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Differences Between Nonnational and Indigenous Patients With Sexually Transmitted Infections in Italy and Insight Into the Control of Sexually Transmitted Infections

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Background: **To determine the health needs non-nationals, information on disease occurrence is fundamental.**

Goals: **The goal of this study was to assess the clinical and behavioral characteristics of non-Italians with a new sexually transmitted infection (STI).**

Methods: **Data were taken from Italy's National STI Surveillance System (1991–1999).**

Results: **Of the 61,798 STI cases reported from January 1991 to December 1999, 6847 (11.2%) were diagnosed among non-Italians, 47.1% of whom were Africans. Being a non-Italian patient with an STI was associated with male gender (adjusted odds ratio [AOR], 1.19; 95% confidence interval [CI], 1.11–1.27), youngest age (AOR, 1.71; 95% CI, 1.43–2.04), no formal education (AOR, 20.25; 95% CI, 17.51–23.42), and having contracted the STI abroad (AOR, 13.98; 95% CI, 12.59–15.54). The HIV-1 prevalence among non-Italian patients with STIs was 5.5% (95% CI, 4.9–6.2), with large differences by continent of origin. The highest prevalence was found among European injecting drug users (54.1%; 95% CI, 37.1–70.1), South American homosexual men (41.6%; 95% CI, 32.0–51.8), and heterosexuals from Sub-Saharan Africa (8.9%; 95% CI, 7.2–10.8).**

Conclusions: **Non-Italian patients with STIs seem to consist mainly of migrants, and STI transmission patterns differ from those among Italians; this information is important for developing targeted STI prevention efforts.**

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THE MASSIVE MOVEMENT ALONG the modern migration routes represents one of the most important determinants of human health and of modifications in social status worldwide. In addition to the health implications for the migrants themselves, migration has an impact on the healthcare systems of the countries that host these persons.[1] So that these countries can better assess and satisfy the health needs of migrants, and of non-nationals in general, it is necessary to have adequate information on disease occurrence among these populations. Although such data should ideally be provided by national health surveillance systems or large multisite studies, this is rarely the case, and few national health statistics anywhere distinguish between disease cases among non-nationals and those found in the native population.[2]

In Italy, the number of non-nationals has increased progressively during the last 10 years. At the end of 2000, there were 1,388,153 non-nationals with legal residence, representing 2.4% of the country's total population and constituting a 77.7% increase since approximately 1990. The majority of legally residing non-nationals come from other European countries (39.8%) and Africa (28.1%). Although the number of non-nationals who have not obtained legal status is unknown, it has been estimated to range between 500,000 and 600,000, which increases the total number of non-nationals in Italy to nearly 2 million.[3]

According to the cumulative data collected by Italy's National Sexually Transmitted Infection (STI) Surveillance System, 1 of every 10 annually reported STI cases is represented by a non-Italian.[4] In light of this unexpectedly high proportion, we analyzed the database of the Surveillance System to better define the clinical and behavioral characteristics of non-Italian patients with STIs, comparing them with Italian patients with STIs.

Methods

We reviewed the database of the National STI Surveillance System and selected the data referring to all cases of STIs represented by non-Italians and reported from January 1, 1991, to December 31, 1999. Non-Italians were defined as persons who were born outside of Italy and who do not have Italian citizenship. The case-definitions used for diagnosing STIs among non-Italians are the same as those used for Italians, as described elsewhere.[5] For each person with a newly diagnosed STI, data are collected on

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TABLE 1. Distribution of Non-Italians With a New Sexually Transmitted Infection (STI) Reported to the Italian STI Surveillance System by Geographic Area of Birth, Italy, 1991–1999

Continent of Origin	No. of Reported Cases	Percent
Africa	3228	47.1
Northern Africa	*2028*	*29.6*
Sub-Saharan Africa	*1200*	*17.5*
Europe*	2120	31.0
The Americas	1022	15.0
North America (US and Canada)	*95*	*1.4*
Central America	*163*	*2.4*
South America	*764*	*11.2*
Asia	441	6.4
Oceania	36	0.5
Total	6847	100.0

*Excluding Italy.

demographics, level of education, sexual practices, type of current STI, geographic area where the current STI was acquired, previous STIs, and current and previous HIV test results. Persons for whom nationality was recorded as "unknown" were excluded from the analysis.

