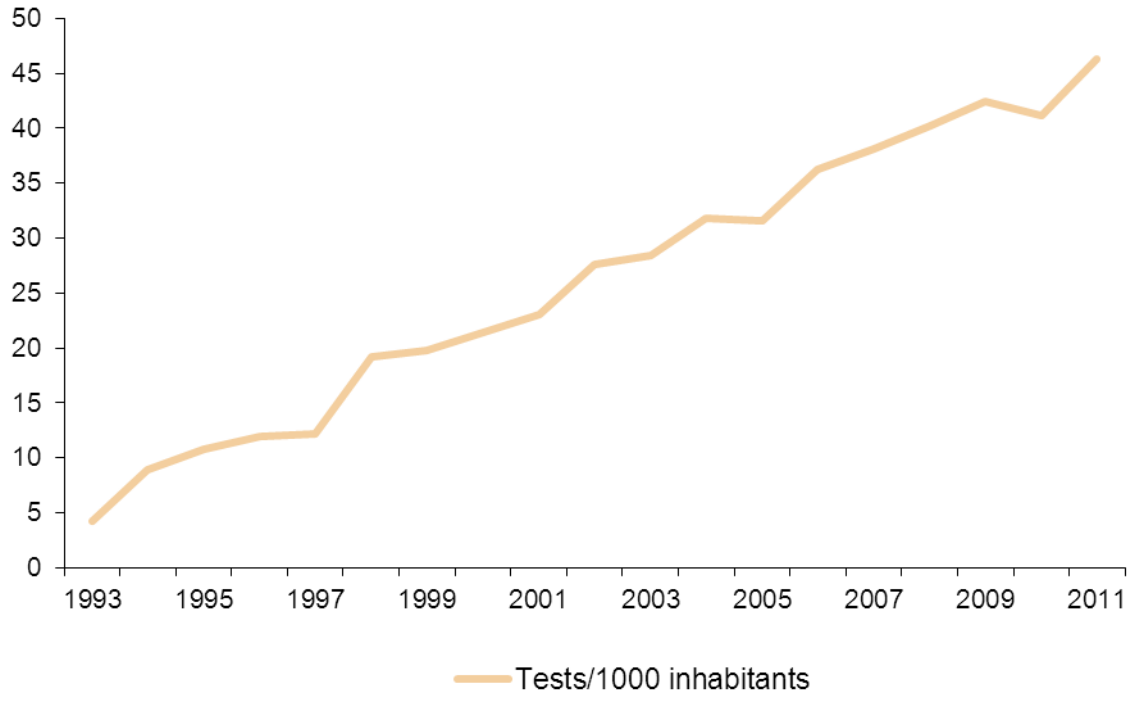
4.1 Number of HIV tests performed

HIV tests performed in laboratories

The number of diagnostic tests per 1,000 inhabitants in Catalonia has been increasing each year, reaching 46.2/1,000 in 2011 (**figure 33**). This testing rate varies by Health Region, ranging from 25.8/1,000 in Terres del Ebre to 55.1/1,000 in the Barcelona Health Region (**figure 34**). Despite the increase, the HIV testing rate is considerably lower than that of countries such as Austria or France, which have rates of 98.3 and 79,6/1,000, respectively[12]. (**figure 35**).

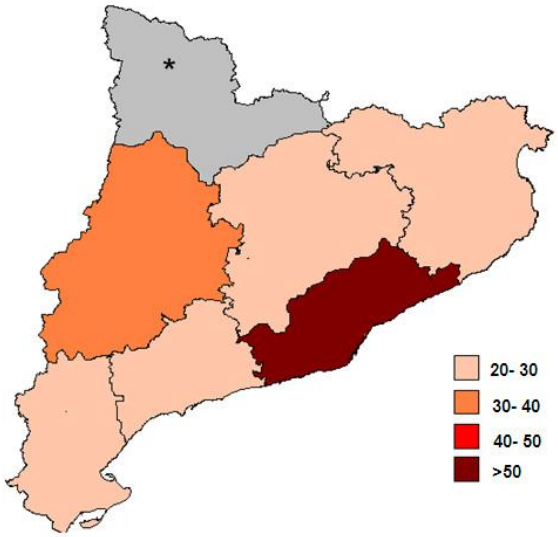
The annual number of tests performed and reported by laboratories has progressively increased over the years, from 52,005 in 1993, to 343.704 in 2011. In recent years, the largest increase in the number of HIV tests performed has been in primary care laboratories. The percentage of positive tests positive during this period (1992-2011) initially decreased (**figure 36**), but has remained stable in recent years (0.8 to 1.0%). The amount of data provided by each laboratory often varies significantly, differing in both the number of tests performed, and the percentage of positive results.

Figure 33. Annual HIV testing rate per 1,000 inhabitants in Catalonia



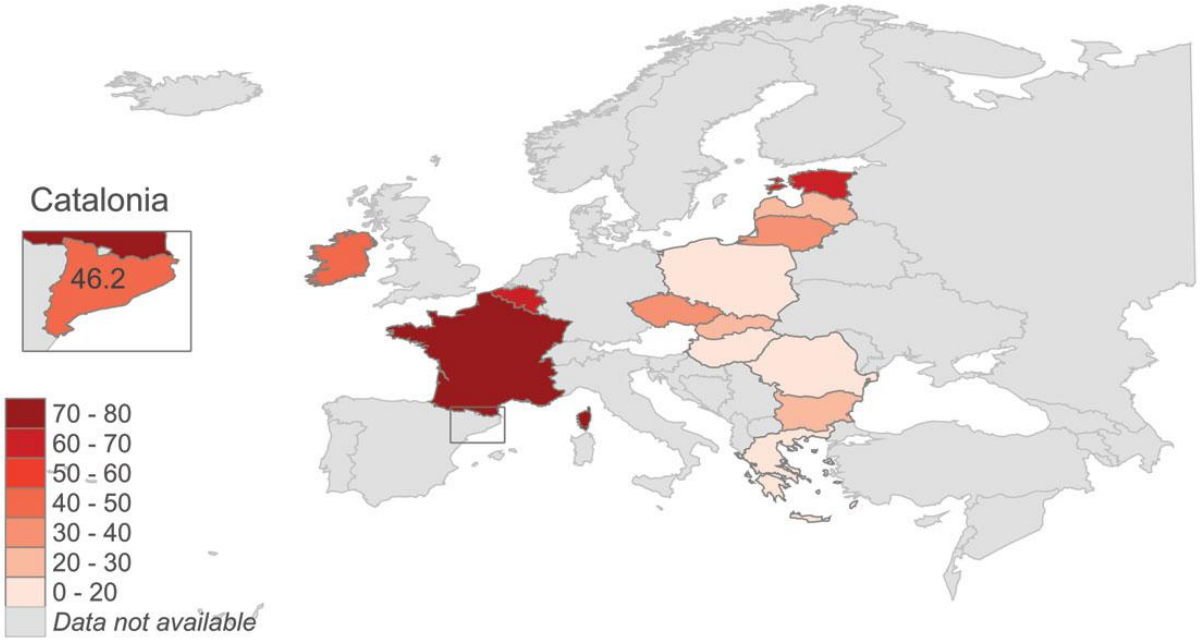
[12] European Centre for Disease Prevention and Control/WHO Regional Office for Europe. HIV/AIDS surveillance in Europe 2011. Stockholm: ECDC; 2012.

Figure 34. Estimated HIV testing rates by Health Region. Catalonia 2011



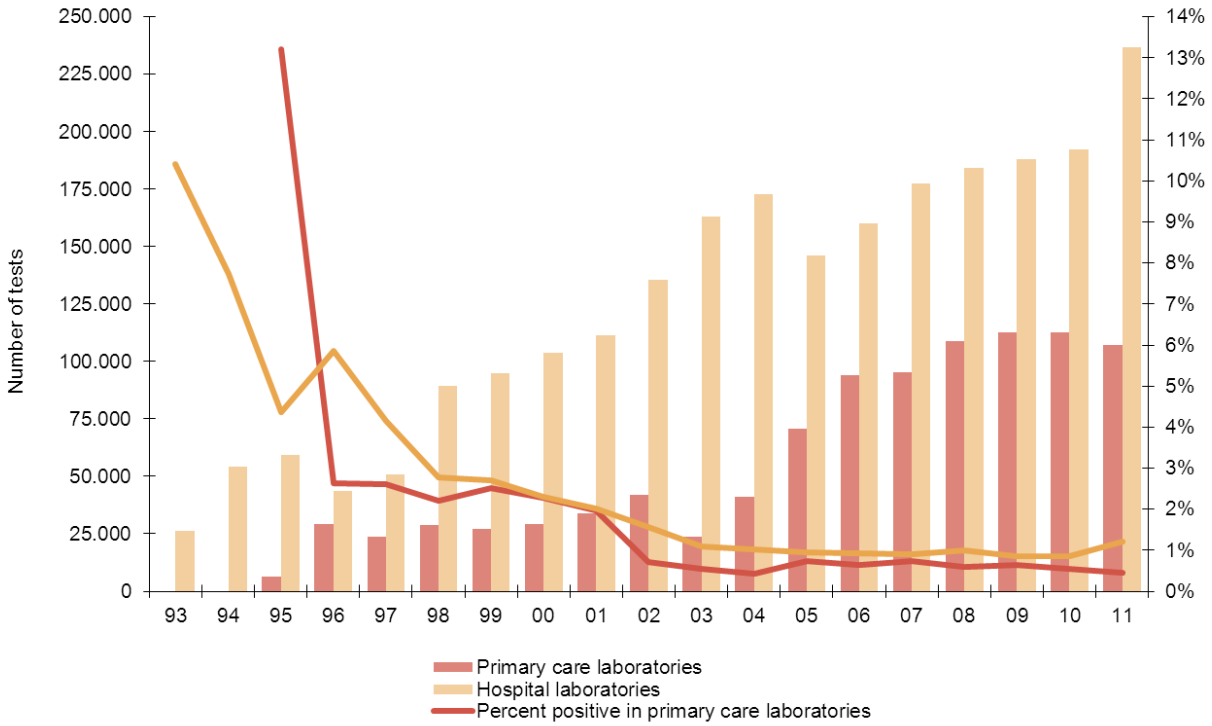
* Data not available

Figure 35. HIV testing rate per 1,000 inhabitants in European countries, 2011



Source: European Centre for Disease Prevention and Control/WHO Regional Office for Europe. HIV/AIDS surveillance in Europe 2011. Stockholm: ECDC; 2012

Figure 36. Number of diagnostic test performed, and the proportion of positive tests. Catalonia network of hospital and primary care laboratories, 1993-2011

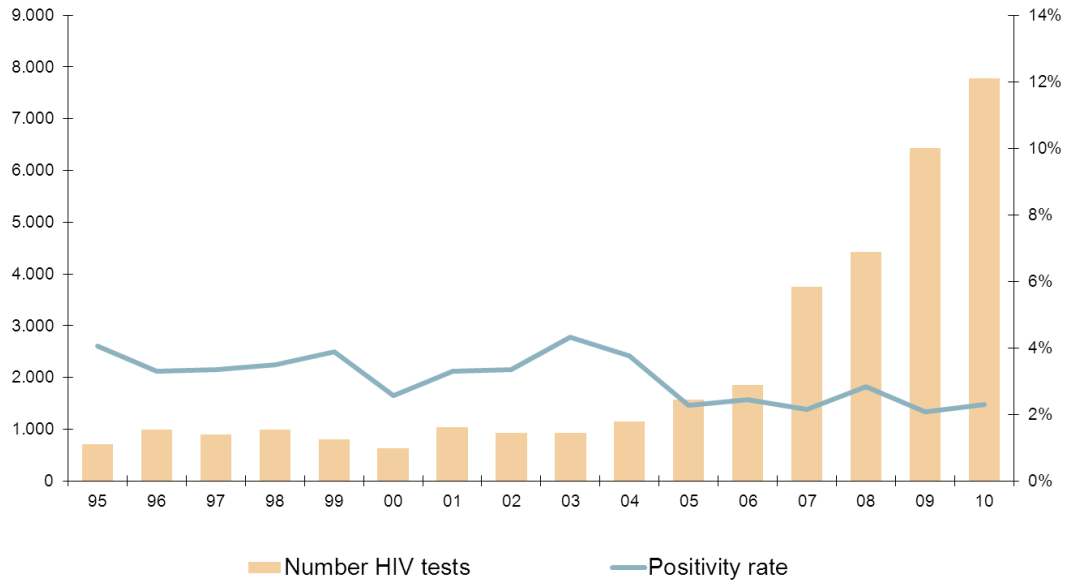


HIV testing in community based testing centres

Between 1995 and 2010, community HIV testing centres performed 35,023 HIV tests. The positivity rate for this period was 2.7%. Until 2006, the annual number of tests performed was small, oscillating between 716 in 1995 and 1,849 in 2006 (**figure 37**). At the end of 2006, rapid HIV testing was introduced into community testing centres, increasing the demand for HIV testing in these centres by 102.9%[13]. The number of tests performed has increased year on year, reaching 7,783 in 2010 with a positivity rate of 2.3%. The observed increase in testing between 2006 and 2010 is 323%. Despite this increase in the number of tests carried out, the percentage of positive tests detected has not varied significantly. Since 2007, rapid HIV tests have replaced standard tests.

[13] Fernàndez-López L, Rifà B, Pujol F, Becerra J, Pérez M, Meroño M, et al. Impact of the introduction of rapid HIV testing in the Voluntary Counseling and Testing sites network of Catalonia, Spain. Int Int J STD AIDS. 2010 Jun;21(6):388-91.

Figure 37. Number of HIV tests performed and the positivity rate in community based testing centres. Catalonia, 1995-2010



HIV tests performed in Pharmacies

Dr. Benet Rifà. Programme for treatment and prevention of AIDS, Catalonia Agency for Public Health

In April 2009, the Programme for treatment and prevention of AIDS (Programa per a Prevenció I Assistència de la Sida, PPAS) together with the College of Pharmacists piloted the use of rapid HIV testing in pharmacies. By April 2012 a total of 5,807 tests had been performed, of which 57 were reactive (0.98%). Of the reactive tests, 26 were confirmed positive and 3 were false positives. Seventy one percent (71%) of pharmacy testers were men, they had an average age of 34 and 41% were aged between 30 and 39. Twelve percent (12%) were newly arrived migrants, principally from Latin America. The main reason for seeking an HIV test was unsafe sex, with 11% having had unsafe homosexual sex. Among reactive tests, 75% were men, 25% new migrants, 73% were aged between 20 and 39. Sex was the main route of transmission and 36.5% of sexual transmission was through homosexual sex.

HIV testing in gay saunas and recreation areas in Barcelona

Dra. Patricia Garcia de Olalla, Dra. Elia Díez. Barcelona Agency for Public Health

Between 2007 and 2011 1,825 tests were performed on 1,406 individual users of saunas, who were assumed to be HIV negative. The ages of testers ranged from 16 and 80 years (median 32), 571 (40.6%) were born in Spain, 591 (42.1%) had at least one year of University studies, and 371 (26.4%) identified as sex workers. Of 873 participants reporting their sexual orientation, 655 (75%) identified as homosexual, 152 (17.4%) as bisexual, and 59 (6.9%) as heterosexual. A total of 281 participants (20%) had never been tested previously. During the whole period, 144 tests were

reactive, equating to a new diagnosis rate of 8.6% in 2007, 9.7% in 2008, 8.6% in 2009, 9.2% in 2010 and 7.6% in 2011. Saunas offer opportunities for prevention interventions in a population at high risk of HIV infection.

4.2 Characteristics of people who request HIV testing and people testing positive in community based testing centres

In the period between 1994 and 2010, 68.5% of people who had an HIV test in a community based testing centre were men. In both sexes, most HIV tests were performed between the ages of 20 and 29. This age group was also the most frequent among those testing positive (**figure 38**).

Figure 39 shows the change over time in the percentage distribution by transmission group of the tests performed. In community based testing centres, the proportion of testers who were MSM has increased over time whereas the proportion of PWID has decreased. From 1996 to 2004 most positive tests were in PWID, but from 2005 the proportion of PWID decreased while the proportion of MSM increased, reaching 85% of the total of positive tests in 2010 (77.7% MSM and 7.3% MSM SW). The transmission group with the highest percentage of positive tests throughout the period was PWID, followed by MSM, whereas heterosexuals had the lowest percentage of positive tests (**figure 40**).

Figure 38. Distribution by age and sex of: a) HIV tests performed and b) positive tests. Community based HIV testing centres, 1995-2010

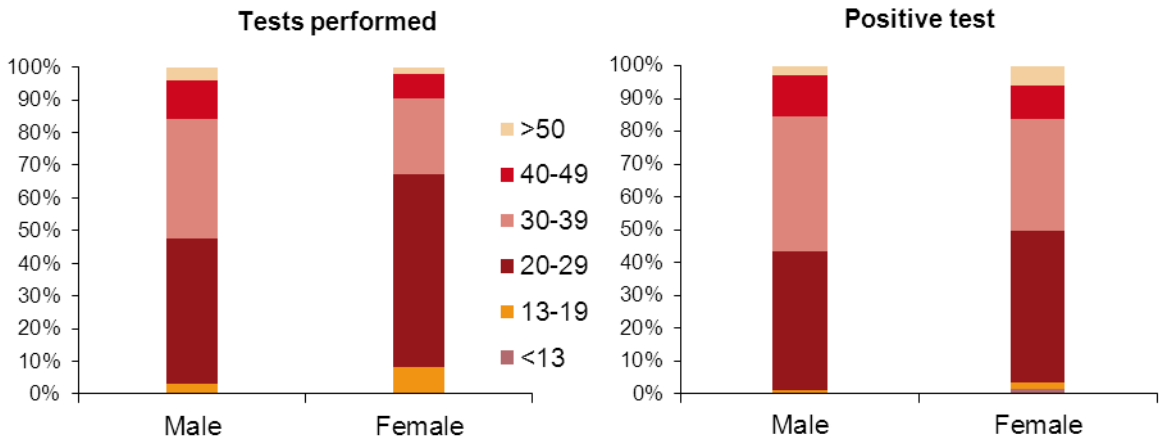
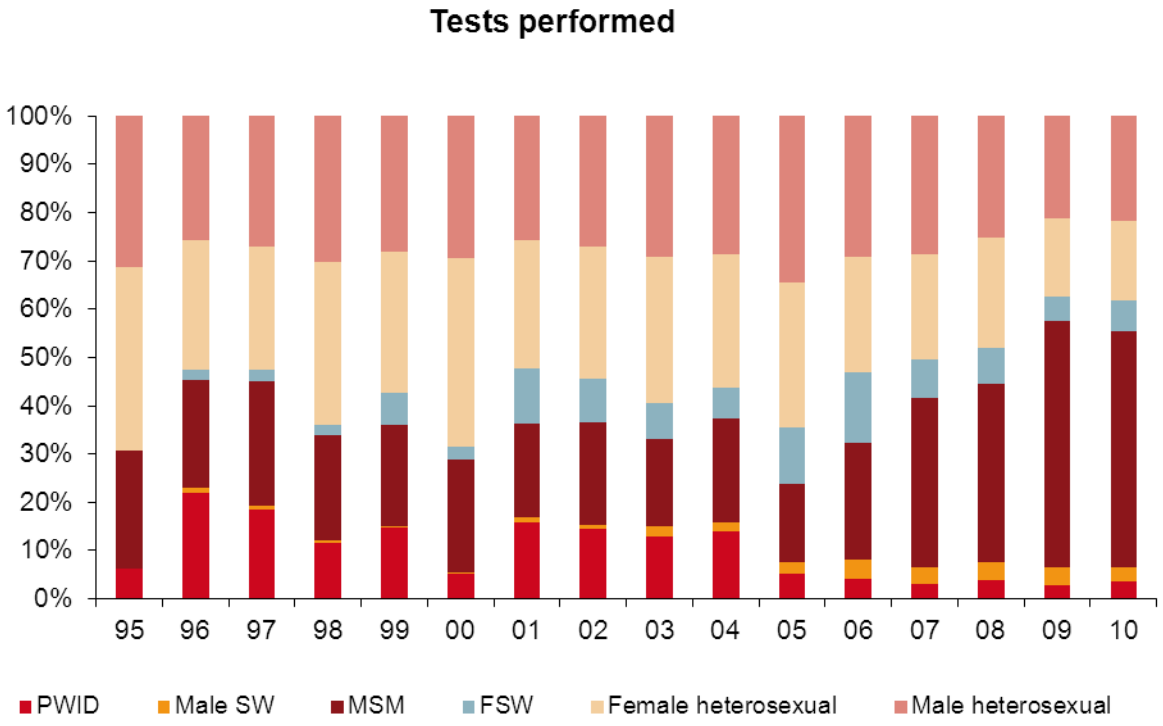
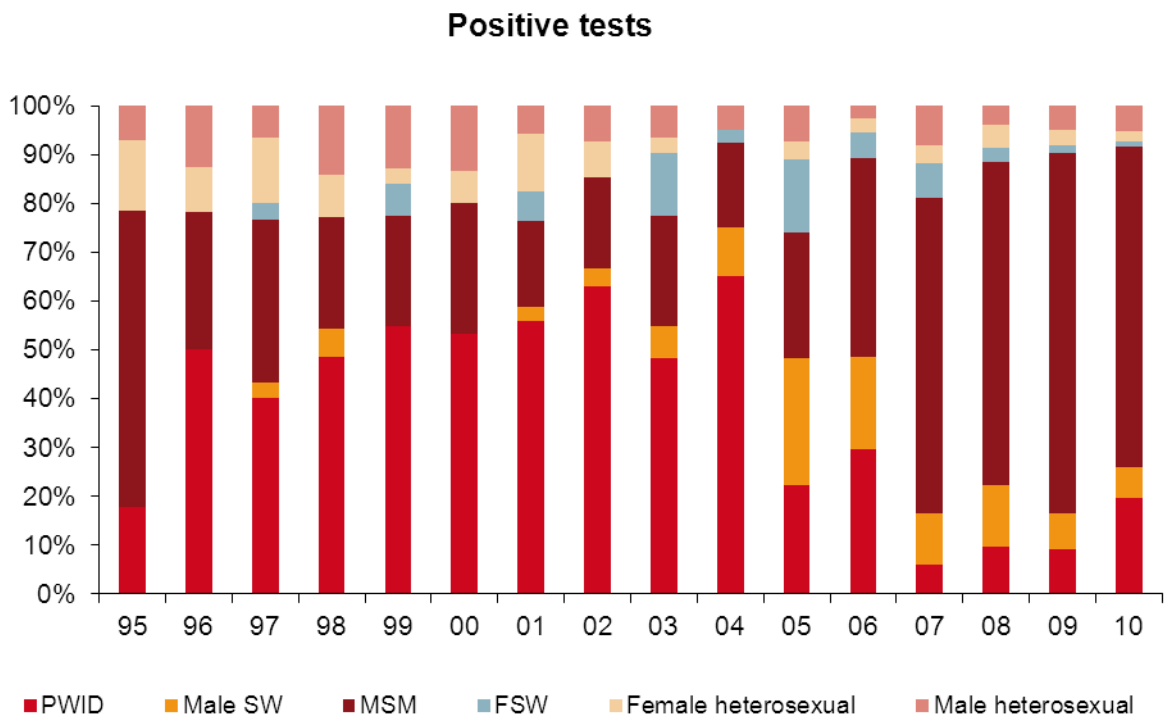


Figure 39. Distribution by transmission group of: a) HIV tests performed and b) positive tests. Community based HIV testing centres, 1995-2010



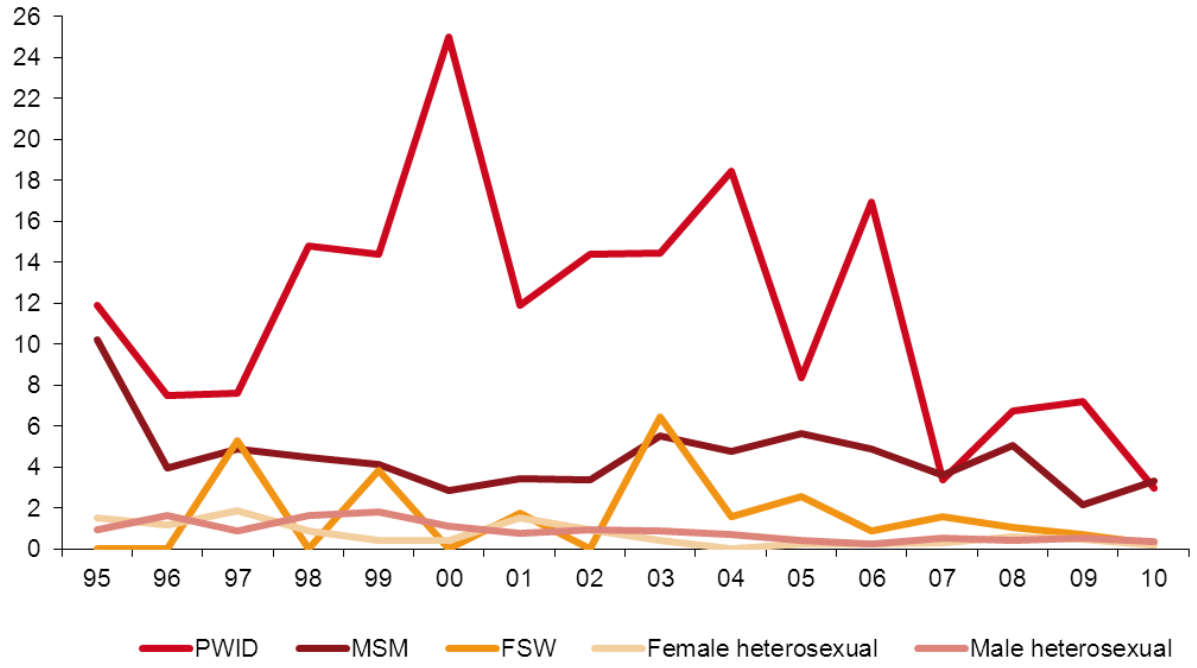


In 2010, 78% of people who had an HIV test were men. In both men and women, most testers were aged between 20 and 35. Of the 7,822 tests performed, 179 (2.29%) were positive to HIV and 68.5% had been tested at least once. Of those with a positive result, 76.7% had at least one previous negative test result. Over a third (37.6%) of testers were migrants, but among positive cases the percentage of migrants was 54.7%. Nearly all tests (95.5%) were rapid tests.

In a cohort of HIV-negative MSM (Project ITACA), which is run from one of the community based testing centres, 3,228 MSM were recruited to the cohort between December 2008 and October 2010 and 1,054 of these participants returned for at least one follow-up visit which included further HIV testing. Of these, 73.8% had a repeat HIV test within a year of entering the cohort and 41.7% did so within 6 and 12 months, in line with guidelines on HIV testing in MSM. The mean time between baseline visit and first follow-up was 10.4 months and the retention in the cohort for this period was 52.5%[14].

[14] Calculated using the number of men who had at least one follow-up visit as a proportion of those who had been recruited at least one year previously.

Figure 40. Percentage of positive HIV test results by transmission group. Community based HIV testing centres, 1995-2010



4.3 HIV testing in groups with high-risk behaviours

A large majority (94.7%) of PWID recruited in harm reduction centres in 2010-11 had ever had an HIV test. Test coverage was lower among the migrant PWID (90.5% vs. 97.4%, respectively ($p<0.05$) (project REDAN)). Most (60.8%) PWID had had an HIV test in the previous 12 months in 2010 and 2011. Among MSM recruited in gay recreation areas in 2008, 88% had had an HIV test at least once (SIALON project). On the other hand, 73.1% of MSM surveyed via the Internet and residing in Catalonia (European MSM Internet Survey project - EMIS) had been tested for HIV on at least one occasion. More than half of MSM in both studies had been tested for HIV in the previous year. The United Nations Joint Programme on HIV/AIDS (UNAIDS) has propose an indicator to measure the number of MSM tested for HIV in the last 12 months and who know their results (Indicator 1:13 of the Global AIDS indicator Reporting Progress response (GARP), formerly UNGASS indicator 8 (United Nations General Assembly Special Session on HIV & AIDS))[15]. Catalonia scores highly on this indicator (51.8%), similar to values in France and Belgium (47% and 46.6%, respectively) (**figures 41 and 42**).

[15] United Nations Programme on HIV/AIDS (UNAIDS) Global AIDS Response progress reporting: monitoring the 2011 political declaration on HIV/AIDS: guidelines on construction of core indicators: 2012 reporting. (UNAIDS / JC2215E). Geneva: UNAIDS; 2011

Figure 41. Percentage of MSM who have had an HIV test in the previous 12 months and who know the result, Europe

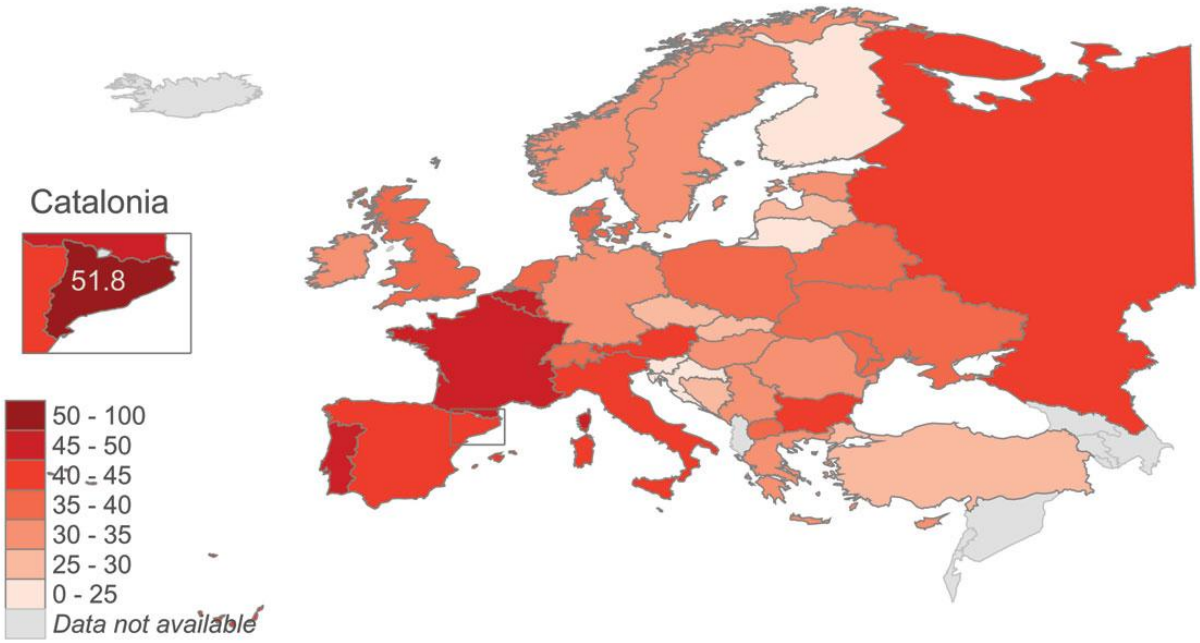
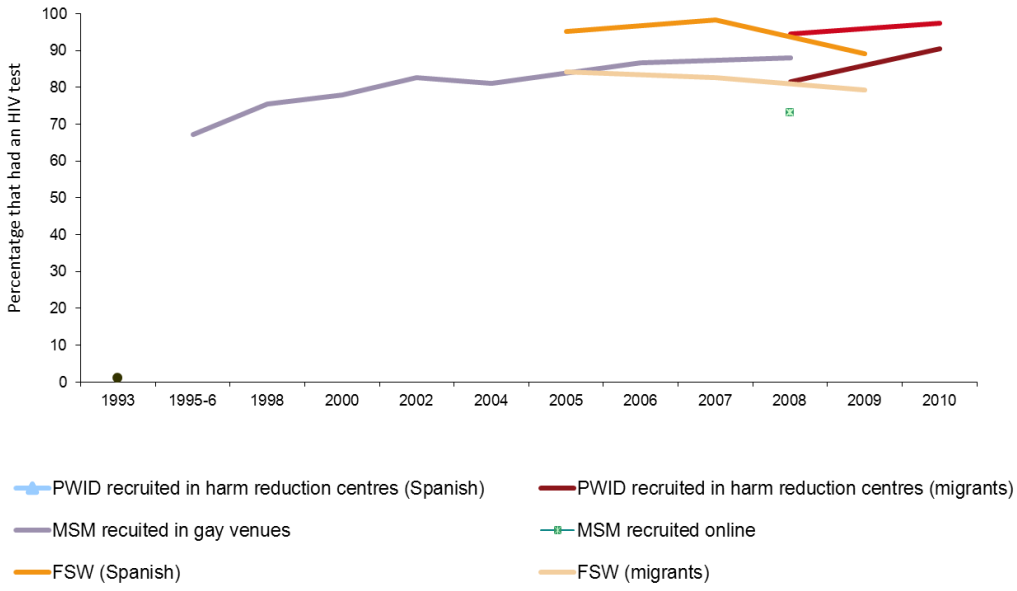


Figure 42. Coverage of HIV testing in groups with high-risk behaviours



Source: REDAN, SIALON, HIVHOM, EMIS, HIVITS-TS
(*) 2008 data from the SIALON project

Finally, of the 400 FSW recruited in Catalonia in 2009 (project HIVITS-TS), 80.4% had had an HIV test at least once. A lower proportion of migrant women than local women had previously had an HIV test (79.3% and 89.1% respectively) (**figure 42**). In 2009, the percentage of FSW that had had an HIV test in the previous 12 months was 58.5%.

4.4 Acceptability and feasibility of rapid HIV testing in primary care

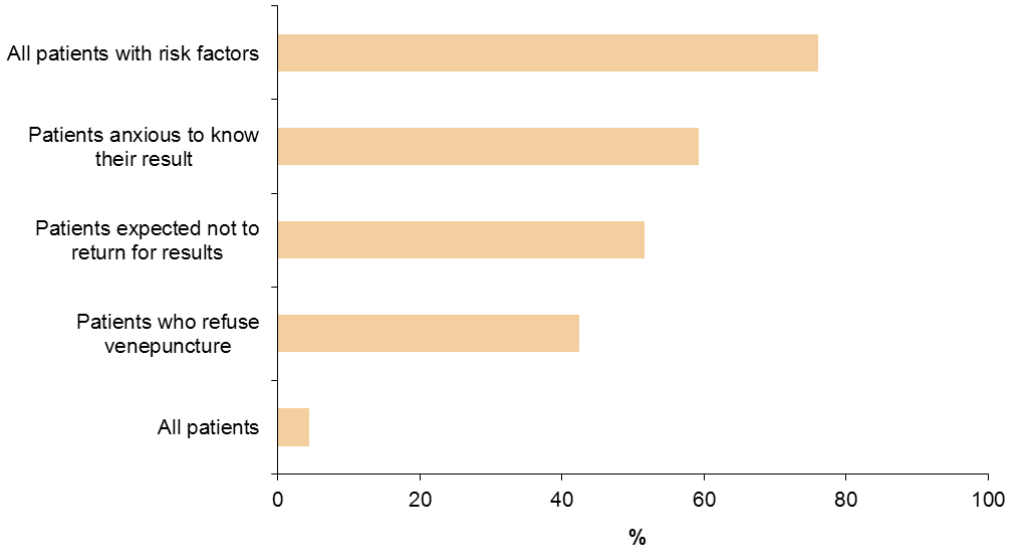
Rapid HIV testing would be well accepted, according to a national survey of 1,308 primary care physicians.

According to this survey, 70.4% of family physicians surveyed knew of the existence of rapid HIV tests, 13% knew how they functioned and 3.4% had used them on at least one occasion. The majority of the participants (79.8%) would be willing to offer rapid HIV testing in their practices and 74.7% would trust the results obtained.

The main barriers to the implementation of rapid HIV tests identified in the survey were lack of time and lack of training, both for the test itself (44.3% and 56.4% respectively), and the pre and post test counselling (49.2% and 34.5% respectively).

Only 4.4% of family physicians would offer the rapid HIV test to all patients attending the clinic and 76.1% would test only to patients considered at risk of becoming infected. Other groups identified for HIV testing are shown in **figure 43**.

Figure 43. Preferred criteria for HIV testing expressed by primary care physicians



Source: Survey of knowledge, attitudes and practices in HIV and other STI as well as acceptability of rapid HIV testing in primary care in Spain.

Nearly half of participants (44.7%) considered that rapid HIV tests using oral fluid or fingerpick blood would both would be equally acceptable and viable in their practices, whereas 23.8% expressed a preference for test using oral fluid rather than blood.

Nearly all respondents (91.9%) felt that the time spent on counselling should be less than 30 minutes, and of these, 53.3% felt that 15 minutes would suffice. A third (33.9%) of family physicians believed they did not have a space suitable for counselling.

Half of the family physicians surveyed (51.2%) believed that doctors, nurses and midwives would be able to perform rapid HIV tests. Thirty eight percent (38.2%) believed that rapid testing should only be done by nurses or midwives and only 10.6% considered that it should be done only by the family doctor.

The majority of respondents (71.5%) considered that family doctors, nurses and midwives could all provide counselling, 20.8% believed that counselling should be done exclusively by the doctor, while 7.7% considered that only nurses or midwives should offer counselling.

A pilot test conducted in a primary care physician group demonstrated the feasibility of rapid HIV testing as part of a primary care consultation.

This pilot test was carried out by 74 health professionals in 10 primary care centres, 5 sexual and reproductive health centres (ASSIR) and 2 international health units. A total of 1,450 tests were distributed to all the participating professionals, who offered tests to 672 patients with risk criteria, 7 of whom rejected testing (1.04%). In total there were 665 rapid tests performed and 3 positive results detected (0.45%).

After the pilot test, an online survey was distributed to all the participating professionals to assess their experience and opinions on the use of rapid tests.

In this survey, 100% of the participants found the interpretation of the results of the test easy or very easy, and 86.1% fully trusted the results of the test. The main barriers identified to providing rapid tests in the consultation were: cultural and language barriers with the patient, a lack of time for testing and counselling (see **table 3**). Counselling lasted less than 20 minutes in 100% of cases, and less than 15 minutes in 69.4% of cases. Thirty eight percent (38.2%) considered that testing should be performed by the doctor, rising to 44% for pre-test counselling and 61.9% for counselling after a positive test (see **figure 43**). A majority (86.1%) of participants considered that this would be a useful tool for primary care.

