



EPI-VIH Study

New HIV diagnoses in clients of a network of HIV/STI centres, 2003-2008

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Secretaría del Plan Nacional sobre Sida.

Financing:

FIPSE (Foundation made up of the Ministerio de Sanidad y Consumo, Abbott Laboratories, Boehringer Ingelheim, Bristol Myers Squibb, GlaxoSmithKline, Merck Sharp and Dohme, and Roche), exp. 3076/99, 36303/02 y 36537/05.

Madrid, May 2010

Suggested citation:

EPI-VIH Study Group. New HIV diagnoses in clients of a network of HIV/STI centres, 2003-2008. National Centre of Epidemiology, 2010.

INTRODUCTION

Prevention of new infections is the most important tool to control the HIV epidemic, given that HIV is a chronic disease with no cure despite increased patient survival with the new antiretroviral treatments.

Adequate development of prevention activities requires information on the distribution and evolution of HIV infection in the population, as well as the circumstances in which new infections are produced. Although the entire population may be susceptible to HIV infection, the prevalence is much higher in certain groups with more frequent risk exposures. Prevention should be adapted to the characteristics of each population, and this requires the availability of specific information on the main groups affected.

The EPI-VIH study group is a network of front-line centres for HIV/STI counselling and diagnosis in populations highly vulnerable to the infection. They are a valuable source of information to quantify and analyse annually the profile of persons who seek testing in participating centres, as well as those who are newly diagnosed of HIV. This report presents information on new HIV diagnoses for the period 2003-2008.

OBJECTIVES

To describe the frequency and characteristics of new HIV diagnoses in the centres participating in the EPI-VIH study during the period 2003-2008.

METHODS

- **Design:** Descriptive study.
- **Period:** 2003-2008.
- **Setting:** Twenty specialized centres for HIV/STI diagnosis located in 19 Spanish cities.

The Health Promotion and Support Unit (Spanish acronym, UPAS) of Malaga joined the study in 2004, and the Sexually Transmitted Infection (STI) unit of the Drassanes Primary Care Centre in Barcelona participated during the period 2003-2007.

- **Subjects:** Patients who were voluntarily tested for HIV during the study period in any of the participating centres, either at their request or recommended by their attending health professional, with confirmed presence of anti-HIV antibodies.
- **Study variables and data collection:** A specially designed questionnaire was used to collect information on sociodemographic variables, existence of previous tests, history of intravenous drug use, sexual risk exposures, circumstances to which the infection was attributed, and clinical and laboratory data.
- **Data analysis:** The qualitative variables are described by the frequency and percentage, and the quantitative variables by the mean and standard deviation (SD) or the median and 25th and 75th percentiles (P₂₅-P₇₅). Student's t-test was used for the comparison of means and the χ^2 test for the comparison of proportions.

In interpreting these results, the profile of the population attending these centres during the study period must be considered. For this purpose, readers should consult the report "HIV prevalence in clients of a network of HIV/STI centres, 2000-2008" which is available at http://www.isciii.es/htdocs/centros/epidemiologia/epi_VIH.jsp

RESULTS

During the study period 2,617 new HIV diagnoses were identified. The distribution of diagnoses by participating centre and year of diagnosis is shown in table 1.

Table 1. Distribution of new diagnoses by centre and year of diagnosis

Centres	Year of diagnosis						Total
	2003	2004	2005	2006	2007	2008	
ALICANTE	31	36	42	38	35	61	243
BARCELONA*	52	66	69	59	42	—	288
BILBAO	18	13	10	10	18	21	90
CARTAGENA	1	7	1	0	3	2	14
CASTELLÓN	5	7	6	10	8	4	40
GIJÓN	6	3	5	3	3	0	20
GRANADA	10	3	7	10	17	12	59
LA RIOJA	5	1	1	2	0	0	9
MÁLAGA**	—	10	10	7	12	13	52
MADRID-MONTESA	12	12	12	21	26	21	104
MADRID-SANDOVAL	111	116	132	161	198	260	978
MURCIA	1	0	0	0	3	0	4
OVIEDO	5	5	5	6	8	10	39
PAMPLONA	4	1	0	2	4	2	13
SAN SEBASTIAN	5	2	6	2	6	9	30
SANTANDER	0	0	4	2	4	2	12
SEVILLA	19	26	13	22	35	36	151
TENERIFE	23	29	23	24	12	0	111
VALENCIA	41	45	54	49	75	81	345
VITORIA	4	0	4	3	2	2	15
Total	353	382	404	431	511	536	2,617