The characteristics of the non-Italians were compared with those of Italians who were recorded in the same database in the same period. To evaluate differences in these characteristics between the 2 populations, we performed chi-squared test and calculated the odds ratios (OR) for each characteristic; 95% confidence intervals (CI) of the ORs were used to assess the statistical significance of the differences. To assess independent associations between the study variables and nationality, a multivariate analysis was conducted using the variables for which the univariate analysis showed a statistical significant association.

Results

From January 1991 to December 1999, 62,297 persons with a newly diagnosed STI were reported to the National STI Surveillance System; of these, 499 (0,8%) were excluded from the study because their nationality was listed as "unknown." Of the 61,798 patients with known nationality, 6847 (11.2%) were non-Italians. The median age of non-Italians was 29 years (range, 13–77 years) for both men and women; 4344 (63.4%) of the non-Italians were males. Table 1 shows the distribution of non-Italians by geographic area of birth. The greatest percentage of non-Italians was from Africa (47.1%), although all continents were represented.

Table 2 shows selected characteristics of both the non-Italians and Italians by continent of birth. The male-to-female ratio was at least 2:1 for persons from Africa and Asia, whereas it ranged from 0.82:1 to 0.98:1 for persons from other geographic areas. The median age was lower for persons from Europe (excluding Italy; ie, 28 years), North/Central America (ie, 28 years), and Oceania (ie, 27 years) compared with persons from Africa, South America, and Asia, where the median age was 30 years. The median number of sexual partners in the previous 6 months was twice as high for persons from Africa and South America (median of 2 partners for both continents) compared with persons from other geographic areas (median of 1 partner). The proportion of persons represented by men who have sex with men (MSWM) was highest for South America (16.8%) and North America (10.9%) and lowest for Asia (4.8%) and Africa (4.0%). The proportion of intravenous drug users (IDUs) was highest for South America (4.2%); this percentage is similar to that found for Italian patients with STIs (4.7%).

The distribution of the reported cases of STIs among non-Italians and Italians by gender is shown in Table 3. The most frequent diagnoses among non-Italian males were nonspecific urethritis (n = 1013, 23.3%), genital warts (n = 874, 20.1%), and gonococcal infections (n = 698, 16.1%). The most frequent diagnoses among non-Italian women were nonspecific vaginal infection (n = 1229, 49.1%), latent syphilis (n = 484, 19.3%), and genital warts (n = 269, 10.7%). Of the 745 cases of gonococcal infection reported among non-Italians, 442 (59.3%) were diagnosed among individuals from Africa.

The distribution of the reported STIs (Table 3) significantly differed between non-Italians and Italians, both in males (chi-squared: 1232.6, DF = 17, $P < 0.001$) and females (chi-squared: 1025.4 DF = 16, $P < 0.001$). The non-Italians showed, among males, a significantly higher proportion of cases of nonspecific urethritis (23.3% vs. 18.8% for Italians) and gonococcal infections (16.1% vs. 6.2%). Among females, non-Italians had a higher proportion of latent syphilis (19.3% vs. 4.8%) and chlamydial infections (6.1% vs. 4.2%).

Of the 6847 non-Italians, 1210 (17.7%) reported that they had acquired the STI outside of Italy. The most common STI acquired abroad was latent syphilis for both genders (29.4% for males and 42.4% for females), whereas the most common disease acquired in Italy was nonspecific urethritis for males (25.9%) and nonspecific vaginal infection for females (67.7%).