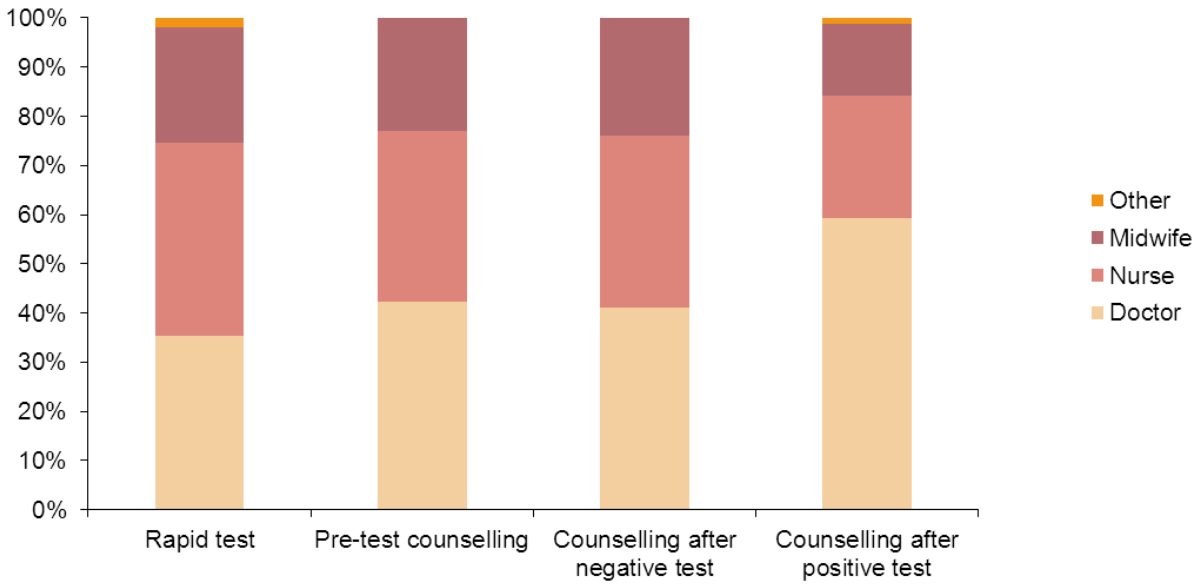
Table 3. Barriers identified by primary care professionals to providing rapid HIV tests

Barriers Identified	N	%
Language barriers	17	50
Insufficient time for counselling	14	41.2
Cultural barriers	13	38.2
Insufficient time for testing	13	38.2
The patient is not ready for a positive test	7	20.6
The patient is not ready for testing	7	20.6
No barriers identified	6	17.6
Insufficient time to give out a positive result	5	14.7
Patient unwilling to be tested	3	8.8
Fear of the patietns reaction to a positive test	2	5.9
Concerned about patient confidentiality	1	2.9

** Question not mutually exclusive*

Source: Rapid HIV test viability study in primary care physicians and professionals working in sexual and reproductive health centres (ASSIR).

Figure 44. Health professionals who should perform different aspects of rapid HIV testing and counselling within primary care



Source: Rapid HIV test viability study in primary care physicians and professionals working in sexual and reproductive health centres (ASSIR).

5. Chemoprophylaxis, treatment and impact of HIV

Key points

- Between 1998 and 2011, the pattern of initial cART regimen has changed. Since 2003, first-line regimens based on non-nucleoside reverse transcriptase inhibitors (NNRTI) and boosted protease inhibitors (bPI) have predominated, with integrase inhibitors (II) appearing from 2008.

- According to estimates based on data from the PISCIS Cohort, the number of patients on cART in Catalonia would increase approximately by 300 people per year if all patients with a CD4 count of between 350 and 500 were treated. This is equivalent to a total annual cost of €2,300,000.

- The systematic monitoring of subtypes of HIV and transmitted antiretroviral drug resistance is key to developing guidelines on the use of cART. The prevalence of resistance in patients with recent infection in Catalonia (11%) is similar to that observed in other regions of Spain and Europe.

- Between 2000 and 2009, the mother-to-child transmission rate has not changed. During the 2010 and 2011, no children born to HIV positive mothers were infected. Despite this sustained decline in recent years, it is important to continue monitoring the implementation of the recommendations for the prevention of mother-to-child transmission of HIV in Catalonia.

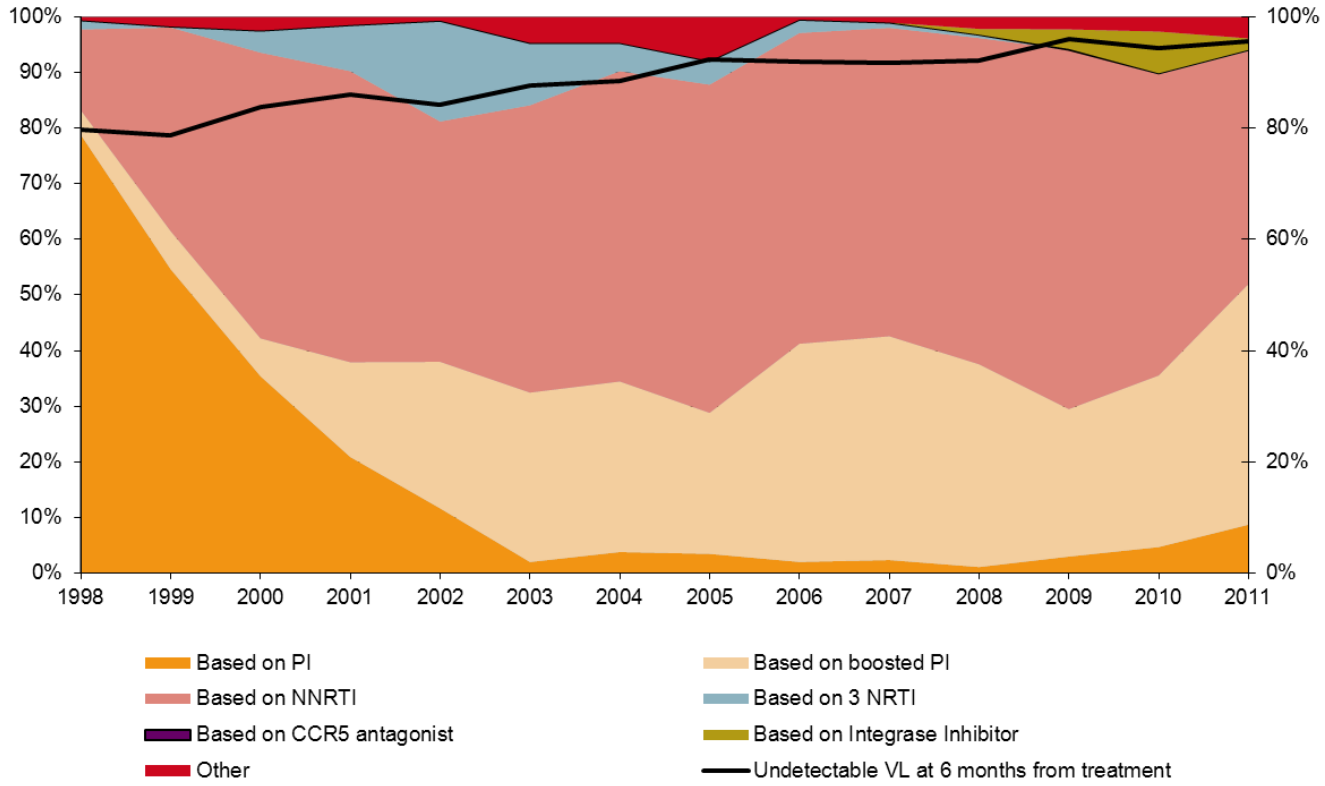
- Between 2009 and 2010, a total of 586 cases of accidental non-occupational HIV exposures were reported; none of whom were subsequently infected with HIV. Post exposure prophylaxis (PEP) should only be used in exceptional circumstances and is not a substitute for the primary prevention of HIV, at either individual or community level.

5.1 Treatment of HIV infection

In 2010, over 19,000 people were treated with ART in Catalonia at a total cost of over €150 million[16].

Monitoring of HIV treatment regimens in Catalonia is achieved partly through the PISCIS Cohort. Between January 1998 and December 2011, a total of 7,713 patients initiated ART in the PISCIS hospitals. Nearly all (97%) were started on combination ART (cART). Of the naive patients who initiated treatment, 72.7% did so with a baseline CD4 count below 350. The initial regimen was based on NNRTI in 49.8% of patients, followed by boosted PI protease inhibitors in 26.7%, the remainder mostly being based on NRTI. **Figure 45** shows the distribution of initial ART regimen by year in the PISCIS Cohort. Of patients who began ART in 2011, 95.7% had an undetectable VL (<500 copies/ml) 6 months after starting treatment. This proportion increased over time.

Figure 45. Distribution of initial ART regimen and percentage with an undetectable viral load at 6 months. PISCIS Cohort 1998 – 2011



[16] Data from CatSalut

5.2 Antiretroviral resistance

The prevalence of drug resistance in patients with recent HIV infection is a useful indicator of current transmission of these resistance mutations, highlighting the importance of population surveillance of resistance mutations in patients with recent infection is an essential part of ARV resistance surveillance.

In Catalonia, between 2003 and 2005 a study of the prevalence of transmitted drug resistance in 182 samples of recently infected individuals found that 20 cases had mutations associated with resistance (11.0%). The characteristics of individuals with recent infection, naive to ART and included in the PISCIS cohort, are described in **table 4**. The prevalence of transmitted resistance was higher among immigrants than locals (22.5% vs. 7.8%, p = 0.019) and in patients with non-B subtypes (22.9% vs. 8.2%, p = 0.030). Ten individuals (4.9%) showed resistance to NRTI, 6 (3.3%) to NNRTI, 2 (1.1%) to PI, and only two individuals (1.1%) had mutations associated with resistance to more than drug class. The most prevalent mutations were found in the reverse transcriptase gene: A62V (2.7%), K103N (2.7%) and M41L (1.6%) (**figure 46**).

Figure 46. Number of resistance mutations, by class of antiretroviral drug

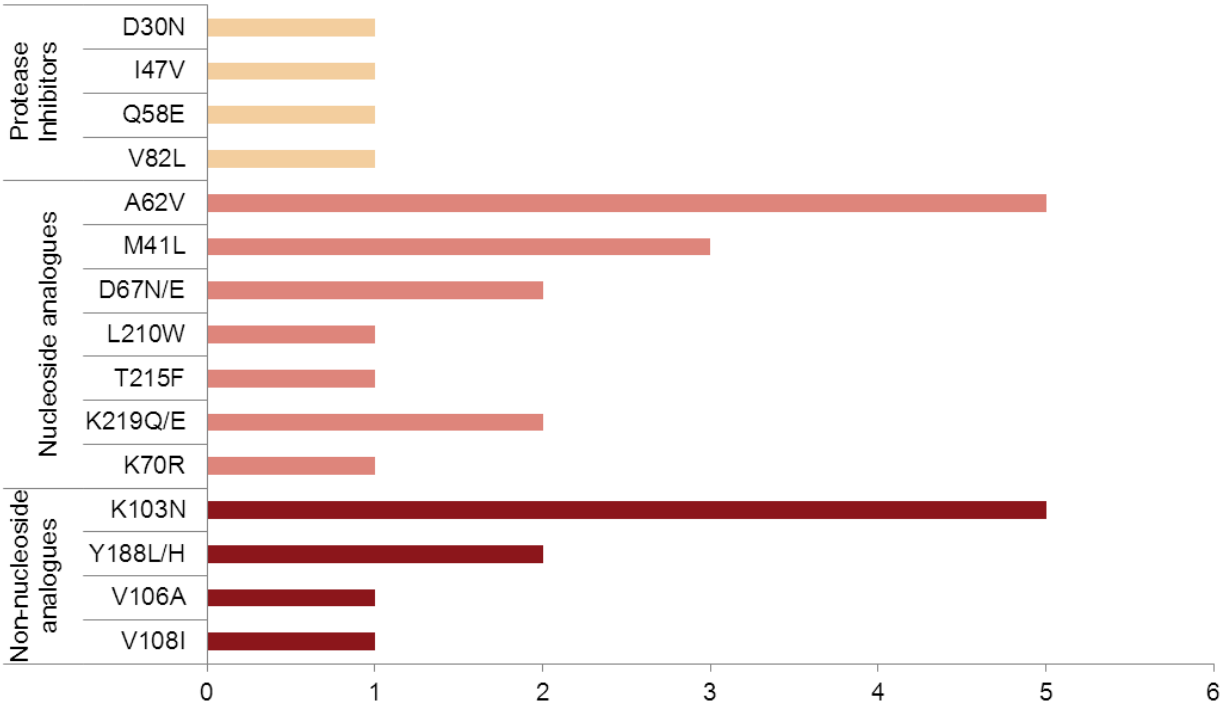


Table 4. Epidemiological characteristics of patients with resistance mutations

	Total	Resistent	P
	182	20 (11.0) 95% CI: 6.8–16.5	
Sex*			
Males	147	18 (12.2)	0.374
Females	35	2 (5.7)	
Age (years)	33.3 [27.2–37.9]	32.8 [28.0–41.1]	0.591
<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)	
PWID	24	5 (20.8)	
Other/Unknown	29	0 (0.0)	
Origin * (N=168) ‡			
Spanish	128	10 (7.8)	0.019
Migrants	40	9 (22.5)	
HIV-1 Subtype*			
B	147	12 (8.2)	0.03
Non-B	35	8 (22.9)	
Geographical area*			
Barcelona and metropolitan are	165	16 (9.7)	0.098
Rest of Catalonia	17	4 (23.5)	

* N (%). / ‡ P value calculated from 168 patients with available information. / $ Median and IQR.
Barcelona and Metropolitan area (L'Hospitalet de Llobregat, Badalona, Sabadell, Mataró, Cornellà and Granollers.
Rest of Catalonia: Lleida, Tortosa, Reus, Vic and Palamós.

The prevalence of transmitted drug resistance is similar to the European average of 11.4% found in the EuroSIDA study (1996-2004), but higher than that found in the SPREAD study (8.4%, 2002-2005), the United Kingdom (8.9%, 2005) or the CoRIS Cohort in Spain (8.5%, 2004-2008).

5.3 Mother-to-child transmission

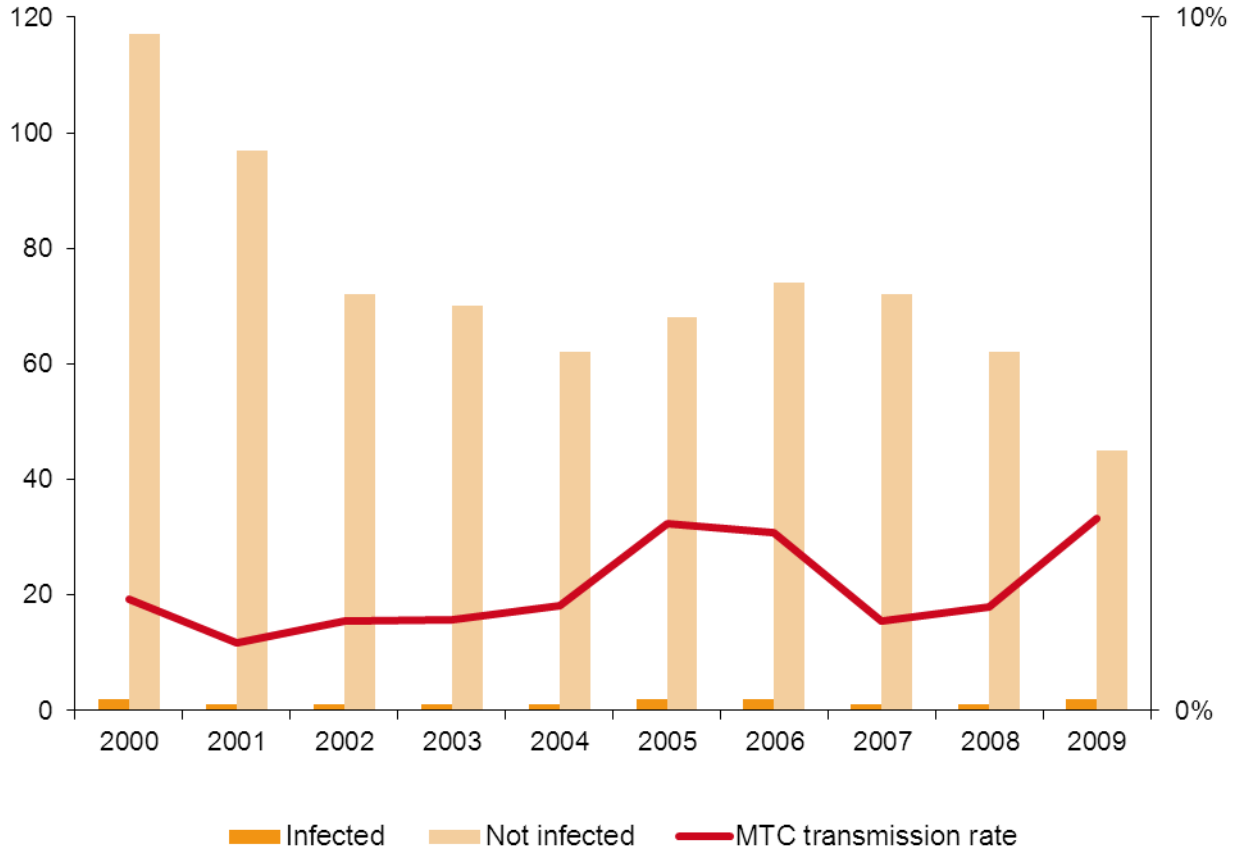
NENEXP is a follow-up cohort of pregnant HIV + women and their children. Data is available for ten hospitals in Catalonia who participated in the study until 2009.

The mother-to-child transmission rate for the period 2000-2009 has remained stable (**Figure 47**). A total of 14 infected children were born to 683 infected mothers. Eighteen infected mothers were diagnosed at the time of delivery or later and were therefore unable to benefit from prenatal measures to prevent transmission of HIV.

ART was administered during pregnancy to 597 of 683 pregnant women (87.4%), 85% of whom had combination ART.

New recommendations for the prevention of mother-to-child prevention of HIV should include measures to monitor adherence to guidelines[17].

Figure 47. Mother–to-child transmission rate in Catalonia, NENEXP 2000-2009



5.4 Non-occupational post exposure prophylaxis

In 2009 and 2010 a total of 586 non-occupational accidental exposures to HIV were notified to the surveillance system monitoring non-occupational exposure to HIV (NONOPEP). Of these, 64% were men, 31.1% were women and 73.3% were aged between 20 and 39. Most (511, 87.2%) were sexual exposures, 60 (10.2%) were parenteral exposures and 15 (2.6%) had other exposures. In 439 cases (74.9%) PEP was prescribed. The index case was identified in 182 cases (31.1%). Of these, 78.6% were HIV negative. Under a third (180, 31.7%) of those prescribed PEP experienced any adverse effect (**table 5**). Nausea/vomiting (31.2%) and malaise (20.5%) were the most common side effects. During this period, no sero-conversion to HIV was identified.

[17] Suy A, Soler-Palacín P, Mur A, Paya A, Fortuny C, Marimon E, et al. Recomanacions per a la prevenció de la transmissió vertical del VIH. Abril 2012. Barcelona: Agència de Salut Pública de Catalunya; 2012.

Table 5. Side effects of post exposure prophylaxis for HIV. Catalonia 2009 - 2010

Side-effects	N	%
No	388	31.7
Yes	180	68.3
Nausea and/or vomiting	90	31.2
General malaise and fatigue	32	20.5
Diarrhoea	62	19.7
Other*	35	16.1
Abdominal pain	18	5.4
Headache	19	3.6
Other gastrointestianl symptoms	17	3.6

*Anorexia, fever, renal colic and abnormal test results.

Sexually transmitted infections

1. Infectious and congenital syphilis

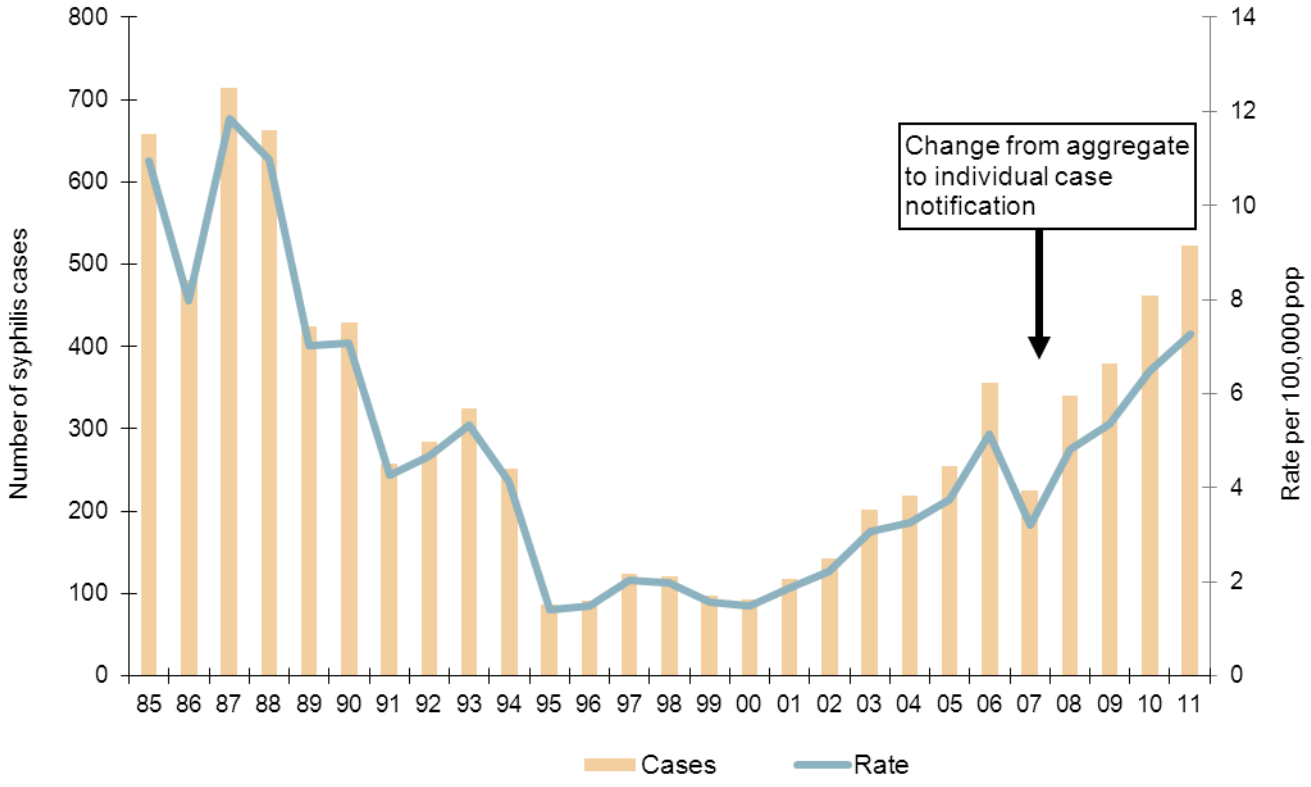
Key points

- In 2011, notifications of syphilis in Catalonia were 13% higher than in 2010. Almost 60% of the cases were in MSM, of whom more than one third were also infected with HIV, highlighting the importance of annual screening for STIs, including HIV, in MSM.
- No cases of congenital syphilis were notified in 2011, but in view of the increase in the notification of syphilis cases, screening for this infection in pregnant women should not be relaxed.

1.1 New diagnoses

In 2011, 523 cases of syphilis were notified to the Catalan Notifiable Disease Register (MDO), a rate of 7.3 per 100,000 population. This is higher than the mean notification rate in Europe of 4.5/100,000[1] (**Figure 1**).

Figure 1. Number of cases of Syphilis.
Catalan Notifiable Disease Register, 1985 - 2011



Primary or secondary syphilis accounted for 58.6% of reported cases, 30.9% were latent, early or indeterminate, and there were no clinical data for 10.5% of cases.

Most cases notified were men (87.4%) with only 12.6% of notifications being women, a ratio of 7:1. Population notification rates were 12.9 and 1.8 per 100,000 in men and women, respectively. The average age of cases was 35; 36.1% were aged 25 - 34 and 33.7% were aged between 35 and 44 (**figure 2**).

Migrants made up nearly half of cases (229, 43.8%), originating mainly (57.2%) from Latin America and the Caribbean.

[1] European Centre for Disease Prevention and Control. Annual Epidemiological Report 2011. Reporting on 2009 surveillance data and 2010 epidemic intelligence data. Stockholm: ECDC; 2011.

The commonest route of transmission was MSM (59.3% of) followed by heterosexual men and women (10.9% and 9.4%, respectively). Likely transmission route was unidentified in 18.7% of cases (**figure 3**).

Figure 2. Age and sex distribution of syphilis cases.
Catalan Notifiable Disease Register, 2011

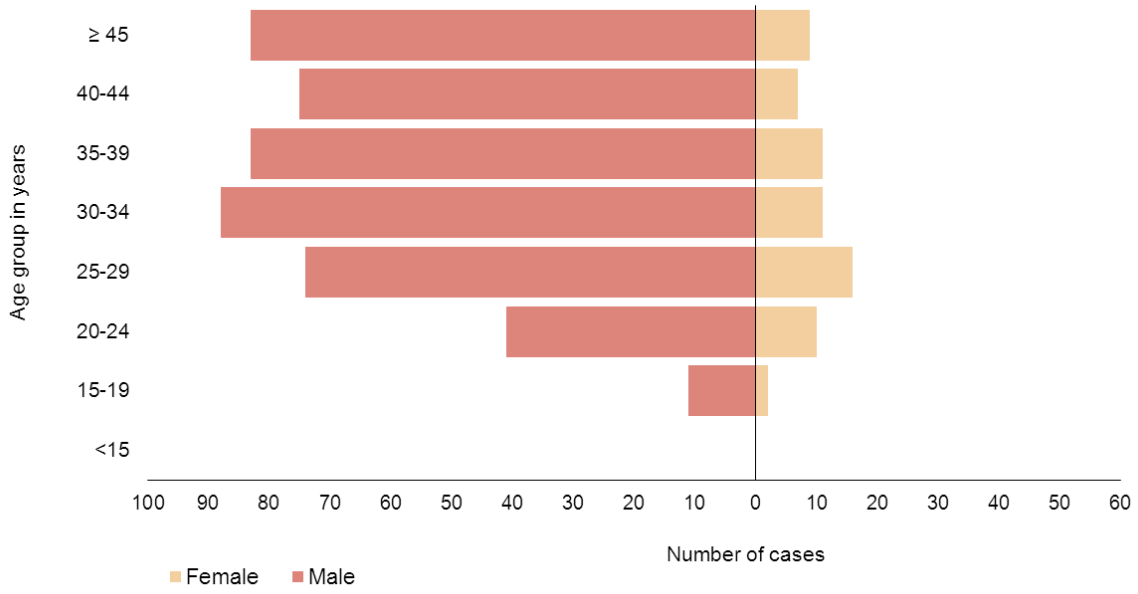
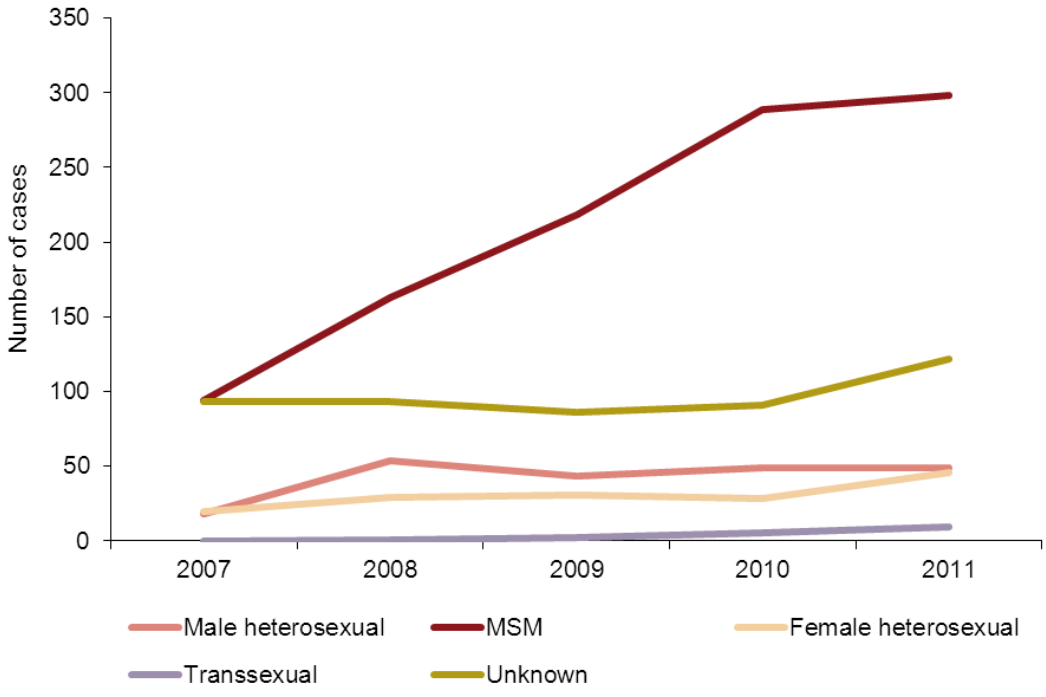


Figure 3. Number of syphilis cases notified, by sexual orientation.
Catalan Notifiable Disease Register, 2007 - 2011



A significant proportion of cases of syphilis were co-infected with HIV at the time of diagnosis. In 2011, 25.6% of all syphilis cases were HIV-positive, but 37.4% of MSM diagnosed with syphilis were HIV positive.

Excluding commercial sex workers, people diagnosed with syphilis had an average of 19 sexual partners in the previous 12 months. Nearly half (48%) had had a new sexual partner in the last 3 months and 44.2% had not used condoms at last sexual intercourse.

Contact tracing was initiated in 58.3% of cases, with an average of 2.5 traceable sexual contacts per case.

Trends for the period 1992-2011

The syphilis incidence rate declined steadily, reaching 1.4 per 100,000 population in 1995. After a period of stability, the rate between 2003 and 2011 rose by 136%, rising by 12.6% in the last year, 2010 – 2011 **(figure 1**).

Congenital syphilis

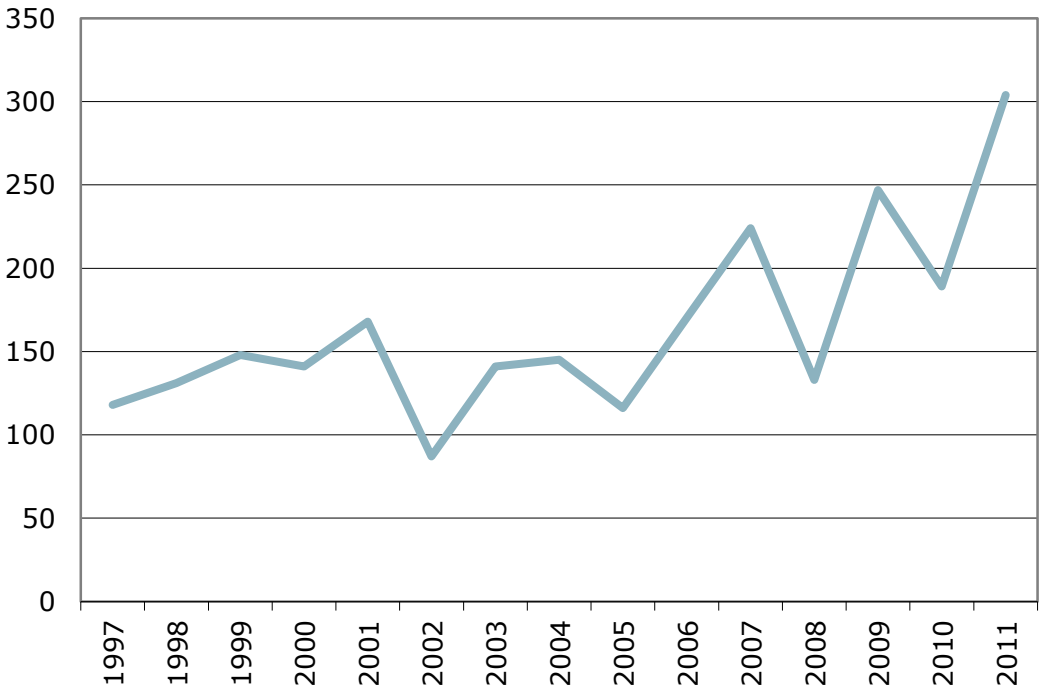
There were no cases of congenital syphilis notified in Catalonia between 2008 and 2011. During 2006-2011, there were five suspected cases, one in 2006 and four in 2007. Of these, only one case was confirmed.

1.2 Laboratory notification

In 2011, 304 positive *Treponema pallidum* results were notified to the Catalan Laboratory Notification System (SNMC) a rise of 61% over 2010 (**figure 4**).

Figure 4. Notifications of *Treponema pallidum.*

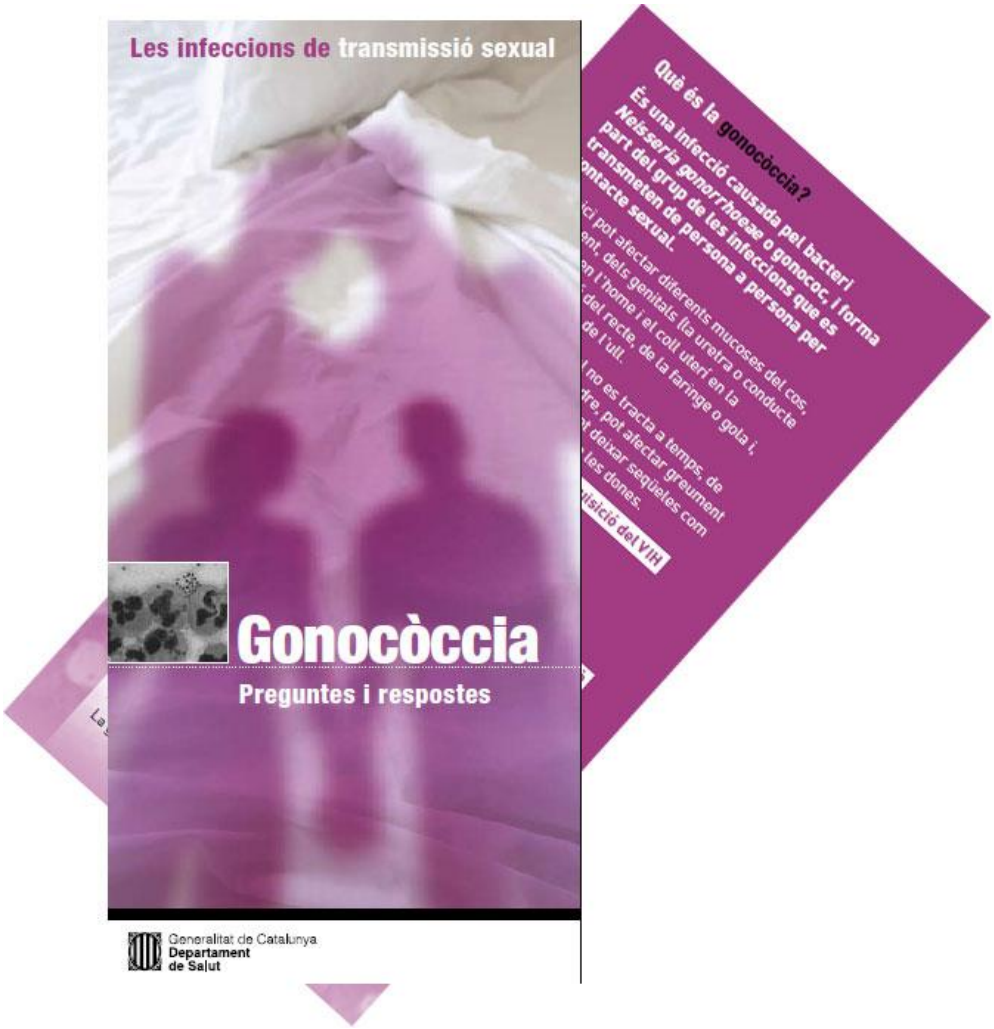
Catalan Laboratory Notification System (SNMC), 1996-2011



2. Gonococcus

Key points

- During 2011, notifications of gonorrhoea in Catalonia have decreased by 5.4% compared to 2010.
- Most cases were in men aged between 25 and 35, a vulnerable group who should be targeted for preventive services.
- In the light of resistance patterns reported in Europe and the emergence of two cases of ceftriaxone resistant gonococci in Catalonia in 2011, a surveillance system for resistance is essential to prevent the spread of multi-resistant strains of *Neisseria gonorrhoeae*.



2.1 New diagnoses

In 2011, 510 cases of gonorrhoea were notified to the Catalan Notifiable Disease Register, a population rate of 7.1 per 100,000 population. This rate is lower than the European Union mean of 9.7 per 100,000 population[2] (**figure 5**).

Figure 5. Cases and rates of gonorrhoea notified.
Catalan Register of Notifiable Disease, 1992-2011

Most cases notified were men (81.8%) with only 18.2% of notifications being women, a ratio of 4:1. Population notification rates were 11.8 and 2.6 per 100,000 in men and women, respectively. The average age of cases was 31; 42.1% were aged 25 - 34 and 24.3% were aged between 35 and 44 (**figure 6**).

Migrants made up 33.1% of cases, nearly half (49.7% of 169) coming from Latin America and the Caribbean.

The commonest route of transmission was MSM (28.0%) followed by heterosexual men and women (23.3% and 14.5%, respectively). In 2011 the likely transmission route was unidentified in 34.1% of cases, coinciding with the automation of notification in Catalonia (**figure 7**).

[2] European Centre for Disease Prevention and Control. Annual epidemiological report 2011. Reporting on 2009 surveillance data and 2010 epidemic intelligence data. Stockholm: ECDC; 2011.

