

# Assessing the secular trends in the transmission of HIV in Greece

A Tsantes, G Nikolopoulos, A Masgala, D Paraskeva

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See end of article for authors' affiliations

Correspondence to: Argirios Tsantes, 6-8 Makedonias, 104 33, Athens, Greece; dparaskeva@keel.org.gr or g.nikolopoulos@keel.org.gr

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**Objective:** To evaluate the current trends in HIV transmission in Greece.

**Methods:** A retrospective study of HIV infected individuals reported to the Hellenic Center for Infectious Diseases Control (HCIDC) was conducted.

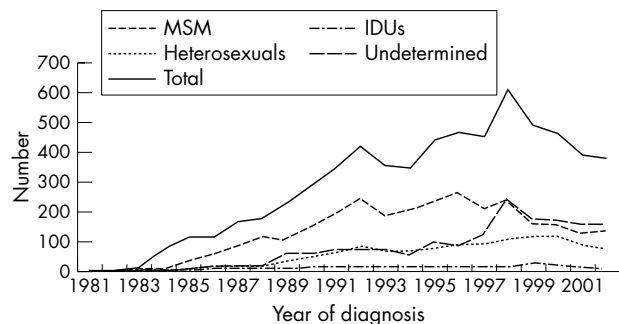
**Results:** Since the beginning of the epidemic in Greece and until early 1990s most cases concerned men who have sex with men (MSM). After the mid-1990s the proportion of homosexual males among HIV positive individuals decreased slightly, then was stabilised but they still remain the dominant population among HIV positive people. On the other hand, heterosexual transmission increased steadily and has become a frequent route for the spread of HIV/AIDS in recent years. Individuals originating from or travelling to countries where this mode of transmission prevails were the most frequent cases in this category. A significant proportion of cases classified as "undetermined" were also recorded and were partially attributed to the increased heterosexual transmission among people (especially women) without obvious high risk behaviours.

**Conclusions:** The HIV/AIDS surveillance system must evolve in order to find the new unreported risk information and identify the population groups at higher risk. This will help to implement preventive policies and information campaigns addressed to target populations with special attention paid to immigrants, women, and marginalised communities.

At the beginning of the HIV epidemic, most of the cases in Western countries were exposed to HIV through male to male sex. In the early 1990s changes in sexual practice of male homosexuals led to a slight decline in the percentage of men who have sex with men (MSM) among HIV positive individuals and to increasing transmission through injection drug use and heterosexual contact.<sup>1</sup> Advances in antiretroviral therapy since 1995,<sup>2</sup> much active migration from countries where transmission through heterosexual contact is frequent,<sup>3</sup> and changes in risk behaviours<sup>4</sup> have resulted in shifts in modes of HIV transmission. The aim of this study is to evaluate the changes and current trends in HIV transmission in Greece in order to target and implement individual and group based interventions.

## METHODS

An analysis concerning the mode of exposure to HIV in all infected individuals reported to the Hellenic Center for Infectious Diseases Control (HCIDC) was conducted. HCIDC has established a national surveillance system for HIV/AIDS.<sup>5</sup> Data related to subject's age, sex, nationality, geographical area, stage of HIV disease, and mode of exposure to HIV were collected from several facilities including all 18 infectious diseases units, reference centres, and hospitals. Data were recorded and managed by the HIV infection office. The first two characters of the name and patient's date of birth were used as personal identifiers. However, this use was based upon cooperation with the individuals. Duplicates, missing, or incorrect data were in fact present; however, there is a close cooperation between the HIV office, laboratories, and clinics in order to validate the reported data. HIV infections and AIDS cases were counted only once in a hierarchy that is intended to correspond to the most probable route of transmission, according to the information given by the attendant physicians.<sup>6</sup>



**Figure 1** HIV positive cases by year of diagnosis and transmission group reported in Greece (1981–2002).

## RESULTS

The number of HIV infections reported in Greece through the first half year period of 2003 was 6521. Among them, 5241 (80.37%) are men and 1242 (19.04%) are women. The gender was not reported for 38 cases (0.59%). There was an increasing trend in HIV infection in Greece but during 2000 a decrease in the number of reported HIV positive cases is observed for first time, which was also confirmed for 2002 (fig 1).

MSM are the most frequent category, with 2944 (45.1%) cases reported. Men and women who have been infected through heterosexual contact make up 1214 (18.6%) cases and 37.1% of them originate from a country with a generalised HIV epidemic. Heterosexual contact is the only transmission category where women predominate (64.74%). A high

**Abbreviations:** HCIDC, Hellenic Center for Infectious Diseases Control; IDU, injecting drug users; MSM, men who have sex with men

**Table 1** Cumulative HIV positive cases by transmission group and sex reported in Greece through first half year period of 2003

Transmission group	Males		Females		Total*	
	No	(%)	No	(%)	No	(%)
Men who have sex with men (MSM)	2944	(56.2)	–	–	2944	(45.1)
Injecting drug users (IDUs)	184	(3.5)	52	(4.2)	237	(3.6)
Haemophiliacs/coagulation disorder	218	(4.2)	14	(1.1)	232	(3.6)
Transfusion recipients	49	(0.9)	36	(2.9)	85	(1.3)
Heterosexuals	453	(8.6)	756	(60.9)	1,214	(18.6)
Mother to child	23	(0.4)	20	(1.6)	44	(0.7)
Undetermined†	1370	(26.1)	364	(29.3)	1765	(27.1)
Total	5241	(100.0)	1,242	(100.0)	6521	(100.0)

\*Includes cases of unknown sex.