* Participated during the period 2003-2007

** Joined the study in 2004

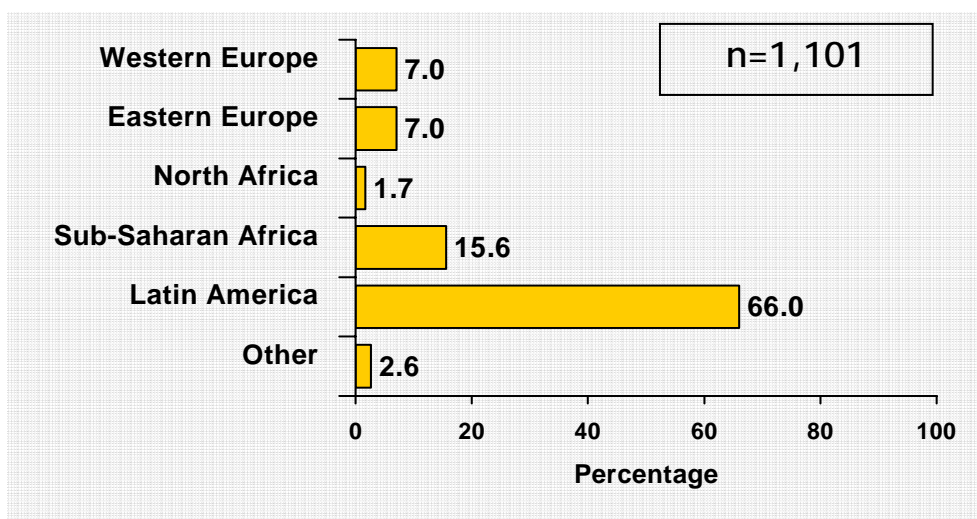
a) Sociodemographic characteristics of new HIV diagnoses

Most of the new HIV diagnoses were men (83.1%), between age 25 and 34 years (47.8%) and with secondary or higher level of education (64.7%). With respect to region of birth, 1,101 patients (42.1%) came from countries other than Spain, primarily from Latin America and Sub-Saharan Africa (Table 2, Figure 1).

Table 2. Sociodemographic characteristics of new HIV diagnoses

Variables	Year of diagnosis												TOTAL	
	2003		2004		2005		2006		2007		2008			
	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%
Sex														
Man	271	76.8	302	79.1	336	83.2	366	84.9	434	84.9	467	87.1	2,176	83.1
Woman	78	22.1	70	18.3	49	12.1	54	12.5	60	11.7	53	9.9	364	13.9
Transgender female	0	0.0	8	2.1	17	4.2	11	2.6	17	3.3	16	3.0	69	2.6
Unknown	4	1.1	2	0.5	2	0.5	0	0.0	0	0.0	0	0.0	8	0.3
Age groups														
<25 years	56	15.9	54	14.1	57	14.1	53	12.3	69	13.5	97	18.1	386	14.7
25-34 years	178	50.4	156	40.8	202	50.0	206	47.8	264	51.7	246	45.9	1,252	47.8
35-44 years	83	23.5	103	27.0	110	27.2	130	30.2	129	25.2	136	25.4	691	26.4
>=45 years	18	5.1	26	6.8	27	6.7	32	7.4	44	8.6	55	10.3	202	7.7
Unknown	18	5.1	43	11.3	8	2.0	10	2.3	5	1.0	2	0.4	86	3.3
Educational level														
No education	11	3.1	10	2.6	2	0.5	6	1.4	10	2.0	10	1.9	49	1.9
Primary	81	22.9	78	20.4	85	21.0	85	19.7	115	22.5	117	21.8	561	21.4
Secondary	133	37.7	135	35.3	188	46.5	136	31.6	172	33.7	179	33.4	943	36.0
Higher	83	23.5	103	27.0	95	23.5	141	32.7	152	29.7	176	32.8	750	28.7
Unknown	45	12.7	56	14.7	34	8.4	63	14.6	62	12.1	54	10.0	314	12.0
Country of birth														
Spain	197	55.8	228	59.7	237	58.7	240	55.7	289	56.6	325	60.6	1,516	57.9
Other	156	44.2	154	40.3	167	41.3	191	44.3	222	43.4	211	39.4	1,101	42.1
TOTAL	353	100	382	100	404	100	431	100	511	100	536	100	2,617	100