Figure 6. Age and sex distribution of cases of gonorrhoea notified. Catalan Register of Notifiable Disease, 2011

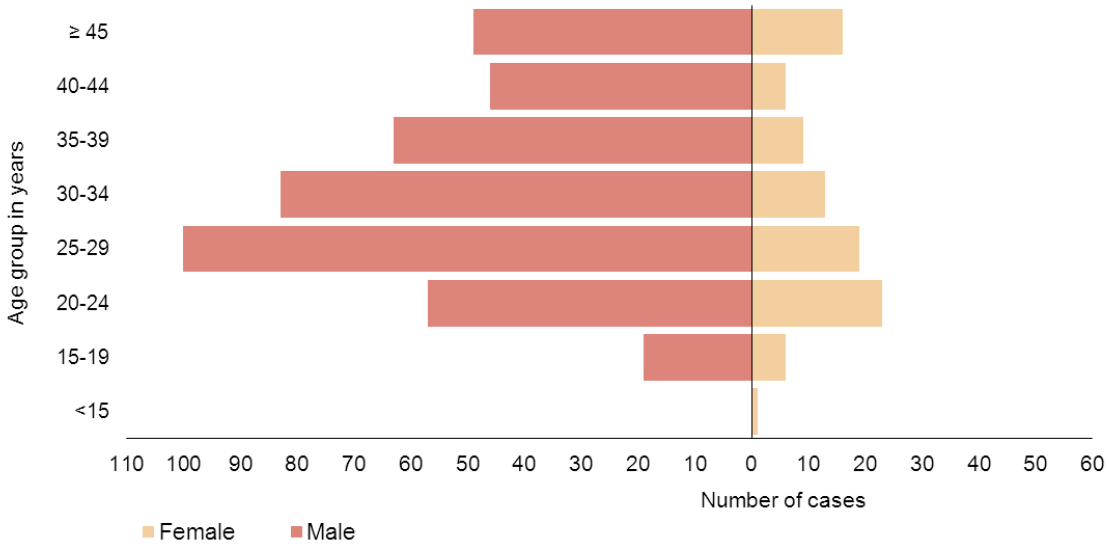
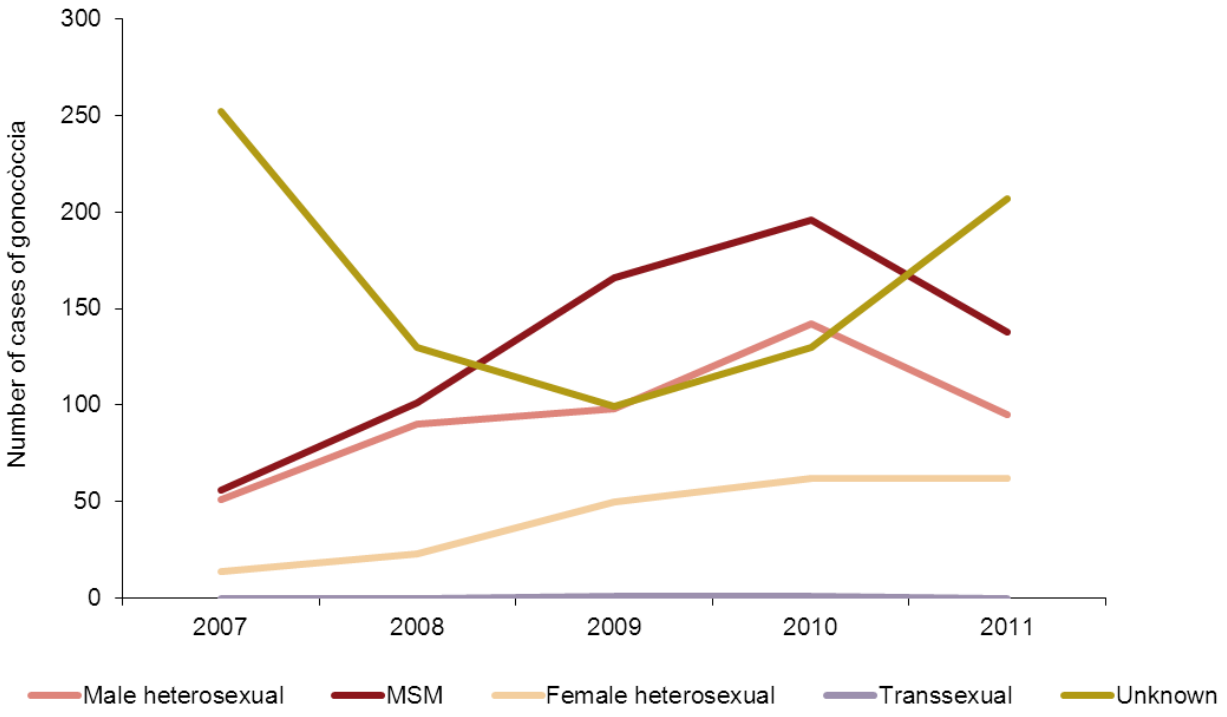


Figure 7. Number of cases of gonorrhoea notified, by sexual orientation. Catalan Register of Notifiable Disease,. 2007-2011



The proportion of notified cases of gonorrhoea co-infected with HIV was 10.0%. In MSM, the proportion co-infected with HIV was 32.2%. It was not possible to ascertain HIV co-infection status in 49.8%.

Excluding commercial sex workers, people diagnosed with gonorrhoea reported an average of 12 sexual partners in the previous 12 months, 45.1% reported having had a new sexual partner in the last 3 months and 44.5% had not used condoms at last sexual intercourse.

Contact tracing was initiated for 46,9% of cases and a mean of 1.7 sexual contacts were traced per case.

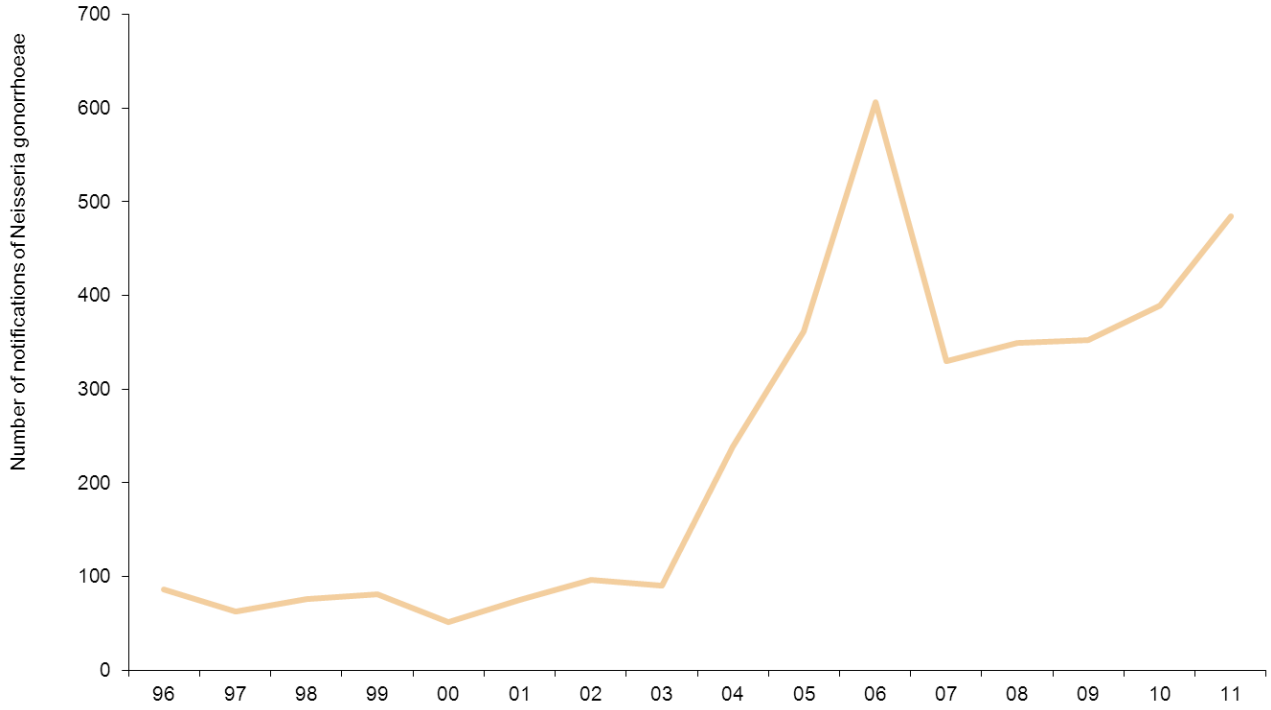
Trends for the period 1990-2011

The gonorrhoea notification rate declined steadily from 1990, reaching 3.2 per 100,000 population in 1999. Between 2000 and 2011 the notification rate rose by 101.6%, although it fell by 5.4% in the last year, 2010 – 2011 **(figure 5**).

2.2 Laboratory notification

In 2011 484 isolates of *Neisseria gonorrhoeae* were notified to the Catalan Laboratory Notification System (SNMC) a rise of 24% over 2010 (**figure 8**).

Figure 8. Notifications of *Neisseria gonorrhoeae* to the Catalan Laboratory Notification System (SNMC), 1996-2011

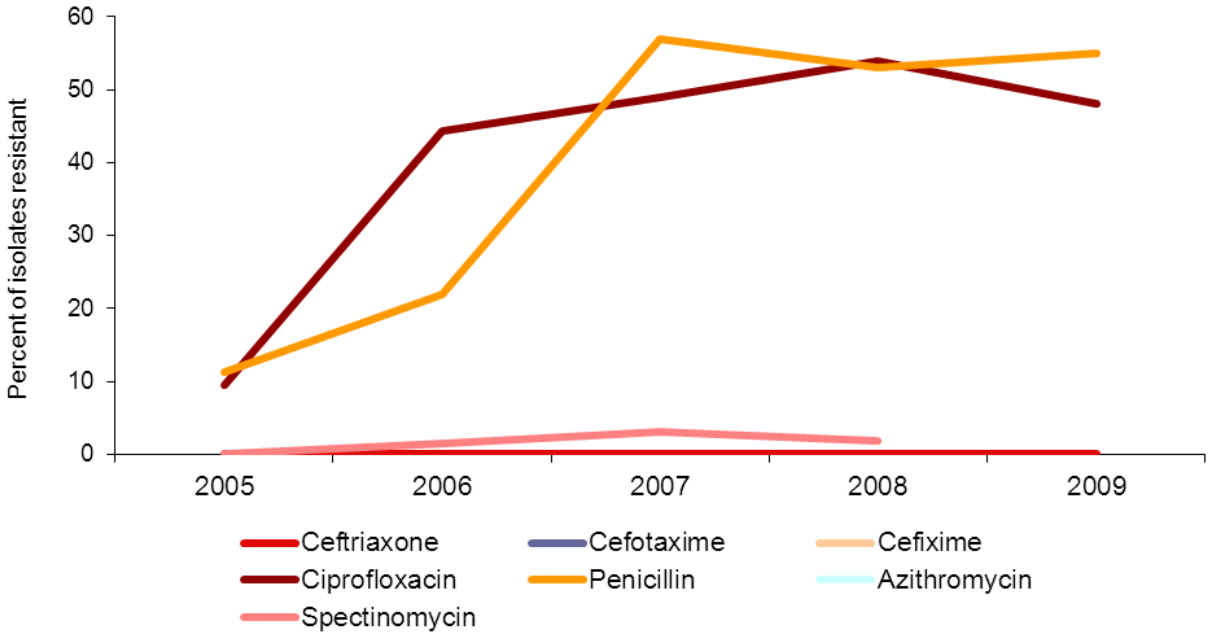


2.3 Antibiotic resistance in gonococci

The Catalan Laboratory Notification System (SNMC) gathers voluntarily declared information on the resistance of *Neisseria gonorrhoeae* isolates to the antibiotics penicillin, ciprofloxacin, ceftriaxone, cefixime, cefotaxime, spectinomycin, and azithromycin.

Resistance data are available to the CEEISCAT until 2009 and show a rise in resistance to ciprofloxacin and penicillin since 2006. Data on resistance to cefixime and cefotaxime is not available for 2005 – 2009, despite being on the list of antibiotics to be monitored for resistance by SNMC (**figure 9**).

Figure 9. Antibiotic resistance of *Neisseria gonorrhoeae* isolates notified voluntarily to the Catalan Laboratory Notification System (SNMC), 2005 - 2009



Source: Catalan Laboratory Notification System, Sistema de Notificació Microbiològica de Catalunya (SNMC)

In May 2011 the SNMC was notified of the isolation of a strain of *Neisseria gonorrhoeae* with a minimum inhibitory concentration for ceftriaxone of 1.5 mg/l[3]. The genotype of the strains of *Neisseria gonorrhoeae* were identical to that of an isolate newly identified in France, suggesting cross border spread within Europe and reinforcing the importance of microbiological and epidemiological surveillance of antibiotic resistance in gonococci[4] (**table 1**).

[3] Carnicer-Pont D, Smithson A, Fina-Homar E, Bastida MT; Gonococcus Antimicrobial Resistance Surveillance Working Group. First cases of Neisseria gonorrhoeae resistant to ceftriaxone in Catalonia, Spain, May 2011. Enferm Infecc Microbiol Clin. 2012 Apr;30(4):218-9.

[4] Camara J, Serra J, Ayats J, Bastida T, Carnicer-Pont D, Andreu A, et al. Molecular characterization of the firs two high-level ceftriaxone-resistant Neisseria gonorrhoeae isolates detected in Catalonia, Spain. J Antimicrob Chemother. 2012 Aug;67(8):1858-60.

Table 1. Antibiotic resistance monitoring in gonococci through the Catalan Laboratory Notification System (SNMC)

	2005		2006		2007		2008		2009	
	N	%	N	%	N	%	N	%	N	%
Ceftriaxone	74	0	89	0	143	0	164	0	335	0
Cefotaxime										
Cefixime										
Ciprofloxacin	277	9,4	144	44,4	133	49	164	54	335	48
Penicillin	377	11,2	96	21,9	62	57	138	53	335	55
Azithromycin										
Spectinomycin	40	0	68	1,5	64	3,1	104	1,9		

2.4 Prevalence

As part of the monitoring of STIs and associated risk behaviours, biennial cross-sectional surveys are held in vulnerable populations (Young people and FSW) to estimate the prevalence of *Neisseria gonorrhoeae*.

Prevalence of *Neisseria gonorrhoeae* in young attendees of sexual and reproductive health clinics (ASSIR) and clinics for young people.

In 2010, a total of 730 young people aged 16-35 years were tested during routine visits to ASSIR centres and centres for young people. The prevalence of gonococcus was 0.4% (3 positive cases), similar to that of neighbouring countries[5].

All cases were detected in women. Prevalence was higher (though not significantly) in women aged 26-35 compared to those aged 16-25 (0.5% vs. 0.3%, respectively) and in migrants compared to Spanish–born women (0.8% vs. 0.2%, respectively).

Prevalence of *Neisseria gonorrhoeae* among young people in prison

Among 359 16-25 year-olds who were tested in 2011 in the prisons that house the entirety of the youth prison population, a single 19 year old migrant male tested positive for *Neisseria gonorrhoeae.* The global prevalence was 0.3%, similar to that of the general youth population.

[5] Skidmore S, Copley S, Cordwell D, Donaldson D, Ritchie D, Spraggon M. Positive nucleic acid amplification tests for Neisseria gonorrhoeae in young people tested as part of the National Chlamydia Screening Programme. Int J STD AIDS. 2011 Jul;22(7):398-9.

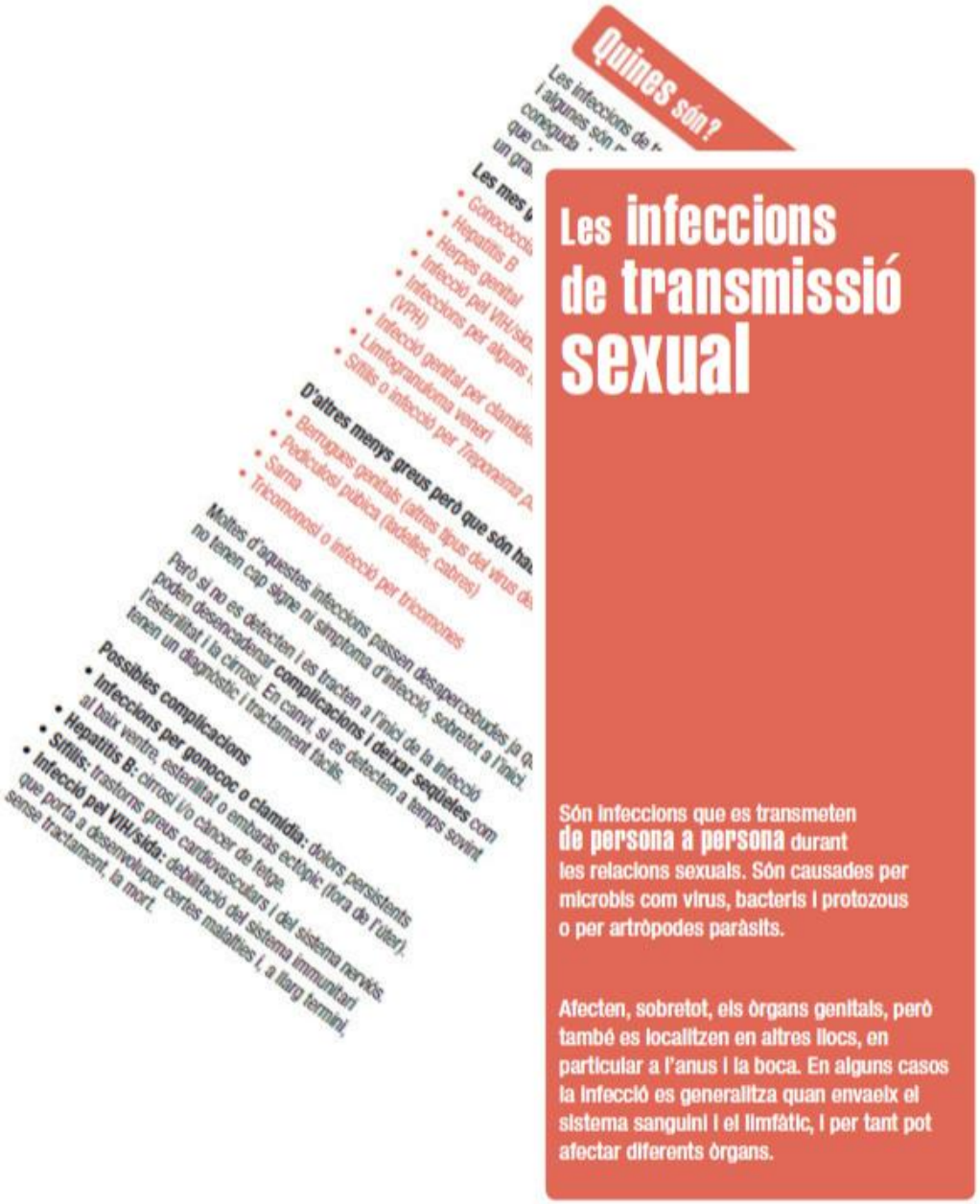
Prevalence of Neisseria gonorrhoeae in female sex workers

Of 400 FSW interviewed in 2009, 46 were Spanish (11.5%), 109 African (27.3%), 124 Latin American (31.0%) and the rest from Eastern Europe (30.3%). The overall prevalence of *Neisseria gonorrhoeae* was 0.3%. There were no differences by country of origin and the prevalence was similar to that observed in previous studies (0.5% and 1.0% in 2005 and 2007, respectively).

3. Infections due to *Chlamydia trachomatis* serovars L1-L3: *Lymphogranuloma venereum*

Key points

- In 2011, a new outbreak of Lymphogranuloma Venereum (LGV) was notified. There were 90 cases affecting MSM of whom 92% were co-infected with HIV. Health professionals should be made aware in order to ensure early diagnosis of any further cases.



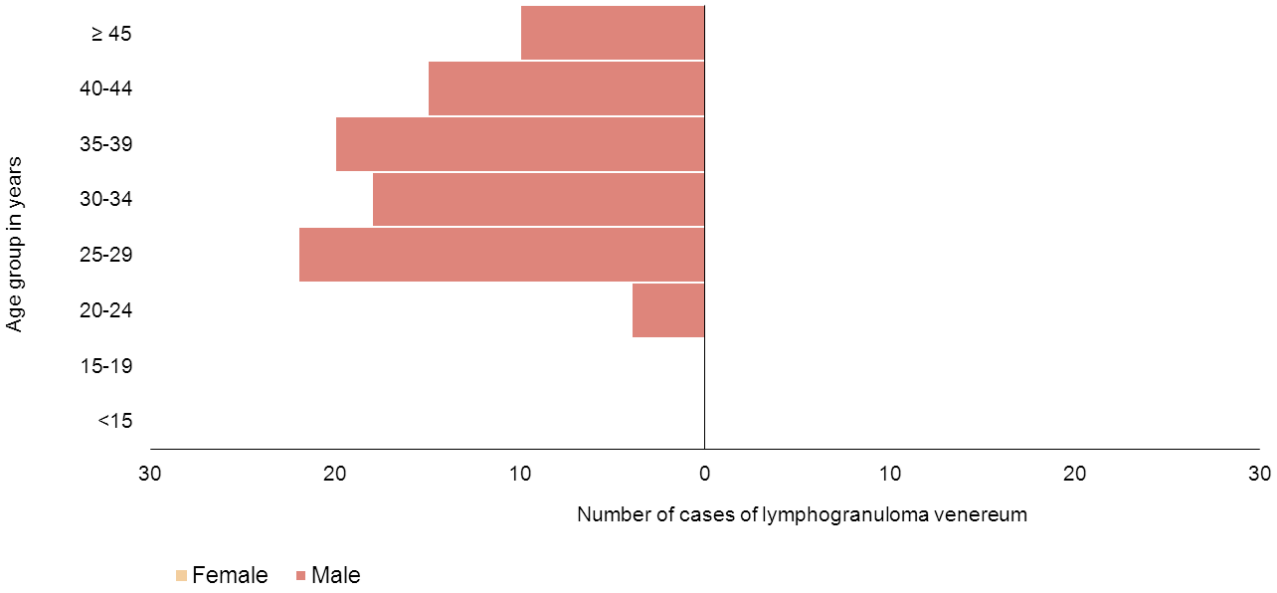
3.1 New diagnoses of LGV

In 2011, 90 cases of LGV were notified to the Catalan Register of Notifiable Diseases, a population rate of 1.3 per 100,000 population (**figure 10**).

Figure 10. Cases of LGV notified.
Catalan Register of Notifiable Disease, 2007-2011

All cases were male (2.5 per 100,000 males), the mean age was 35, 44.4% were aged 25-34 and 40% were aged 35 - 44 (**figure 11**).

Figure 11. Age and sex distribution of LGV cases notified.
Catalan Register of Notifiable Disease, 2011

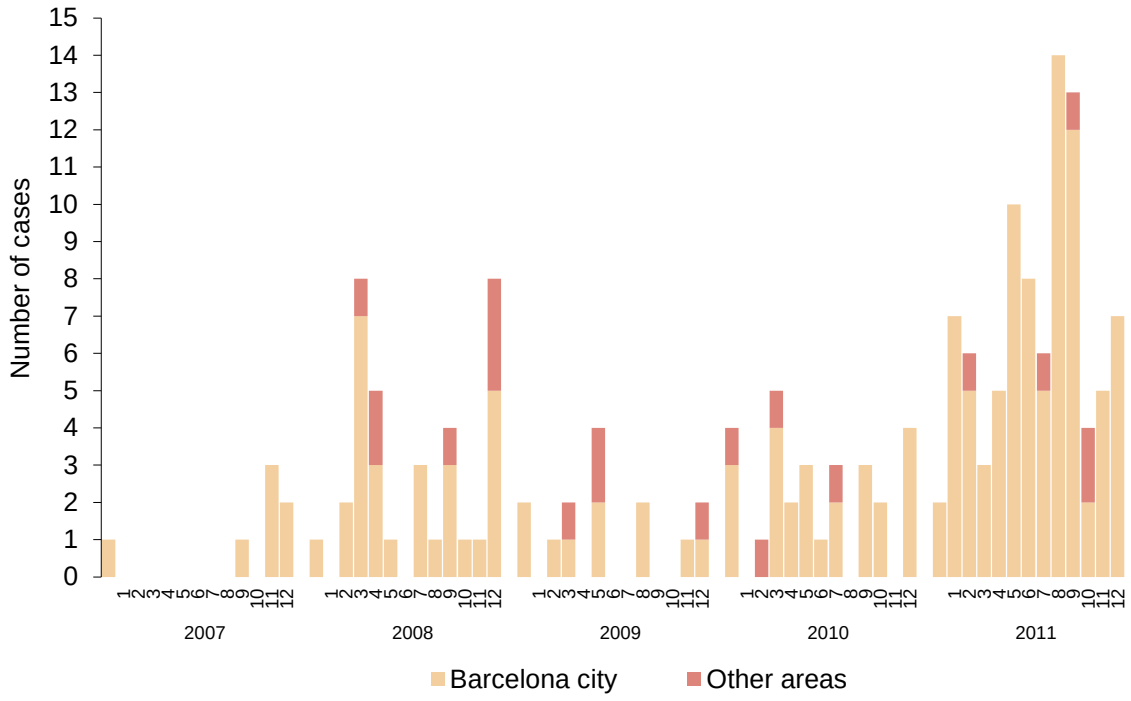


Migrants made up 43.3% of cases. Nearly half (39, 48.7%) of migrants came from Latin America and the Caribbean and 41% were from Eastern Europe.

Nearly all (96.7%) cases occurred in MSM and 92.2% were co-infected with HIV on diagnosis.

Excluding commercial sex workers, people diagnosed with LGV reported an average of 26 sexual partners in the previous 12 months, 64.4% reported having had a new sexual partner in the last 3 months and 60% had not used condoms at last sexual intercourse.

Figure 12. Number of cases of LGV notified by 4-week period.
Catalan Register of Notifiable Disease, 2007-2011



Contact tracing was initiated for 58.9% of cases and a mean of 3 sexual contacts were traced per case.

Trends for the period 2007-2011

Since the first case of LGV was confirmed in 2004 in Catalonia, this infection has gone from a rarely diagnosed illness to an emerging infection with two identified outbreaks, in 2008[6] (21) and in 2011[7] (65), mostly (94.4%) in residents of the city of Barcelona (**figure 12**).

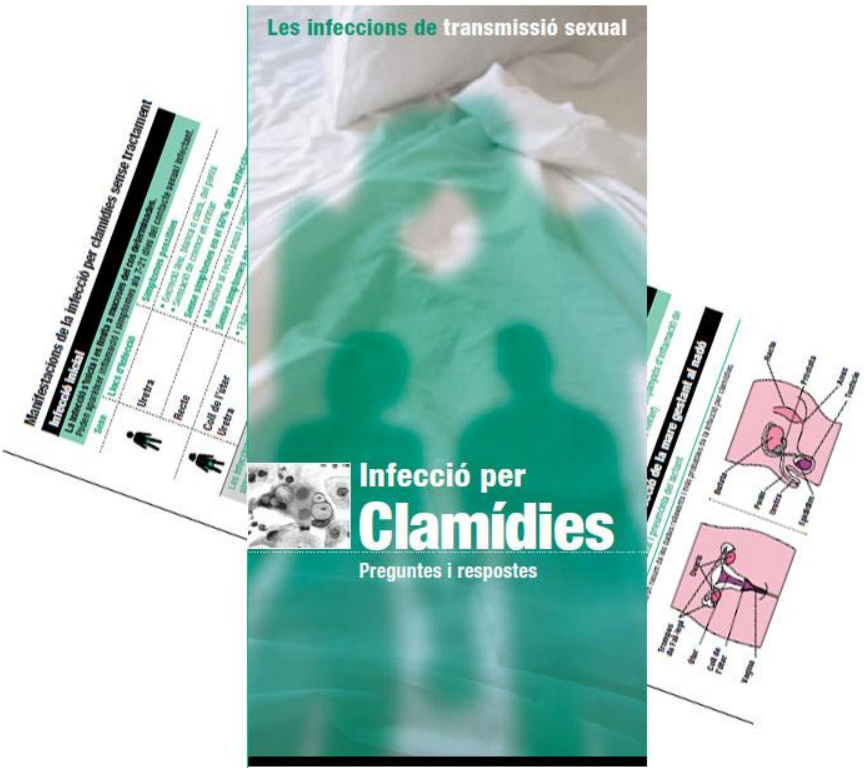
[6] Vall Mayans M, Caballero E, Garcia de Olalla P, Armengol P, Codina MG, Barberà MJ, et al. Outbreak of lymphogranuloma venereum among men who have sex with men in Barcelona 2007/08-an opportunity to debate sexual health at the EuroGames 2008. Euro Surveill. 2008 Jun 19;13(25). pii: 18908.

[7] Vargas-Leguas H, Garcia de Olalla P, Arando M, Armengol P, Barbera M, Vall M, et al. Lymphogranuloma venereum: a hidden emerging problem, Barcelona, 2011. Euro Surveill. 2012 Jan 12;17(2). pii: 20057.

4. Genital infection due to *Chlamydia trachomatis* serovars D-K

Key points

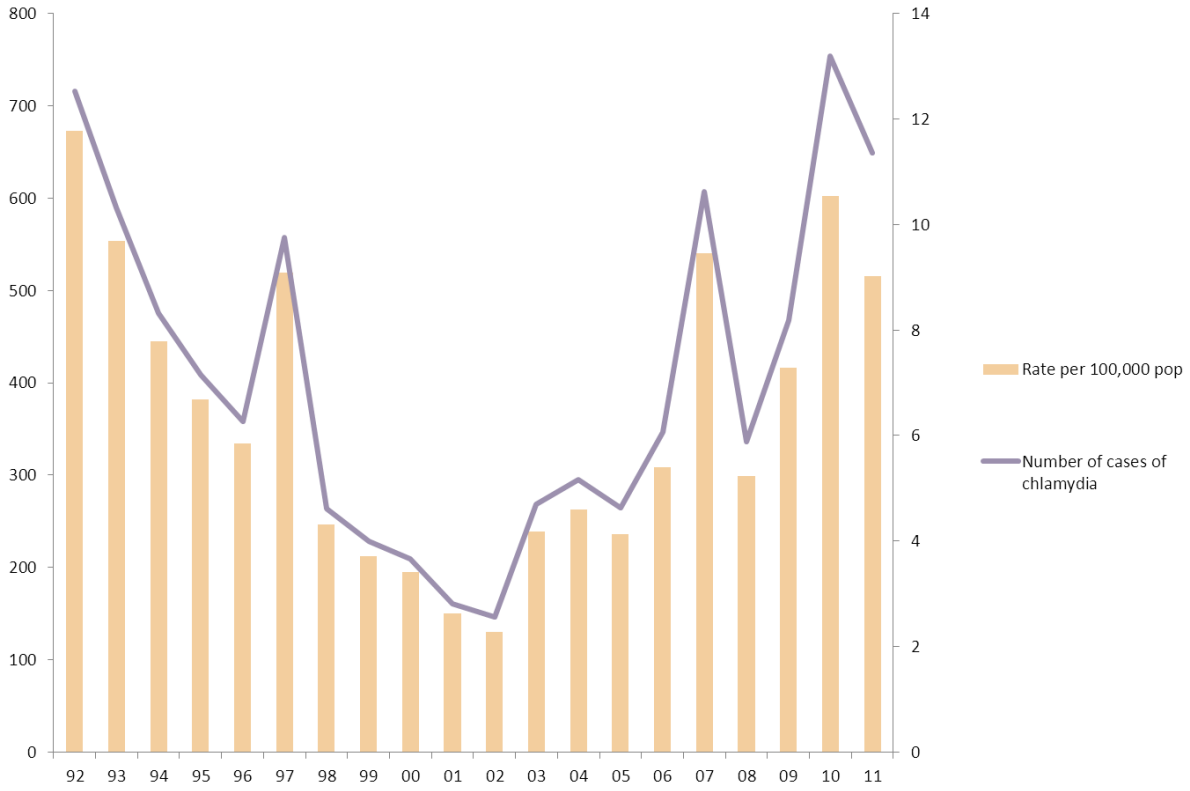
- In 2011 the notification rate of *Chlamydia trachomatis* in Catalonia was 9 per 100,000 population, well below the European average of 185 per 100,000, suggesting that detection rates may be low in Catalonia.
- *Chlamydia trachomatis* infection mainly affects heterosexual men and women under 30 years of age, although it is emerging in MSM.
- The prevalence of *Chlamydia trachomatis* in young people has increased in recent years and is highest in those aged under 25, as seen elsewhere in Europe. We should ensure the implementation of the screening recommendations for *Chlamydia trachomatis* in current *Guia de pràctica clínica sobre les infeccions de transmission sexual (*Clinical practice guidelines for sexually transmitted infections).
- Migrant young people have a significantly higher prevalence of *Chlamydia trachomatis* than the Spanish-born population, which should be taken into account in the design of preventive interventions in migrant communities.



4.1 New diagnoses

In 2011, 649 cases of *Chlamydia trachomatis* serovars D-K were notified to the Catalan Register of Notifiable Disease, a rate of 9 per 100,000 population. Compared with 2010, the rate of chlamydia has decreased by 7% (**figure 13**). This rate is very different from that reported by other countries of the European Union of 185 per 100,000 population[8].

Figure 13. Number of cases of genital *Chlamydia trachomatis* serovars D-K notified. Catalan Register of Notifiable Disease, 1992-2011

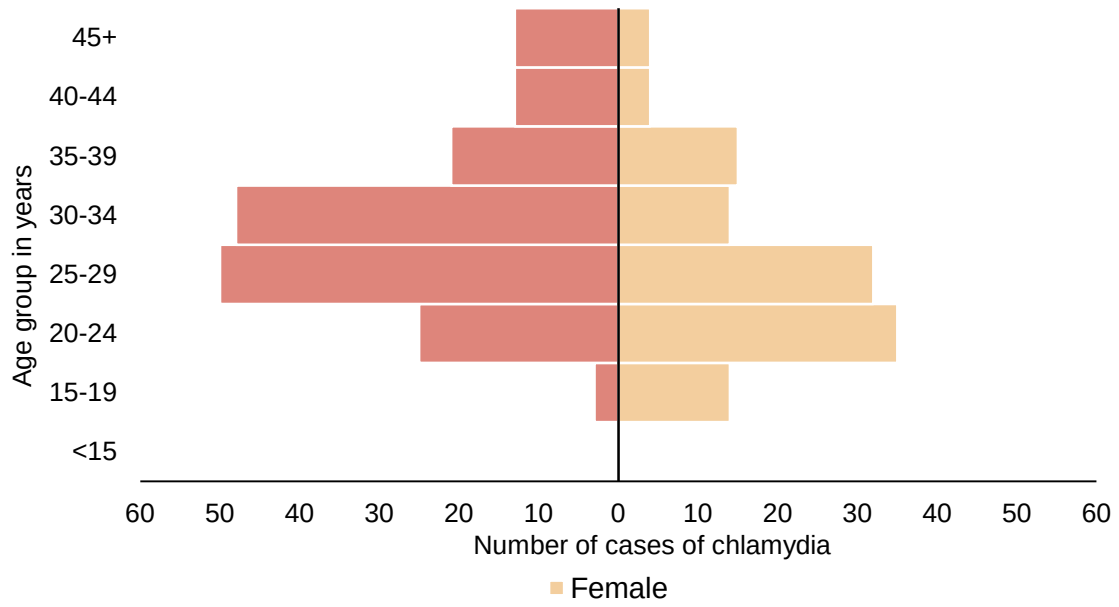


The Sexually Transmitted Infection Register of Catalonia (RITS) undertakes enhanced sentinel surveillance of genital infections by Chlamydia trachomatis serovars D-K. There were 282 new episodes notified during 2011, representing 43% of the total *Chlamydia* serovars notified to the Catalan Register of Notifiable Disease.

Of the 291 episodes of *Chlamydia trachomatis*, 60.6% were in males, a male-female ratio of 3:2. The average age was 30; in men it was 31 and in women, 27. Most men were aged 25-34 and most women were aged 20-29 (**figure 14**).

[8] European Centre for Disease Prevention and Control. Annual epidemiological report 2011. Reporting on 2009 surveillance data and 2010 epidemic intelligence data. Stockholm: ECDC; 2011.

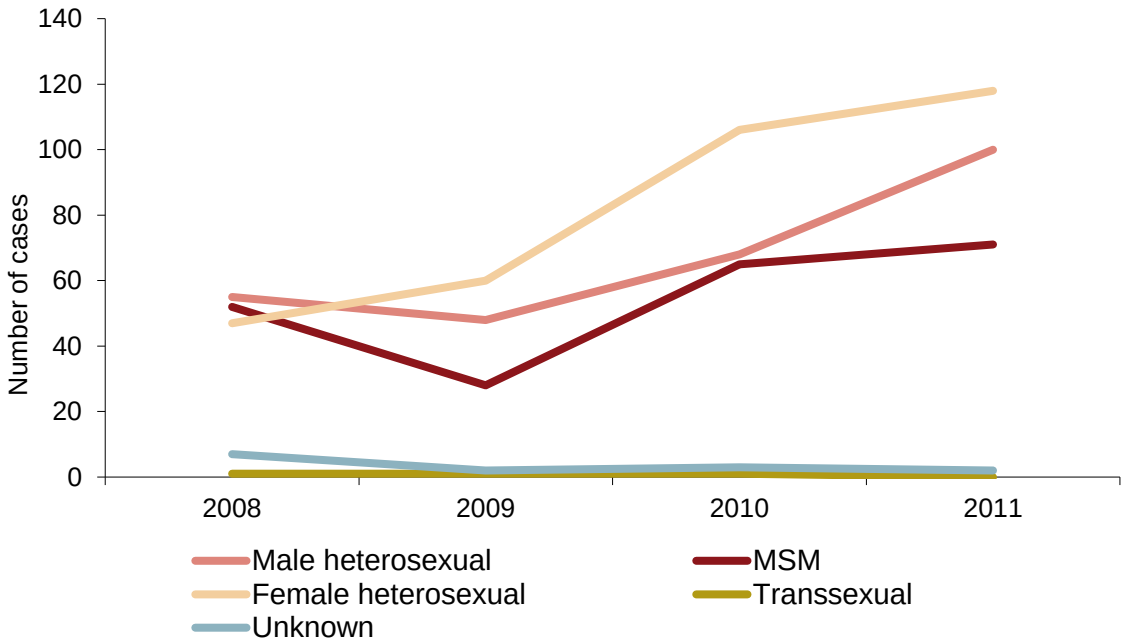
Figure 14. Age and sex distribution of *Chlamydia trachomatis* serovars D-K notified. RITS, 2011



Nearly half of cases were migrants (129, 45.7%), mainly from Latin America and the Caribbean (45%) and Western Europe (30.2%).

Most cases of *Chlamydia trachomatis* were in young heterosexual men or women (72.3%), but a quarter (25.5%) were in MSM over 25 years of age (**figure 15**).

Figure 15. Number of cases of *Chlamydia trachomatis* notified by sexual orientation. RITS, 2008-2011



Most reported cases are genital infections, but a minority have ano-rectal infection (9%), the latter mainly in MSM. Co-infection with HIV was 11% and 18% had had another STI in the previous year. The majority of cases were treated with azithromycin, doxycycline or cephalosporin-azithromycin combinations.

Excluding commercial sex workers, people diagnosed with *Chlamydia trachomatis* reported an average of 10 sexual partners in the previous 12 months, 49.6% reported having had a new sexual partner in the last 3 months and 78.3% had not used condoms at last sexual intercourse.

