

# HIV Infection among seafarers in Croatia

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## ABSTRACT

The purpose of this study was to estimate the magnitude of the HIV problem among seafarers in Croatia. The study is based on data from the AIDS/HIV Registry of the Croatian National Institute of Public Health and data on the number of seafarers in Croatia, from the Croatian Seafarers' Union. All case records of HIV infection among seafarers and the type of their sexual contacts have been analysed retrospectively. During the period between 1985 and the end of October 2009, a total of 784 persons with diagnosed HIV infection were registered, of which 74 were seafarers (9.4%). Only 0.25% of Croatian seafarers are HIV infected. Considering the fact that seafarers are a "bridge" for HIV infection to the population, this article describes the epidemiological characteristics of HIV infection among Croatian seafarers and suggests measures in combating HIV infection in their population.

(Int Marit Health 2010; 61; 4: 209–214)

**Key words:** HIV infection, seafarers, Croatia

## INTRODUCTION

The number of people living with HIV worldwide continued to grow in 2008, reaching an estimated 33.4 million. The total number of people living with the virus in 2008 was 20% higher than the number in 2000, and the prevalence was roughly threefold higher than in 1990 [1]. These are old references and should be changed for the latest data for 2010, or at least with data from 2009, because later in the text the author presents data from 2009 for Croatia.

Due to their geographic mobility and long periods of separation from intimate partners, migrant workers are at increased risk for a variety of sexually transmitted infections (STIs) including HIV/AIDS. Certain types of work situations are more susceptible to the risk of infections than others although the main issue is one of behaviour, not occupation. Among migrant workers, seafarers are especially vulnerable to HIV infection as they are often away from their families for very long periods [2].

Croatia falls under the group of countries with the lowest HIV prevalence in the world: 1–1.5 per

10,000 inhabitants. Incidence rates are relative to other parts of Eastern Europe [3]. The dominant transmission route for HIV infection in Croatia is still primarily homosexual, followed by the heterosexual route. The current situation: from 2000–2003 indicates that the dominant was heterosexual workers at risk, in the world and in Croatia, are migrant workers, specially truck drivers and seafarers [4–6].

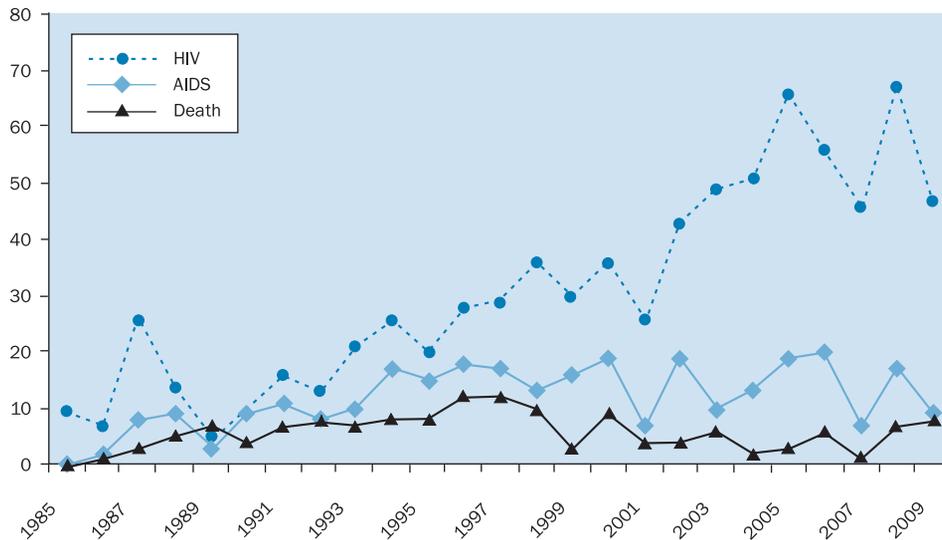
Migrant workers, including seafarers, can present a risk for transmitting HIV to the heterosexual population in non-endemic areas [7].

Croatia is considered to be a seafaring nation and, according to the International Transport Workers' Federation (ITF), ranks among the top 15 countries in the world regarding the number of seafarers.