Figure 1. Distribution of patients from other countries by region of birth



b) Distribution by transmission route

Patients were classified into mutually exclusive categories by the most probable route of HIV transmission. Unprotected sexual relations were responsible for transmission in 2,457 cases (93.9%); in 118 patients (4.5%) transmission was attributed to shared injection material, and in 42 (1.6%) transmission was either produced by other mechanisms (in one case, due to an occupational accident) or could not be determined (information was not available in 41 cases).

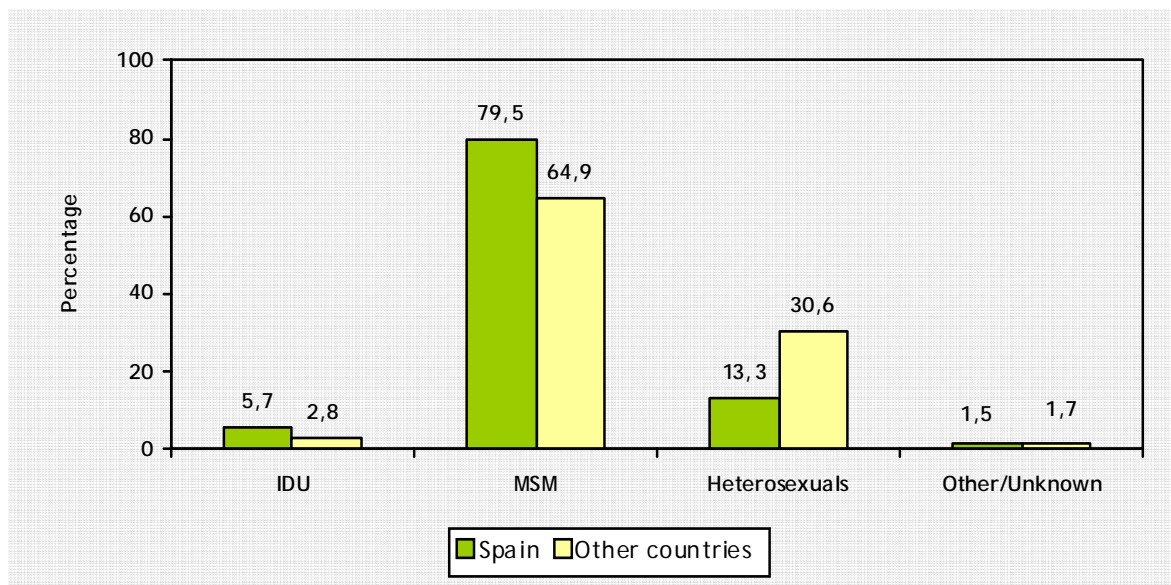
Of the total number of patients, 1,919 (73.3%) attributed the transmission to male sexual contacts (MSM) and 538 (20.6%) attributed it to heterosexual contacts. An increasing proportion of HIV diagnoses reporting male sexual relations as the probable transmission mechanism was observed during the period, together with a decreasing proportion of those reporting heterosexual relations (Table 3).