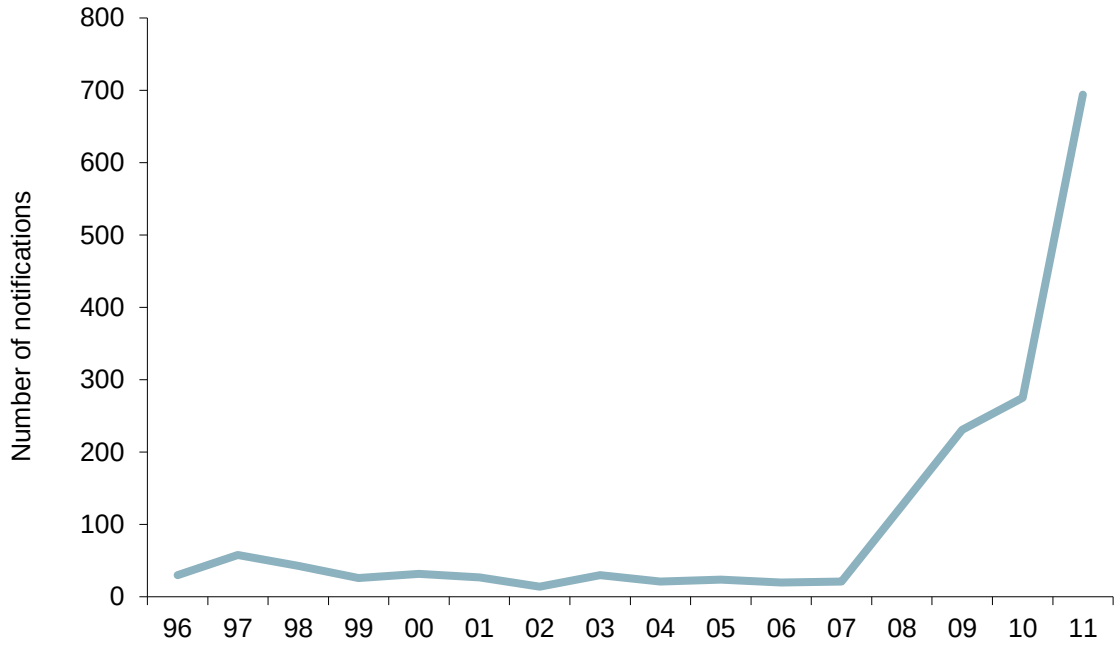
In the previous 12 months, 3% reported sex with commercial sex workers, 3.6% practised commercial sex, 3.3% had picked up sexual contacts in meeting places for sex, 5.6% had sex abroad and 5.6% had consumed drugs.

Contact tracing was initiated in 94.7% of cases diagnosed and a mean of 1 sexual contact was traced per case.

4.2 Laboratory notification

In 2011 694 isolates of *Chlamydia trachomatis* were notified to the Catalan Laboratory Notification System (SNMC) a rise of 152% over 2010 (**figure 16**).

Figure 16. Notifications of *Chlamydia trachomatis* to the Catalan Laboratory Notification System (SNMC), 1996-2011



4.3 Prevalence

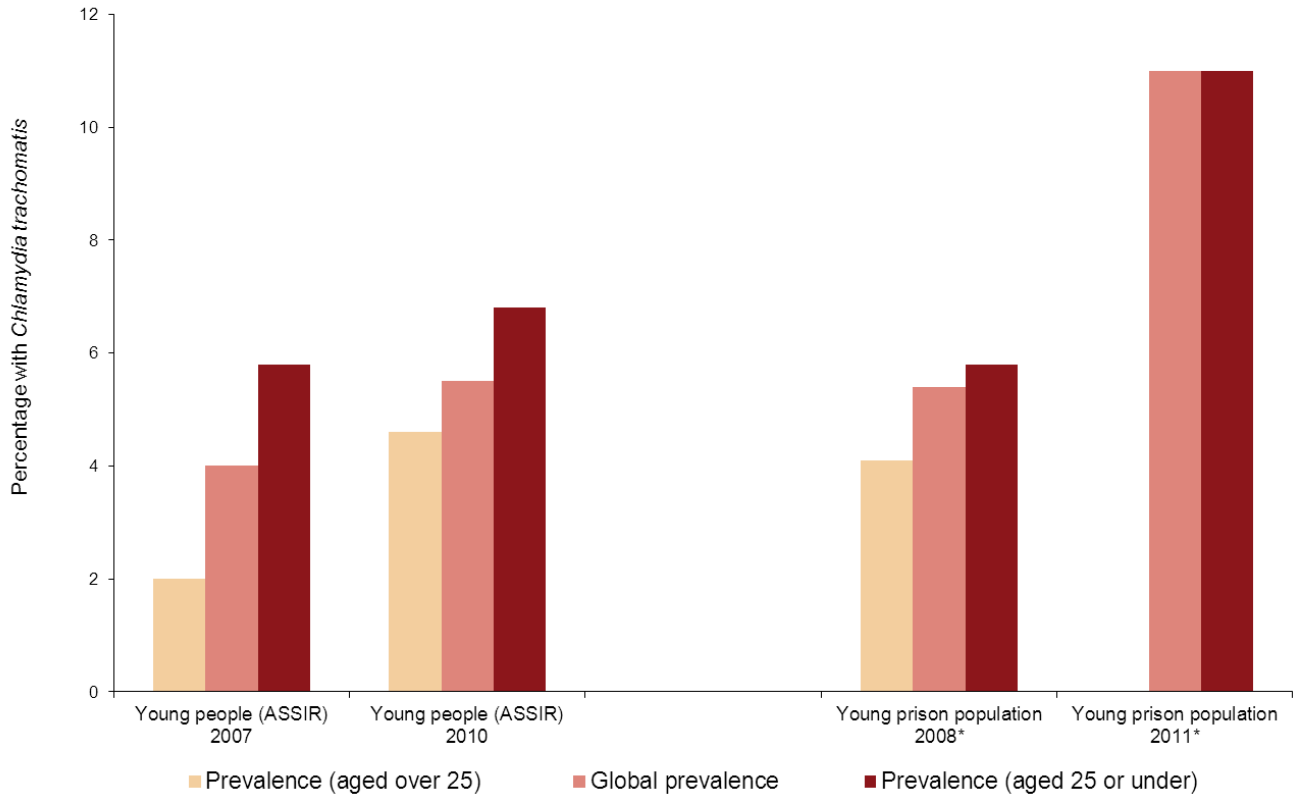
As part of the monitoring of STIs and associated risk behaviours, biennial cross-sectional surveys are held in vulnerable populations (Young people and FSW) to estimate the prevalence of *Chlamydia trachomatis*.

Prevalence of *Chlamydia trachomatis* in young attendees of sexual and reproductive health clinics (ASSIR) and clinics for young people.

In 2010, a total of 730 young people aged 16-35 years were tested during routine visits to ASSIR centres and centres for young people. The prevalence of *Chlamydia trachomatis* was 5.5% (40 positive cases), similar to that of neighbouring countries[9]. Among migrants, the prevalence was significantly higher than in the Spanish-born population (8.2% vs. 4.0%, respectively)

Prevalence was higher in 2010 than in previous surveys (**figure 17**).

Figure 17. Prevalence of *Chlamydia trachomatis* in young people. Catalonia, 2007-2011



*significant rising trend

[9] European Centre for Disease Prevention and Control. Chlamydia control in Europe. ECDC Guidance. Stockholm: ECDC; 2009.

Prevalence of *Chlamydia trachomatis* among young people in prison

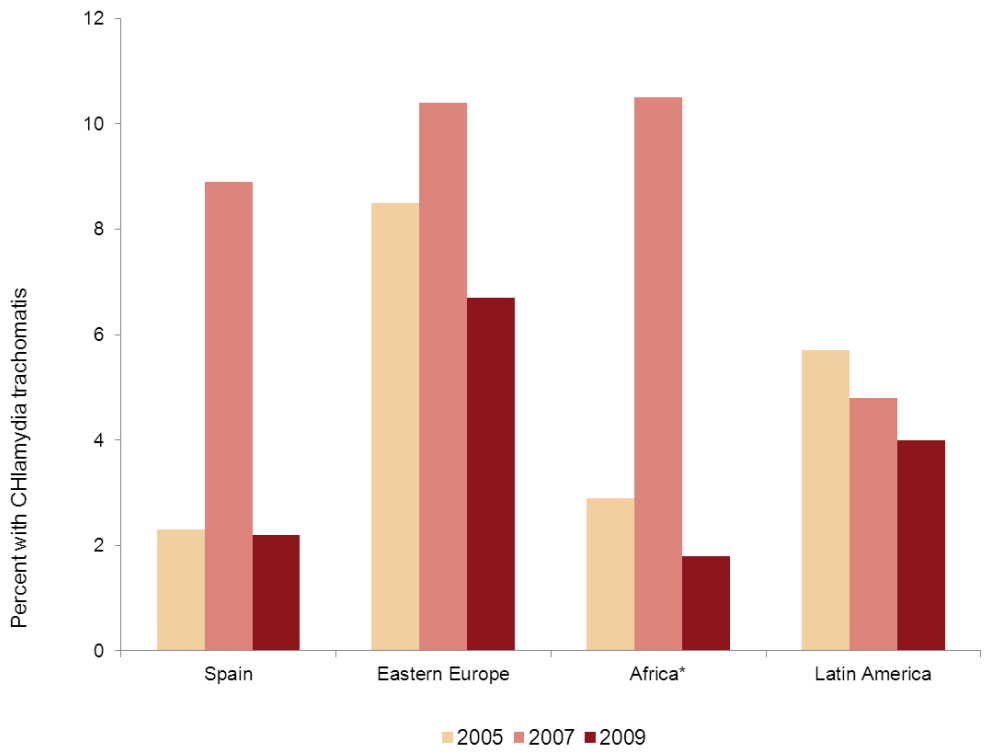
Among 359 16-25 year-olds who were tested in 2011 in the prisons that house the entirety of the youth prison population, there were 39 positive cases, a prevalence of 11%. Three of the cases were in women (7.7% prevalence) and 36 were in men (12% prevalence). There were 7 cases in people born in Spain (7.2% prevalence) and 32 in migrants (12.2% prevalence), although none of these differences were significant.

Prevalence was higher in 2010 than in previous surveys (**figure 17**) and higher than the prevalence in the general population, although similar to figures reported for the prison populations of neighbouring countries[10].

Prevalence of *Chlamydia trachomatis* in female sex workers

The overall prevalence of *Chlamydia trachomatis* in FSW in 2009 was 4.0% with no differences by country of origin and lower than that observed in previous studies, especially the 2007 survey (**figure 18**). There were no significant differences in prevalence by age (4.5% and 3.9% in those younger and older than 25, respectively)

Figure 18. Prevalence of *Chlamydia trachomatis* in FSW, by country of origin. Catalonia, 2005-2009



* p<0,05

[10] Menon-Johansson AS, Winston A, Matthews G, Portsmouth S, Daniels D. The first point prevalence study of genital Chlamydia trachomatis infection in young male inmates in the UK. Int J STD AIDS. 2005 Dec;16(12):799-801.

5. Genital Herpes simplex virus (HSV)

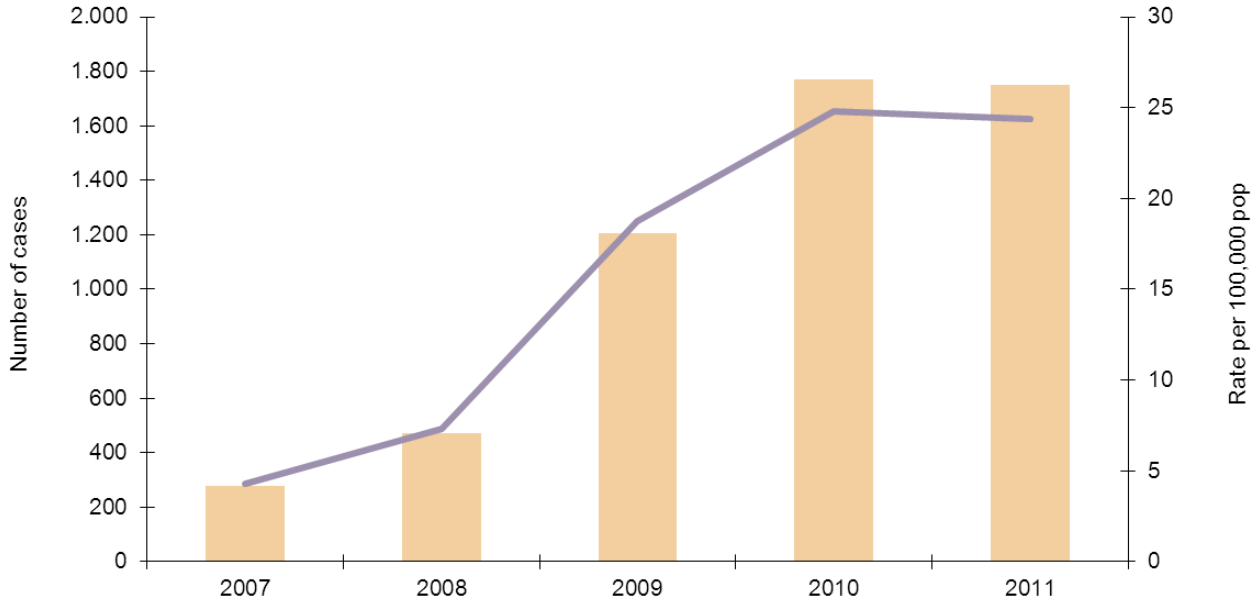
Key points

- Herpes simplex virus (HSV) is the second most common STI, after condyloma acuminata.
- HSV infection mainly affects heterosexual men and women aged 25-34, highlighting the importance of continued STI prevention measures in this population.

5.1 New diagnoses

In 2011 1,695 cases of genital HSV were notified to the Catalan Register of Notifiable Disease, a rate of 23.6 per 100,000 population. Compared with 2010, the notification rate of HSV has decreased by 4.4% (**figure 19**).

Figure 19. Number of cases of genital HSV notified.
Catalan Register of Notifiable Disease, 2007-2011



The RITS undertakes enhanced sentinel surveillance of genital infections by HSV. There were 205 new episodes notified during 2011.

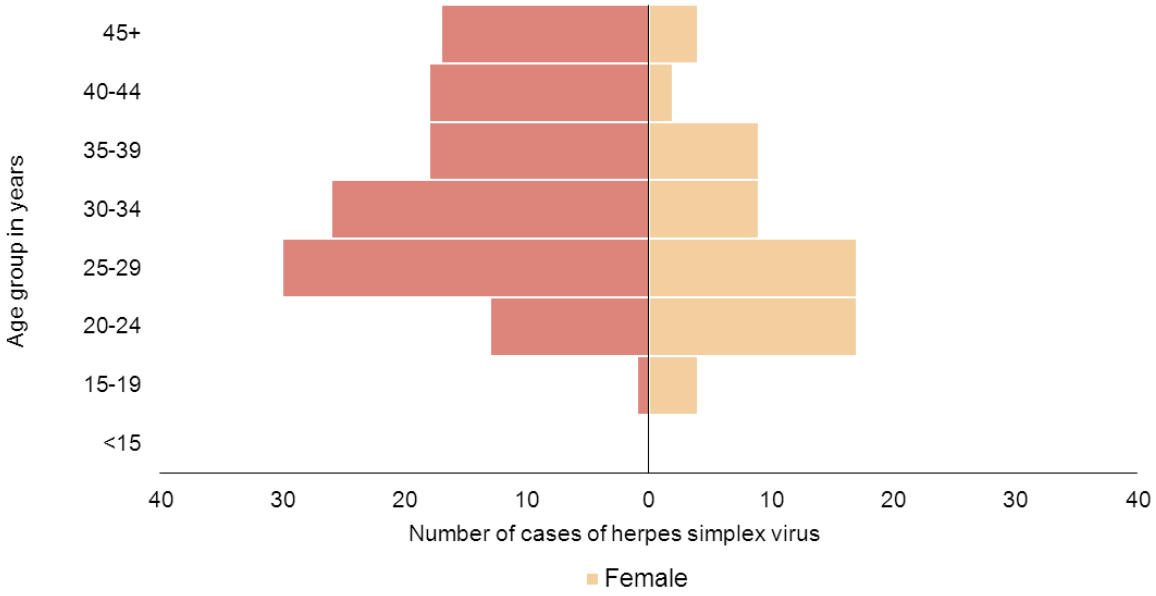
Of the 185 episodes of HSV, 65% were in males, a male-female ratio of 9:5. The average age was 32. Most male cases were aged 25-34 and most females were aged 20-29 (**figure 20**).

Nearly half the cases were migrants (98, 47.8%), mainly from Latin America and the Caribbean (54.1%) and Western Europe (21.4%).

Most cases (69%) were in heterosexual males and females with little variation in recent years (**Figure 21**).

Figure 20. Age and sex distribution of genital HSV infections notified.

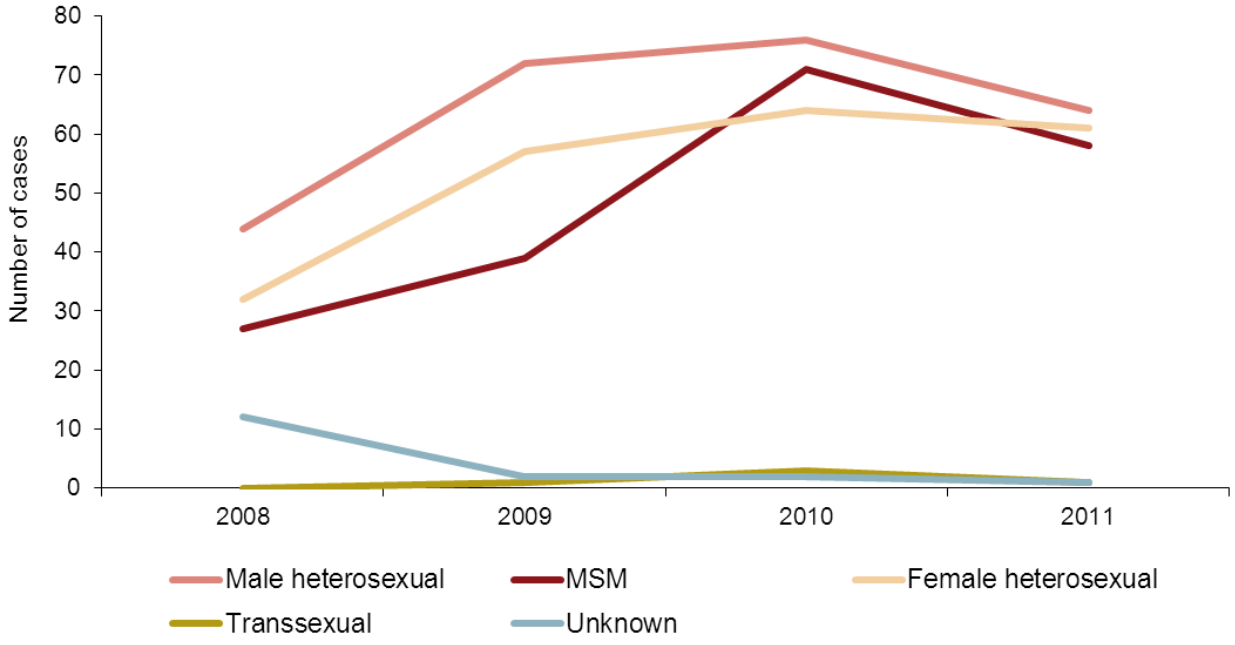
RITS, 2011



HSV is an ulcerative disease and increases the likelihood of HIV transmission. In 2011 16% of HSV cases notified were co-infected with HIV, the majority in MSM (87.5%) and 11% had had another STI in the previous year.

Figure 21. Number of cases of genital HSV, by sexual orientation, notified.

RITS, 2008-2011

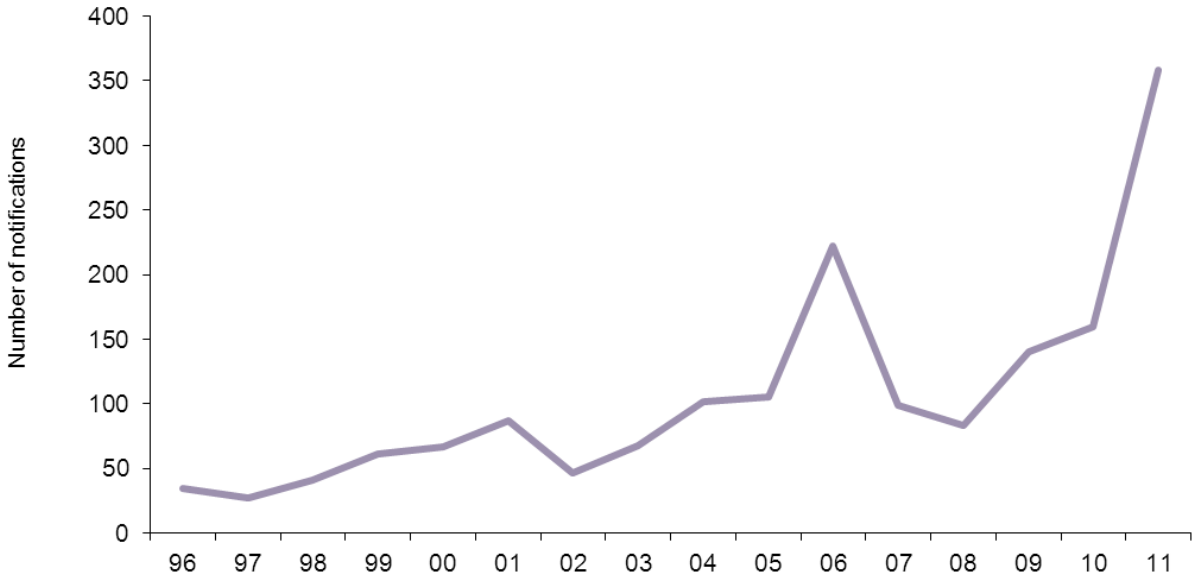


Nearly half (47.3%) of cases had not used condoms at last sexual intercourse and 36.6% had had a new sexual partner in the previous 3 months. Cases reported an average of more than 5 sexual partners in the previous year, 2% reported sex with commercial sex workers, 2.4% practised commercial sex, 2.4% had picked up sexual contacts in meeting places for sex, 5.4% had had sex abroad, and 4.9% reported consuming drugs.

5.2 Laboratory notification

In 2011, 358 cases of genital HSV were notified to the Catalan Laboratory Notification System (SNMC) a rise of 124% over 2010 (**figure 22**).

Figure 22. Number of cases of genital HSV notified.
Catalan Laboratory Notification System (SNMC), 1996-2011



6. Human papilloma virus (HPV): condyloma acuminata (genital warts)

Key points

- Genital warts are the most frequently reported STI in Catalonia.
- Most cases of genital warts are in male and female heterosexuals aged between 20 and 35.
- Sentinel surveillance for this STI is important in order to monitor the impact of the introduction of quadrivalent vaccines against HPV.

6.1 New diagnoses

Genital warts are the most frequent STI in Catalonia. During 2011, 4,698 cases of condyloma acuminata were notified, a rate of 65.4 per 100,000 population and a decrease of 2.4% over 2010.

The RITS undertakes enhanced sentinel surveillance of genital warts, receiving notification of 538 new episodes in 2011.

Of the 440 episodes of ano-genital warts, 50% were in males, with a male-female ratio of 1:1. The average age was 29 and most cases (male and female) were aged 25-29.

Most cases of ano-genital warts reported were in people born in Spain and 32% were in migrants. The majority of migrants were from Latin America and the Caribbean (57.6%) and Western Europe (20.9%).

A majority of cases (80.6%) were in heterosexual males and females. HIV co-infection was present in 4%, a lower co-infection rate than in other STI. Cryotherapy was the preferred treatment method, alone or in combination with imiquimod, podofil and, to a lesser extent, trichloroacetic acid.

Excluding commercial sex workers, people diagnosed with ano-genital warts reported an average of 4 sexual partners in the previous 12 months, fewer than the number reported for other STI. A new sexual partner in the previous 3 months was reported by 22.7% and 51.1% had not used condoms at last sexual intercourse. In the previous 12 months, 30.1% reported having consumed drugs, principally cannabis and alcohol, 5.9% had had sex abroad and 2.8% had picked up sexual contacts in meeting places for sex.

Figure 23. Number of cases of genital HSV notified.
Catalan Register of Notifiable Disease, 2007 - 2011

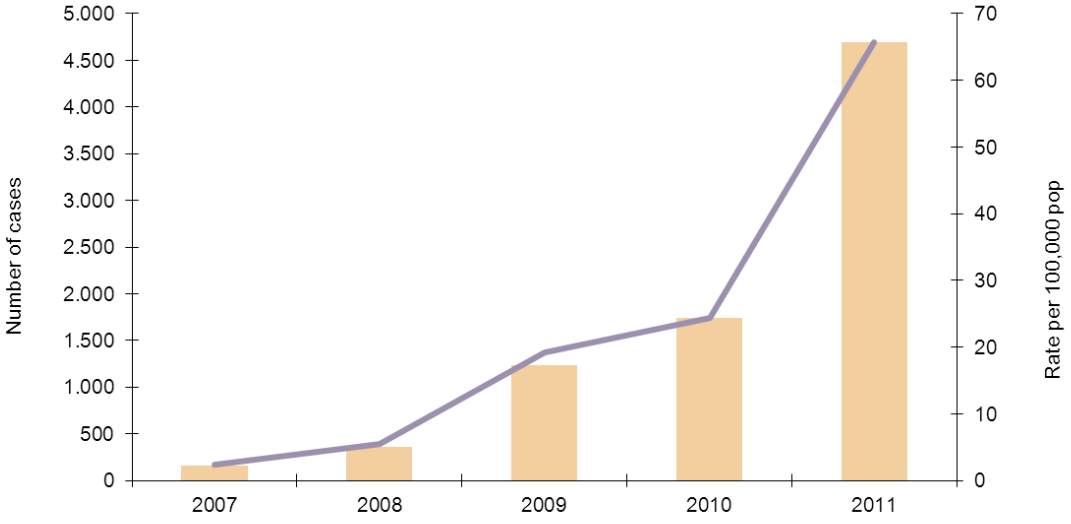


Figure 24. Age and sex distribution of cases of ano-genital warts notified. RITS, 2011

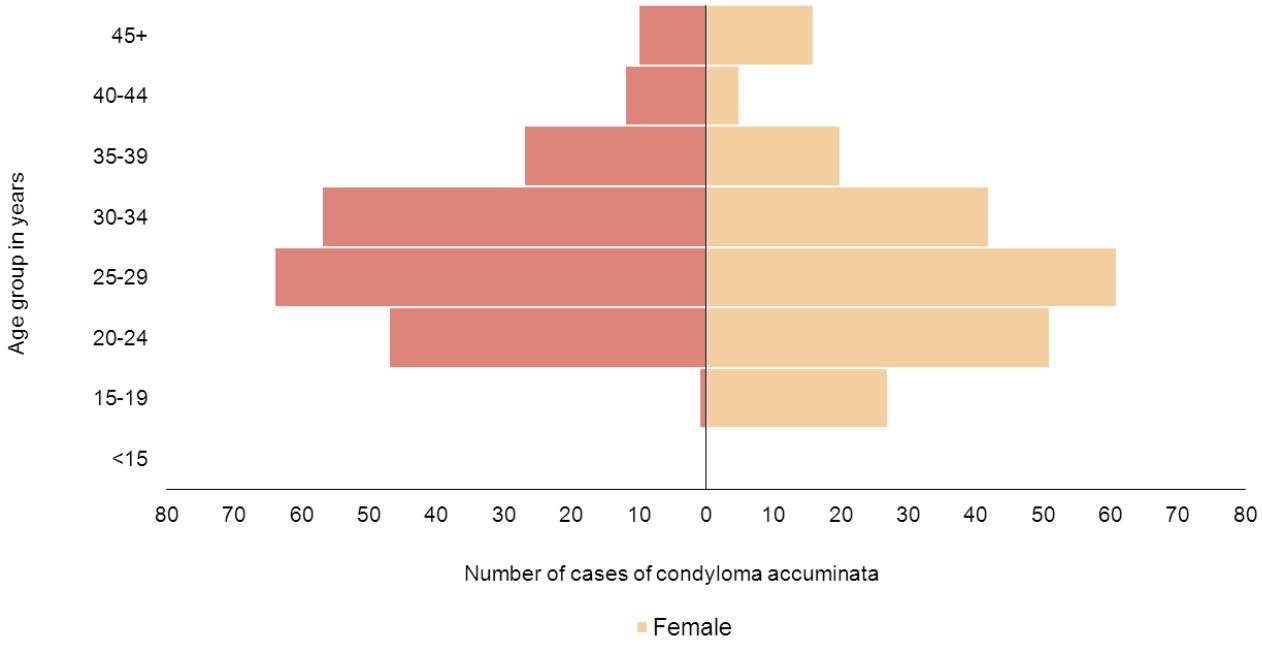
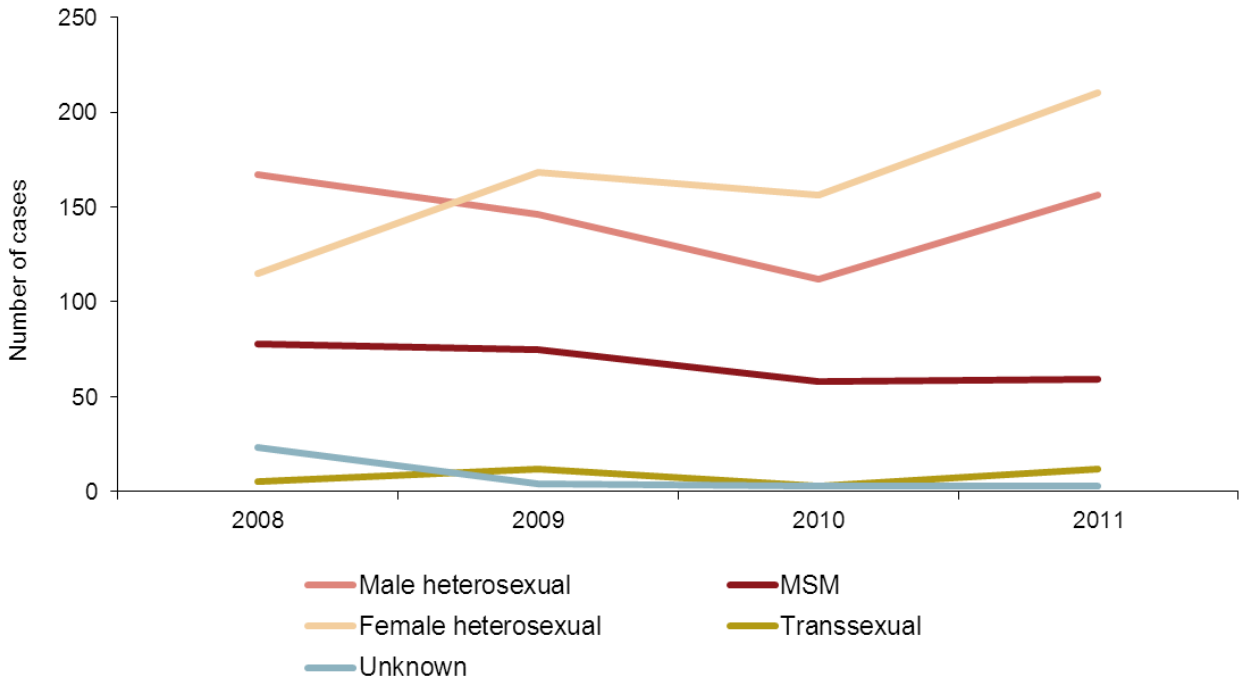


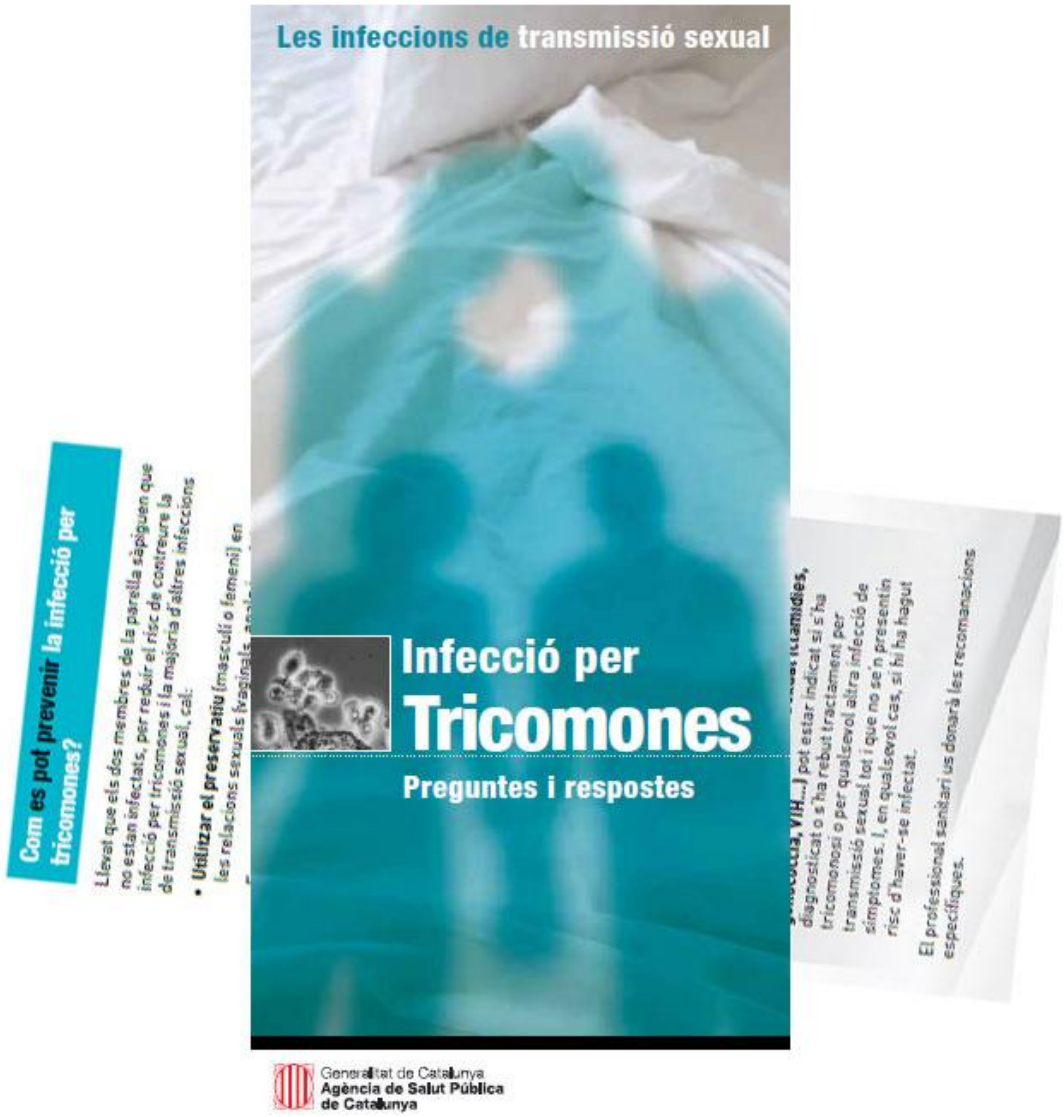
Figure 25. Number of cases of ano-genital warts, by sexual orientation. RITS, 2008-2011



7. *Trichomonas vaginalis:* trichomoniasis

Key points

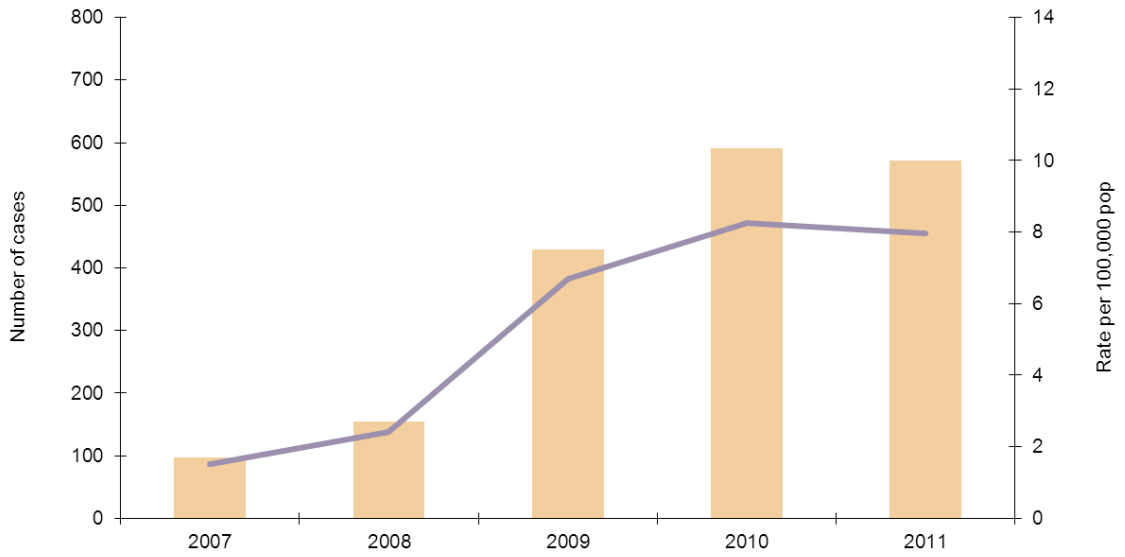
- Up to 40% of notified cases of *Trichomonas vaginalis* have been in women over the age of 40.



7.1 New diagnoses

In 2011, 562 cases of infection due to *Trichomonas vaginalis* were notified to the Catalan Register of Notifiable Disease, a rate of 7.8 per 100,000 population. Compared with 2010, the rate of trichomoniasis has decreased by 4.9% (**figure 26**).

Figure 26. Number of cases of infection due to *Trichomonas vaginalis.*
Catalan Register of Notifiable Disease, 2007-2011



The RITS undertakes enhanced sentinel surveillance of genital infections due to *Trichomonas vaginalis*. There were 36 new episodes notified during 2011. Although only about 5% of the number of cases in aggregate reports, these cases provide important information on the epidemiology of this infection.