Table 4 shows the demographic, behavioral, and clinical characteristics of both non-Italians and Italians. Compared with the Italians, the non-Italians were more represented by: males (adjusted odds ratio [AOR], 1.19, 95% CI, 1.11–1.27), youngest individuals (AOR, 1.71; 95% CI, 1.43–2.04), persons who had never used intravenous drugs (AOR, 0.22; 95% CI, 0.18–0.30),

TABLE 2. Selected Characteristics of Non-Italians and Italians With a New Sexually Transmitted Infection (STI) Reported to the Italian National STI Surveillance System, by Continent of Birth, Italy, 1991–1999

Place of birth	No.	M/F	Median Age (years)	Median No. of Partners*	MSWM (%)	Heterosexuals (%)	IDU (%)
Africa	3228	3.5	30	2	4.0	87.1	1.1
Europe†	2120	0.98	28	1	7.0	85.2	2.5
South America	764	0.82	30	2	16.8	72.0	4.2
Asia	441	2.0	30	1	4.8	90.5	0.5
North/Central America	258	0.83	28	1	10.9	77.9	2.4
Oceania	36	0.89	27	1	8.3	91.7	0.0
Italy	54,951	1.3	32	1	6.1	86.1	4.7

*Number of sexual partners in the previous 6 months. †Excluding Italy.
MSWM = men who have sex with men; IDU = intravenous drug users; Heterosexuals = non-IDU heterosexuals.

TABLE 3. Distribution of Reported Sexually Transmitted Infection Diagnoses in Italian and Non-Italian Patients by Gender; Italy 1991–2001

	Males*		Females†	
Reported Diagnosis	Non-Italians (%)	Italians (%)	Non-Italians (%)	Italians (%)
Gonococcal infections	698 (16.1)	1905 (6.2)	47 (1.8)	132 (0.6)
Genital warts	874 (20.1)	11,690 (37.5)	269 (10.7)	4,358 (18.4)
Genital herpes	335 (7.7)	3074 (9.9)	83 (3.3)	933 (3.9)
Latent syphilis	575 (13.2)	2470 (7.9)	484 (19.3)	1,140 (4.8)
Primary and secondary syphilis	186 (4.3)	1110 (3.5)	71 (2.8)	295 (1.2)
PID			13 (0.5)	65 (0.3)
LGV	20 (0.5)	20 (0.1)	2 (0.1)	7 (0.0)
Nonspecific urethritis	1013 (23.3)	5876 (18.8)		
Nonspecific vaginal infection			1229 (49.1)	13,969 (58.8)
Trichomonas infections			86 (3.4)	1008 (4.2)
Chlamydial infections	400 (9.2)	2282 (7.3)	151 (6.1)	1000 (4.2)
Chancroid	21 (0.5)	26 (0.1)	3 (0.1)	2 (0.0)
Donovanosis		6 (0.0)	2 (0.1)	
Molluscum contagiosum	49 (1.1)	979 (3.1)	32 (1.3)	418 (1.8)
Pediculosis pubis	169 (3.9)	1697 (5.4)	31 (1.2)	412 (1.7)
Unspecific proctitis	4 (0.1)	67 (0.2)		9 (0.0)
All diagnoses	4344 (100)	31,202 (100)	2503 (100)	23,748 (100)

*Global χ^2: 1232.6, DF = 17, $P < 0.001$.
†Global χ^2: 1025.4 DF = $P < 0.001$.
PID = pelvic inflammatory disease; LGV = lymphogranuloma venerum.

persons with no formal education (AOR, 20.25; 95% CI, 17.51–23.42) or with a middle-school education only (AOR, 1.93, 95% CI, 1.89–2.06), and persons who had not used a condom in the previous 6 months (AOR, 1.37; 95% CI, 1.20–1.57). Moreover, the non-Italians were 14 times more likely than Italians to have contracted the STI outside of Italy (AOR, 13.98; 95% CI, 12.59–15.54), and they tend to have a lower prevalence of HIV-1 infection (AOR, 0.82; 95% CI, 0.72–1.15) and a higher probability of having undergone HIV-1 testing (AOR, 0.71; 95% CI, 0.67–0.76).