Table 3. Most probable mechanism of transmission

Route of transmission	Year of diagnosis												TOTAL	
	2003		2004		2005		2006		2007		2008		N°	%
	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%		
Shared injection material	25	7.1	33	8.6	13	3.2	19	4.4	15	2.9	13	2.4	118	4.5
Unprotected homosexual relations among males (MSM)	210	59.5	248	64.9	305	75.5	323	74.9	401	78.5	432	80.6	1,919	73.3
Unprotected heterosexual relations	106	30.0	96	25.1	81	20.0	81	18.8	90	17.6	84	15.7	538	20.6
Other/Unknown	12	3.4	5	1.3	5	1.2	8	1.9	5	1.0	7	1.3	42	1.6
TOTAL	353	100	382	100	404	100	431	100	511	100	536	100	2,617	100

Differences were found in the mode of transmission according to patients' origin. Homosexual relations between men were more frequent in Spaniards (79.5% versus 64.9%) and heterosexual relations were more frequent in foreigners (30.6% versus 13.3%) (Figure 2).

Figure 2. Distribution of new HIV diagnoses by route of transmission and country of birth



For the 2,457 cases in which transmission was attributed to unprotected sexual relations, data were collected on the most probable situation in which it occurred. Bearing in mind that the same patient could report more than one risk situation, the most frequent were relations with a casual partner (67.7%), followed by relations with the steady partner (39.6%) (Table 4).

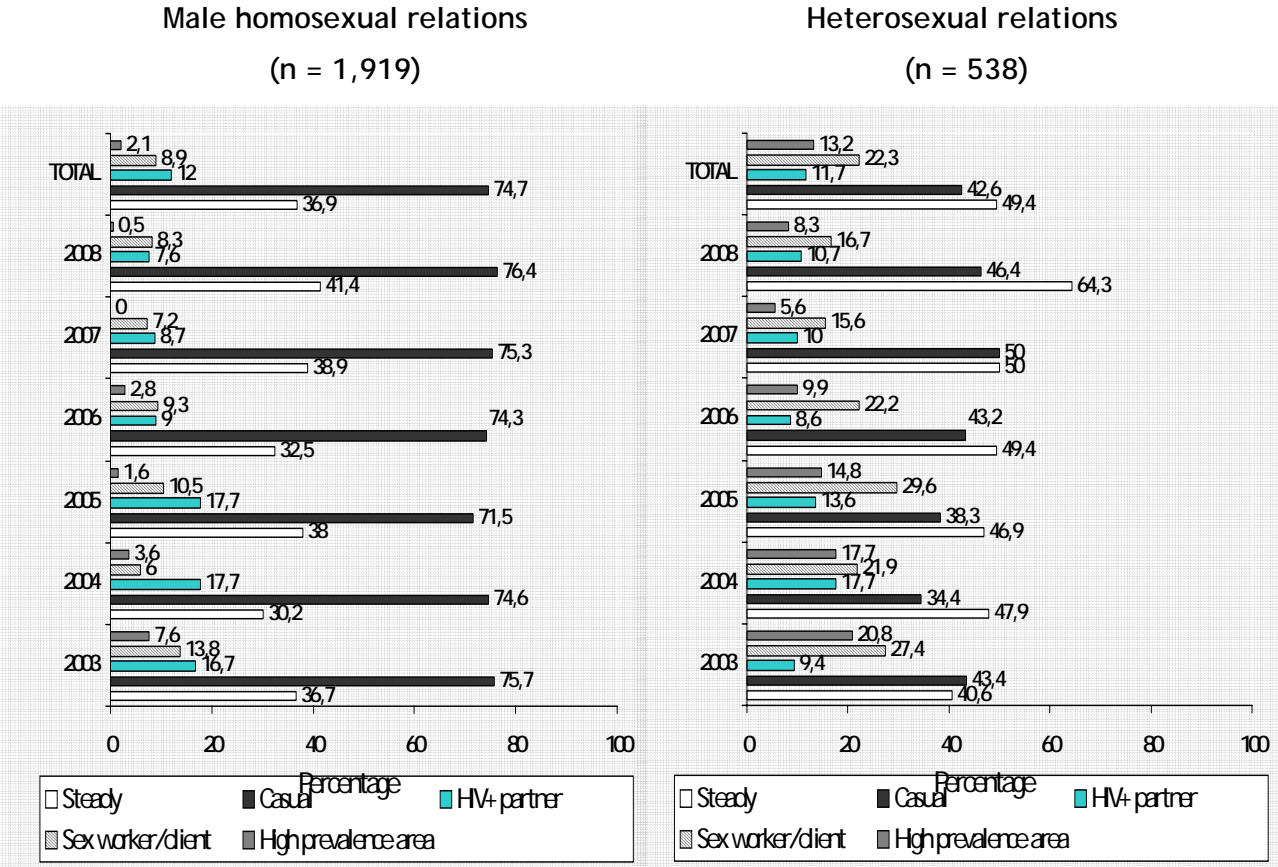
Table 4. Risk situations in new diagnoses attributed to sexual transmission