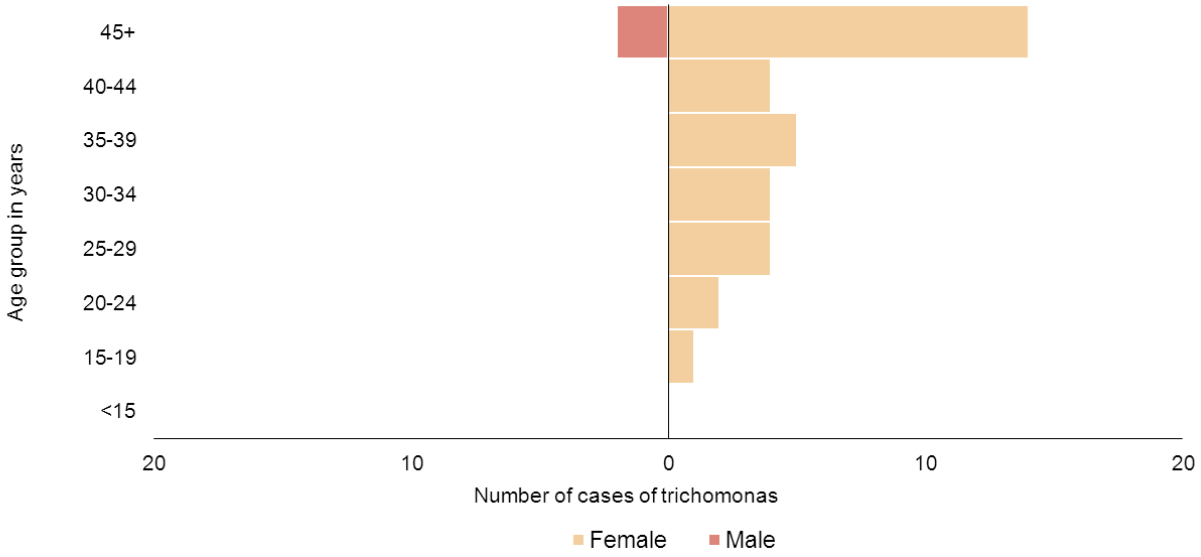
Of the 29 episodes of *Trichomonas vaginalis*, nearly all (94.9%) were in women, with a male-female ratio of 1:20. The average age was 40, principally affecting women over the age of 45 (**figure 27**). Forty percent of cases (11) were in migrants, mainly from Latin America and North Africa.

Cases occurred almost exclusively in heterosexual females. HIV co-infection was present in 5% and 15.4% reported having had another STI in the previous year. Tinidazole and metronidazole were the most common drugs used to treat the infection.

Excluding commercial sex workers, people diagnosed with *Trichomonas vaginalis* reported an average of 1 sexual partner in the previous 12 months, fewer than for other STI, 23.1% had had a new sexual partner in the previous 3 months and 61.5% had not used condoms at last sexual intercourse.

Contact tracing was initiated in 79% of cases diagnosed, although there were few sexual contacts identified.

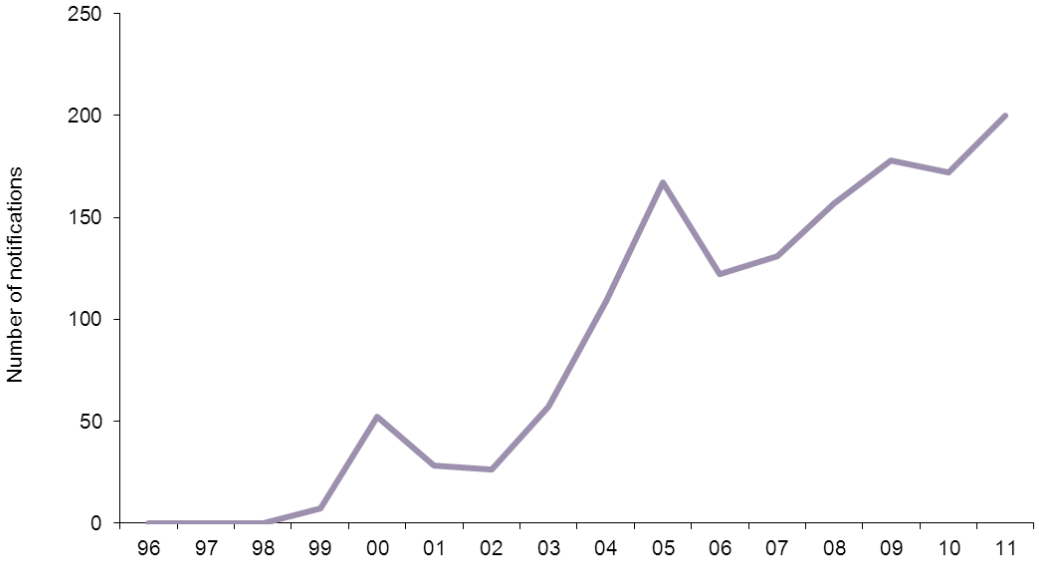
Figure 27. Age and sex distribution of cases of infection due to *Trichomonas vaginalis.* RITS, 2011



7.2 Laboratory notification

In 2011, there were 200 isolates of *Trichomonas vaginalis* notified to the Catalan Laboratory Notification System (SNMC) a rise of 16% over 2010 (**figure 28**).

Figure 28. Number of cases of infection due to *Trichomonas vaginalis* notified to the Catalan Laboratory Notification System (SNMC), 1996-2011



Behavioural surveillance

Surveillance of behaviours associated with HIV and STI

Key points

- Due to the high prevalence of HIV and STI transmission risk behaviours in MSM, primary prevention programmes targeted at MSM should be reviewed and intensified.
- Although condom use in FSW is high with clients, it is low with steady partners. Promotion of condom use between FSW and their steady partners together with the provision of tools to help FSW negotiate their use is important.
- Specific interventions aimed at sexual risk reduction in female and migrant PWID are needed, given their increased vulnerability to HIV/STI, either through increased risk behaviour or social marginalisation.
- The early onset of sexual intercourse in the young and high use of emergency contraception highlights the importance of condoms for prevention of HIV and STI.
- Since drug use is frequent in young men and MSM and it is an important risk factor for HIV infection, it is important to incorporate educational messages about the combined effects of sex and drugs into HIV and STI prevention programs.
- Since people recently diagnosed with HIV engage in higher risk sex and have a higher prevalence of STI than people diagnosed over one year ago, specific interventions to decrease risk practices in this group and reduce the probability of HIV transmission should be maintained.

1. Men who have sex with men (MSM)

The average age of MSM resident in Catalonia in 2010 was 33.5 (interviewed online through the EMIS Project), 70.5% of whom were of Spanish origin[1]. The educational level of respondents was high, 60.8% having university level education or higher. Most (70.3%) were working, 68.4% of MSM were living in cities with more than 500,000 inhabitants, 82.1% identified as gay or homosexual and 31% of MSM reported having a stable male partner at the time of the survey (**table 1**).

Table 1. Social and demographic characteristics of MSM residents in Catalonia in 2010

	n	%
Age		
<25	610	20.7
25-39	1,662	56.5
≥40	670	22.8
Mean (SD)	33.5 (9.8)	
Origin		
Spanish	2,064	70.5
Migrant	663	29.5
Educational level		
Primary or less	235	8
Secondary	915	31.2
University or higher	1,779	60.8
Employment		
Working	2,061	70.3
Out of work	287	9.8
Student	430	14.7
Retired	25	0.9
Other situation*	125	4.2
Size of town of residence		
Over 500,000 inhab.	1,946	68.4
100,000-499,999 inhab.	328	11.5
Under 100,000 inhab.	569	20
Sexual identity		
Gay/homosexual	2,412	82.1
Bisexual	313	10.7
Other	213	7.2
In a stable relationship with a man	934	31.8

*includes permanent work incapacity and other unspecified situations

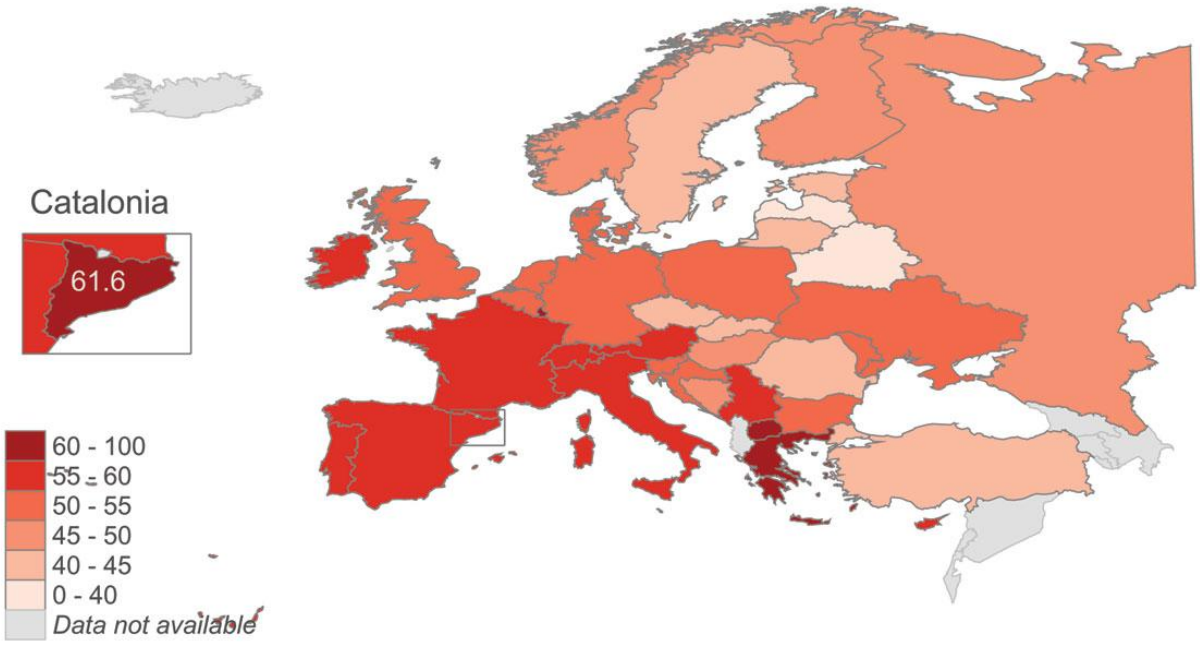
[1] No trend data are given due to differences in recruitment methodology in previous studies.

A condom was used by 61.6% of MSM at last penetrative sex with a male partner (indicator 1.12 Global AIDS Report, equivalent to UNGASS 19)[2]. This was higher than that reported in the rest of Spain and other countries like France and Germany, but lower than Greece or Macedonia (**figure 1**).

A higher proportion of MSM aged 25 or over reported 10 or more sexual partners compared to MSM aged under 25 (39.7% vs. 26,3%, respectively).

The proportion of MSM who reported unprotected anal intercourse with a casual partner of unknown or discordant HIV status was similar between age groups (20.2% <25 vs. 23.3% ≥25) but a higher proportion of younger MSM reported unprotected anal sex with a steady partner (13.1% vs. 10.0%). Men aged over 25 were more likely to have paid for sex (8.9% vs. 1.7%, respectively), while younger MSM were more likely to have been paid for sex (9, 7% vs. 3.4%, respectively) (**table 2**).

Figure 1. Percent of MSM who used a condom for the last episode of penetrative sex with a male partner (within 12 months). Europe, 2010



Source: EMIS, 2010

A higher proportion of MSM aged 25 or over reported having had an STI in the previous 12 months than younger men (13.9 vs.. 9.7% respectively). Reported HIV prevalence was also higher in older

[2] United Nations Programme on HIV/AIDS (UNAIDS). Global AIDS Response progress reporting: monitoring the 2011 political declaration on HIV/AIDS: guidelines on construction of core indicators: 2012 reporting. Geneva: UNAIDS, 2011.

MSM (15.2% vs. 2.9% respectively) and they were more likely to have been tested for HIV (and collected the results) in the previous 12 months (53.1% vs. 47.4%, respectively) (**table 2**).

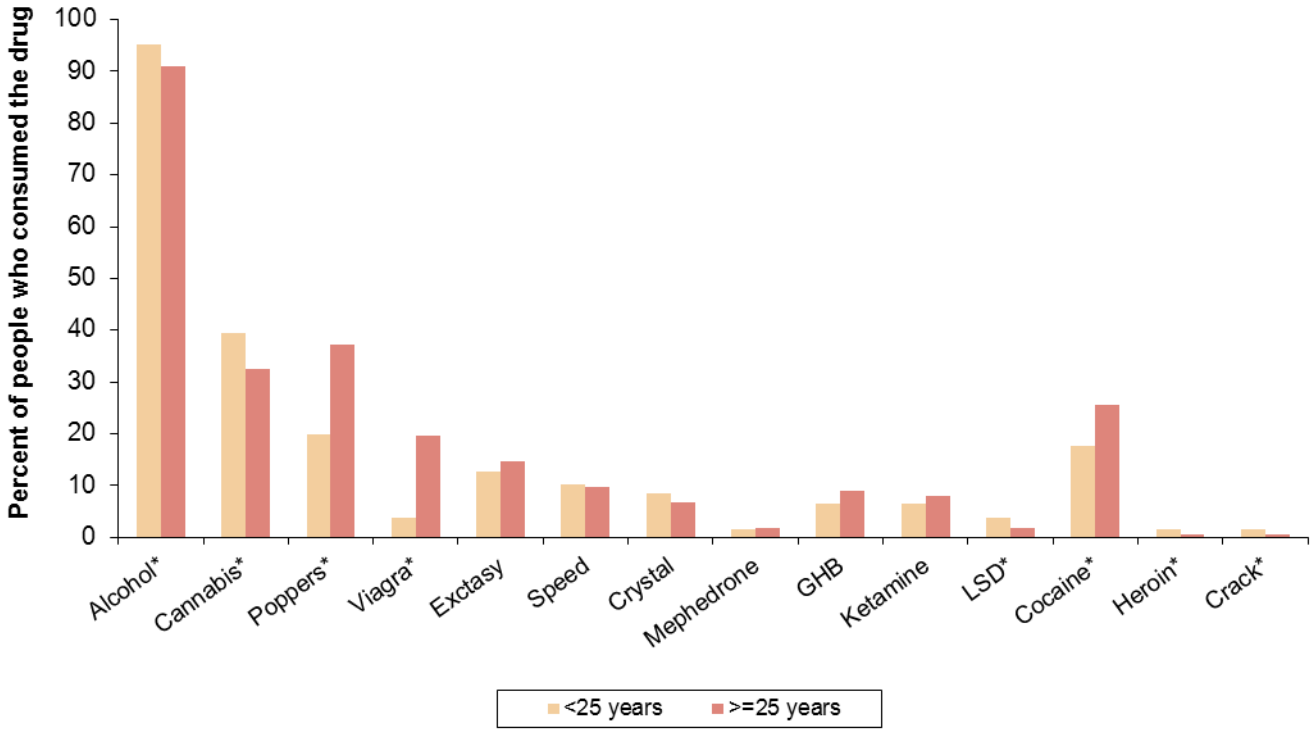
In the previous 12 months, drug use was reported by a higher proportion of MSM aged 25 or over than younger MSM (59.8% vs. 48.6%, respectively). Younger men consumed more alcohol (95.2% vs. 91.0%, respectively) and smoked more cannabis (39.5% vs. 32.6%, respectively). On the other hand, older MSM consumed more poppers (37.2% vs. 19.8%), more cocaine (25.6% vs. 17.7%, respectively) and Viagra® (19.7% vs. 3.8%) (**figure 2**).

Table 2. Prevalence of sexually transmitted infections, sexual behaviour and HIV testing in MSM, by age group. Catalonia, 2010

	Age <25 n=610		Age =>25 n=2.332		
	n	%	n	%	p
Number of sexual partners*					<0.001
None	79	13	205	8,9	
Fewer than	368	60,7	1178	51,4	
10 or more	159	26,3	910	39,7	
Unprotected anal sex with a partner of discordant or unknown HIV status* *					
Casual partnerl†	116	20,2	522	23,3	0,120
Stable partner††	75	13,1	227	10	0,036
Transactional sex*					
Has paid for sex	10	1,7	201	8,9	<0.001
Has been paid for sex	56	9,7	77	3,4	<0.001
Ever been diagnosed with an STI*					
	59	9,7	323	13,9	0,006
HIV test					
Has been tested for HIV and knows the result (UNGASS indicator)*	286	47,4	1109	53,1	0,012
Never tested for HIV	225	37,1	296	12,8	<0.001
Prevalence of self-reported HIV positivity**	11	2,9	307	15,2	<0.001

*previous 12 months; † among those who had sex with a casual partner (previous 12 months); †† among those who had sex with a stable partner (previous 12 months); ** among those who have ever been tested for HIV

Figure 2. Consumption of drugs and alcohol in MSM, by age group. Catalonia, 2010



* Significant differences

2. Female sex workers (FSW)

Of the 400 FSW interviewed in Catalonia in 2009 (HIVITS-TS project), 14% were of Spanish origin, 19% African, 26.3% were from Latin America and 40.8% were from Eastern Europe. The mean age was 30.6 and the youngest women were from Eastern Europe (mean age 26.9). As in previous surveys, Spanish and African women reported the lowest educational attainment (67.4% and 58.9%, respectively had completed primary or lower education). Unlike previous years[3], African FSW had practised commercial sex work for the least time (50.5% for less than 2 years). The number of clients per week decreased compared to previous surveys, with Spanish FSW having the fewest number of clients (31% had more than 10 clients). Consumption of drugs has increased from survey to survey, except in African women. Spanish women had the highest proportion of drug use (69.6%), including injected drugs (15.2%) (**table 3**).

Table 3. Social and demographic characteristics of FSW, drug consumption and use of health services, by region of origin 2005-2009

	Spain			**Latin America**			**Africa**			**Eastern Europe**		
	2005	2007	2009	2005	2007	2009	2005	2007	2009	2005	2007	2009
Mean age (SD)*	42.1 (11.7)	43.3 (10.5)	42.4 (10.0)	32.2 (8.2)	31.6 (7.8)	31.9 (8.1)	26.6 (6.3)	26.2 (4.2)	28.0 (7.1)	25.1 (6.4)	23.8 (4.8)	26.9 (6.2)
Educational level: primary or	69,8	77,8	67,4	39,3	33,3	48,4	59,2	63	58,9	42,7	49,7	45,8
More than 2 years as a FSW	95,2	83,6	93	**67,5**	**52,9**	**72,7**	48	50	50,5	**44**	**44,4**	**59,7**
More than 10 clients a week	39,5	61,2	31	**57**	**70,9**	**48,4**	28,1	58,1	42,9	**55,6**	**82,4**	**53,8**
Use of illegal drugs (1)	**37,2**	**48,2**	**69,6**	**31,7**	**32,4**	**50,8**	8,7	6,7	9,2	**26,2**	**24,5**	**35,5**
Use of injected drugs (1)	9,3	12,5	15,2	0,8	1	0,8	-	-	-	0	0	2,5
Annual gynecology check-ups	88,4	89,3	87	90,2	81,9	89,5	76	62,7	66	92,2	80,4	80,8
Ever had an STI	-	56,4	50	-	41,9	41,1	-	50,7	56,9	-	**52,8**	**64,5**
HIV tested (1)	95,2	98,2	89,1	89,4	84,8	87,1	**83,7**	**80,3**	**70,4**	80	82,2	79,2
Use of health services (2)	79,1	69,6	60,6	66,7	67,6	63,7	58,7	54,7	62	61,5	60,1	64,5
Use of social services (2)	55,8	66,1	63	35,8	45,7	48	**45,6**	**43,4**	**67**	29,5	29,4	38

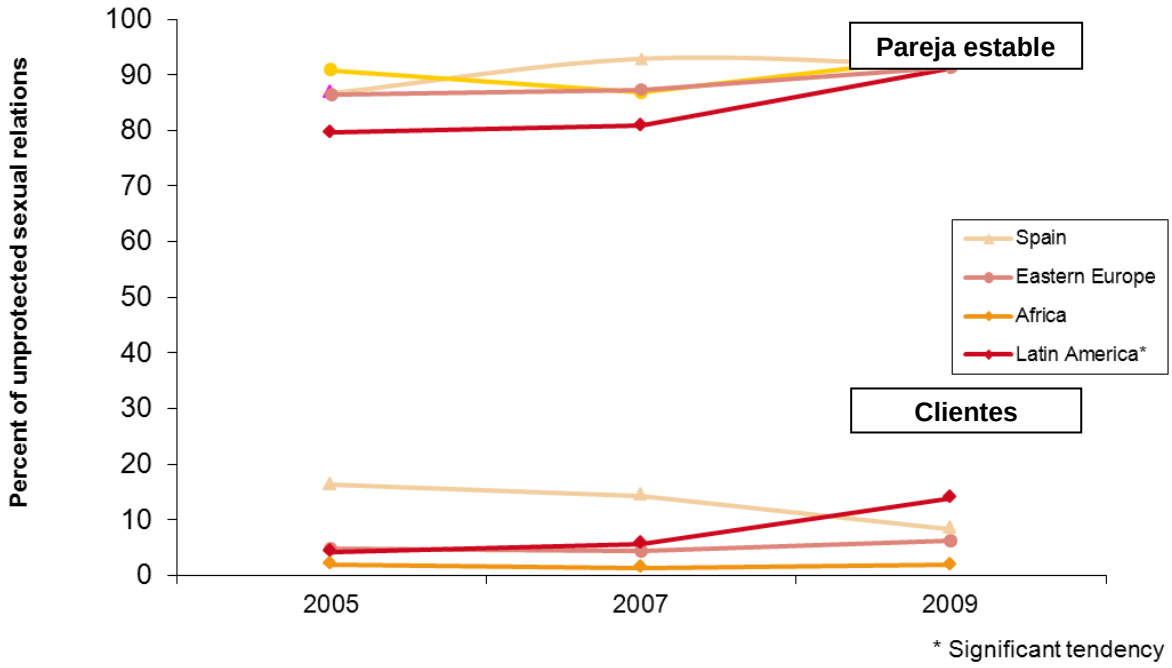
FSW: Female sex worker; TOP: Termination of pregnancy; (1) ever; (2) previous 6 months

*Significant differences in bold

More than 90% of the women reported not "always" using condoms during sex with their partners in the previous 6 months. The prevalence of unprotected sex with clients was lower; 8.3%, 6.2%, 1.9% and 13.9% of Spanish women, Eastern European, African and Latin American women, respectively reporting unprotected sex with clients. Unprotected sex with clients increased in Latin American women over the period 2005-2009 (**figure 3**).

[3] Folch C, Sanclemente C, Esteve A, Martró E, Molinos S, Casabona J; HIVITS-TS. Diferencias en las características sociales, conductas de riesgo y prevalencia de VIH/infecciones de transmisión sexual entre trabajadoras del sexo españolas e inmigrantes en Cataluña. Med Clin (Barc). 2009;132(10):385-8.

Figure 3. Prevalence of unprotected sex in the previous six months between FSW and their clients or stable partners, by region of origin 2005-2009



Most women had gynaecological examinations at least once a year. African women were the group with the lowest proportion examined (66%). The prevalence of STI was highest in Eastern Europe women and increased in 2009 compared to 2007 (64.5% vs. 52.8%, respectively). HIV testing reduced over the same period, with the largest drop in HIV testing among African women (83.7% to 70.4% from 2005 to 2009). Women from Eastern Europe were the group with the lowest use of social services (38% in the previous 6 months)[4] (**table 3**).

3. People who inject drugs (PWID)

Between October 2010 and April 2011, 761 injectors were recruited in Catalonia harm reduction centres (project REDAN). Most, (464, 61%) were Spanish and the rest (39%) were immigrants, mainly from Georgia (24.2%), Italy (18.2%) and Romania (12.5%). The average age of injectors was 36.5, migrants being younger on average (33.6). A higher percentage of migrants were men (89.2%) and had attended university (18.2%). Half of those interviewed were unemployed and 18.1% lived on the street, with higher rates of homelessness among migrants. Spanish PWID had

[4] Folch C, Lazar C, Ferrer L, Sanclemente C, Casabona J. Female sex workers and access to social and health services in Catalonia: Influence of region of origin and place of work. AIDS Care. 2012 Dec 7. [Epub ahead of print]

used drugs for longer (17.4 years) than migrants (10.6 years). Heroin was the drug most frequently injected in the previous six months by both groups (52,0%), but the percentage of daily injectors was higher among immigrants than Spanish PWID (58.9% vs. 39.4%) (**table 4**).

Approximately half of injectors (48.5%) had stable sexual partners and 35.5% had casual sexual partners and there were no differences by region of origin. A fifth (20.7%) of PWID reported having a partner who also injected drugs, although a higher percentage of women than men had a partner who injected drugs (46.6% vs. 15.1%). Sex in exchange for drugs or money in the previous six months was reported by 5.3% (2.4% in men and 18.9% in women, p< 0.001) (**table 4**).

Consistent condom use in the last 6 months was similar in locals and migrants, In general, 27.5% always used condoms with stable couples, 65.5% always used condoms with casual partners and 82.5% always used them with clients (**figure 4**).

Table 4. Social and demographic characteristics, drug consumption and sexual behaviour of PWID recruited in harm reduction centres, 2010 - 2011

	Spanish N=464 %	Immigrants N=297 %	Total N=761 %	p
Mean age (SD)	38.7 (7.0)	33.6 (7.6)	36.5 (7.6)	<0.001
Males	78,4	89,2	82,7	<0.001
Educational attainment				<0.001
Primary or lower	28,3	16,2	23,6	
Secondary	70,4	65,6	68,5	
University	1,3	18,2	7,9	
Occupation (previous 6 months)				<0.001
Employed	14,4	21,8	17,3	
Out of work	42	63,3	50,3	
Retired or incapacity	36	2	22,8	
Other: prison, sex work, robbery, etc	7,6	12,9	9,6	
Homeless (previous 6 months)	13,8	24,9	18,1	<0.001
Undergoing drug rehabilitation	63,8	38,7	54	<0.001
Mean number of years injecting (SD)	17.4 (9.3)	10.6 (7.9)	14.8 (9.4)	<0.001
Drugs most frequently injected (previous 6 months)				<0.001
heroin	52,5	51,2	52,0	
cocaine	31,7	17,6	26,3	
*speedball (*heroin + cocaine)/other	15,8	31,2	21,7	
Daily drug injection (previous 6 months)	39,4	58,9	47,0	<0.001
Sex with a stable partner (previous 6 months)	46,8	51,2	48,5	ns
Stable partner a PWID (previous 6 months)	22,5	17,9	20,7	ns
Sex with a casual partner (previous 6 months)	35,6	35,4	35,5	ns
Sex with clients (previous 6 months)	5,6	4,7	5,3	ns

ns: not significant

A minority of PWID reported having accepted (12.6%) or shared (14.5%) used syringes in the previous six months. Indirect sharing of drugs dissolved in another (often previously used) syringe (*front/back loading)* was reported by 47.2% and the sharing of paraphernalia (other materials such as spoons, filters or water) was reported by 48.9% (**figure 5**). There were no differences observed in any of these practices by region of origin.

Almost all PWID had had an HIV test at least once (97.4% of Spanish PWID and 90.5% of migrants, p<0.05). Among these, the prevalence of reported HIV infection was 36.3% in Spanish PWID and 14.7% in migrants. In PWID who had had an HCV test, the prevalence of reported HCV infection was 75% in Spanish PWID and 55.4% in migrants (p<0.05).

Figure 4. Prevalence of consistent condom use in the previous six months by PWID, by type of sexual partner

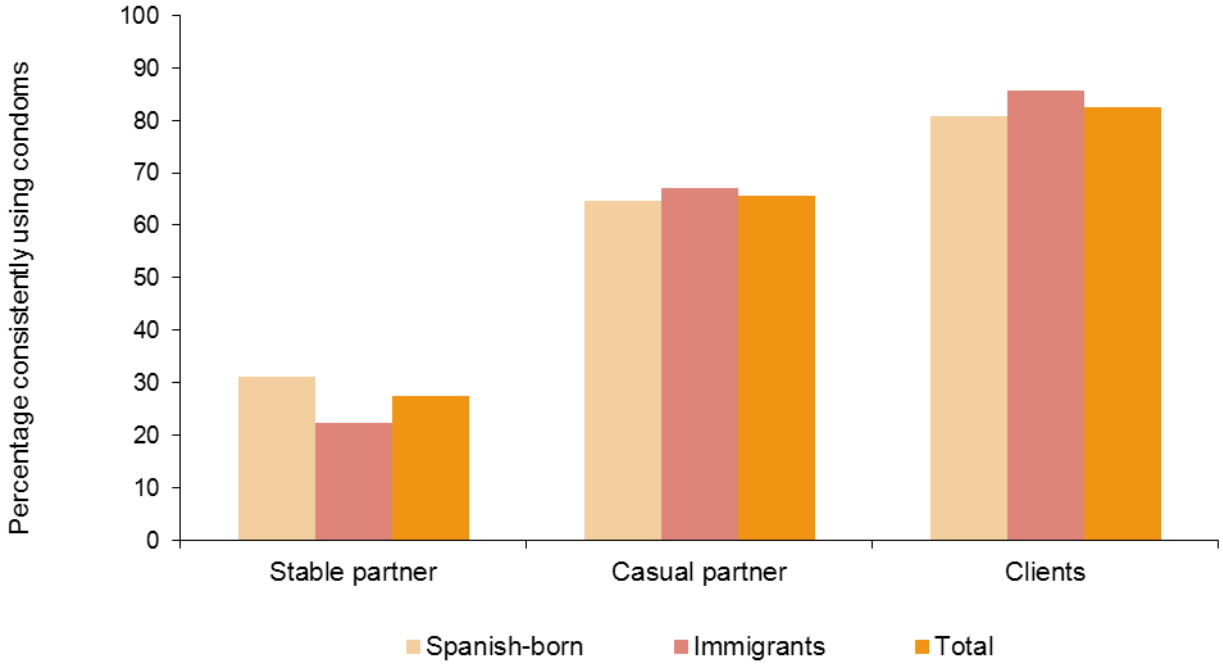
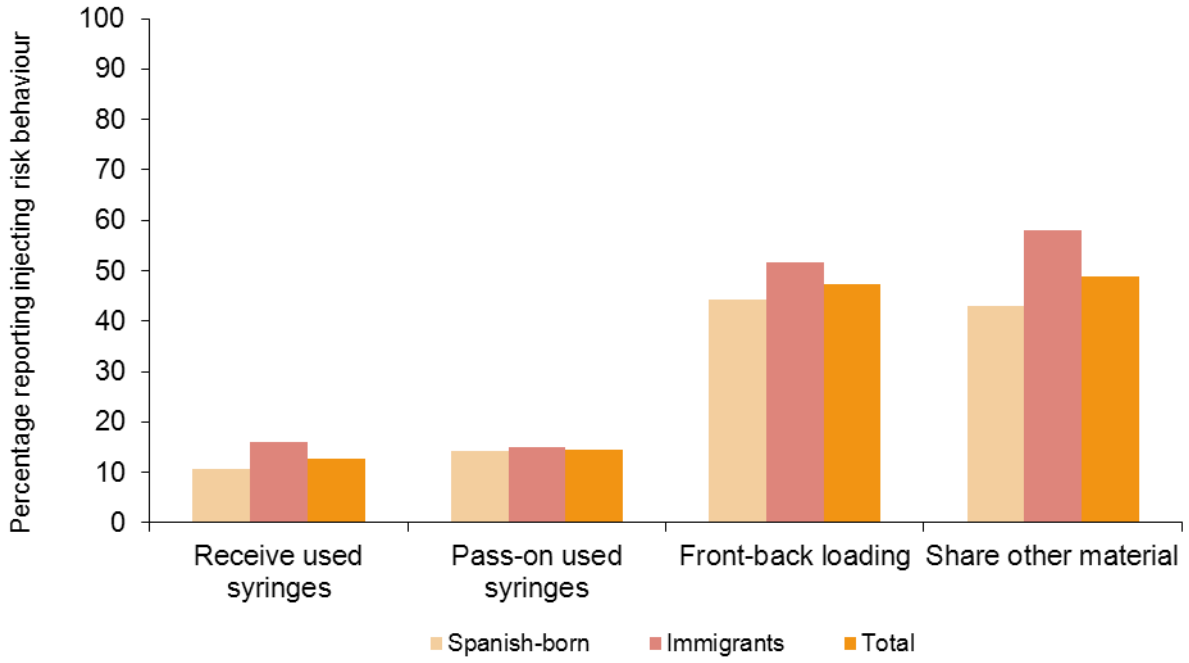


Figure 5. Percentage of PWID who have shared syringes and paraphernalia in the previous six months



The social and demographic characteristics of PWID surveyed in 2010-11 were similar to those of 2008-9. Among Spanish injectors, the percent sharing used syringes was lower in 2010-11. There

were no differences in other behavioural indicators of sexual and parenteral[5,6] risk, or in the reported prevalence of HIV and HCV (**table 5**).

Table 5. Summary of principal indicators derived from surveys of Spanish and migrant PWID. Catalonia (2008-2009 , 2010-2011)

	Spanish		Immigrants	
	2008-9	2010-11	2008-9	2010-11
Sample size	439	464	309	297
Mean age (SD)	38.5 (7.1)	38.7 (7.0)	33.4 (6.9)	33.6 (7.6)
Male	78,1	78,4	88	89,2
Homeless*	**19,1**	**13,8**	**35,3**	**24,9**
Daily drug injection*	43,7	39,4	57,6	58,9
Has shared used syringes*	**32,2**	**19,9**	29,5	24,1
Has shared other injection materials*	**54,9**	**43**	52,6	58,1
Inconsistent condom use (stable partner)*	71,5	68,8	69,9	77,6
Inconsistent condom use (casual partner)*	37,1	35,4	28,2	33
Sex in exchange for drugs or money*	8,5	5,6	5,8	4,7
Prevalence of self-reported HIV positivity (1)	40	36,3	14,6	14,3
Prevalence of self-reported HCV positivity (1)	78,3	74,6	67,3	56,1

"significant differences in bold"
(1)among those testedt; *previous 6 months

4. Young people

Young people in school

A total of 440 upper secondary school students in the Alt Maresme region answered a questionnaire on sexual and reproductive health. The average age was 17.3 years (DE:1.06), 47.3% were male and 52.7 %, female.

Over half of boys (58.7%) and girls (59.9%) said they had sex at least once. The average age at first intercourse was 15.5, and most had used a condom (86.4%). The proportion of males and females who reported homosexual orientation was 5.9% and 4.5 %, respectively (**table 6**).

The average number of sexual partners reported by heterosexual boys and girls was 4.0 and 2.7, respectively. Over half (51.4%) of respondents had had heterosexual sex in the previous 12 months, of whom 68.4% had used a condom during their last sexual encounter. A higher proportion of boys than girls had had sex with casual partners (40.4% vs. 26.9%), although there

[5] Folch C, Casabona J, Brugal MT, Majó X, Esteve A, Meroño M, Gonzalez V; REDAN Study Group. Sexually Transmitted Infections and Sexual Practices Among Injecting Drug Users Recruited in Harm Reduction Centers in Catalonia, Spain. Eur Addict Res. 2011;17:271-278.
[6] Folch C, Casabona J, Brugal MT, Majó X, Meroño M, Espelt A, González V; Grupo REDAN. Perfil de los usuarios de droga por vía parenteral que mantienen conductas de riesgo relacionadas con la inyección en Cataluña. Gac Sanit. 2012;26:37-44.

were no differences between the sexes in inconsistent condom use with these partners (41.4%). Use of alcohol and/or drugs during the last heterosexual encounter was reported by 30.7% of boys and 20.0% of girls (**table 6**).

Table 6. Sexual behaviour in upper secondary school students over the age of 16, by sex

	Males N=208 %	Females N=232 %	Total N=440 %	p
Ever had sex	58,7	59,9	59,3	0,788
Mean age at first sex (SD)	15.4 (1.2)	15.6 (1.4)	15.5 (1.3)	0,414
Condom use at first sex	87,3	85,6	86,4	0,699
Sexual orientation				0,581
Homosexual	5,9	4,5	5,1	
Bisexual	1,7	3,7	2,8	
Heterosexual	90,8	87,3	88,9	
Other/uncertain	1,7	4,5	3,2	
Mean number of sexual partners (ever) (SD)	4.0 (5.5)	2.7 (2.9)	3.3 (4.3)	0,021
Heterosexual sex (previous 6 months)	49,5	53,1	51,4	0,405
Condom use at last heterosexual sex (previous 6 months)*	71,9	65,5	68,4	0,321
Heterosexual sex with a casual partner (previous 6 months)*	40,4	26,9	32,9	0,037
Inconsistent condom use with casual partners (previous 6 months)**	43,2	39,4	41,4	0,200
Drug/alcohol consumption at last heterosexual sex (previous 6 months)*	30,7	20	24,6	0,080

ns: not significant; *among those who have had sex in the previous 12 months;

** among those who have had casual sex in the previous 12months

Of the male students interviewed, seven (3.4%) reported ever having had homosexual relationships, all of whom had had anal sex in the previous 12 months and 57.1% of these used a condom for their last homosexual sex. Among the female students, three reported having had an abortion (1.4%) and a quarter of girls (25.1%) had used emergency contraception.

Young users of sexual and reproductive health services (ASSIR) and young person's health centres

In 2010 a total of 730 young people who visited the sexual and reproductive health centres (ASSIR) and young persons health centres were interviewed (CT/NG-ASSIR project), of which 94.8% were women. The average age was 27 -DE: 5.2- and most had completed either secondary (45,2%) or university studies (44%). A third (35%) of respondents were migrants, mostly from Latin America (67%) and 60.2% had been resident in Catalonia for at least five years (**table 7**).

Table 7. Social and demographic characteristics of young users of sexual and reproductive health services (ASSIR) and young persons health centres, 2010

	n	%		n	%
Sex			**Partner type**		
Female	691	94,8	Casual	88	12,3
Male	38	5,2	Stable	629	87,7
Origin			**Cohabiting**		
Spanish	474	65	No	327	53,7
Immigrant	255	35	Yes	282	46,3
Age group (years)			**New partner within last 3 months**		
Under 25	291	39,9	Yes	166	22,9
25 or over	438	60,1	No	559	77,1
Educational attainment			**Sexual practices**		
No education	6	0,9	Vaginal sex	705	96,6
Primary	69	9,9	Oral	570	78
Secondary	315	45,2	Anal	185	25,3
University	306	44	Oral/anal	84	11,5
Sexual orientation			**Drug use**		
Homosexual or bisexual	35	4,8	Tobacco	370	51
Heterosexual	692	95,2	Alcohol	358	49
Mean age at first sex			Cannabis	189	26,2
Age	17	SD: 2.5	Designer	23	3,2
Mean number of partners	2	SD: 5.4	Non-injectable	65	9
Condom use at last sex	324	45	Injectable	6	0,8

The majority of respondents identified as heterosexual (95.2%). The average age of onset of sexual intercourse was about 17 (DE:2.5) and the average number of sexual partners in the previous year was 2 (DE: 5.4). The proportion of young people who had sexual intercourse with stable partners was 87.7% and with casual partners was 12.3%. Nearly half (46.3%) were co-habiting, 22.9% had had a new sexual partner in the previous three months and 4.6% had had sex with people diagnosed with an STI (**table 7**).