Table 5 shows the number and percentage of non-Italians who were tested for HIV-1 and the proportion of those who were positive for HIV-1 by continent of birth and exposure category. Among the 4716 (68.9%) non-Italians who underwent HIV testing, the overall HIV seroprevalence was 5.5% (95% CI, 4.9–6.2). However, the seroprevalence varied widely by continent of birth, ranging from 0.0% (95% CI, 0.0–21.9) among persons born in Oceania to 16.7% (95% CI, 13.7–20.3) among those from South America. Overall, the HIV-1 prevalence was higher for persons from the Americas and Africa and lower for those from Asia and Oceania. Only the overall HIV-1 prevalence among patients with STIs from South America was higher than that among Italian patients with STIs (16.7 vs. 9.4; Table 5). The HIV-1 prevalence rate among persons from the continent of Africa is influenced by that among persons from Sub-Saharan Africa, for which the prevalence was high among MSWM (28.6%) and heterosexuals (8.9%). Moreover, the HIV-1 prevalence among heterosexuals from Sub-Saharan Africa was the highest rate found among non-Italian heterosexuals.

For persons from European countries other than Italy, the highest HIV-1 prevalence was observed among IDUs (54.1%; 95% CI, 37.1–70.1). For persons from South America, the highest HIV-1 prevalence was observed among MSWM and IDUs (41.6%; 95% CI, 32.0–51.8 and 43.8%; 95% CI, 31.2–58.3, respectively).

Among the non-Italians, the HIV-1 prevalence was 4.7% (95% CI, 4.0–5.4) among those who reported having acquired the current STI in Italy and 7.2% (95% CI, 5.6%-9.0%) among those who reported having acquired the STI elsewhere (OR, 1.58; 95% CI, 1.16–2.16).

Discussion

The data from Italy's National STI Surveillance System show that more than 1 of every 10 (11.2%) reported cases of STIs was diagnosed in a non-Italian individual and that approximately half of these individuals were from Africa. This 11.2% is over 3 times higher than the estimated proportion of the general population represented by legal and illegal non-Italians resident in Italy (2 million individuals, 3.3% of Italy's resident population). Although no data are available on the proportion of non-Italians who use public hospital-based health facilities on an outpatient basis, if this proportion is compared with that of non-Italians who are inpatients in hospital-based facilities (ie, 1.7% of the hospitalized individuals in Italy in 1998),[6] then we can assume that non-Italians are extremely overrepresented among persons with STIs, especially when considering that non-nationals generally have poorer access to ambulatory-based public health services.[7] This finding is consistent with several studies conducted in industrialized countries that showed an increased risk of infectious diseases among populations considered to be vulnerable (ie, persons with poor access to health facilities and hospital care such as migrants, the homeless, and persons with a low income).[1,2] In particular, among migrants residing in Europe, an increased risk of STIs has been recently described.[8,9]

In our study, persons with an STI who originated from Africa or Asia were generally non-drug-using heterosexual males without a steady sexual relationship, as deduced from the median number of sexual partners in the 6 months before STI diagnosis. This profile is consistent with that of non-nationals in some European countries where the demand for labor causes a selection by gender, with a predominance of male migrants who have unsteady sexual partners or who could have sexual relations with commercial sex workers and who are thus at a higher risk of acquiring STIs than indigenous males.[8,9]

TABLE 4. Demographic, Behavioral, and Clinical Characteristics of Non-Italians Versus Italians With a New Sexually Transmitted Infection (STI) Reported to the Italian National STI Surveillance System; Italy, 1991–1999