Risk situation*	Year of diagnosis												TOTAL	
	2003		2004		2005		2006		2007		2008			
	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%
Sexual relations with steady partner	120	38.0	121	35.2	154	39.9	145	35.9	201	40.9	233	45.2	974	39.6
Sexual relations with casual partner	205	64.9	218	63.4	249	64.5	275	68.1	347	70.7	369	71.5	1,663	67.7
Sexual relations with someone known to have HIV infection	45	14.2	61	17.7	65	16.8	36	8.9	44	9.0	42	8.1	293	11.9
Sexual relations in exchange for money or drugs	58	18.4	36	10.5	56	14.5	48	11.9	43	8.8	50	9.7	291	11.8
Sexual relations with a person from a high prevalence area	38	12.0	26	7.6	17	4.4	17	4.2	5	1.0	9	1.7	112	4.6

*A patient may have more than one risk situation.

Sexual relations with casual partners (74.7%) and with the steady partner (36.9%) were more frequent in MSM, whereas the most frequent sexual relations in heterosexuals were with the steady partner (49.4%) followed by those with an casual partner (42.6%) (Figure 3).

Figure 3. Distribution of new diagnoses attributed to sexual transmission, by type of partner*



*A patient may have more than one risk situation.

Some cases reported certain special situations as the most probable exposure: condom breakage or slippage in 110 cases and unprotected oral sex in 81.

c) Clinical characteristics

A sexually transmitted infection (STI) together with HIV was diagnosed in 764 (29.2%) of all patients. This percentage rose to 30.4% in those for whom HIV

transmission was attributed to unprotected sexual relations (Table 5); in the latter group the most frequently diagnosed infections were: syphilis (302 cases, 40.5%), anogenital warts (154 cases, 20.6%), gonorrhoea (103 cases, 13.8%) and chlamydia (55 cases, 7.4%), either alone or in conjunction with other STIs. Some 33.0% of MSM had another STI at the time of HIV diagnosis versus 21.0% of heterosexuals ($p=0.00$).

Of newly diagnosed patients for whom HIV was attributed to sexual transmission, 43.8% reported having had a previous STI (Table 5). By route of HIV transmission, 50.1% of MSM reported a history of STI versus 21.6% of homosexuals, a statistically significant difference. Differences in the proportion of cases with a history of STI were also detected between Spanish (45.7%) and foreign (41.4%) patients.

Table 5. Other sexually transmitted infections in new HIV diagnoses attributed to sexual transmission

Sexually transmitted infections (STI)		Year of diagnosis										TOTAL			
		2003		2004		2005		2006		2007				2008	
		N°	%	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%
Concurrence with another STI	Yes	87	27.5	95	27.6	101	26.2	131	32.4	147	29.9	185	35.9	746	30.4
	No/Unknown	229	72.5	249	72.4	285	73.8	273	67.6	344	70.1	331	64.1	1,711	69.6
History of STI	Yes	126	39.9	151	43.9	155	40.2	179	44.3	228	46.4	238	46.1	1,077	43.8
	No/Unknown	190	60.1	193	56.1	231	59.8	225	55.7	263	53.6	278	53.9	1,380	56.2
TOTAL		316	100	344	100	386	100	404	100	491	100	516	100	2,457	100

With respect to clinical stage of HIV infection, most cases were asymptomatic at the time of diagnosis (stage A) (1,875 cases, 71.6%), 6.2% (162) had primary infection, 3.8% (99) were in stage B (symptomatic not AIDS), and in 33 patients (1.3%) HIV was diagnosed in stage C (AIDS). This information was unknown for 448 patients (17.1%).