The most frequent sexual practices in the past 12 months were vaginal sex (96.6%) and oral sex (78%) (**table 7**). Condoms were used by 45% of young people at last sexual intercourse, although condom use was lower with casual partners (36.4%) than with stable partners (58.4%); $p<0.05$. Forty two percent of women had used emergency contraception an average of 1.3 times in the previous year. Emergency contraception use was higher in women aged under 25 than women aged 25 or older (58% vs. 32%; $p<0.05$). An STI diagnosis in the previous 12 months was reported by 12% of women with the most frequent STI reported being genital warts (3.8%) and human papilloma virus (HPV) (2.7%). Six women older than 25 reported being HIV positive.

There were 87 pregnant women identified during the study. Average gestational age was 23 weeks and three were found to be positive for chlamydia. Nearly one in five women (18%) had had a

termination of pregnancy in the previous year and this proportion was significantly higher in women aged 25 or over.

Sixty eight percent of young people reported having consumed drug in the previous year. Alcohol (49%) and cannabis (26.2%) were the most common drugs reported. Other drugs such as cocaine, heroin or amphetamines were consumed by between 1 - 8% of young people (**table 7**).

A total of 250 women under 25 formed part of a study looking at chlamydia prevalence in their sexual partners within three months. A total of 105 male partners participated, a response rate of 44% and similar to previous studies in other countries[7]. The mean age of sexual partners was 24 (DE:4.3), mostly Spaniards (81%). The prevalence of chlamydia in the women was 6.2%, in their partners it was 4.8%, and the concordance of infection between couples was 33%.

Young people in prison

In 2011, 359 young remand inmates were interviewed as part of the CT/NG-PRESONS project. The mean age was 21 (DE:2); 39.8% of inmates had completed only primary education and 34.3% reported not having any formal education. Migrants made up 73% of respondents and were mainly from Latin America (51%) and North Africa (33.4%) (**table 8**).

The mean stay in prison was 1.3 years (DE: 1.2) and the most common reason for incarceration was robbery (66%). Among migrants, the median time from arrival in Spain to incarceration was 4.7 years (DE: 0.5).

Most respondents identified as heterosexual (96.1%) and the average age at first sexual intercourse was about 14 years (DE: 9.3). The mean number of sexual partners in the previous year was 3.6 (DE: 5), whereas the number of partners since incarceration was 1 (DE: 1.4). Most (70.2%) stated that their current partner was stable, while 18.9% reported having a new sexual partner in the previous three months. During the previous 12 months, the most common sexual practices were vaginal sex (98.3%), followed by oral sex (77.4%) and anal sex (49.9%). The most common contraceptive method used was the condom (40.7%), followed by oral contraceptives (17%) but 37.3 % reported not having used any contraception (**table 8**).

Condoms were not used by 70% of respondents during their last sexual contact. Last sexual contact was with steady partners in 68% of responses. Condoms were most frequently used with casual partners, 43.5% of young remand prisoners affirming they always used condoms with casual partners. Condom use with stable partners was much lower, 13.6% using them always and 62.4% never using them.

[7] Nelson HD, Saha S, Helfand M. Screening for Chlamydial Infection. Rockville (MD): Agency for Healthcare Research and Quality (US); 2001 Apr. (Systematic Evidence Reviews, No. 3.)

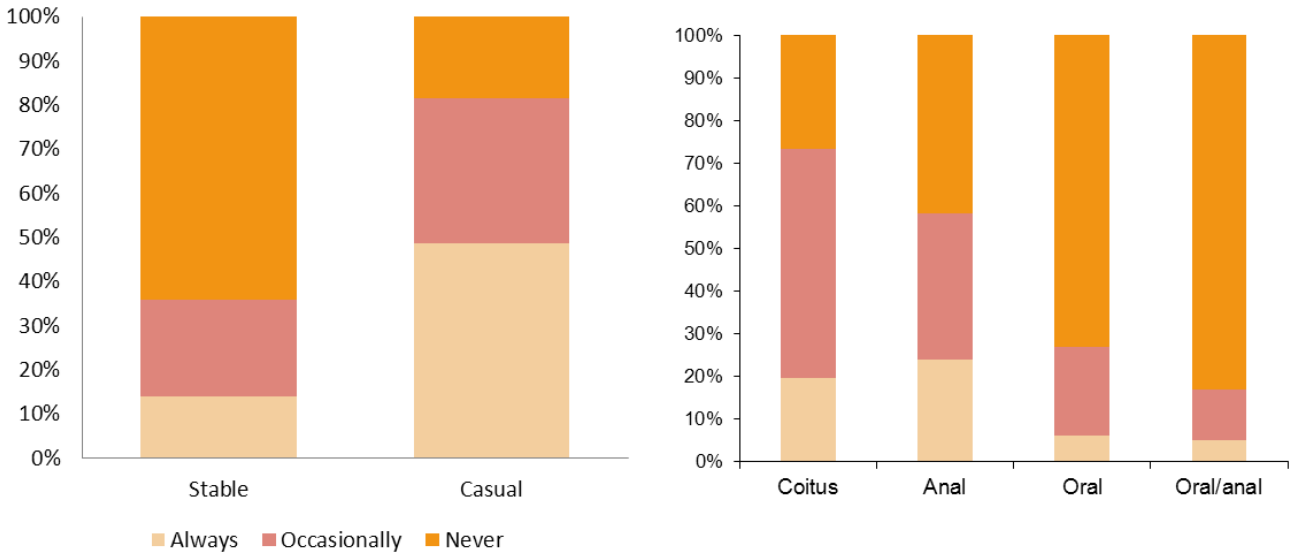
Table 8. Social, demographic and behavioural characteristics of young remand prisoners in Catalonia, 2010

	n	%
Sex		
Female	41	11,4
Male	318	88,6
Origin		
Spanish	97	27
Immigrant	262	73
Sexual orientation		
Homo/Bisexual	13	3,6
Heterosexual	345	96,1
Educational attainment		
No education	123	34,3
Primary	143	39,8
Secondary	89	24,8
University	4	1,1
Partner type		
Non-	252	70,2
Concurrent	93	25,9
New partner within last 3 months		
Yes	68	18,9
No	290	80,8
Mean age at first sex		
Age	14	SD: 9.3
Mean number of partners		
	3,6	SD: 5
STI at the time of survey		
Gonorrhoea	1	0,3
Chlamydia	39	10,9
HIV	2	0,6
Previous STI	21	5,9

	n	%
Sexual practices		
Vaginal sex	353	98,3
Oral	278	77,4
Anal	179	49,9
Oral/anal	49	13,6
Usual contraceptive method		
Condoms	146	40,7
Oral	61	17
Morning after pill	8	2,2
Cervical cap	2	0,6
IUD	8	2,2
None	134	37,3
Transactional sex		
	40	11,1
Sex worker client		
	172	47,9
Sex in:		
Saunas	44	12,3
Discoteques/bars	165	46
Swinger club	17	4,7
Conjugal visit	179	49,9
Drug use		
Tobacco	303	84,4
Alcohol	208	57,9
Cannabis	250	69,6
Amphetamines	27	7,5
Heroin	19	5,3
Crack	21	5,8
Cocaine	108	30,1
LSD	17	4,7
Methadone	9	2,5

The percentage reporting always using condoms for vaginal (19.4%) and anal (23.5%) sex was similar, whereas it was lower for oral sex (**figure 6**).

Figure 6. Percentage of young remand prisoners in Catalonia who use condoms, by type of sexual partner and sex act, 2010

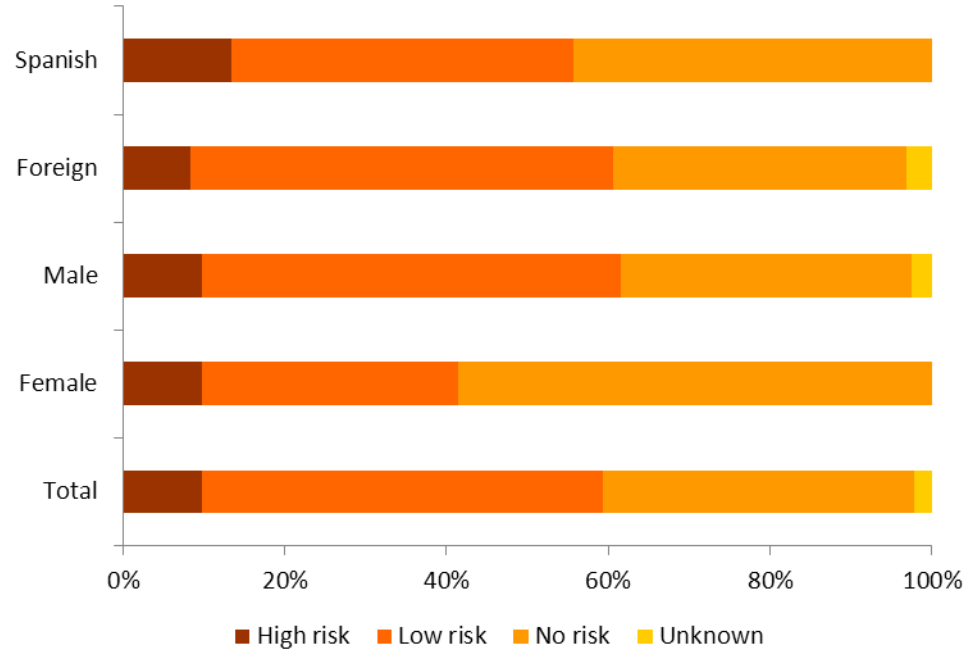


Half of the respondents had had at least conjugal visit while in prison. Other places of sexual contact in the previous year were nightclubs (50%), bars (46%) and to a lesser extent, saunas (12.3%) or exchange clubs (4.7%). Nearly half (47.9%) had paid for sex and 11.1% had provided sex in exchange for money or drugs (**table 8**).

Most respondents had used legal or illegal drugs in the previous 12 months (**table 8**). Tobacco was the most common legal drug (84.4%) whereas the most consumed illegal drugs were cannabis (69.6%), followed by cocaine (30.1%). Sex after consuming drugs was reported by 70% of respondents. Six percent of young offenders had been previously diagnosed with an STI, most frequently, gonorrhoea, human papilloma virus and syphilis. At the time of the study, there were four pregnant women none of whom had a STI.

Most respondents (81%) said they knew what STI were and although 27% thought their sexual practices were not safe, they perceived themselves to be at little or no risk from these practices. Knowledge and risk perception did not vary by sex or origin (**figure 7**).

Figure 7. Perception of the risk of acquiring a STI in young remand prisoners in Catalonia, 2010



5. People living with HIV

A study was carried in Catalonia (as part of the PISCIS Cohort) of 584 HIV-positive individuals between 2009 and 2011 in order to identify differences in risk behaviours among people newly diagnosed with HIV (new diagnoses) and people diagnosed at least one year previously (old diagnoses). The average age of the old diagnoses was 44.5, and 35.7 for new diagnoses ($p < 0.001$). The sex distribution in the two groups was similar, with men making up 77.3% of old and 85.5% of new diagnoses ($p = 0.06$). Over a third (37%) were migrants, although the percentage of migrants was higher in new (48%) then old diagnoses (29%) ($p < 0.001$). Most migrants were from Latin America, followed by Western Europe and Sub-Saharan Africa. Educational level was highest among new diagnoses, with 82% reporting secondary or higher education as compared to 66.8% of the old diagnoses ($p < 0.001$).

MSM were the most common risk group in new diagnoses and PWID were the most common risk group in old diagnoses ($p < 0.001$) (**table 9**).

Thirty percent of new diagnoses reported having had an STI in the previous 12 months compared with 10.7% of the old diagnoses ($p < 0.001$). The most common STI reported by people with a new diagnosis were syphilis (13.40%) and genital warts (7.22%), whereas in old diagnoses they reported syphilis (3.19 %), gonorrhoea (3.19%) and genital warts (3.19%) (**table 10**).

Table 9. Social and demographic characteristics, transmission group and STI in people with new and old HIV diagnoses recruited through the PISCIS-Conductas project

	Old diagnoses N=347	(%)	New diagnoses N=229	(%)	Total N=576	p
Sex						
Male	262	77,3	177	85,5	439	0,059
Female	70	20,6	28	13,5	98	
Trans	7	2,1	2	1	9	
Age						
<30	20	25,6	58	74,4	78	<0.001
30-49	90	52	83	48	173	
40-49	142	76,3	44	23,7	186	
50+	86	82,7	18	17,3	104	
Educational attainment						
Primary or lower	112	33,2	37	18	149	<0.001
Secondary or higher	225	66,8	169	82	394	
Transmission group						
PWID	64	18,9	2	1	66	<0.001
MSM	152	45	125	60,4	277	
Heterosexual	104	30,8	67	32,4	171	
Other	2	0,6	1	0,5	3	
Migration						
Immigrant	97	29	99	48,5	196	<0.001

* numbers and percentages for those wth available data

Drug and alcohol use was slightly different in new and old diagnoses, though no significantly so. Newly diagnosed patients had a higher consumption in the last 12 months of poppers (19.4% vs. 11.1%, respectively) and cocaine (19.4% vs. 8.1%, respectively), as well as increased consumption of hormones (25.6% vs. 15.3%, respectively) and Viagra® (11.6% vs. 8 2%, respectively) (**table 10**).

The average age of first sexual intercourse did not differ between old and new diagnoses (17 in both), or between men and women (17 in both), but was higher among MSM as compared to heterosexual men (17 and 16 years, respectively p <0.001). No differences in the number of casual sexual partners in old and new diagnoses were found, but MSM had an average of 10 casual partners compared to 3 in heterosexuals.

Table 10. Characteristics of risk behaviours and STI reported in the past 12 months by patients with new and old HIV diagnoses recruited through the PISCIS-Conductas project

	Old diagnoses N=347	(%)	New diagnoses N=229	(%)	Total N=576	p
STI						
Reprted an STI in the previous 12 months	36	10,7	62	30	98	<0.001
Drugs						
Marijuana	37	21,5	19	19,4	56	0,036
Cocaine	14	8,1	19	19,4	33	
Heroin	1	0,6	0	-	1	
Methadone	6	3,5	0	-	6	
Amphetamines	1	0,6	1	1	2	
Ecstasy	3	1,7	4	4,1	7	
Poppers	19	11,1	19	19,4	38	
Viagra	20	11,6	8	8,2	28	
Hormones	44	25,6	15	15,3	59	
Benzodiazepines	10	5,8	7	7,1	17	
Others	12	7	3	3,1	15	
Injected drugs	5	2,9	3	3,1	8	
Condom use with:						
Casual partner	113	91,1	79	66,9	192	<0.001
Stable partner	133	70,7	40	29,2	173	<0.001
Reasons for NOT using condoms						
After alcohol or drugs	9	4,8	32	17,6	41	<0.001
If excited	15	8,1	25	13,7	40	0,081
If none are available	11	5,9	34	18,7	45	<0.001
Do not like them	25	13,4	22	12,1	47	0,697
If the partner does not want to use one	20	10,8	21	11,5	41	0,811
With a casual partner	2	1,1	17	9,3	19	<0.001
With a stable partner	46	24,7	123	67,6	169	<0.001
For oral sex	158	84,9	134	74	292	0,010

* numbers and percentages for those wth available data

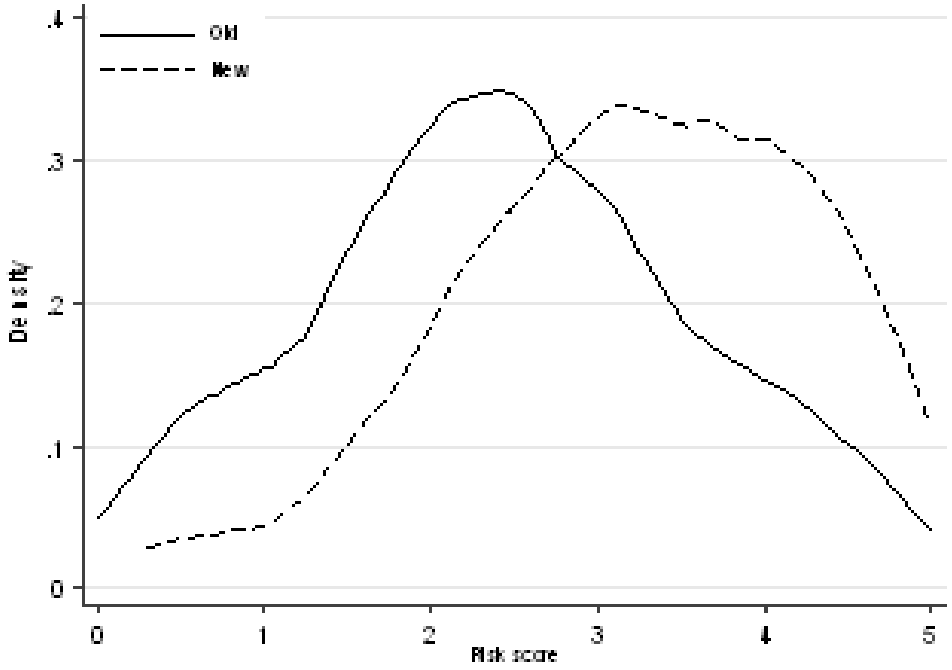
Condom use at last penetrative sex with a casual partner was significantly different between people with a new (91%) and old (67%) HIV diagnosis ($p < 0.001$). There were no differences in condom use with casual between MSM and heterosexual men diagnosed for at least a year (90.9% and 91.7%, respectively), but in those with a new diagnosis, condom use with a casual partner was higher in MSM than in heterosexuals (76% in MSM and 32% in heterosexuals). Condom use during penetrative sex was lower with stable partners than with casual partners, 29.2% of new diagnoses and 70.7% of old diagnoses having used a condom at the last penetrative sex. No differences in transmission group were observed (**table 10**).

The reasons given for non-use of condoms differ between new and old diagnoses. In both groups, the most common reasons given for not using condoms were for oral sex and with a regular

partner, but non-use of condoms with a steady partner was proportionally lower in old compared with new diagnoses (24.7% vs. 67.6 %, respectively). A greater proportion of new patients reported not using condoms with casual partners, after consumption of substances, when excited or if there was no condom available. The proportion of old and new diagnoses stating they did not like condoms or did not use them when the partner objected was similar (**table 10**).

Risk behaviours have been summarised by creating an index of relative sexual risk [link methods], which takes into account the type of sexual act, number of partners and the transmission probability per event. The sexual risk behaviour index was significantly higher in newly diagnosed patients compared with old and also higher in MSM compared with heterosexual men (**figure 8**).

Figure 8. Sexual risk index in MSM and heterosexuals newly diagnosed with HIV



Indicators

Indicators derived from the Integrated Surveillance System for STI and HIV in Catalonia (SIVES) and other sexual and reproductive health indicators

Systematic monitoring of standardized indicators is an important part of a surveillance system for HIV infection in order to assess the effectiveness of the national response to the epidemic and enable comparison over time and against other national and international epidemics. This importance is reflected in internationally agreed declarations and documents[1] [2] [3].

In order to be useful, monitoring and evaluation indicators should be: relevant to national programs, measurable, easy to interpret and sensitive enough to detect change.

The indicators for Catalonia given in this report are constructed from data generated by using all available surveillance systems, from the notifiable disease registers, observational studies and other information sources contributing to the SIVES:

- Register of Notifiable Diseases (MDO)
- RITS
- Studies in sentinel surveillance population
- Behavioural monitoring
- HIVLABCAT
- HIVDEVO
- AERI
- Spectrum Projection Package
- PISCIS Cohort
- ITACA Cohort
- Register of mother-to-child transmission
- Register of non-occupational post-exposure prophylaxis (NONOPEP)

External sources of information also used to construct these indicators are referenced at the end of this chapter.

SIVES 2012 includes a set of homogeneous indicators considered by CEEISCAT to be key to understanding the current epidemic of HIV/AIDS and STI in Catalonia. This set of indicators responds to the demands of different Catalan agencies and departments (Action Plan, Health Plan, Government Department of Health Plan), meets national agreements (National Strategic AIDS Plan), and contributes indicators to the international reporting systems alluded to earlier (European Centre for Disease Prevention and Control (ECDC), UNGASS/GARP (Global AIDS Response Progress)).

[1] Programa Conjunto de las Naciones Unidas sobre el VIH/SIDA. Seguimiento de la Declaración de compromiso sobre el VIH/SIDA. Directrices para el desarrollo de Indicatores básicos. Informe 2010. Ginebra: ONUSIDA; 2009.

[2] United Nations Programme on HIV/AIDS. Global AIDS response progress reporting. Guidelines on construction of core indicators for monitoring the 2011 Political Declaration on HIV/AIDS. 2012 reporting. Geneva: UNAIDS; 2011.

[3] European Centre for Disease Prevention and Control. Mapping of HIV/STI behavioural surveillance in Europe. Stockholm: ECDC 2009.

Indicators

The table of indicators is structured in the following manner:

- Mortality due to HIV/AIDS
- Morbidity due to HIV/STI
- Behavioural determinants of HIV infection
- Response to the epidemic:
    - Diagnosis
    - Treatment
    - Services
- Other sexual and reproductive health indicators
- Complementary Indicators

Each indicator contains the following information fields:

Source
Periodicity
Latest update (year)
Stratification
Value of the indicator

Because of the international relevance of the GARP[2] indicators referred to in the Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia as well as the set of main indicators proposed by ECDC[3], these have been highlighted within the table.

MORTALITY DUE TO HIV/AIDS						
Indicator	Main source (secondary source)	Periodicity	Latest data available	Stratified by	Indicator value	
Annual number of deaths due to AIDS	Catalan Notifiable Disease Register (Catalan Mortality Register) [4]	Annual	2008	Global	157	
				Sex	Male	120
					Female	37
AIDS-specific mortality rate (per 100,000 population)	Catalan Notifiable Disease Register (Catalan Mortality Register and Idescat)[4,5]	Annual	2008	Global	2.2	
				Sex	Male	3.4
					Female	1.0
Mortality rate in people with an AIDS diagnosis (per 1,000 person/years)	PISCIS Cohort	Biennial	1998-2011	Global	27.3	
				Sex	Male	28.5
					Female	23.1
				Key population	PWID	34.0
					MSM	17.9
					Male heterosexual	29.2
					Female heterosexual	14.2
					Other	36.5
Percent of people with an AIDS diagnosis who survive for 18 months	Catalan Notifiable Disease Register (secondary sources: Catalan Mortality Register and Idescat)[4,5]	Annual	2008	Global	62.2	
				Sex	Male	61.5
					Female	65.3
				Key population	PWID	62.9
					MSM	59.0
					Heterosexual	66.1
					Other	56.7
	PISCIS Cohort	Biennial	1998-2011	Global	90.0	
Mean potential years of life lost due to AIDS in the population aged 1-70	Catalan Notifiable Disease Register (secondary sources: Catalan Mortality Register and Idescat)[4,5]	Annual	2009	Global	25.35	
Percent of people with an AIDS diagnosis who survive for 10 years	PISCIS Cohort	Biennial	1998-2011	Global	25.0	

Annual case-fatality rate due to HIV	Catalan Notifiable Disease Register (secondary source: Catalan Mortality Register)[4]	Annual	2008	Global	2.7	
HIV specific mortality rate (per 100,000 population)	Catalan Notifiable Disease Register (secondary sources: Catalan Mortality Register and Idescat)[5,4]	Annual	2008	Global	1.0	
				Sex	Male	1.8
					Female	0.3
Mortality rate in HIV patients per 1,000 person/years	PISCIS Cohort	Biennial	1998-2011	Global	17.3	
				Sex	Male	18.7
					Female	12.9
				Key population	PWID	29.1
					MSM	7.0
					Male heterosexual	21.0
					Female heterosexual	7.2
					Other	22.2

[4] Registro de mortalidad. Departament de Salut. Generalitat de Catalunya
[5] Institut d'Estadística de Catalunya

MORBIDITY DUE TO HIV/AIDS						
Indicator	Source	Periodicity	Latest data available	Stratified by	Indicator value	
Annual number of AIDS cases	Catalan Notifiable Disease Register	Annual	2011	Global	107	
				Sex	Male	89
					Female	18
				Age	<19	0
					20-29	12
					30-39	36
					40-49	41
					≥ 50	18
				Key population	PWID	14
					MSM	45
					Male heterosexual	16
					Female heterosexual	14
					Unknown	18
				Origin†	Spain	69
					Outside Spain	38
Number of people living with HIV/AIDS	Spectrum EPP	Annual	2011	Global	27,796	
				Sex	Male	22,086
					Female	5,71
AIDS incidence rate (per 100,000 population)	Catalan Notifiable Disease Register	Annual	2011	Global	1.5	
				Sex	Male	2.5
					Female	0.5
Estimated prevalence of HIV in adults aged over 15	Spectrum EPP	Annual	2011	Global	0.44	
				Sex	Male	0.71
					Female	0.18
GARP indicator 1.6. and ECDC indicator. Percentage of young people aged 15-24 who are living with HIV*	Spectrum EPP	Annual	2011	Global	0.1	
GARP indicator 1.14 and ECDC indicator. Percentage of men who have sex with men who are living with HIV	Sentinel populations and Behavioural surveillance	Biennial	2008	Global	20.4	

GARP indicator 1.10 and ECDC indicator. Percentage of sex workers who are living with HIV [adapted to: FSW]	Sentinel populations and Behavioural surveillance	Biennial	2009	Global	2.5	
GARP indicator 2.5 and ECDC indicator. Percentage of people who inject drugs who are living with HIV	Sentinel populations and Behavioural surveillance	Biennial	2010-2011	Global	33.2	
GARP indicator 3.3. Mother-to-child transmission of HIV [adapted: unmodelled]	Register of mother-to-child transmission	Annual	2009	Global	0	
Percentage of blood donors living with HIV	Sentinel populations and Behavioural surveillance	Annual	2011	Global	0.01	
Percentage of the prison population living with HIV	Sentinel populations and Behavioural surveillance	Annual	2011	Global	10.9	
Percentage of pregnant females living with HIV	Sentinel populations and Behavioural surveillance	Annual	2011	Global	0.2	
GARP indicator 3.2. Percentage of infants born to HIV-positive women receiving a virological test for HIV within 2 months of birth [adapted to:Percentage of pregnant women tested for HIV before birth]	Register of mother-to-child transmission	Annual	2009	Global	99.5	
GARP indicator 3.1. Percentage of HIV-positive pregnant women who receive antiretrovirals to reduce the risk of mother-to-child transmission [adapted to: Annual Percentage of newborns infected with HIV who were born to HIV-positive pregnant women who receive antiretrovirals to reduce the risk of mother-to-child transmission during pregnancy, birth and for 48 hours after birth].	Register of mother-to-child transmission	Annual	2009	Global	99.5	
Number of new HIV infections	Spectrum EPP	Annual	2011	Global	721	
				Sex	Male Female	561 160
Estimated annual incidence rate of HIV	Spectrum EPP	Annual	2011	Global	0.01	
				Sex	Male Female	0.02 0.005

Annual incidence rate of HIV in new diagnoses (per 1,000 person/years)	HIVLABCAT and AERI	Annual	1998-2011	Global	0.2	
Cumulative incidence rate of HIV in MSM (per 100 person/years)	Cohort ITACA	Biennial	2008-2011	Global	2.38	
				Origin†	Spain	1.24
					Outside Spain	2.52
Annual nombre of new HIV diagnoses	Catalan Notifiable Disease Register	Annual	2011	Global	608	
				Sex	Male	522
					Female	86
				Age	< 19	15
					20-29	174
					30-39	219
					40-49	139
					≥ 50	62
				Key population	PWID	23
					MSM	374
					Male heterosexual	88
					Female heterosexual	66
					Unknown	57
				Health region	Terres de l'Ebre	4
					Tarragona	22
					Lleida	21
					Girona	33
					Catalunya Central	21
					BCN Nord and	40
					Barcelona Sud	53
					Barcelona Centre	37
					Barcelona Ciutat	376
					Alt Pirineu and Aran	2

Distribution of new HIV diagnoses, by year (%)	Catalan Notifiable Disease Register	Annual	2011	Sex	Male Female	85.9 14.1
				Age	< 19 20-29 30-39 40-49 ≥ 50	2.5 28.6 36.0 22.9 10.2
				Key population	PWID MSM Male heterosexual Female heterosexual Unknown	3.8 61.5 14.5 10.9 9.4
Rate of new HIV diagnosis (per 100,000 population)	Catalan Notifiable Disease Register	Annual	2011	Global	8.5	
				Sex	Male Female	14.7 2.4
Percentage of new HIV diagnoses with contact tracing initiated	Catalan Notifiable Disease Register	Annual	2011	Global	41.1	

* The percentage is based on Idescat estimates of the population aged 15-24 anys on the 1st January 2011. † The category "Outside Spain" refers to persons born outside Spain.

SEXUALLY TRANSMITTED INFECTIONS						
Indicator	Source	Periodicity	Latest data available	Stratified by	Indicator value	
Annual number of new cases of limfogranuloma venereum (LGV)	Catalan Notifiable Disease Register	Annual	2011	Global	88	
				Sex	Male	88
					Female	0
				Age	15-19	0
					20-24	4
					25-34	39
					35-44	35
				Health region	Terres de l'Ebre	0
					Tarragona	0
					Lleida	0
					Girona	0
					Catalunya Central	0
					BCN Nord and	2
					Barcelona Ciutat	83
					Costa de Ponent	3
					Vallès Occ. and Or.	0
					Alt Pirineu and Aran	0
Incidence rate of LGV per 100,000 population	Catalan Notifiable Disease Register	Annual	2011	Global	1.2	
				Sex	Male	2.5
					Female	0
				Age	15-19	0.0
					20-24	1.2
					25-34	3.8
					35-44	2.9
Percentage of new diagnoses of LGV with contact tracing initiated	Catalan Notifiable Disease Register	Annual	2011	Global	60	

Annual number of new diagnoses of gonococcus	Catalan Notifiable Disease Register	Annual	2011	Global	502	
				Sex	Male	411
					Female	91
				Age	15-19	23
					20-24	79
					25-34	212
					35-44	122
				Health region	Terres de l'Ebre	7
					Tarragona	16
					Lleida	3
					Girona	67
					Catalunya Central	20
					BCN Nord and	39
					Barcelona Ciutat	249
					Costa de Ponent	49
					Vallès Occ. and Or.	51
					Alt Pirineu and Aran	0
Incidence rate of gonococcus per 100,000 population	Catalan Notifiable Disease Register	Annual	2011	Global	7.0	
				Sex	Male	11.6
					Female	2.5
				Age	15-19	7.1
					20-24	22.9
					25-34	20.5
					35-44	9.9
Percentage of new diagnoses of gonococcus with contact tracing initiated	Catalan Notifiable Disease Register	Annual	2011	Global	56.5	

Annual number of new diagnoses of syphilis	Catalan Notifiable Disease Register	Annual	2011	Global	509	
				Sex	Male	442
					Female	65
				Age	15-19	13
					20-24	47
					25-34	188
					35-44	167
				Health region	Terres de l'Ebre	4
					Tarragona	13
					Lleida	16
					Girona	42
					Catalunya Central	22
					BCN Nord and	36
					Barcelona Ciutat	285
					Costa de Ponent	54
					Vallès Occ. and Or.	37
					Alt Pirineu and Aran	0
Incidence rate of syphilis per 100,000 population	Catalan Notifiable Disease Register	Annual	2011	Global	7.1	
				Sex	Male	12.5
					Female	1.8
				Age	15-19	1.2
					20-24	4.2
					25-34	16.9
					35-44	15.0
Percentage of new diagnoses of syphilis with contact tracing initiated	Catalan Notifiable Disease Register	Annual	2011	Global	66	
Annual number of new diagnoses of ophthalmaia neonatorum	Catalan Notifiable Disease Register	Annual	2010	Global	45	
Incidence rate of ophthalmaia neonatorum per 100,000 live births	Catalan Notifiable Disease Register	Annual	2010	Global	53.6	
Annual nombre of new diagnoses of congenital syphilis	Catalan Notifiable Disease Register	Annual	2011	Global	0	

Annual number of new diagnoses of chlamydia	Catalan Notifiable Disease Register	Annual	2011	Global	649	
				Health region	Terres de l'Ebre	8
					Tarragona	10
					Lleida	85
					Girona	32
					Catalunya Central	12
					BCN Nord and	31
					Barcelona Ciutat	412
					Costa de Ponent	19
					Vallès Occ. and Or.	99
					Alt Pirineu and Aran	0
Incidence rate of chlamydia per 100,000 population	Catalan Notifiable Disease Register	Annual	2011	Global	9.0	
Annual number of new diagnoses of genital warts	Catalan Notifiable Disease Register	Annual	2011	Global	4,698	
				Health region	Terres de l'Ebre	71
					Tarragona	208
					Lleida	281
					Girona	479
					Catalunya Central	213
					BCN Nord and	450
					Barcelona Ciutat	1362
					Costa de Ponent	901
					Vallès Occ. and Or.	876
Incidence rate of genital warts per 100,000 population	Catalan Notifiable Disease Register	Annual	2011	Global	65.4	
Annual number of new diagnoses of trichomonas	Catalan Notifiable Disease Register	Annual	2011	Global	562	
				Health region	Terres de l'Ebre	22
					Tarragona	20
					Lleida	39
					Girona	59
					Catalunya Central	20
					BCN Nord and	68
					Barcelona Ciutat	175
					Costa de Ponent	67
					Vallès Occ. and Or.	102

Incidence rate of trichomonas per 100,000 population	Catalan Notifiable Disease Register	Annual	2011	Global	7.8	
Annual number of new diagnoses of genital herpes	Catalan Notifiable Disease Register	Annual	2011	Global	1,695	
				Health region	Terres de l'Ebre	45
					Tarragona	97
					Lleida	62
					Girona	241
					Catalunya Central	77
					BCN Nord and	180
					Barcelona Ciutat	567
					Costa de Ponent	279
					Vallès Occ. and Or.	203
Incidence rate of genital herpes (per 100,000 population)	Catalan Notifiable Disease Register	Annual	2011	Global	23.6	
Prevalence of chlamydia in persons aged < 25	Sentinel population (prisons)	Biennial	2011	Global	11	
	Sentinel population (ASSIR)		2010		5.5	
Number of cases of STI in the general population and in key populations	RSTI	Annual	2011	Global	682	
				Key population	MSM	605
					FSW	39
					Clients of FSW	37
Percentage of the population general and key populations with an STI	RSTI	Annual	2011	Global	50.0	
				Key population	MSM	41.2
					FSW	2.7
					Clients of FSW	2.5
Number of people diagnosed with an STI who are also infected with HIV	RSTI	Annual	2011	Global	260	
				Sex	Male	255
					Female	5
				Age	< 30	61
					30+	199
				Key population	Homosexual/bisexual	246
					Heterosexual	13

Percentage of people diagnosed with an STI who are also infected with HIV	RSTI	Annual	2011	Global	1.17	
				Sex	Male	17.4
					Female	0.3
				Age	< 30	4.2
					30+	13.5
				Key population	Homosexual/bisexual	16.7
					Heterosexual	0.9
	Catalan Notifiable Disease Register			Global	Syphilis: 29.5	
					Gonococcus: 12.9	
					LGV: 95.3	
Number of cases with a concomitant diagnosis of STI/HIV	RSTI	Annual	2011	Global	42	
Percentage of cases with a concomitant diagnosis of STI/HIV	RSTI	Annual	2011	Global	2.8	
Number of people newly diagnosed with an STI who were previously diagnosed with an STI in the preceding year	RSTI	Annual	2011	Global	204	
				Sex	Male	132
					Female	72
				Age	< 30	100
					30+	104
				Key population	Homosexual/bisexual	99
					Heterosexual	100
Percentage of people newly diagnosed with an STI who were previously diagnosed with an STI in the preceding year	RSTI	Annual	2011	Global	13.9	
				Sex	Male	64.7
					Female	35.3
				Age	< 30	49.0
					30+	51.0
				Key population	Homosexual/bisexual	48.5
					Heterosexual	49.0
Number of people newly diagnosed with an STI who report high risk behaviours in the preceding year	RSTI	Annual	2011	Global	499	
				Sex	Male	286
					Female	213
				Age	< 30	240
					30+	259
				Key population	Homosexual/bisexual	220
					Heterosexual	274

Percentage of people newly diagnosed with an STI who report high risk behaviours in the preceding year	RSTI	Annual	2011	Global	33.9	
				Sex	Male	57.3
					Female	42.7
				Age	< 30	48.1
					30+	51.9
				Key population	Homosexual/bisexual	44.1
					Heterosexual	54.9
ECDC indicator. Mean number of sexual partners in the previous 12 months in people diagnosed with an STI	RSTI	Annual	2011	Global	11	
				Sex	Male	17
					Female	2.0
Number of people diagnosed with an STI who have had concurrent or sequential sexual partners in the previous 12 months	RSTI	Annual	2011	Global	Concurrent: 250 Serial: 402	
Percentage of people diagnosed with an STI who have had concurrent or sequential sexual partners in the previous 12 months	RSTI	Annual	2011	Global	Concurrent: 17.0 Serial: 7.4	
Number of people diagnosed with an STI who had a new sexual partner in the 3 months before the STI diagnosis	RSTI	Annual	2011	Global	693	
				Sex	Male	555
					Female	138
				Age	< 30	268
					30+	425
				Key population	Homosexual/bisexual	433
					Heterosexual	259
Percentage of people diagnosed with an STI who had a new sexual partner in the 3 months before the STI diagnosis	RSTI	Annual	2011	Global	47.2	
				Sex	Male	58.4
					Female	26.6
				Age	< 30	38.7
					30+	61.3
				Key population	Homosexual/bisexual	62.5
					Heterosexual	37.4
Number of people diagnosed with an STI who reported sexual practices, by type of sexual practice	RSTI	Annual	2011	Global	Vaginal: 554 Oral: 553 Oral/anal: 63 Anal: 370	

Percentage of people diagnosed with an STI who reported sexual practices, by type of sexual practice	RSTI	Annual	2011	Global	Vaginal: 58.5 Oral: 58.4 Oral/anal: 6.7 Anal: 39.1	
Number of people diagnosed with an STI who reported using a condom at last sex	RSTI	Annual	2011	Global	232	
				Sex	Male Female	153 79
				Age	< 30 30+	110 122
				Key population	Homosexual/bisexual Heterosexual	108 123
ECDC indicator. Percentage of people diagnosed with an STI who reported using a condom at last sex	RSTI	Annual	2011	Global	15.7	
				Sex	Male Female	65.9 34.1
				Age	< 30 30+	47.4 52.6
				Key population	Homosexual/bisexual Heterosexual	46.6 53.0
Number of new diagnoses of STI with contact tracing initiated	RSTI	Annual	2011	Global	653	
				Sex	Male Female	487 166
				Age	< 30 30+	271 382
				Key population	Homosexual/bisexual Heterosexual	360 291
Percentage of new diagnoses of STI with contact tracing initiated	RSTI	Annual	2011	Global	70.7	
				Sex	Male Female	74.6 25.4
				Age	< 30 30+	41.5 58.5
				Key population	Homosexual/bisexual Heterosexual	55.1 44.6

Number of STI notified by type of health service	RSTI	Annual	2011	Global	ASSIR: 385 Primary care team: 20 STI unit: 1,064
Distribution of STI by type of health service (%)	RSTI	Annual	2011	Global	ASSIR: 26.2 Primary care team: 1.4 STI unit: 72.4
BEHAVIOURAL DETERMINANTS					
Indicator	Source	Periodicity	Latest data available	Stratified by	Indicator value
General population					
GARP indicator 1.3. Percentage of adults aged 15–49 who have had sexual intercourse with more than one partner in the past 12 months	Survey of health and sexual habits. INE[6]	One-off	2003	Global	18.2
GARP Indicator 1.4. and ECDC indicator. Percentage of adults aged 15–49 who had more than one sexual partner in the past 12 months who report the use of a condom during their last intercourse	Survey of health and sexual habits. INE[6]	One-off	2003	Global	67
MSM					
ECDC indicator. Percent of MSM who correctly identify HIV prevention measures and reject incorrect methods [adapted to: European MSM Internet Survey (EMIS) indicators of knowledges of HIV transmission routes]*	Behavioural surveillance	Biennial	2010	Global	44.5
GARP indicator 1.12. and ECDC indicator. Percentage of men reporting the use of a condom the last time they had anal sex with a male partner [adapted to: among those who have had anal sex in the previous 12 months]	Behavioural surveillance	Biennial	2010	Global	61.6
ECDC indicator. Percentage of MSM reporting consistent use of a condom for anal sex with stable sexual partners in the previous 12 months	Behavioural surveillance	Biennial	2010	Global	26.9

ECDC indicator. Percentage of MSM reporting consistent use of a condom for anal sex with casual sexual partners in the previous 12 months	Behavioural surveillance	Biennial	2010	Global	55.4
Percentage of MSM who report unprotected anal sex with a stable partner of unknown or discordant HIV status in the previous 12 months	Behavioural surveillance	Biennial	2010	Global	20.7
ECDC indicator. Percent of MSM who have paid for sex in the previous 12 months [adapted to: previous 6 months]	Behavioural surveillance	Biennial	2010	Global	7.4
Percentage of MSM who have been paid for sex in the previous 12 months	Behavioural surveillance	Biennial	2010	Global	4.7
Female sex workers					
GARP indicator 1.8. and ECDC indicator. Percentage of sex workers reporting the use of a condom with their most recent client [adapted to: FSW in the previous 6 months, by type of client (stable or not stable)]	Behavioural surveillance	Biennial	2009	Global	Regular client: 92.4; occasional client 95.5
ECDC indicator. Percent of FSW who reported using a condom at last sex with a stable partner in the previous 12 months [adapted to: previous 6 months]	Behavioural surveillance	Biennial	2009	Global	10.3
ECDC indicator. Proportion of FSW who consistently used a condom with clients in the previous 6 months	Behavioural surveillance	Biennial	2009	Global	92.3
ECDC indicator. Proportion of FSW who consistently used a condom with stable sexual partners in the previous 6 months	Behavioural surveillance	Biennial	2009	Global	8

[6] Instituto Nacional de Estadística. Encuesta de Salud y Hábitos Sexuales 2003.