## MATERIAL AND METHODS

The data used are from the Croatian National Institute of Public Health and are regularly cited in publications like the Croatian Health Service Year-book and Epidemiological News, from 1985 to 2009. Incidence and prevalence have been calculated

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**Figure 1.** Numbers of newly discovered cases of HIV infection, AIDS, and deaths from HIV/AIDS in the Republic of Croatia during the period 1985–2009

according to the number of inhabitants from the 2001 census. According to that census, 4,437,460 people live in the territory of the Republic of Croatia [5, 6].

Data on the overall number, age, and sex structure of AIDS/HIV infected were obtained from the Epidemiology Department of the Croatian National Institute of Public Health.

## RESULTS

### AIDS/HIV IN THE REPUBLIC OF CROATIA

According to the data of the Croatian Registry for HIV/AIDS, since 1985 when the first cases of HIV infection were recorded in Croatia until the end of October 2009, a total of 784 persons were recorded with diagnosed HIV infection, of which 298 developed AIDS. In the same period, 161 died (Figure 1).

According to the available epidemiological data, the homosexual transmission route is predominant in Croatia and is followed closely by the heterosexual route in promiscuous persons and partners of HIV-positive persons, among whom are seafarers and their partners are included (Table 1).

Of the 47 cases with diagnosed HIV infection in the year 2009, the probable transmission route in 35 cases was Men Who Have Sex with Men (MSM), as was the case in the year 2008; in 11 cases it was transmitted through heterosexual relationships, and in one case it was not possible to prove the mode of transmission. The number of diagnosed HIV infection cases has seen an increase in the last five years, while the number of those who develop AIDS and

the number of deaths has been stagnating or is slightly decreasing. It is not clear if that trend can be attributed to a real increase in infection or better accessibility of HIV tests and, consequently, an increase in the number of registered cases, primarily in populations of risky sexual behaviour (MSM, heterosexuals outside permanent relationship, migrant workers). The falling trend in developing AIDS and in the number of deaths is a consequence of the effectiveness of the highly active antiretroviral therapy that has been in use in Croatia since 1997.

The sexual HIV infection transmission route is predominant in the overall number of HIV positive persons. The probable transmission route in 48.2% of infected is male-to-male sexual contact, and to a somewhat lesser degree (36.2%) heterosexual contact. According to data from the epidemiological anamnesis of heterosexuals outside permanent relationships, almost all such persons were infected abroad, during their usually long-term stay outside of Croatia, in a country with a high HIV infection prevalence [5].

A little over 8% of the infected had shared intravenous drug use equipment, while all other transmission routes (transfusion of infected blood, transfer from mother to child) comprise less than 5% of the infected (Table 1).

In 2008 HIV infection was diagnosed in 67 cases. In 50 of them, the most probable transmission route was male homosexual contact, in 15 cases it was heterosexual contact, in 1 case it was drug injection, and in another case the transmission route could not be proven.

**Table 1.** Probable transmission routes of AIDS/HIV infection in Croatia in the period 1985–2009

Probable transmission route of AIDS/HIV infection	Number	(%)
Male homosexual	378	48.2
Risk heterosexual – outside of permanent relationship*	190	24.2
Risk heterosexual – of a permanent partner**	94	12.0
Injecting drug use	61	7.8
People with haemophilia – infected blood products	14	1.8
Children of HIV-infected mothers	11	1.4
Receiver of infected blood products	3	0.4
Unknown	33	4.2
Total	784	100.0

\*Heterosexual contact with a person who is at high risk for HIV infection (the population with high-risk behaviour for acquiring HIV)

\*\*Heterosexual contact with a partner who is infected with HIV

Of the 47 cases of HIV infections diagnosed in 2009, in 35 cases the probable transmission route was MSM, as was the proportion in the previous year (in 2008: 50 of 67); in 11 cases it was through a heterosexual relationship, which was again equal to the proportion of infections in 2008; and in one case it was not possible to prove the transfer route [4, 5].

### GEOGRAPHIC DISTRIBUTION OF AIDS/HIV INFECTION IN CROATIA

HIV-infection has been registered in all counties of the Republic of Croatia. The highest number of infections is located in the City of Zagreb and Primorsko-Goranska County, followed by coastal counties. The smallest number of infected was recorded in central counties, the easternmost point of Croatia, and the County of Ličko-Senjska.