Information on hepatitis C serology was available in 1,951 cases (74.5%), 192 of whom (9.8%) had anti-HCV antibodies. Some 55.2% of persons with hepatitis C were or had been intravenous drug users (IDU) and 74.0% were Spaniards.

CD4 level at diagnosis was available for 1,770 patients (67.6%); of these, 510 (28.8%) had less than 350 CD4 cells/ μ l (Table 6).

Table 6. CD4 level at diagnosis

CD4 level	Year of diagnosis										TOTAL			
	2003		2004		2005		2006		2007				2008	
	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%
<200	34	14.8	31	13.1	29	10.1	24	8.0	31	9.3	40	10.5	189	10.7
200-350	38	16.6	53	22.5	60	20.9	54	17.9	55	16.4	61	16.0	321	18.1
>350	157	68.6	152	64.4	198	69.0	223	74.1	249	74.3	281	73.6	1,260	71.2
TOTAL	229	100	236	100	287	100	301	100	335	100	382	100	1,770	100

The proportion of cases with less than 200 CD4 was higher in patients with lower educational level (16.6% in those with only primary/no education versus 9.0% in those with secondary/higher education), and was higher in IDUs (21.2%) than in heterosexuals (16.6%) and MSM (8.6%). The mean age of cases with less than 200 CD4 was 36.4 years (SD: 9.1) versus 32.4 years (SD: 7.9) in those who had \geq 200 CD4.

A total of 1,756 new HIV diagnoses (67.1%) had previously been tested. The test date was known in 1,730 cases (98.5%), and the median time between the date of the last test and the date of HIV diagnosis was 1 year (P_{25} - P_{75} = 0-3). The existence of the previous test was reported by the patients themselves in 978 cases (56.5%), was documented in the centre participating in the study in 544 cases (31.4%), was documented in another health centre in 130 cases (7.5%), and in 78 cases (4.5%) the source of the information was unknown. Patients with a previous test were mostly men (90.8%), with a mean age of 32.6 years (SD: 7.6) and Spaniards (59.5%). About 74.5% of MSM reported having had a previous test versus 66.9% of IDUs and 42.0% of heterosexuals.

CONCLUSIONS

- ⌘ During the study period, most new HIV diagnoses occurred in men, between 25 and 34 years of age, Spaniards, and with secondary or higher educational level. Some 42% of cases occurred in persons from other countries, primarily from Latin America and Sub-Saharan Africa.
- ⌘ Most new HIV diagnoses were attributed to unprotected sexual relations, especially among men. Unprotected homosexual relations were more frequent in Spaniards, and unprotected heterosexual relations were more frequent in persons born in other countries.
- ⌘ In cases of transmission due to unprotected sexual relations, the most frequent risk situations were relations with casual partners among MSM and relations with steady partners in persons with heterosexual exposures.
- ⌘ Almost one-third of new HIV diagnoses had another STI at the same time. About 44% of cases had experienced a previous STI.
- ⌘ Of the HIV diagnoses with information on hepatitis C serology, one of every ten had anti-HCV antibodies. HCV infection was more frequent in Spaniards and IDUs.
- ⌘ The CD4 level at HIV diagnosis was less than 350 cells/ μ l in 29% of cases. These are late presenters in which treatment effectiveness and quality of life are reduced.
- ⌘ About 67% of newly diagnosed persons had previously been tested for HIV. The median time between date of the last negative test and date of diagnosis was 1 year (P_{25} - P_{75} = 0-3).
- ⌘ The results obtained in this study reflect the epidemiological situation of persons who attend HIV/STI diagnostic centres, thus they can not be considered representative of the situation in other segments of the population.

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