	Non-Italians (n = 6847, %)	Italians (n = 54,951, %)	COR (95% CI)	AOR (95% CI)
Gender				
Female	2503 (36.6)	23,748 (43.2)	1	1
Male	4344 (63.4)	31,203 (56.8)	1.32 (1.22–1.34)	1.19 (1.11–1.27)‖
Age group,				
median age (range)	29 (13–77)	32 (12–78)		
<20 years	190 (2.8)	1763 (3.3)	1	1
20–39 years	5896 (86.0)	38,880 (70.7)	1.41 (1.21–1.64)	1.71 (1.43–2.04)¶
≥40 years	761 (11.2)	14,308 (26.0)	0.49 (0.42–0.58)	0.41 (0.34–0.50)¶
Intravenous drug use				
Never	6256 (97.9)	50,086 (94.3)	1	1
Ever	132 (2.1)	3015 (5.7)	0.34 (0.28–0.41)	0.22 (0.18–0.30)‖
Unknown	459 (6.7)	1850 (3.4)	1.99 (1.78–2.21)	1.32 (1.15–1.52)
Sexual orientation				
Heterosexual	6290 (92.4)	50,799 (92.4)	1	1
Homosexual	557 (8.1)	4152 (7.6)	1.08 (0.99–1.19)	1.13 (0.99–1.28)‖
Education level*				
High school	2080 (33.4)	26,330 (49.8)	1	1
Middle school	3800 (55.5)	27,592 (50.2)	1.74 (1.65–1.85)	1.93 (1.81–2.06)¶
No formal education	741 (10.8)	572 (1.0)	16.40 (14.55–18.48)	20.25 (17.51–23.42)¶
Condom use†				
Always	403 (5.9)	3883 (7.1)	1	1
Rarely	1516 (22.2)	14,933 (27.2)	0.98 (0.87–1.10)	0.89 (0.78–1.02)‖
Never	4928 (71.9)	36,135 (65.7)	1.31 (1.18–1.46)	1.37 (1.20–1.57)¶
Place of contagion‡				
Italy	4964 (80.4)	51,339 (98.4)	1	1
Abroad	1211 (19.6)	860 (1.6)	14.56 (13.27–15.99)	13.98 (12.59–15.54)¶
Previous STI§				
No	5198 (75.9)	41,755 (76.0)	1	1
Yes	1246 (18.2)	12,100 (22.0)	0.83 (0.77–0.88)	0.91 (0.84–0.99)‖
HIV status				
Negative	4457 (65.1)	29,880 (54.4)	1	1
Positive	259 (3.8)	3082 (5.6)	0.56 (0.49–0.64)	0.82 (0.72–1.15)‖
Unknown	2131 (31.1)	21,989 (40.0)	0.65 (0.62–0.69)	0.71 (0.67–0.76)

*For 682 persons, data on the educational level were missing.
†In the previous six months.
‡For 3424 individuals, data on place of contagion were missing.
§For 1499 persons, data on previous STI were missing.
¶$P < 0.001$.
‖$P > 0.05$.
COR = crude odds ratio; CI = confidence interval.

In fact, differently from persons who travel for pleasure, the role played by migrant workers in the spread of STIs is considered to be disproportionately large.[10] That the non-Italians with an STI mainly consist of migrants and not of tourists is suggested by the finding that 17.7% of these persons had acquired the STI outside of Italy and that, among the Italians, this proportion was 1.5%, despite the fact that in the past decade, over 6 million Italians traveled annually to a foreign country on holiday.[11] Additional data that supports the hypothesis of a very large proportion of migrants among non-indigenous STI cases in Italy is the large proportion of non-Italians (ie, approximately 70%) who came from continents where people travel mainly to find work such as Africa, South America, and Asia, and that the most common STIs contracted outside of Italy by non-Italians were infections that are endemic in the areas of origin most represented in our study population (ie, untreated latent syphilis and gonococcal infections) such as Africa and Asia.

Our results show that the non-Italians were more affected by bacterial infections than Italians and would thus benefit from the cornerstones of STI control such as improving access to public healthcare services, case finding for providing prompt treatment, and educational initiatives (eg, teaching persons to recognize signs and symptoms). Initiatives for promoting health among these persons should be implemented within the communities themselves. However, it should be taken into account that, compared with Italians, non-Italians had a much lower educational level, which suggests that they would benefit more from educational programs based on face-to-face skill transfer as opposed to programs aimed at providing information through the media or reading materials.