The epidemiological situation in terms of transmission routes differs from county to county, i.e. there are sub-epidemics in counties or regions. In the City of Zagreb the MSM transmission route is predominant, while in coastal counties it is the heterosexual route in seafarers and their partners in Croatia (Map 1). This is very relevant to this article as the majority are seafarers.

### AIDS/HIV AMONG CROATIAN SEAFARERS

Based on the number of issued maritime certificates, it is estimated that there are around 30,000 seafarers in Croatia, half of whom are officers.

Of the overall 784 AIDS/HIV infected persons in Croatia, 74 (9.4%) are seafarers. When calculated into a rate, the prevalence rate in the general population of Croatia in the period 1985–2009 is 17.67 diseased/infected per 100,000 inhabitants. Since of

the overall 30,000 seafarers 74 are AIDS/HIV infected, the prevalence rate is 246.67 per 100,00 seafarers, which is 14 times that of the general population (Table 2).

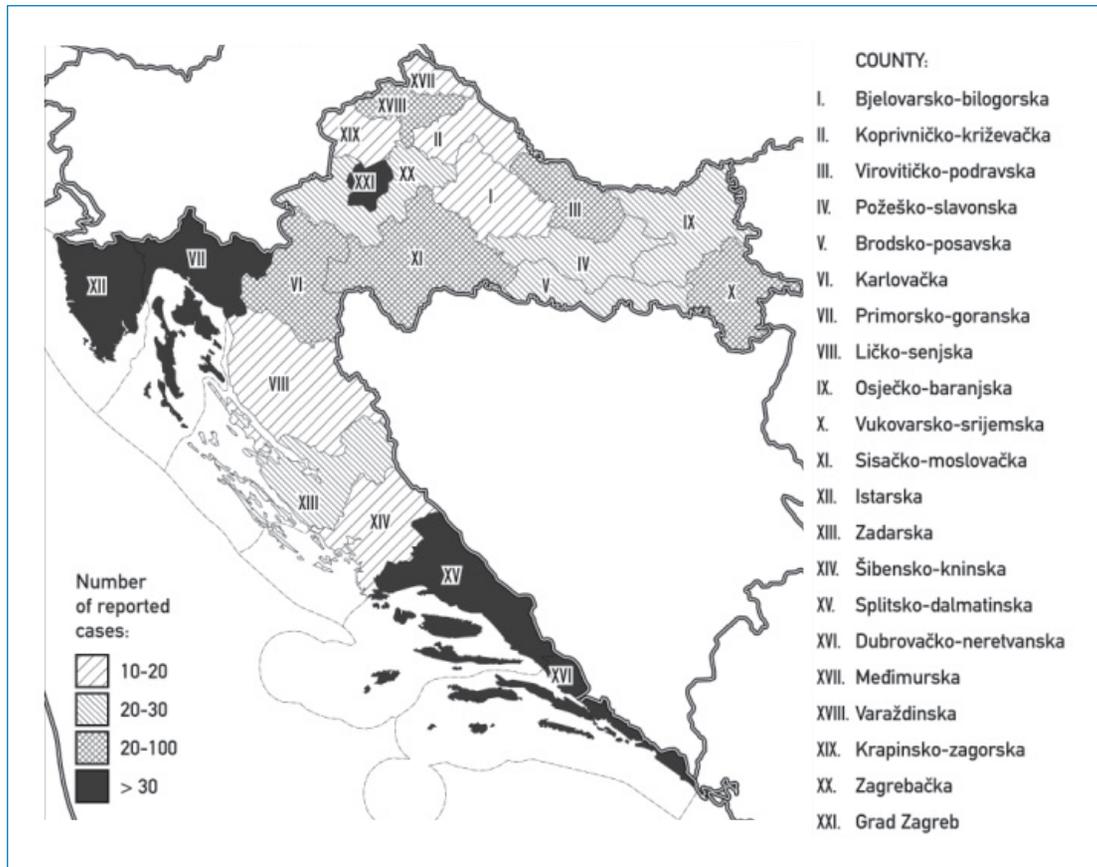
Looking at percentages, only 0.25% of Croatian seafarers (74/30,000) are infected.