PWID						
GARP indicator 2.2. and ECDC indicator. Percentage of people who inject drugs who report the use of a condom at last sexual intercourse [adapted to: having sex in the previous 6 months, by type of sexual partner]	Behavioural surveillance	Biennial	2010-11	Global	Stable partner: 36.9. Casual partner: 77.2	
ECDC indicator. Proportion of PWID who consistently used a condom with stable sexual partners in the previous 6 months	Behavioural surveillance	Biennial	2010-11	Global	27.5	
ECDC indicator. Proportion of PWID who consistently used a condom with casual sexual partners in the previous 6 months	Behavioural surveillance	Biennial	2010-11	Global	65.5	
GARP indicator 2.3. Percentage of people who inject drugs who reported using sterile injecting equipment the last time they injected [adapted to: within the last month]	Behavioural surveillance	Biennial	2010-11	Global	91.1	
Young people (aged under 25)						
Mean age at first sex	Behavioural surveillance*	One-off	2012	Global	16.6	
				Sex	Male Female	16.7 16.5
GARP indicator 1.2. Percentage of young women and men aged 15-24 who have had sexual intercourse before the age of 15	Behavioural surveillance*	One-off	2012	Global	12.3	
Percentage of young people who have had penetrative sex (anal or vaginal)	Behavioural surveillance*	One-off	2012	Global	79.8	
				Sex	Male Female	76.4 83.3
ECDC indicator. Mean number of sexual partners in the previous 12 months	Behavioural surveillance*	One-off	2012	Global	2.1	
	Poblacions sentinella (ASSIR)	Biennial	2010	Global	2.0	
	Poblacions sentinella (prisons)	Biennial	2011	Global	3.6	

ECDC indicator. Percentage of the young sexuallly active heterosexuals who used a condom at last sex in the previous 12 months	Behavioural surveillance*	One-off	2012	Global	66.2	
	Poblacions sentinella (prisons)	Biennial	2011	Sex	Male	30.8
					Female	18
Percentage of people diagnosed with an STI who used a condom at last sex	Poblacions sentinella (prisons)	Biennial	2011	Global	20.5	
Prevalence of contraceptive use at last sex	Behavioural surveillance*	One-off	2012	Global	89.7	
				Sex	Male	91.0
					Female	88.4
Percentage of women who have ever used emergency contracption	Behavioural surveillance*	One-off	2012	Global	Female	42.0
Teenage pregnancy rate	Reproductive healtlh Observatory[7]	Annual	2010	Global	23.1	
GARP indicator 1.1. Percentage of young women and men aged 15–24 who correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission* [adapted to: correctly answers: using a condom, mosquito bite, drinking from the same glass. Relationships have not been included within the couple.	Survey of health and sexual habits. INE[6]	One-off	2003	Global	70.8	

"* This Indicator may be underestimated because of the w ay the EMIS indicator is built (it correctly estimates five parameters of know ledge of HIV transmission.) + The indicators for young people derived from behavioural surveillance are part of an initial exploration of the project "Youth, health and the Internet" funded by the Catalan Institute of Oncology. These indicators include: ever having had a sexual relationship (contraception include: oral contraceptives, IUD, diaphragm, condom, tubal ligation, rhythm method and w ithdraw al). † the category "Outside Spain" corresponds to people born outside Spain

[7] Consejo Superior de Investigaciones Científicas, Bayer Schering Pharma. Observatorio de Salud Reproductiva

RESPONSE						
Diagnosis						
Indicator	Source	Periodicity	Latest data available	Stratified by	Indicator value	
Number of diagnostic HIV tests performed in saunas	Agència de Salut Pública de Catalunya	Annual	2007-2011	Global	1,825	
Number of diagnostic HIV tests performed in pharmacies	Programme for treatment and prevention of AIDS (PPAS), Department of Salut	Annual	2011	Global	1,638	
Number of diagnostic HIV tests performed in community based voluntary counselling and testing centres	HIVDEVO	Annual	2010	Global	7,783	
Number of diagnostic HIV tests performed by the Catalonia laboratory network	HIVLABCAT	Annual	2011	Global	343,704	
Rate of diagnostic HIV tests performed by the Catalonia laboratory network (per 100,000 population)	HIVLABCAT	Annual	2011	Global	46.2	
				Health region	Terres de l'Ebre	25.79
					Tarragona	27.09
					Lleida	38.8
					Girona	28.0
					Catalunya Central	27.2
					Barcelona	55.1
					Alt Pirineu and Aran	-
Percentage of positive diagnostic HIV tests performed by the Catalonia laboratory network	HIVLABCAT	Annual	2011	Global	0.97	
				Health region	Terres de l'Ebre	0.4
					Tarragona	0.5
					Lleida	0.3
					Girona	0.3
					Catalunya Central	0.3
					Barcelona	1.1
					Alt Pirineu and Aran	-

Percentage of positive diagnostic HIV tests performed in community based voluntary counselling and testing centres	HIVDEVO	Annual	2010	Global	2.3
GARP indicator 1.5. and ECDC indicator. Percentage of women and men aged 15-49 who received an HIV test in the past 12 months and know their results	Survey of health and sexual habits. INE[6]	One-off	2003	Global	6.4
GARP indicator 1.9. and ECDC indicator. Percentage of sex workers who have received an HIV test in the past 12 months and know their results [adapted: FSW]	Behavioural surveillance	Biennial	2009	Global	58.5
GARP indicator 1.13. and ECDC indicator. Percentage of men who have sex with men that have received an HIV test in the past 12 months and know their results	Behavioural surveillance	Biennial	2010	Global	51.8
GARP indicator 2.4. and ECDC indicator. Percentage of people who inject drugs that have received an HIV test in the past 12 months and know their results	Behavioural surveillance	Biennial	2010-11	Global	60.8

Percentage of people with a new dignosis of HIV with late presentation*	PISCIS Cohort	Biennial	1998-2011	Global	43.1	
				Sex	Male	45.0
					Female	28.8
				Age	13-24	23.1
					25-44	42.7
					45-49	52.6
					>=50	59.6
				Key population	PWID	61.5
					MSM	38.4
					Male heterosexual	67.7
					Female heterosexual	28.6
					Other/Unknown	50.0
	Catalan Notifiable Disease Register	Annual	2011	Global	40.7	
				Sex	Male	40.5
					Female	41.4
				Age	13-24	25.0
					25-44	39.7
					45-49	48.9
					≥ 50	59.3
				Key population	PWID	40.0
					MSM	33.5
					Male heterosexual	59.0
					Female heterosexual	40.4
					Unknown	62.2
Percentatge of people with a new diagnosis of HIV with recent infection	AERI	Annual	2011	Global	34.6	
* New infections diagnosed with a CD4 count of < 350.						

Treatment						
Number of cases of non-occupational post-exposure prophylaxis for HIV	NONOPEP Cohort		2009-2010	Global	586	
Percentage of PLWH who survive for 5 years after starting cART	PISCIS Cohort	Biennial	1998-2011	Global	92.6	
					Late diagnosis	91.0
					No late diagnosis	96.8
Life expectancy of PLWH who start cART (in years)	PISCIS Cohort	Biennial	1998-2011	Global	At age 20	40.5
					At age 35	30.0
Potential life years lost due to HIV before age 65 in PLWH who initiate cART (per 1,000 person/years)	PISCIS Cohort	Biennial	2010-2011	Global	303.8	
GARP indicator 4.1. Percentage of eligible adults and children currently receiving antiretroviral therapy [adapted to: % of adults]	PISCIS Cohort	Biennial	2011	Global	92.4	
GARP indicator 4.2. Percentage of adults and children with HIV known to be on treatment 12 months after initiation of antiretroviral therapy [adapted to: % of adults]	PISCIS Cohort	Biennial	2010-2011	Global	89.2	
Percentage of PLWH with an undetectable viral load 6 months after starting cART	PISCIS Cohort	Biennial	2010-2011	Global	94.9	
Life years gained in adults due to cART for PLWH, since the start of the epidemic	Spectrum EPP	Annual	up to 2012	Global	20,286	
Percentage of people with recent HIV infection who have transmitted drug resistance	AERI	Annual	2005	Global	11.0	
Percentage of people with recent HIV infection who have non-B subtypes	AERI	Annual	2005	Global	19.2	

GARP indicator 5.1. Percentage of estimated HIV-positive incident TB cases that received treatment for both TB and HIV [adapted to: HIV infected people with TB who complete TB treatment]	Programme for prevention and control of tuberculosis in Catalonia[8]	Annual	2011	Global	75.4	
GARP indicator 1.11. Percentage of men who have sex with men reached with HIV prevention programmes	Behavioural surveillance	Biennial	2010	Global	69.5	
GARP indicator 1.7. Percentage of sex workers reached with HIV prevention programmes [adapted: FSW whose main source of condoms was free during the previous year]	Behavioural surveillance	Biennial		Global	70.7	
GARP indicator 2.1. Number of syringes distributed per person who injects drugs per year by needle and syringe programmes (syringes/injector/year) [adapted to: number of injectors estimated]	General Sub-directorate for Drug Dependency	Biennial		Global	133*	
†† The category "Outside Spain"refers to people w ith a nationality different to "Spanish". * Value modified on July 24 2013						
Other sexual and reproductive health indicators						
Percentage of sexually active women aged 18-70 who have ever used contraception	Aphrodite study[9]	One-off	2009	Global	87.4	
Percentage of women aged 15-49 who have ever used emergency contraception	Population survey on the use of emergency contraception. Spanish society for contraception[10]	One-off	2011	Global	15.4	
Average age of first child	Natural population change. Idescat [11]	Annual	2010	Global	29.7	
Percentage of births due to cesarean section	Maternal and infant health programme, Departament of Health [12]	Annual	2010	Global	28.1	
Total abortion rate (Terminations of pregnancy per woman)††	Register of terminations of pregnancy [13]	Annual	2011	Origin††	Spain Outside Spain	0.3 0.8
Total fertility rate (children per woman)††	Natural population change. Idescat [11]	Annual	2011	Origin††	Spain Outside Spain	1.3 1.7

Complementary Indicators					
GARP indicator 7.2. Proportion of ever-married or partnered women aged 15-49 who experienced physical or sexual violence from a male intimate partner in the past 12 months [adapted to: police reports of gender-based violence]	Monthly statistical bulletin on gender-based violence. Ministry of Health, social service and equality [14]	Annual	2012	Global	19.6
Indicator 6.1. Domestic and international AIDS spending by categories and financing sources (€) [adapted to: Public spending on NGO for HIV prevention projects and support for PLWH]	Report on HIV prevention activities in Autonomous Communities. Ministry of Health, social service and equality [15]	Annual	2009	Global	1,548,800
GARP indicator 7.1. National Commitments and Policy Instruments (prevention, treatment, care and support, human rights, civil society involvement, gender, workplace programmes, stigma and discrimination and monitoring and evaluation)				Under development	
GARP indicator 7.3. Current school attendance among orphans and non-orphans aged 10–14				Not applicable	
GARP indicator 7.4. Proportion of the poorest households who received external economic support in the last 3 months				Not applicable	
†† The category "Outside Spain" refers to people with a nationality different to "Spanish".					

[8] Direcció de Vigilància i Resposta a Emergències de Salut Pública. Informe Annual 2011. Situació epidemiològica i tendència de l'epidèmia tuberculosa a Catalunya. Prevenció i control de la tuberculosi a Catalunya. Barcelona: Agència de Salut Pública de Catalunya; 2012.

[9] Bosch X, Castellsagué X, Cortés J, Puig-Tintoré LM, Roura E, Sanjosé S, et al. Estudio Afrodita: cribado del cáncer de cuello uterino en España y factores relacionados. Madrid: GlaxoSmithLine; 2009.

[10] SIGMADOS. Encuesta poblacional sobre uso y opinión de la píldora postcoital.

[11] Moviment Natural de Població, Institut Català d'Estadística, 2010.

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[13] Interrupción voluntaria del embarazo Datos definitivos correspondientes al año 2011. Madrid: Secretaría General de Sanidad y Consumo. Minsterio de Sanidad, servicios sociales e igualdad; 2011.

[14] Boletín Estadístico Mensual sobre Violencia de Género. Abril 2012. Madrid: Ministerio de Salud, Servicios Sociales e Igualdad; 2012.

[15] Informe del cuestionario de actividades de prevención del VIH en las CCAA (ICAP) año 2009. Madrid: Secretaría del Plan Nacional sobre el Sida. Dirección General de Salud Pública y Sanidad Exterior. Ministerio de Sanidad, Política Social e Igualdad; 2010.

Sources of information

1. Catalan Notifiable Disease Register

The Catalan Notifiable Disease Register (MDO) is fed by both weekly aggregate notifiacation and individual case notification by medical professionals on clinical suspicion of a notifiable STI. The system of statutory notification has been unified under the law “Decreto 67/2010, de 25 Mayo”. This law regulates the system of notifiable diseases and the reporting of outbreaks to the Department of health.

Standard procedures and circuits for the notification of diseases listed in the law are available at: http://www20.gencat.cat/docs/canalsalut/Home%20Canal%20Salut/Professionals/Temes_de_salut/Vigilancia_epidemiologica/documents/manualmod2009.pdf

Case definitions for these infections are included in the document “Definición de caso de las EDO”, which is updated annually by the Department of Health and is available at: http://www20.gencat.cat/docs/canalsalut/Home%20Canal%20Salut/Professionals/Temes_de_salut/Vigilancia_epidemiologica/documents/spdefimdo.pdf

1.1 Aggregate reporting

Aggregate reports should be filed weekly (the week starts at midnight on Sunday and ends at 24:00 the following Saturday).

Aggregate reports are received for: genital chlamydia infection, condyloma acuminata, genital herpes, trichomoniasis, ophthalmia neonatorum and for the sum total of other STI diagnosed.

1.2 Case notification

Some diseases should be reported individually in order to allow immediate action for prevention and control. Individual case notification is undertaken on clinical suspicion by completion of a case notification form. Data collected on the form is confidential and is used exclusively for public health purposes.

Sexually transmitted infections that should be notified on a case-by-case basis include: infectious syphilis, gonorrhoea and LGV. LGV has been notifiable 2007, congenital syphilis since 1997 and AIDS since 1987. HIV was subject to voluntary notification between 2001 and 2010, but with the publication of the law “Decreto 67/2010, de 25 Mayo”, HIV became statutorily notifiable and formed part of the formal surveillance of HIV in Catalonia.

2. Catalan Laboratory Notification System (SNMC)

The SNMC is based on the collection of microbiological information for selected infections. Several hospital and reference laboratories report these infections voluntarily. Currently there are a total of 50 hospital laboratories from different geographical areas of Catalonia that report to the SNMC. A total of 11 clinical infectious síndromes are notified:

- Mycobacterial infections
- Sexually transmitted infections
- Meningitis and encephalitis
- Respiratory infections
- Gastroenteritis
- Bacteraemia
- Other infectious diseases
- Invasive pneumococcal infection
- Invasive meningococcal infection
- Invasive *Haemophilus influenzae* infection
- Listeriosis

The Department of Health publishes all information gathered by the SMNC, including participating centres, a list of microorganisms and notification criteria.
http://www20.gencat.cat/portal/site/canalsalut/menuitem.af261f715269a25d48af8968b0c0e1a0/?vgnextoid=4778b088013da210VgnVCM1000008d0c1e0aRCRD&vgnextchannel=4778b088013da210VgnVCM1000008d0c1e0aRCRD&vgnextfmt=default

3. Sentinel surveillance networks

Sentinel surveillance networks are used for the surveillance of HIV and STI, gathering data complementary to other surveillance systems already in use.

3.1 Sexually Transmitted Infection Register of Catalonia (RITS)

The RITS is a sentinel surveillance system that is part of the epidemiological repository of Catalonia (REC) within the Department of Health intranet. RITS gathers data from the voluntary notifications of 12 different STI by 164 sentinel professional in 64 primary care centres (Sexual and reporoductive health centres (ASSIR), primary care and Sexual health clinics) in Catalonia. Demographic, clinical and behavioural information is collected on a voluntary basis using a

standardised questionnaire. Incident cases of STI from participating primary care centres are targeted for notification. Physicians or other health professionals notify any person with one or more diagnoses of a notifiable STI. RITS complements aggregate notification systems by providing data not available from those aggregate reports.

3.2 Network of Community-based voluntary counselling and testing centres in Catalonia (HIVDEVO)

Since 1994, community-based voluntary counselling and testing centres (HIVDEVO) have collected epidemiological data on users of these services. In Catalonia, there are 12 centers offering free, anonymous, voluntary and confidential caounselling and testing. These centers are located in Barcelona (Associació Ciutadana Anti-Sida de Catalunya, Centre Jove d'Anticoncepció i Sexualitat, BCN-Checkpoint, Servei d'Atenció i Prevenció Sociosanitària-Creu Roja, Stop Sida, Àmbit Prevenció i Gais Positius), Sabadell y terraza (Actua Vallès), Lleida (Associació Antisida de Lleida), Girona (Associació Antisida de Girona) and Tarragona (Assexora'TGN i Creu Roja TGN). HIV tests are funded by the Department of Health of the Generalitat de Catalunya.

3.3 Catalonia laboratory network for HIV diagnosis (LABCAT)

In 1992, in Catalonia a network of laboratories was created which voluntarily reported on diagnostic HIV testing and results. Currently, this network (HIVLABCAT) is made up of hospital laboratories, primary care laboratories and private laboratories. All laboratorios send a monthly report to CEEISCAT, notifying the total number of diagnostic tests carried out, as well as the number of new HIV diagnoses (excluding testing during blood donation).

3.4 Sentinel surveillance network for gonococal antibiotic resistance of Catalonia (VIRAG.cat)

In March 2010, we undertook a review of the status of surveillance for gonococcal antibiotic resistance in Catalonia.

A total of 51 in Catalonia laboratories undertake antibiotic sensitivity testing of *N. gonorrhoeae*, of which 29 responded to the survey. Of these, 18 were hospital laboratories belonging to SNMC and 11 were private laboratories from different parts of Catalonia.

Sensitivity to the following antibiotics was reported: ciprofloxacin, spectinomycin, ceftriaxone, cefotaxime, tetracycline, penicillin, and others (from an open question). Due to increased resistance to ciprofloxacin and penicillin and the identification of new strains resistant to ceftriaxone, CEEISCAT convened, in March 2011, a working group to prepare a plan for the sentinel surveillance of gonococcal antibiotic resistance in Catalonia (VIRAG.cat). This plan is currently in the approval stage.

This plan proposes the creation of a sentinel network of laboratories (Several laboratorios haave been participating Since January 2013) and the identification of reference laboratories with homogeneous techniques to identifiy antibiotic resistance. Enhanced surveillance to collect epidemiological data will be acheived through the identification of a network of physicians who will also contribute to the surveillance network.

4. Sentinel surveillance populations

Monitoring of sentinel populations allows the detection of variations and trends in the prevalence of HIV and STI, risk behaviours in these key populations and the distribution of these infections in Catalonia, complementing information from other surveillance systems. These populations are selected to be representate, homogeneous and accessible and are intended to represent the general population as well as populations at high risk of acquiring HIV and STI.

4.1 Newborns (VIH nadó)

Unlinked anonymous screening for HIV in pregnant women in Catalonia in undertaken through a representative sample of umbilical cord blood. Samples of cord blood are preserved on filter paper and systematically collected as part of the Neonatal metabolic disorder screening programme. This programme covers 99% of babies born each year in Catalonia and has been running since 1994.

The programme "VIH nadó" collects, along with the biological sample, additional data using a questionnaire. These data include age, country of origin of the parents of the baby, province of residence and sex of the baby.

4.2 Blood donors

Since 1985, all blood donations have been systematically screened for HIV in order to prevent the transmission of HIV via blood or organ transplantation. Aggregate data on HIV positivity are systematically sent to CEEISCAT in order to calculate the positivity rate of HIV in a low-risk population. In addition, demographic variables such as age and sex are collected. The numerator

is all donations in a calendar year positive for HIV and the denominator is the total of all donations collected in the same year by the blood and tissue bank of Catalonia.

4.3 Prison inmates in Catalonia

Since 1995, SIVES has monitored the prevalence of HIV infection in the prison population through the systematic collection of HIV testing data from three centres in Catalonia. The point prevalence of HIV is calculated for a particular day and stratified by age and sex. The numerator is the number of HIV positive inmates on a particular day and the denominator is the total prison population in the three study centres on the same day.

4.4 Young attendees of sexual and reproductive health clinics (ASSIR), and clinics for young people

As part of the monitoring of STI and their associated risk behaviors, cross-sectional surveys are conducted biennially in a population of young people aged between 16 and 35 who have attended either ASSIR or clinics for young people. The objective of these studies is to determine the prevalence of *C. Trachomatis* and *N. gonorrhoeae* and associated determinants. The first cross-sectional survey was performed in 2007, the second in 2010 on a convenience sample of 750 young people, and stratified by age and sex. The sample was representative of attendees of the 7 centers included in the study which included centres form the following sub-regions of the Barcelona health district: Barcelona Ciudad, Barcelonés Norte y Maresme, Costa Poniente y Cataluña Central. Two of the centers were clinics for young people, the remaining five were ASSIR. An additional study was performed in a sub-sample of 250 partners of women aged under 25. Screening in these women was undertaken through a urine simple taken at home and sent through the mail, with test results accessed via the internet. STI were detected in urine through the DNA amplification techniques of real time PCR (polymerase chain reaction) (Abbott RealTime PCR CT/NG CE). To calculate the prevalence of *C. Trachomatis* and *N. gonorrhoeae* the number of positive samples are divided by the total number of samples tested. All participants gave written informed consent and were given a semi-structured, standardized questionnaire. Questionnaires consisted of 40 questions grouped by sociodemographic data, relationships, contraception, sexual practices in the previous 12 months, other risk behaviours, drug use, medical history and reason for consultation. A descriptive analysis of all variables was performed followed by multivariate logistic regression designed to explore the risk factors associated with genital infection with *C. Trachomatis*.

4.5 Young people in prison in Catalonia

As part of the monitoring of STI and their associated risk behaviors, cross-sectional surveys are conducted biennially in young prison inmates aged between 18 and 25. The objective of these studies is to determine the prevalence of *C. Trachomatis* and *N. gonorrhoeae* and associated determinants in this population. The first cross-sectional survey was performed in 2008, the second in 2011 on a convenience sample of 430 young people aged under 25 years and inmates of the Wad-Ras, Brians-1 and Jóvenes prisons. All participants gave written informed consent and submitted a urine simple for testing. STI were detected in urine through the DNA amplification techniques of real time PCR (polymerase chain reaction) (Abbott RealTime PCR CT/NG CE). To calculate the prevalence of *C. Trachomatis* and *N. gonorrhoeae* the number of positive samples are divided by the total number of samples tested. Participants were given a self-administered semi-structured, standardized questionnaire. consisting of 40 questions grouped by sociodemographic data, relationships, contraception, sexual practices in the previous 12 months, other risk behaviours, drug use, medical history and knowledge of STI. A descriptive analysis of all variables was initially performed and followed by multivariate logistic regression designed to explore the risk factors associated with genital infection with *C. Trachomatis*.

4.6 Female sex workers

Surveillance of the prevalence of HIV/STI in FSW in Catalonia was initiated in 2005, alongside monitoring of associated risk behaviours. Three cross-sectional studies have been conducted in collaboration with the association Àmbit Prevenció; in 2005, 2007 and 2009. In each study, a convenience sample of 400 women over 18 years was selected and proportionally stratified by province and country of origin. Women were recruited from the street, brothels, clubs and bars throughout Catalonia. All participants gave written informed consent and behavioural information was gathered using a semi-structured, standardized questionnaire adapted from a questionnaire used by Médicos del Mundo in their 2002 study funded by FIPSE (Fundación para la Investigación y la Prevención del Sida en España)[1]. The questionnaire was translated into Romanian, Russian and English and asked about behaviour during the previous 6 months. Anonymous testing for HIV, chlamydia and gonorrhoea was undertaken. HIV prevalence[2] was determined from oral fluid, whereas urine specimens were collected to determine the prevalence of *C. trachomatis* y *N.*

[1] Estébanez P, Rodríguez MA, Rodrigo J, Ramon P. Evaluación y tendencias de predictores de riesgo asociados a VIH/sida y otras ETS en trabajadoras sexuales en España. Estudio financiado por FIPSE, 2002. Expediente 2065/99.

[2] Chohan BH, Lavreys L, Mandaliya KN, Kreiss JK, Bwayo JJ, Ndinya-Achola JO, et al. Validation of a modified commercial enzymelinked immunoassay for detection of human immunodeficiency virus type 1 immunoglobulin G antibodies in saliva. Clin Diagn Lab Immunol. 2001 Mar;8(2):346-8.

Gonorrhoeae using the DNA amplification techniques of real time PCR (polymerase chain reaction) (Abbott RealTime PCR CT/NG CE).

4.7 People who inject drugs attending harm reduction centres

Surveillance for HIV and HCV in PWID in Catalonia was initiated in 2008, recruiting PWID from harm reduction centres throught Catalonia. Participants were recruited using multi-stage sampling, stratifying by type of centre and country of origin within each centre (by whether the proportion of migrants was above or below 5%). Participants were included if they injected drugs in the previous 6 months. All participants gave written informed consent and behavioural information was gathered using an anonymous semi-structured, standardized questionnaire developed by the World Health Organisation (WHO)[3] and administered by an interviewer. The questionnaire was translated into Romanian, Russian and English and asked about behaviour during the previous 6 months. In addition, oral fluid specimens were collected to determine the prevalence of HIV[4] and HCV[5].

4.8 People who inject drugs attending treatment centres

Systematic sentienel surveillance for HIV in PWID who intiate treatment for drug adiction in Catalonia was initiated in 1996. This sentinel population is recruited from centres forming part of the nework for care and follow-up of drug addiction ("Red de Atención y Seguimiento de las Drogodependencias"). HIV testing in these centres is voluntary and uses algorithms recommended by WHO for use in this type of study[6].

4.9 People who inject drugs recruited on the street

In order to monitor the prevalence of HIV, sexual behaviour and drug use in PWID recruited from the street and from áreas of drug trading and consumption, biennial surveys have been conducted since 1993. Inclusion criteria were having injected drugs in the previous 3 months (studies conducted between 1993 – 2004) of having injected drugs in the previous 6 months (study conducted in 2006). All participants gave written informed consent and behavioural information was gathered using an anonymous semi-structured, standardized questionnaire developed by the World Health Organisation (WHO) and administered by an interviewer. The questionnaire asked

[3] World Health Organization. Multi-city study on drug injecting and risk of HIV infection : a report prepared on behalf of the WHO International Collaborative Group. Geneva: WHO; 1994.

[4] Genscreen HIV-1|2 Assay Version 2 Bio-Rad Laboratories, Inc.1000 Alfred Nobel Drive Hercules CA 94547 United States 5107247000, http://www.bio-rad.com .

[5] Judd A, Parry J, Hickman M, McDonald T, Jordan L, Lewis K, et al. Evaluation of a modified commercial assay in detecting antibody to hepatitis C virus in oral fluids and dried blood spots. J Med Virol. 2003 Sep;71(1):49-55.

[6] Joint United Nations Programme on HIV/AIDS (UNAIDS) - WHO. Revised recommendations for the selection and use of HIV antibody tests. Wkly Epidemiol Rec. 1997 març 21;72(12):81-7.

about behaviour during the previous 6 months. In addition, oral fluid specimens were collected to determine the prevalence of HIV[7] and HCV (2006 only).

4.10 Men who have sex with men (MSM)

Cross-sectional surveys in MSM have been conducted every two years since 1993. Seven surveys have been conducted in conjunction with a community organisation of gay men (Stop Sida) with the latest survey taking place during October, November and December 2008. This last study was part of a multicentre study which aimed to obtain representative and reliable data on the prevalence of HIV, syphilis, risk behaviours and cultural factors in MSM from the Southern and Eastern Europe *(Proyecto Sialon. The Capacity building in HIV/Syphilis prevalence estimation using non-invasive methods among MSM in Southern and Eastern Europe*, funded by the Public Health Programme of the European Commision 2003 – 2008). In studies undertaken from 1993 – 2006, convenience samples of MSM were chosen from various gay venues (saunas, sex shops and bars), from a public park in the city of Barcelona, and drawn from the list of members of a community gay organization in Catalonia. As of 2008, the selection of MSM in gay venues was conducted using time-location sampling (TLS)[8][9], a probabilistic method that ensures a greater diversity of MSM in the sample. This project defined undiagnosed MSM as those MSM who tested positive for HIV in oral fluid during the study and had previously declared in the Sialon questionnaire that they had never been tested, had not collected the results of a previous test or had tested negative. In all studies, written informed consent was given, behavioural data was obtained through questionnaires and oral fluid was used for HIV testing[10,11].

5. Longitudinal observational studies

Longitudinal observational studies have played a key role in the study of HIV/AIDS infection as they allow the monitoring of patients over time. This type of epidemiological study has contributed to the understanding of the natural history of infection, has helped clarify the question of when start cART as well as to explain the progression of the disease in the era of cART, among many others.

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[7] Granade TC, Phillips SK, Parekh B, Gomez P, Kitson-Piggott W, Oleander H, et al. Detection of antibodies to human immunodeficiency virus type 1 in oral fluids: a large-scale evaluation of immunoassay performance. Clin Diagn Lab Immunol. 1998 Mar;5(2):171-5.

[8] MacKellar DA, Gallagher KM, Finlayson T, Sanchez T, Lansky A, Sullivan PS. Surveillance of HIV Risk and Prevention Behaviors of Men Who Have Sex with Men—A National Application of Venue-Based, Time-Space Sampling. Public Health Reports, 2007;122 Suppl 1:39-47.

[9] Levy Paul S, Lemeshow Stanley. Sampling of Populations. Methods and Applications. 3rd Ed. New York: John Wiley & Sons; c. 1999.

[10] Granade TC, Phillips SK, Parekh B, Gomez P, Kitson-Piggott W, Oleander H, et al. Detection of antibodies to human immunodeficiency virus type 1 in oral fluids: a large-scale evaluation of immunoassay performance. Clin Diagn Lab Immunol. 1998 Mar;5(2):171-5.

[11] Foschia JP, Ramarli D, Coato P, Fontana R, Stanekova D. Sialon. Handbook on lab methods for HIV and Syphilis testing on oral fluid. Verona: Regional Centre for Health Promotion; 2010.

5.1 PISCIS Cohort

The PISCIS Cohort is a multicenter cohort study which undertakes clinical and epidemiological follow-up of patients seen in hospitals in Catalonia and the Balearic Islands[12][13][14][15]. Since 1998, the Cohort has recruited 7,629 new HIV diagnoses, whose clinical and epidemiological characteristics are similar to those of cases notified during the same period to the HIV Register of Catalonia.

Among the 1,126 patients newly diagnosed during 2010-2011, 86.3% were male, the mean age was 35 years and 43.3% were born outside Spain (61.7% from Latin America, 13% from Western Europe and 11.7% from sub-Saharan Africa). The most common probable transmission group was MSM (62.8%) followed by heterosexual men (15.5%) heterosexual women (13.3%) and PWID (4%). Among MSM, most people were from Western Europe and Latin America, whereas most heterosexuals were from sub-Saharan African.

In the period 1998-2010, there was a progressive increase in the percentage of MSM (23.9% in 1998 to 66.8% in 2011) among new diagnoses and a marked decrease in PWID (from 26% in 1998 to 4% in 2011). There was also a progressive increase in migrants up until the last year, when a fall in migrants was observed. These trends are mirroed in the HIV Register of Catalonia.d

5.2 ITACA Cohort

The ITHACA cohort is a prospective longitudinal study in HIV-negative MSM and is a collaborative effort between CEEISCAT and the community-based voluntary counselling and testing center, BCN Checkpoint. It is the first cohort of MSM in Spain established through a community testing centre for HIV and other STI. The ITHACA cohort was designed with the purposes of standardizing data collection procedures to improve the operation of the community center and establishing a stable group of HIV negative MSM with whom to develop and evaluate prevention interventions and implement epidemiological studies. After piloting the data collection instruments, the ITHACA project started in 2008. Criteria for inclusion among peole who request testing in BCN-Checkpoint include; having given written informed consent, being over the age of 18 and having a negative HIV test at baseline visit. Standard procedures in the ITHACA cohort during the first visit and at

[12] Jaen A, Casabona J, Esteve A, Miro JM, Tural C, Ferrer E, et al. Características clinicoepidemiológicas y tendencias en el tratamiento antirretroviral de una cohorte de pacientes con infección por el virus de la inmunodeficiencia humana. Cohorte PISCIS. Med Clin (Barc) 2005 Apr 16;124(14):525-31.

[13] Jaen A, Esteve A, Miró JM, Tural C, Montoliu A, Ferrer E, et al.; PISCIS Study Group. Determinants of HIV progression and assessment of the optimal time to initiate highly active antiretroviral therapy: PISCIS Cohort (Spain). J Acquir Immune Defic Syndr. 2008 Feb 1;47(2):212-20.

[14] Navarro G, Nogueras MM, Segura F, Casabona J, Miro JM, Murillas J, et al.; PISCIS Study Group. HIV-1 infected patients older than 50 years. PISCIS cohort study. J Infect. 2008 Jul;57(1):64-71.

[15] Manzardo C, Esteve A, Ortega N, Podzamczer D, Murillas J, Segura F, et al.; The PISCIS Investigators. Optimal timing for initiation of highly active antiretroviral therapy in treatment-naïve human immunodeficiency virus-1-infected individuals presenting with AIDS-defining diseases: the experience of the PISCIS Cohort. Clin Microbiol Infect. 2012 Jul 25. [Epub ahead of print].

annual follow-up visits, include rapid antibody testing for HIV using (Determine 1/2), the collection of social, demographic, behavioural and epidemiological information, through a standard questionnaire completed by a peer counsellor who is a member of BCN-Checkpoint. Subsequent exhaustive voluntary counselling and testing is geared towards the professional's assessment of the risk of HIV infection. Participants who seroconvert are referred to the HIV unit at the nearest referral hospital in order to receive appropriate care.

5.3 NENEXP Cohort

The NENEXP cohort is a longitudinal study of HIV-positive pregnant women and their children, conducted in ten hospitals in Catalonia. This study gathers information on all newborns and their mother who have been treated at participating centers that have been exposed to HIV and/or to therapeutic or prophylactic antiretroviral treatment during pregnancy, delivery or within 28 of birth.

The main objectives of the study are: to determine and monitor the mother-to-child transmission rate of HIV and it's determinants in Catalonia, to identify and monitor the occurrence of adverse effects on pregnant woman, fetuses and newborns in the short, medium and long term, to describe the sociodemographic profile of women infected with HIV who did not receive prenatal care until delivery, to identify factors in the mother, the newborn and in pregnancy associated with the occurrence of adverse effects of cART exposure during pregnancy, during birth and the during the first weeks of life.

6. Other projects and observational studies

6.1. Recent infection testing algorithm for HIV (RITA)

Identifying newly diagnosed individuals with recent HIV infections provides a more accurate picture of the current transmission dynamics of the epidemic and allows the estimation of incidence in line with guidelines developed for incidence estimation from test for recent infection[16]. In 1998 a new algorithm was described to identify recent infection (STARHS: Serological Testing Algorithm for Recent HIV Seroconversion). This algorithm can distinguish infection within 170 days of seroconversion (95% CI: 144-200 days)[17]. Since the technique was first described in Europe, many countries have incorporated STARHS into their systems HIV surveillance. In the U.S., the Centers for Disease Control and Prevention (CDC) have also implemented STARHS into their national

[16] World Health Organization (WHO), When and how to use assays for recent infection to estimate HIV incidence at a population level. Geneva: WHO; 2011.