Furthermore, the high proportion of cases of latent syphilis and of nonspecific vaginal infections among non-Italian females stresses the need to improve case finding among non-Italian women and to implement antenatal STI screening programs in all obstetrics and gynecologic wards attended by non-Italians so that effective treatment can be provided before childbirth. Moreover, the high proportion of Africans among persons with gonococcal infections suggests that periodic screening, particularly among non-Italians, to assess the resistance of *Neisseria gonorrhoeae* strains to common antibiotics (penicillin, tetracycline, and ciprofloxacin) could be useful in determining the characteristics and

TABLE 5. Number and Percentage of Non-Italian Patients With Sexually Transmitted Infections Who Were Tested for HIV-1 and the HIV-1 Prevalence by Continent of Birth and Exposure Category, Italy, 1991–1999

		HIV-1 Prevalence (%)			
	No. Tested (%)	Overall	MSWM	Heterosexuals	IDU
Africa	2339 (72.5)	4.3	12.9	3.9	9.7
North Africa	*1486 (73.1)*	*1.5*	*8.3*	*1.0*	*15.0*
Sub-Saharan	*853 (71.1)*	*9.1*	*28.6*	*8.9*	*0.0*
Europe*	1375 (64.9)	3.6	10.6	1.2	54.1
Asia	287 (65.1)	2.1	12.5	1.5	0.0
Oceania	18 (50.0)	0.0	0.0	0.0	—
North Central America	171 (66.3)	8.2	17.4	4.7	—
South America	526 (68.8)	16.7	41.6	5.1	43.8
Any continent	4716 (68.9)	5.5	20.7	3.1	36.6
Italy	32,962 (60.0%)	9.4	26.7	2.2	63.0

*Excluding Italy.
MSWM = men who have sex with men; Heterosexuals = non-IDU heterosexuals; IDU = intravenous drug users.

extent of the circulation of penicillinase-producing *N. gonorrhoeae* (PPNG) and of the drug resistance of *N. gonorrhoeae*.

The HIV-1 prevalence rates assessed in our study suggest that the risk of infection greatly varies among non-indigenous patients with STIs, as described in a survey conducted in a public STD clinic in the United States.[12] The different prevalence rates are consistent with those described by local observational studies in the different geographic areas of origin of the patients, with the highest rates among individuals from South-Central America and Sub-Saharan Africa and the lowest rates for Europeans, Asians, and Australians.[13]

The high overall HIV-1 prevalence rates among patients with STIs from South and Central America (16.7% and 8.2%, respectively) and from Sub-Saharan Africa (9.1%) stresses the importance of offering HIV-1 counseling and testing to all individuals coming from these areas to provide prompt treatment and to increase the knowledge of, and skills for, preventing the spread of HIV-1 and other STIs. This goal should be a priority, especially for individuals with an ascertained high risk of HIV infection such as non-Italian patients with STIs who acquired the STI outside of Italy.

Moreover, most of the non-Italians who have come to Italy in the past decade are from regions that are highly endemic for HIV-1 infection.[14] This supports the recently proposed hypothesis that the presence of HIV-1 serotypes other than B in some European countries is probably the result of sexual contact between Europeans and individuals from developing countries through travel or immigration.[15–18]

Finally, the demographic, behavioral, and clinical differences between non-Italian and Italian patients with STIs and the diffusion of HIV-1 infection, particularly among male patients with STIs from endemic areas, suggest the need for culturally and linguistically appropriate prevention efforts that make use of existing facilities, as well as the need to train persons within communities to conduct local prevention activities. Moreover, the findings of the study stress the role of the analysis of surveillance data, particularly data from communicable disease surveillance systems, in distinguishing between indigenous and non-indigenous cases and in identifying characteristics that could be useful in better targeting population-oriented prevention programs for reducing the impact of these diseases. This could help to ensure that the levels of sensitivity to STI-related issues and of preventive behavior among non-nationals could eventually equal those in the host-country population. In fact, like in other countries, in Italy, the goal of successfully controlling STIs will increasingly depend on reducing the impact of STIs in migrant populations, and continued efforts to tailor STI control strategies to the foreign-born community will be a priority in the battle against STIs and HIV-1 infection.