†The mode of exposure to HIV was not reported.

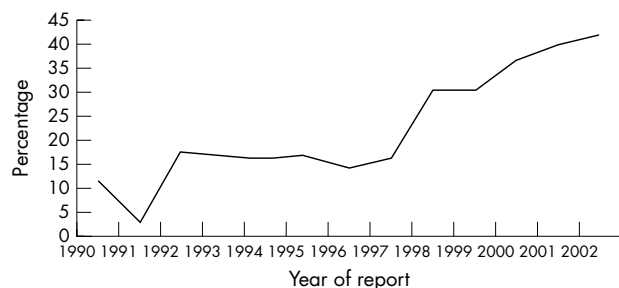
proportion of cases (27.1%) was classified as “undetermined” (table 1).

Proportions of routes of transmission suggest a remarkable decline for MSM from 56.7% in 1996 to 32.3% in 1999. However, the percentage was stabilised in the following years and there was a 4% increase in 2002 compared to 2001. HIV diagnoses reported among those infected through heterosexual contact increased markedly during 1985–2000 (a threefold increase) but the percentage remains relatively unchanged in recent years. Secular trend for injecting drug users (IDUs) remains low (fig 1).

However, the mode of transmission among immigrants shows that 41.52% were exposed to HIV through heterosexual contact and the percentage of IDUs among immigrants is almost twofold that among Greeks (7.74% v 3.6%). A steady increase in the proportion of immigrants reported among the heterosexual transmission group is depicted on figure 2. This is steeper for recent years.

## DISCUSSION

Generally, sexual transmission accounts for the vast majority of HIV/AIDS cases. Since the beginning of the epidemic in Greece and until early 1990s most cases concerned MSM. This is consistent with the pattern of HIV transmission in the United States and western Europe during the same period.<sup>1</sup> After mid-1990s the proportion of MSM among HIV positive individuals decreased slightly, then was stabilised, while a small increase has been recorded recently. Similar patterns of HIV transmission through male to male sex were observed in western Europe, with a 22% increase in 2002 compared to 2001.<sup>6</sup> This declining trend among MSM could partially be attributed to the effects of prevention and education programmes applied in Greece.<sup>7,8</sup> Concern about a possible negative impact of highly active antiretroviral therapy (HAART) on preventive behaviours has been raised,<sup>2</sup> but there is no convincing evidence to suggest a decreasing or an increasing practice of safer sex, because of treatment



**Figure 2** Percentage of immigrants among those infected through heterosexual contact.

possibilities among MSM in Greece. However the increase in 2002 reminds us that the HIV epidemic in Greece mainly involves MSM.

On the other hand, transmission through heterosexual contact increased steadily, especially during last years and seems to be a frequent route for the spread of HIV/AIDS in the population in recent years. HIV diagnoses increased also significantly in people infected through heterosexual contact in western Europe.<sup>1</sup> It is noteworthy that heterosexual contact is the only transmission mode which women account for the majority of cases. The same trend has been recorded in the United States.<sup>9</sup> The most frequent subcategory related to heterosexual transmission concerns individuals originating or travelling to countries where this mode of transmission prevails. In recent years, Greece has hosted a significant number of immigrants originating from sub-Saharan and eastern Europe<sup>10</sup> that are affected by HIV epidemics. Moreover, our data showed that heterosexual transmission accounts for the majority of HIV infections among immigrants. The recent immigration of female sex workers, spread of prostitution, sexual promiscuity, and infrequent condom use are considered important risk factors.<sup>11,12</sup> These females seem to be particularly vulnerable to HIV because of inadequate knowledge about AIDS and limited access to prevention services and medical care. In order to limit the increases of new heterosexually acquired HIV infections, especially in certain minorities, education and access to HIV care services should be provided.

Another notable finding was the relatively low trend of IDUs in comparison with other European countries.<sup>6</sup>

A significant portion of cases classified as “undetermined” was because of reports based only on laboratory surveillance systems, so much information about the transmission mode was not available. Undetermined cases are also reported in other European countries.<sup>6</sup> The proportion of HIV cases without risk information has increased in recent years. Apart from the deliberate masking of the transmission route for certain groups, such as MSM, because of the fear of stigma and discrimination, this is also attributed to the increased heterosexual transmission among people (especially women) without obvious high risk behaviours.

Data from HIV case reporting systems should be interpreted with caution. They may not represent HIV incidence and they depend heavily on patterns of HIV testing and reporting which may also vary over time. Efforts must be focused on the high percentage of recent cases with no reported risk. The surveillance system must evolve to meet public health needs for data in a changing epidemic. The identification of current trends in HIV transmission in the so called target groups is essential. This will help to plan preventive strategies and adequate information campaigns addressed to target populations with special attention to

immigrants, marginalised communities, and sex workers in order to stem the spread of HIV infection.

#### Authors' affiliations

A Tsantes, G Nikolopoulos, A Masgala, D Paraskeva, Hellenic Centre for Infectious Diseases Control, Athens, Greece

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