Of the 74 AIDS/HIV infected Croatian seafarers, five (6.8%) are highly educated seafarers, i.e. officers. The remaining 69 seafarers (93.24%) fall under the lower education category – persons with no high school diploma. Considering the estimate that half the Croatian seafarers are officers, it can be concluded that HIV infection rates are lower among officers. On the other hand, the HIV infection rate in officers is double that of the general population, while the morbidity rate in seafarers of lower education levels (helmsmen, oilers, cooks, waiters) is 460 per 100,000 or 27 times that of the general population, which clearly indicates where preventive actions should be taken, i.e. which group is in need of education.

Based on the above facts, it can be concluded that HIV-infected seafarers can be considered a “bridge” for carrying HIV infection into the heterosexual population in Croatia.

### PREVENTING AIDS/HIV INFECTION IN CROATIA

Basic epidemic control measures include continuous research and preventive activities among the most at-risk populations, anonymous counselling and testing, therapy for those infected, and reducing the stigma associated with HIV infection. HIV infection prevention and AIDS treatment measures are continuously implemented in the Republic of Croatia within the framework of the Program of Health Care



**Map 1.** Geographic distribution of HIV infection prevalence per 100,000 inhabitants, by counties of the Republic of Croatia, in the period 1985-2009

Measures, the National HIV/AIDS Prevention Programme, and special programmes (a programme for increasing the availability of voluntary HIV counselling and testing within a network of centres for voluntary counsellors; anonymous and free counselling and testing for HIV at Public Health Institutes; and a programme of enhancing HIV infection monitoring, i.e. implementing second generation HIV infection and AIDS monitoring, which includes the monitoring of other sexually transmitted diseases and HIV risk behaviour; and seroprevalence studies in high-risk groups, etc.). In Croatia, the treatment of the HIV-infected and persons with AIDS is free.

### Centres for HIV counselling and testing

Centres for free and anonymous HIV testing and counselling have been set up in nine cities. Due to the higher prevalence of AIDS/HIV infected in coastal regions, county centres of all coastal counties (Pula, Rijeka, Zadar, Split, and Dubrovnik) have been involved, as well as the town of Korčula. The remaining centres are located in the continental part of

Croatia. Employees in the centres are all trained counsellors; the centres are intended for anyone who wants to get tested for HIV infection and needs advice and help regarding HIV/AIDS. Services in the centre are free, anonymous, and voluntary.

The program of equipping and setting up centres, i.e. the organization of the service for voluntary testing and counselling, was part of the Croatian Ministry of Health and Social Welfare program "Improving the fight against HIV/AIDS in Croatia", implemented with the financial support of the Global Fund to Fight Tuberculosis, AIDS, and Malaria (GFTAM). The Croatian National Institute of Public Health was in charge of the program in co-operation with the Epidemiology Departments of County Institutes, and the operational model was based on the setting up of ten centres (for counselling) that are integrated in the existing healthcare system. This was aimed at improving access to voluntary, anonymous, and free HIV testing and counselling to everyone. Training seafarers about AIDS/HIV infection is organized within the framework of this program.

**Table 2.** Total number of AIDS/HIV+ persons registered in Croatia in the period 1985–2009

Total number of AIDS/HIV+ + persons registered in Croatia in the period 1985–2009	Total rate per 100,000 in the period 1985–2009							
	General population			Seafarers				
			Total		Of whom officers		Other crew members	
	N	Rate per 100,000	N	Rate per 100,000	N	Rate per 100,000	N	Rate per 100,000
784	784	17.66	74	246.67	5	33.33	69	460.00

After the GFTAM project, the Centres will be financed through the Croatian Ministry of Health and Social Welfare Program “The Work of Centres for Voluntary, Anonymous, and Free HIV Counselling and Testing”.

During the period 2004–2006 the International Organization for Migration (IOM) in Croatia implemented the “Research and Capacity Building on HIV/AIDS and Croatian Migrant Workers” programme. The aim of this programme was to support the capacity of Croatian institutions to prevent HIV and other STIs among Croatian migrant workers [8].