References

1. Carballo M, Divino JJ, Zeric D. Migration and health in the European Union. Trop Med Int Health 1998; 3:926–944.
2. El Sahly HM, Adams GJ, Soini H, Teeter L, Musser JM, Graviss EA. Epidemiologic differences between United States- and foreign-born tuberculosis patients in Houston, Texas. J Infect Dis 2001; 183:461–468.
3. Caritas. Dossier Statistico Immigrazione. Rome: Ed Anterem; 2001.
4. Suligoi B, Giuliani M, Migration Medicine Study Group. Sexually transmitted disease among foreigners in Italy. Epidemiol Infect 1997; 118:235–241.
5. Giuliani M, Suligoi B, the STD Surveillance Working Group. Sentinel Surveillance of Sexually Transmitted Diseases in Italy. EURO Surveillance 1998; 6:55–58. Available at: www.eurosurveillance.com.
6. Fortino A, Boldrini R, Marceca M, Pennazza F, Randazzo M, Geraci S. Rapporto Nazionale sui ricoveri ospedalieri degli stranieri in Italia. Dati SDO 1998. Rome: Ministero della Salute; 2000. Available at: www.sanita.it.
7. Cookson ST, Carballo M, Nolan CM, Keystone JS, Jong EC. Migrating populations—a closer view of who, why, and so what. Emerg Infect Dis 2001; 7:551.
8. Janson S, Svensson PG, Gkblad S. Migration and health in Sweden. In: Huismann A, Weilandt C, Geiger A, eds. Country Reports on Migration and Health in Europe. Bonn: Wissenschaftliches Institut der Arzte Deutschlands e V; 1997.
9. Muynck A. Migration and health in Belgium. In: Huismann A, Weilandt C, Geiger A, eds. Country Reports on Migration and Health in Europe. Bonn: Wissenschaftliches Institut der Arzte Deutschlands e V; 1997.
10. Mabey D, Mayaud P. Sexually transmitted diseases in mobile populations. Genitourin Med 1997; 73:18–22.
11. Touring Club Italiano. Le vacanze degli Italiani all'estero. Estate 2002. Milan: Centro Studi TCI; 2002. Available at: www.touringclub.it/Pdf/vacanze.estat.pdp.
12. Harawa NT, Bingham TA, Cochran SD, Greenland S, Cunningham WE. HIV prevalence among foreign- and US-born clients of public STD clinics. Am J Public Health 2002; 92:1958–1963.
13. UNAIDS-WHO. AIDS Epidemic Update—December 2002. Available at: www.unaids.org/worldaidsday/2002/press/update/epiupdat.pdp.
14. Manfredi R, Calza L, Chiodo F. HIV disease among immigrants coming to Italy from outside of the European Union: a case control study of epidemiological and clinical features. Epidemiol Infect 2001; 127:527–533.

15. Holguin A, Rodes B, Dietrich U, Soriano V. Human immunodeficiency viruses type 1 circulating in Spain. J Med Virol 1999; 59:189–193.
16. Love A, Chen M, Sallberg M. Changing profile of HIV-1 serotypes in Iceland during 1989–96. Scand J Infect Dis 2000; 32:445–446.
17. Gras MJ, Weide JF, Langendam MW, Coutinho RA, Van de Hoek A. HIV prevalence, sexual risk behavior and sexual mixing patterns among migrants in Amsterdam, The Netherlands. AIDS 1999; 13: 1953–1962.
18. McMunn AM, Mwanje R, Pozniak AL. Issue facing Africans in London with HIV infection. Genitourin Med 1997; 73:157–158.