[17] Janssen RS, Satten GA, Stramer SL, Rawal BD, O'Brien TR, Weiblen BJ, et al. New testing strategy to detect early HIV-1 infection for use in incidence estimates and for clinical and prevention purposes. JAMA. 1998 Jul 1;280(1):42-8.

surveillance system of the HIV epidemic. CEEISCAT and the microbiology service of Hospital Universitario Germans Trias i Pujol, have participated since 2001 in the program of external quality control of STARHS coordinated by CDC. The acronym STARHS has recently been replaced by the term RITA (Recent Infection Testing Algorithm), which is the preferred term in this document. The ECDC suggested in 2010 that RITA be part of the routine monitoring of new diagnoses.[18] CEEISCAT has incorporated this technique into routine surveillance since 2003 by coordinating the HIV-AERI study in which we use a RITA to identify recently infected individuals among those newly diagnosed with HIV infection. This surveillance project has used different techniques to estimate recent infection in line with UNAIDS/WHO guidelines, first using Vironostika-LS between 2003 and 2005, BED from 2006 to 2011 and Avidity index testing from 2012. Serum samples tested for recent infection during the period 2003 – 2011 were taken from people newly diagnosed with HIV from primary care laboratories, hospital laboratories, community based testing centres and a sexual health clinic.

6.2 Survey of the acceptability of rapid HIV testing to primary care physicians in Spain

In order to study the acceptability to family physicians of introducing rapid HIV testing into primary care, a survey was conducted on a convenience sample of family physicians who were members of the Catalan Society of Family and Community Medicine (Sociedad Catalana de Medicina Familiar, CAMFiC) and the Spanish Society of Family and Community Medicine (Sociedad Española de Medicina de Familia y comunitaria, semFYC). A questionnaire was designed which collected: demographic data of respondents, knowledge of and attitudes to rapid HIV tests, perceived barriers to the use of rapid test in primary care, preferred type of rapid test, opinion on which health professional should perform testing and who should be targeted for testing. The questionnaire was available online and accesible from the websites of both profesional organisations; it was anonymous and self-administered. Prior to roll out, the questionnaire was piloted by a group of 34 GPs. An email was sent to all (19,500) members of the participating professional societies wthich described the study and provided the access link for the questionnaire. The data collection period ran from June 15 to October 31, 2010 and a reminder was sent in September. A 10-point Liekert scale was used for opinión questions. All answers greater than or equal to 7 were classified as “agree”. The study was authorized by the Clinical Research Ethics Committee at the Fundación Instituto de Investigación en Ciencias de la Salud Germans Trias i Pujol.

[18] European Centre for Disease Prevention and Control. European STI and HIV/AIDS Surveillance Networks Berlin, 28-30 September 2010. Meeting Report. Stockholm: ECDC; 2010.

6.3 Study of the feasibility of rapid HIV testing by professionals in primary care and sexual and reproductive health centres (ASSIR)

To study the feasibility of the introduction of rapid testing into primary care, a pilot test was conducted in which 1,450 rapid HIV tests were distributed to GPs and professionals of ASSIR. Once the study period was completed, all participating physicians completed an online survey about their opinions and experience of rapid HIV testing. The objectives of this study were to: evaluate the acceptability of rapid HIV testing in primary care by the professional and patient, study the feasibility of using these tests in primary care. Participants consisted of primary care physicians, travel clinic doctors and sexual health clinic professionals (ASSIR) who belonged to a sentinel surveillance network established by CEEISCAT to monitor HIV and STI in Catalonia.

6.4 Epidemiological surveillance system for prophylaxis of non-occupational exposure to HIV (NONOPEP)

Epidemiological surveillance of nonoccupational post-exposure prophylaxis for HIV is undertaken through an anonymous voluntary register of all notified non-occupational exposures to HIV, whether or no ART was given. Data is collected on the characteristics of exposed individuals, potential sources of infection, the characteristics of the exposure, category of infection risk (low, medium and high), clinical follow-up and prescriprion of ART, including adherence and tolerance. Non-occupational exposure to HIV is defined as accidental sexual or parenteral contact with blood and/or other biological fluids strictly outside health-related situations.

6.5 European men who have sex with men (MSM) Internet Survey (EMIS)

The EMIS Survey is part of a multicenter project funded by the European Commission (EU Health Programme 2008-2013), in which over 180,000 men from 38 European countries participated. It was available in 25 languages. The main objective of EMIS was to describe, within the framework of second generation surveillance, the behaviours of MSM which expose them to HIV and other STI. Spanish participating centres included: CEEISCAT as associated centre, and the NGO Stop SIDA, the Ministry of Health (Ministerio de Sanidad, Servicios Sociales e Igualdad), the national epidemiology centre (Centro Nacional de Epidemiología del Instituto de Salud Carlos III) as collaborating centers. Data collection was conducted between June and August 2010 via an anonymous, confidential and self-administered online questionnaire. The survey included questions on social and demographic characteristics, stigma and discrimination, sexual behavior with casual and steady sexual partners in the previous 12 months, sex outside Spain, sex in exchange for money and drugs, alcohol and drug consumption, knowledge of HIV/AIDS, STI and

post-exposure prophylaxis (PEP), access to information and prevention equipment, access to testing for HIV and other STI, access to cART, HIV testing experience and result of the last test as well as previous diagnoses of STI. Included in these questions are 15 core indicators recommended by ECDC[19] to monitor risk behaviours in MSM. The survey was promoted by the principal national (Chueca, Gayromeo and Bakala) and international (Gayromeo and Manhunt) gay internet portals and counted on the support of the Autonomous Region's HIV programmes, the national LGBT federation (Federación Estatal de Lesbianas, Gays, Transexuales y Bisexuales), gay and lesbian coordinator (Coordinadora Gay-Lesbiana) and other NGO. There were also 500 posters and 10,000 card distributed nationally which contained information about the study.

6.6 Survey of secondary school students

The drug dependency programme in the Alt Maresme (Programa Intermunicipal de Drogodependencias del Alt Maresme) conducts a biennial survey of drug use in secondary schools in the área. In 2011 this survey included, for the first time, a series of questions about sexual behaviour and other sexual and reproductive health issues aimed at upper secondary school students (aged over 16). Multi-stage sampling techniques were used to select a representative sample, with the primary sampling unit being schools and classes the secondary sampling unit. Stage one sampled from all schools and at stage two, a main secondary stream class (ESO), a baccalaurate class and, if available within the "Ciclos Formativos de Grado Medio y Programa de Transición al Trabajo", a specialised class (cooking, hostelry etc) was selected per year group. The sample was stratified by type of centre and type of schooling (secondary, baccalaureate, technical) with weighting based on the proportion of students in each class in comparison to the total number of students enrolled in the centre. Sample sizes of 577 and 243 were calculated for the secondary and baccalaureate/transition to work streams, respectively. Of those young people aged over 16 surveyed, 440 responded to the questions on sexual and reproductive health and thus contributed to this report.

6.7 Pilot study of rapid HIV testing in pharmacies

In April 2009, a pilot programme was launched in Catalonia which offered rapid HIV testing in a selected group of pharmacies and coordinated by the AIDS treatment and prevention programme (PPAS, Programa per a la Prevenció I Assistència de la Sida). A total of 36 pharmacies from 21 towns in Barcelona province participated in the pilot.

[19] European Centre for Disease Prevention and Control. Mapping of HIV/STI behavioural surveillance in Europe. Stockholm: ECDC 2009.

The locations with the highest demand for this service were: Hospitalet, Badalona, Mataró, Santa Coloma de Gramenet, Cerdanyola and Cornella de Llobregat with demand ranging from 409 to 1,036 test requests.

6.8 Sauna programme

Since 2006, the Public Health Agency of Barcelona, with the support of PPAS and CEEISCAT, has had a “Sauna Programme" which aims to reduce late HIV diagnosis in MSM. A two-person team, including at least one health professional (doctor or nurse) goes twice a week to one of the three busiest gay saunas in the city and one sex shop with a "dark room". They offer pre and post test counseling, rapid HIV and syphilis testing, hepatitis A and B vaccination, condoms, lubricants and information leaflets.

7. Modelling and projection

Modelling studies are able to generate projections which may be of help in understanding the epidemic and estimating its future course.

7.1 Spectrum projection package 2011

Spectrum Projection Package 2011 (Spectrum/EPP) is a package of applications used to model the HIV epidemic and provide health authorities with an analytical tool to support decision making. Spectrum/EPP has been developed to describe the magnitude of the epidemic and to estimate, based upon modelled incidence and prevalence, important HIV indicators including: the number of people living with HIV, new HIV infections, AIDS deaths, the number of adults and children who need treatment and the impact of ART on survival. Estimates of these indicators are used by international organizations to mobilize and commit resources, as well as by countries wishing to develop their national strategic plans, to identify and set treatment goals and estimate the impact of antiretroviral therapy and prevention of mother-to-child transmission at population level.

The UNAIDS Reference Group on Estimates, Modelling and Projections (http://www.epidem.org/) reviews the parameters used by Spectrum every 2 years. The review of these data and the incorporation of new research findings lead to changes in the assumptions underpinning the model and better quality projectons for the planning of national HIV programmes. Long-term follow-up through cohort studies has provided data on the progression from HIV infection to death without treatment (natural history) as well as valuable information on the effects of cART on survival.

Sources of information

Important initial data needed to generate estimates in Spectrum/EPP include the key characteristics of the subpopulations that form the basis of the model (population size, demographics and time in the subpopulation). Additional important parameters are: distribution of first and second line cART in the general population and within key subpopulations, antenatal sentinel surveillance data, survey data on the prevalence of HIV in key populations, the distribution of antiretroviral regimens for the prevention of mother-to-child transmission of HIV, infant feeding practices of HIV-positive mothers, the proportion of people with advanced HIV on cART per year and the distribution of cotrimoxazole and cART in children. Data on HIV prevalence are derived from the national second-generation surveillance of HIV, sentienl surveillance, behavioural surveillance studies and other special studies. Details of data sources can be seen in **Table 1**.

Mathematical models in general and Spectrum/EPP in particular are subject to limitations. Some of the assumptions of Spectrum are derived from a small number of studies and may not be representative of all key populations. The default parameters used in Spectrum are calculated primarily using data form low and middle income countries and may not be appropriate for the production of models of epidemics in high-income countries. The impact of prevention programs and the expansion of HIV testing are not included in the projections and, although their impact on new infections is unclear, these should be taken into account when producing estimates of the incidence and prevalence of HIV.

Spectrum/EPP 2011 was funded primarily by the United States Agency for International Development (USAID) with technical collaboration from UNAIDS, WHO, UNICEF, the United Nations Population Division (UNDP), the United States Census Bureau, the United Nations Population Fund (UNFPA) and other organizations. The program is available in several languages for free at http://www.futuresinstitute.org/ .

Table 1.

Parameter	Source
Baseline population 1970	Idescat (Institut d'Estadística de Catalunya) INE (Instituto nacional de Estadística)
Total fetility rate	Idescat
Age-specific fertility rate	INE
Sex ratio at birth	Fundación BBVA Estadísticas históricas de España
Migration (international and national)	Idescat INE UNDP (United Nations Population Division) Observatorio Permanente de la Inmigración Published literature
Mother -to-child HIV transmission rate	Vertical transmission register Clinical guidelines
ART (Treatment and prevention), including annual migration from first to second line therapy	PISCIS Cohort Clinical guidelines CatSalut
Key populations	Idescat INE Observatorio Español sobre la Droga y las Toxicomanías Direcció General de Serveis Penitenciaris, Rehabilitació i Justícia Juvenil Published literature
HIV prevalence in key populations	Blood and tissue bank Other studies and data sources (EMIS, SIALON, HIVDEVO, LABCAT, Cohort NENEXP, Studies in FSW and PWID, Direcció General de Serveis Penitenciaris, Rehabilitació i Justícia Juvenil)
Mortality without ART	PISCIS Cohort

7.2 Cascade

The HIV treatment Cascade is a visual representation of the number of PLWH/AIDS who are at various stages of followup or treatment for HIV.

Estimates of the number of people within each stage of the cascade are derived by a applying a proportion to the number of people in the previous stage of care.

The first estimate of the total number of people living with HIV is derived using the model, Spectrum/EPP 2011.

Starting from this initial estimate, subsequent stages are calculated by successively applying to the previous stage the proportion of PLWH who are:

- Diagnosed
- Under active follow-up
- On cART
- Virologically suppressed

The proportion of undiagnosed PLWH was derived from the literature on undiagnosed infection in Europe as there are no direct estimates for Spain. The proportions of people under follow-up, on cART and virologiaclly suppressed are derived from the PISCIS Cohort.

Under active follow-up was defined as having had at least one follow-up visit in the hospital in the last year; on cART were those persons who were under active follow-up and received ART in the same period. Finally, of those people on cART, virologically suppressed was defined as having a viral load < 50 copies/ml.

Annexes

National Publications

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List of abbreviations

AIDS	**acquired immunodeficiency syndrome**
ARV	**antiretrovirals**
ASSIR	**Atenció a la Salut Sexual i Reproductiva**
AZT	**zidovudine**
bPI	**boosted protease inhibitor**
cART	**combination antiretroviral therapy**
CEEISCAT	**Centre d'Estudis Epidemiològics sobre les ITS i la Sida de Catalunya**
CoRIS	**Cohorte RIS**
ECDC	**European Centre for Disease Prevention and Control**
EMIS	**European mens internet study**
FSW	**female sex worker**
GARP	**Global AIDS Response Progress**
HBV	**hepatitis B virus**
HCV	**hepatitis C virus**
HIV	**human immunodeficiency virus**
HPV	**human papilloma virus**
HSV	**herpes simplex virus**
CI	**confidence interval**
Idescat	**Institut d'Estadística de Catalunya**
II	**integrase inhibitor**
INE	**Instituto Nacional de Estadística**
LGV	**Lymphogranuloma venereum**
MDO	**Malalties de Declaració Obligatòria**
MSM	**men who have sex with men**
NNRTI	**Non-Nucleoside Reverse Transcriptase Inhibitors**
NRTI	**nucleoside reverse transcriptase inhibitor**
PCR	**polymerase chain reaction**
PEP	**post-exposure prophylaxis**
PI	**protease inhibitor**
PLWH	**people living with HIV**

List of abbreviations

PPAS **Programa per a l'Assistència i la Prevenció de la Sida**

PWID **people who inject drugs**

RI **recent infection**

RITS **Registre de les Infeccions de Transmissió Sexual de Catalunya**

SD **standard deviation**

SNMC **Sistema de Notificació Microbiològica de Catalunya**

STI **sexually transmitted infection**

SW **sex worker**

TB **tuberculosis**

UNAIDS **Joint United Nations Programme on HIV/AIDS**

UNGASS **United Nations General Assembly Special Session**

VL **viral load**

WHO **World Health Organisation**

HIV and AIDS in Catalonia

1. Number of people living with HIV/AIDS. Magnitude and Impact of the HIV epidemic

1.2. Prevalence of HIV in key populations

4. HIV testing

4.4. Acceptability and feasibility of rapid HIV testing in primary care

5. Chemoprophylaxis, treatment and impact of HIV

5.2. Antiretroviral resistance

5.4. Non-occupational post exposure prophylaxis

Other sexually transmitted infections

2. Gonococcus

2.3. Antibiotic resistance in gonococci

Surveillance of behaviours associated with HIV and STI

1. Men who have sex with men (MSM)

2. Female sex workers (FSW)

3. People who inject drugs (PWID)

4. Young people

5. People living with HIV

HIV and AIDS in Catalonia

1. Number of people living with HIV/AIDS. Magnitude and Impact of the HIV epidemic

1.1. Number of people living with HIV and prevalence

1.2. Prevalence of HIV in key populations

1.3. Incidence of HIV

1.4. Life expectancy, survival and causes of mortality

1.5. Projections

2. HIV/AIDS diagnosis

2.1. HIV Notifications

Other sexually transmitted infections

1. Infectious and congenital syphilis

1.1. New diagnoses

1.2. Laboratory notification

2. Gonococcus

2.1. New diagnoses

2.2. Laboratory notification

2.3. Antibiotic resistance in gonococci

3. Infections due to *Chlamydia trachomatis* serovars L1-L3: *Lymphogranuloma venereum*

3.1. New diagnoses of LGV

4. Genital infection due to *Chlamydia trachomatis* serovars D-K

4.1. New diagnoses

4.2. Laboratory notification

4.3. Prevalence

5. Genital Herpes simplex virus (HSV)

5.1. New diagnoses

5.2. Laboratory notification

6. Human papilloma virus (HPV): condyloma acuminata (genital warts)

6.1. New diagnoses

7. *Trichomonas vaginalis:* trichomoniasis

7.1. New diagnoses

7.2. Laboratory notification

Surveillance of behaviours associated with HIV and STI

1. Men who have sex with men (MSM)

2. Female sex workers (FSW)

3. People who inject drugs (PWID)

4. Young people

5. People living with HIV

Epidemiological surveillance of HIV/AIDS and other sexually transmitted infections

Sub directorate for Surveillance and Emergency Response in Public Health (Subdirección General de Vigilancia y Respuesta a Emergencias en Salud Pública)
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Epidemiological Surveillance Units (UVE)
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Mortality Register
Registro de Mortalidad del Servicio de Información y Estudios. Dirección General de Recursos Sanitarios. Departamento de Salud (R. Gispert, A. Puigdefàbregas, G. Ribas).

Reference laboratories
Servicio de Microbiología. Hospital Universitario Germans Trias i Pujol (V. Ausina, V. González, L. Matas, E. Martró, D. Sánchez).

HIVNADO
Unidad de Cribado Neonatal. IBCCDB. Corporación Sanitaria Clínic (J. L. Marín, A. Maya, M. Puliol, F. Borja, C. Martínez).

HIVIVES
Unidad de Cribado Neonatal. IBCCDB. Corporación Sanitaria Clínic (J. L. Marín, A. Maya, M. Puliol, F. Borja, C. Martínez); Servicio de Información y Estudios. Dirección General de Recursos Sanitarios. Departamento de Salud (R. Gispert, J. J. Coll, R. Bosser, M. M. Torne, M. Femenias); Clínica d'Ara-Tutor Mèdica (S. Barambio, J. Fernández, R. M. Boj, Y. Trejo); Clínica EMECE (M. Sánchez); Centro Casanova de Ginecología y Planificación, S. A. (R. Novo, M. Palma).

HIVSANG
Laboratorio de Seguridad Transfusional. Banco de Sangre y Tejidos. Vall d'Hebron (S. Sauleda).

HIVUDVP
Unidad de Coordinación de Drogodependencias. Dirección General de Salud Pública. Departamento de Salud (J. M. Suelves, X. Ayneto).

HIVPRESO
Dirección General de Servicios Penitenciarios de Cataluña (R. Guerrero, M. V. Humet).

SIALON
This study is part of the project "Capacity building in HIV/Syphilis prevalence estimation using non-invasive methods among MSM in Southern and Eastern Europe". Participants: Czech Republic, Greece, Italy, Romania, Slovakia, Slovenia, Spain and EU/DGSANCO of the European Commission under the Public Health Programme 2003-2008.

Participants in Catalonia: Servicio de Microbiología. Hospital Universitario Germans Trias i Pujol; Asociación Stop Sida (K. Zaragoza, R. Muñoz, P. Fernández y entrevistadores: Blai, Jano, Lluís, Miquel).

REDAN 2010-2011
Asociación Àmbit Prevenció (M. Meroño, A. Altabas); Agencia de Salud Pública de Barcelona (T. Brugal, A. Espelt, C. Vecino); Subdirección General de Drogodependencias. Dirección General de Salud Pública.

Departamento de Salud (X. Majó, J. Colom); Servicio de Microbiología. Hospital Universitario Germans Trias i Pujol (V. González, E. Bascuñana, V. Ausina); otros centros de reducción de daños [Àmbit Prevenció; SAPS, Baluard, "El Local" Sant Adrià; AEC-Gris Hospitalet / PIGAD; Asaupa'm Badalona y Santa Coloma; CAS Reus; AIDE Terrassa; Alba Terrassa; Arrels Lleida; Creu Roja Constantí; IAS Girona; CADO Vic), y entrevistadores (A. García, DI. Toledo, C. Stanescu, P. Sánchez, E. Rodríguez, M. Aladesa, P. Freixa, L. Serra, S. I. Moreira, L. Virgili, S. Ben Alaya, C. Lazar, K. Cornejero)].

HIVITS-TS 2009

Asociación Àmbit Prevenció (C. Sanclemente, C. Lazar y entrevistadores: C. Lazar, M. Bessa, M. Castro, K. Conejero, S. López, C. Rives, D. Faixó, A. Rafel, B. Alsina, C. Benítez, M. Melgosa, S. Notor, S. Moreira, S. Sendyk, A. Font, L. Gómez, E. López) y las asociaciones antisida de Lleida; Programa Carretera (Hospital Sant Jaume de Calella); ACAS de Girona; Actua Vallès y Creu Roja Tarragona.

HIVUDVPT

Subdirección General de Drogodependencias. Dirección General de Salud Pública. Departamento de Salud (J. M. Suelves, X. Ayneto).

Register of sexually transmitted infections (RITS)

Primary Care Teams (EAP)

Alt Pirineu
La Cerdaña: CAP Cerdanya (B. Fontecha Valero).

Camp de Tarragona
Tarragona 4: CAP Santa Tecla-Llevant (S. Borràs Freixas, J. Montoya Fernández del Campo, C. Nolla Sabaté). Salou: CAP Salou (M. Carmen Rubio Rivas). Vila-seca: CAP Vila-seca (A. Fallada Pouget).

Terres de l'Ebre
Tortosa 2-oest: CAP Baix Ebre (G. Batlle Escolies).

Girona
Salt 2: CAP Alfons Moré i Paretas (M. María Dolores Rivero Gemar).

Catalunya Central
Navarcles/Sant Fruitós de Bages: CAP Sant Fruitós de Bages (X. Puigdengolas Armengol). Vic 2 sud: CAP El Remei (P. Aguila Pujols, R. Codinachs Alsina).

Barcelona
Barcelona 3C: CAP Doctor Carles Ribas (M.A. De la Poza Abad). Barcelona 6C: CAP Larrard (S. Barro Lugo, J. Manuel Casermeiro Cortes, F. Díaz Gallego, M. C. Prado Moyano, A. Santiveri Villuendas). Barcelona 7B: CAP Sardenya (A. Casasa Plana, J. Sellarès Sallas). Barcelona 10H: CAP Sant Martí (B. Escorihuela Martínez).

Metropolitana Nord
Arenys de Mar: CAP Arenys de Mar (R. Hueso). Mataró 1: CAP La Riera (Mataró) (P. Paulo Burguete). Premià de Mar: CAP Premià de Mar (A. Valls Martínez). Santa Coloma de Gramenet 5: CAP Santa Rosa (S. Montesinos Sanz). Santa Coloma de Gramenet 5: Unidad de Salud Internacional Metropolitana Nord (L. Valerio Sallent). Vilassar de Mar: CAP G. Masriera i Guardiola (M. Carmen Viñes Silva, J. Gerhard Pérez). Sant Adrià de Besòs 2: CAP La Mina (J. Miguel Baena Díez, M. García Lareo, J. M. Mendive Arbeloa). Calella: CAP Calella (S. Curos Torres). Malgrat de Mar: CAP Josep Torner i Fors (M. Tejedor Robledo).

Metropolitana Sud
L'Hospitalet de Llobregat 8: CAP La Florida (R. Carrillo Muñoz, J. Mascort Roca). L'Hospitalet de Llobregat 11: CAP Gornal (C. Pérez Olivera). Castelldefels 2: CAP Can Bou (M. J. Jareño Sanz, V. M. Silvestre Puerto). Vilanova i la Geltrú 3: CAP Baix a Mar (J. Milozzi Berrocal, G. Torrell Vallespín).

Sexual and reproductive health programme, Programa de atención a la salud sexual y reproductiva (PASSIR)

Lleida
ASSIR Lleida (ICS): CAP Prat de la Riba (M. J. Garrofé Peirón, M. Huguet Samper).

Girona
ASSIR Baix Empordà (CABE): Hospital de Palamós (D. Meza Mejías, E. Castañeda, D. Pérez Pleguezuelo, R. O. Hanoun, E. M. Vicedo Madrazo, J. M. Marqueta Sánchez, E. Apalimov, E. Folch Borràs, M. L. Monje Beltran, E. Lineros Oller, V. Márquez Expósito, E. I. Lugo Carrillo, M. Veciana Colillas –MIR–, S. M. Iglesias Ferreiro –MIR–, P. Clavillo Pañell, V. Moens). ASSIR Baix Empordà (CABE): CAP La Bisbal d'Empordà (M. E. Cesar Olmos). ASSIR Baix Empordà (CABE): CAP Torroella de Montgrí (M. E. Cesar Olmos). ASSIR Baix Empordà (CABE): CAP Catalina Cargol (Palamós) (E. Folch Borràs). ASSIR Baix Empordà (CABE): CAP Josep Alsina i Bofill (Palafrugell) (E. Lineros Oller, E. I. Lugo Carrillo). ASSIR Baix Empordà (CABE): CAP Sant Feliu de Guíxols (V. Márquez Expósito). ASSIR Baix Empordà (CABE): A. Garatea, I. Ríos.

Catalunya Central
ASSIR Anoia (ICS): CAP Anoia (R. Hernández Beltran). ASSIR Anoia: Hospital de Igualada (T. García Grandal, J. Rovira Pampalona). ASSIR Bages (ICS): CAP Bages (R. Forn Guilanya, R. Oller Bellmunt, C. Ramos Rastrero). ASSIR Berguedà (ICS): CAP Berguedà (A. Benavídez Hernández, C. Comellas Martínez, C. Rincón Bonet). ASSIR Berguedà: Hospital Sant Barnabé (Z. L. Colman Pereira). ASSIR Osona (ICS): CAP Osona (J. Grau Galtés, J. Tarrés, A. Montpeyo, T. Farguell Grau, R. García-Moreno, C. Blasco, A. Masoliver Jordana, R. Subirats Alberich).

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Metropolitana Nord
ASSIR Maresme (ICS): CAP La Llàntia (C. Coll Capdevila, A. de Castro Lezcano, A. Tirado Canals). ASSIR Badalona (BSA): CASSIR BSA (À. Avecilla Palau, M. de Sebastián Sánchez, I. Ferré de Diego, M. Teixidó Famades, D. Mateo Lara, M. del Socorro Ferrero Barrio). ASSIR Cerdanyola/Ripollet (ICS): CAP Cerdanyola-Ripollet (A. Acera Pérez, R. Contero Lebrón, D. Rodríguez Capriles, P. Soteras Guasch, M. Llucia Amorós, A.M. Carceles Aguirre, N. A. Sánchez García, M. Robert Ribosa). ASSIR Granollers (ICS): CAP Vallès Oriental (S. Corchs Cutura, D. Guix Llistuela, J. Relat Llavina, C. Serra, M. J. Vila López, A. Prats Oliveras, E. Gascón Navarro). ASSIR Mollet del Vallès: Hospital de Mollet (M. J. Ayuso Campos, E. López Gimeno). ASSIR Rubí/Sant Cugat/Terrassa (Mútua Terrassa): CAP Rambla (J. Jiménez Quesada, O. Ezquerro Rodríguez, X. Urquizu Brichs, E. Coll Navarro). ASSIR Sabadell (ICS): CAP Sant Fèlix (M. Abella Jove, G. Falguera Puig, E. López Grado, À. Yus Blasco, J. Sobrino Solano, V. Ila Bruned, P. Solà Cebria, M. Villanueva Guevara, B. Morillas, E. Ruiz Andorra, M. C. Uyá Pons).

Sexual health clinics (UITS)

Camp de Tarragona
UITS: CAP Jaume I (Tarragona) (Josep Boronat Hidalgo).

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UITS: CAP Drassanes (M. Arando Lasagabaster, P. Armengol Egea, M. J. Barberá Gracia, M. Vall Mayans, Á. Vives Suñé, M. Cajal, C. Martín Callizo, G. Torrell, E. Ugarte). UITS:

Servicio de Andrología - Fundación Puigvert (Á. Vives Suñé). Servicio Dermatología - Hospital Clínic de Barcelona (C. Muñoz Santos, S. Pedregosa Fauste, M. Alsina Gibert).

CT/NG-PRISONS

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CT/NG-Sexual and reproductive health centres, (ASSIR)

ASSIR CAP II Prat de la Riba, Lleida (M. J. Garrofé); ASSIR Hospital de Palamós, Palamós (E. César, E. Folch); ASSIR BSA Mare de Déu de Lorda, Badalona (A. Avecilla, M. de Sebastián, M. Teixidó); ASSIR Mataró-Maresme, Mataró (A. de Castro, I. González); ASSIR CAP II Sant Fèlix, Sabadell (R. Espelt, M. Abella, G. Falguera); ASSIR CAP II Cerdanyola-Ripollet, Ripollet (A. Acera, M. Robert, A. Cárceles, N. A. Sánchez, M. Robert, M. Llucià, P. Soteras, A, Cuenca, S. Mesa); ASSIR CAP Osona, Vic (J. Tarrés, J. Grau); ASSIR Bages-Solsonès, Manresa (N. Crespo, P. Piqué); ASSIR Terrassa, Terrassa (M. J. Cayuela); ASSIR Mollet, Mollet del Vallès (E. López, M. Manzanares, E. Adarve, A. Torrent); ASSIR Granollers, Granollers (D. Guix); ASSIR Esquerre, Barcelona (C. Seguí, J. Xandri, R. Almirall, F. Valenzuela, A. Payaró, L. Zamora, C. Piorno, M. Roure, G. Labay, R. Astudillo, X. Díez, E. Picola, R. Escriche); Centro de Salud para Jóvenes de L'Hospitalet, L'Hospitalet del Llobregat (E. Arranz); Centro Joven de Anticoncepción y Sexualidad –CJAS–, Barcelona (I. Campo, R. Ros); Centro Joven de Salud, Girona (M. Hernández, C. Fornells).

Surveillance of HIV prevention and risk behaviour

European MSM Internet Survey (EMIS)

The European MSM Internet Survey is part of a multicentre project funded by the European Commission (EU – Health Programme 2008 - 2013). Participating countries: Germany, Italy, Netherlands, United Kingdom and Spain.

REDAN 2010-2011

Asociación Àmbit Prevenció (M. Meroño, A. Altabas); Agencia de Salud Pública de Barcelona (T. Brugal, A. Espelt, C. Vecino); Subdirección General de Drogodependencias, Dirección General de Salud Pública, Departamento de Salud (X. Majó, J. Colom); Servicio de Microbiología; Hospital Universitario Germans Trias i Pujol (V. González, E. Bascuñana, V. Ausina); otros centros de reducción de daños [Àmbit Prevenció; SAPS, Baluard, "El Local" Sant Adrià; AEC-Gris Hospitalet / PIGAD; Asaupa'm Badalona y Santa Coloma; CAS Reus, AIDE Terrassa, Alba Terrassa, Arrels Lleida; Cruz Roja Constantí, IAS Girona, CADO Vic) i entrevistadors (A. García, D. I. Toledo, C. Stanescu, P. Sánchez, E. Rodríguez, M. Aladesa, P. Freixa, L. Serra, S. I. Moreira, L. Virgili, S. Ben Alaya, C. Lazar, K. Cornejero)].

HIVITS-TS 2009

Asociación Àmbit Prevenció (C. Sanclemente, C. Lazar y entrevistadores: C. Lazar, M. Bessa**,** M. Castro, K. Conejero, S. López, C. Rives, D. Faixó, A. Rafel, B. Alsina, C. Benítez, M. Melgosa, S. Notor, S. Moreira, S. Sendyk, A. Font, L. Gómez, E. López) y las asociaciones antisida de Lleida; Programa Carretera (Hospital Sant Jaume de Calella); ACAS de Girona; Actua Vallès y Creu Roja Tarragona.

Study of sexual behaviour in young people

Programa intermunicipal de drogodependencias de El Alt Maresme (Mar Latorre); Ayuntamientos de: Calella, Pineda de Mar, Santa Susanna, Malgrat, Palafolls y Tordera; Diputación de Barcelona; encuestadora: Montserrat Valls.

HIV testing surveillance

Catalonia laboratory network, Laboratorios de Cataluña (HIVLABCAT)

Servicio de Análisis Clínicos del Hospital Universitario Arnau de Vilanova (J. Farré); Laboratorio Clínico Tarraco (A. Vilanova, L. Guasp, C. Sarvisé; C. Molina); Laboratorio Clínico CAP Just Oliveres de

L'Hospitalet de Llobregat (E. Dopico); Laboratorio Clínico Barcelonès Nord i Vallès Oriental (J. Ros, C. Guardià); Laboratorio Clínico Bon Pastor (R. López); Laboratorio Clínico Manso (I. Rodrigo); Consorcio Laboratorio Intercomarcal de L'Alt Penedès, L'Anoia i El Garraf (A. Bosch, M. A. Benítez); Servicio de Microbiología del Hospital Universitario de Sant Joan de Reus (J. Joven); Laboratorio de Referencia Sud de Reus (J. M. Simó); Servicio de Hematología del Hospital de Tortosa Verge de la Cinta (X. Ortín); Laboratorio de Análisis Clínicos del Hospital Universitario de Girona Dr. Josep Trueta (M. J. Ferri); Servicio de Análisis Clínicos del Hospital Sant Jaume de Calella (I. Caballé, J. Massa); Servicio de Microbiología del Hospital de Mataró (G. Sauca); Servicio de Microbiología del Hospital Universitario Germans Trias i Pujol (L. Matas); Laboratorio de Microbiología del Hospital Universitario de Bellvitge (A. Casanova); Laboratorio de Microbiología de la Fundación Hospital Sant Joan de Déu de Martorell (M. A. Gasos); Servicio de Bioquímica del Hospital General de Granollers (M. C. Villà); Laboratorio de Microbiología del Hospital General de Vic (J. M. Euras); Hospital General de Manresa (J. Franquesa); Hospital de Sant Joan de Déu de Manresa, Fundación Altaia (M. Morta); Laboratorio de Inmunología, Corporación Sanitaria Parc Taulí (M. J. Amengual); Laboratorio de Microbiología, Hospital de la Santa Creu i Sant Pau (N. Margall); Laboratorio de Microbiología, Hospital Clínic i Provincial de Barcelona (T. Pumarola, J. Costa); Laboratorio de Microbiología, Laboratorio de Referencia de Cataluña (M. Salvador); Servicio de Microbiología, Hospital Universitario Vall d'Hebron (E. Caballero); Laboratorio de Análisis Dr. Echevarne (J. Huguet).

Community-based voluntary counselling and testing centres in Catalonia (HIV-DEVO)

CJAS (R. Ros, A. M. Gutiérrez; M. Pérez; M. P. Oliver); SAPS (E. Juárez, O. Díaz, E. Adan; L. Andreo); Stop-Sida (J. Bonilla; A. Morales); Asociación Antisida de Lleida (N. Barberà, A. Binaixa, A. Rafel); ACASC (E. Caballero, J. Becerra, L. A. Leal, J. Quezadas); Actua Vallès (A. Avellaneda, M. Sité, B. Alsina; E. Artigas); Projecte dels NOMS-Hispanosida (J. Saz, F. Pujol, M. Meulbroeck); Asociación Àmbit Prevenció (M. Meroño, C. Jacques, C. Lazar, S. Silva); Gais Positius (V. Mateu, J. Roqueta; R. Araneda; A. Pazos); ACAS Girona (A. Lara).

COBEMB

Hospital Clínic y Maternidad, Barcelona (R. Ros, V. Cararach, S. Pisa); Hospital de Sant Joan de Déu (J. M. Lailla, I. Bombi, E. Gómez); Hospital Universitario Germans Trias i Pujol (O. Gamisans, A. Asensio, M. Luna); Hospital de Terrassa (J. Sáez, M. Aznar, C. Rigau); Corporación Sanitaria Parc Taulí (C. Foradada, C. Grau, S. Moros); Hospital Universitario Joan XXIII de Tarragona (R. M. Miralles, E. Aguilar, E. Segura); Hospital Universitario Arnau de Vilanova (M. Muñoz, E. de Diego, A. González); Hospital Universitario de Girona Doctor Josep Trueta (J. Sabria, A. Montells); Hospital de Barcelona (C. Humet, C. Vila); Instituto Universitario Dexeus (J. Mallafré, A. Suris, X. Murciano).

Other projects

PISCIS Cohort

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AERI-VIH

Hospital Clínic y Provincial de Barcelona (J. M. Miró, O. Sued, T. Pumarola, E. de Lazzari); Fundación IrsiCaixa (B. Clotet, L. Ruiz, T. Puig).

Laboratories

Laboratorio Clínico Manso. Barcelona (I. Rodrigo); Laboratorio Clínico Cornellà de Llobregat (R. Navarro); Laboratorio Clínico El Maresme (C. Rovira); Consorcio Laboratorio Intercomarcal de L'Alt Penedès, L'Anoia y El Garraf (M. Á. Benítez, A. Cebollero); Hospital Clínic - IDIBAPS (T. Pumarola); Hospital Universitario de Bellvitge - Instituto de Investigación Biomédica de Bellvitge (IDIBELL) (A. Casanova); Hospital Universitario Germans Trias i Pujol (E. Martró, L. Matas, V. González, V. Ausina); Hospital Universitario Vall d'Hebron (E. Caballero); Hospital de la Santa Creu i Sant Pau (N. Margall); Hospital Universitario Arnau de Vilanova (J. Farré); Hospital de Mataró (M. G. Sauca); Hospital de Tortosa Verge de la Cinta (X. Ortín); Corporación Sanitaria Parc Taulí (M. J. Armengual); Hospital de Palamós (J. M. Prats); Hospital General de Vic (M. Navarro); Hospital Universitario de Sant Joan de Reus (J. M. Simó); Hospital General de L'Hospitalet (E. Márquez); Hospital General de Granollers (M. C. Villa).

Clinicians

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Community-based testing sites

Laboratorio Sabater Tobella (R. Sala); SAPS - Cruz Roja, Barcelona (O. Díaz, E. Adan); Asociación Stop Sida (J. Bonilla, A. Morales); Projecte dels NOMS-Hispanosida - Jóvenes Positivos, Barcelona (F. Pujol, J. Saz, M. Meulbroek); Asociación Àmbit Prevenció, 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).

ITACA

Hispanosida (F. Pujol, M. Meulbroek, H. Taboada, J. Saz, E. Diezel, J. Montilla); Empresa Q-Soft; entrada de datos (Hispanosida).

NONOPEP

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HPV Project - PISCIS

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NENEXP

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Study of the feasibility of introducing rapid HIV testing into primary care

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