## DISCUSSION

HIV infection rates are decreasing in several countries, but the global number of people living with HIV continues to rise [1]. Croatia falls under the group of countries with low HIV prevalence (1–1.5 per 10,000 inhabitants), and HIV infection is mainly related to risk behaviour of MSMs and migrant workers working in HIV infection endemic areas, including seafarers and partners of migrant workers and seafarers [5, 6, 8–10]. Sexual contact between men currently represents the dominant mode of transmission in Croatia [4–6].

In Croatia, in the population of men who engage in sexual contact with other men, there is an autochthonous epidemic. In a study conducted in the Zagreb area, which included 360 MSMs, HIV infection was found in 4.5% of them [11].

Acquisitions through heterosexual contact are still “imported” – significantly related to stay abroad, sex trade and risky sexual behaviour. It is dominated by heterosexual men, who most often acquire an infection abroad, and their sexual partners in Croatia [5, 6].

The continuing rise in the population of people living with HIV in Croatia reflects the combined effects of continued high rates of new HIV infections, better diagnostic procedures, better opportunities for testing, and the beneficial impact of highly effective retroviral therapy [5, 6].

For seafarers, the nature of their work and long periods away from home mean that risky behaviour is far more likely. Recently, important structural changes have reshaped the maritime trade. The introduction of vessels of higher speed, extensive computerisation, and automation of ships has shortened the time spent in ports, rarely allowing the crew to leave the ship. The “tourism element” (including sex tourism) is, thus, rapidly shrinking in contemporary seafaring. However, the sex industry in many ports has adapted to recent developments by introducing “sex catering” or organised visits of sex workers to anchored ships, often in collaboration with the port authorities [12]. Unfortunately, the available data does not suggest a reduction in HIV infection incidence among seafarers in the world [10, 14, 15]. In Croatia, seafarers are one of the “bridges” for HIV infection into the heterosexual population. Seafarers are one of the populations worst hit by HIV/AIDS in parts of south east Asia – Cambodia, Lao People’s Democratic Republic, Burma, Thailand, Vietnam and Yunnan province (China) – according to a UNAIDS report [10, 14]. Prevalence rates among seafarers are as high as 22% in some places. And a study from the Philippines shows that 35% of total reported HIV infection cases were among overseas Filipino workers and 33% of these positive cases were seafarers [15]. When compared with this, the 0.25% of Croatian seafarers who are HIV infected (of the overall seafaring population), accounting for 9.4% of the overall infected in Croatia, does not seem worrying. However, compared with the general population in Croatia, morbidity rates among in seafarers are high, especially among those with no high-school diploma. Another problem recognized in this category of seafarers is that of the higher number of sexually transmitted diseases and low rate of condom use [12, 13]. The results of a questionnaire survey conducted among 566 male migrant workers (seafarers and construction workers) in Croatia in 2003 indicated that the knowledge of ratings among them regarding AIDS and HIV virus

transmission was inadequate. Only 18.5% of respondents were able to correctly answer all questions assessing knowledge of HIV/AIDS. One fifth of the respondents (20.3%) who reported having had intercourse with a sex worker during the last year reported not using condoms during their last intercourse [12].

Some seafaring countries still have low rates of HIV-infected seafarers [7, 16].

Seafarers appear less likely than other occupational groups to voluntarily receive HIV testing, and more likely to engage in high-risk behaviours [17, 18]. In one survey, 53% of participants reported contact with commercial sex workers and 73% reported that they never used condoms [17]. Other research also suggests that seafarers have lower levels of knowledge about HIV transmission and risk factors than the general population [18–20].

However, confronted with the spread of the AIDS epidemic, many countries are implementing restrictions to migration based on the HIV status of travellers. Seafarers are often subjected to such unfair procedures, especially in pre-employment health checks, and are among the most tested populations, but of course not voluntarily [20].

Faced with the lack of an effective vaccine, education and training play the key role in HIV/AIDS prevention. Social partners (seafarers, employers, local community, government) are in a unique position to promote prevention efforts through information, education, and support for behaviour change. However, it is crucial that such programmes be evaluated using the internationally used surveys, measures, and indicators prior to and after completion, and that they include comprehensive training schemes that encompass seafarers, doctors, peer educators, and seafarer representatives as well as voluntary HIV testing [20, 21].

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