

HIV/AIDS SURVEILLANCE IN CROATIA

Croatian National Institute of Public Health

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Abbreviations

AIDS – Acquired Immunodeficiency Syndrome

ARV – Antiretroviral

ATCUI – Attitudes towards condom use index

CCM – Country Coordinating Mechanism (GFTAM)

CNIPH – Croatian National Institute of Public Health

CRIS – Country Response Information System (UNAIDS)

CSW – Commercial sex worker

EHIDS – European HIV infection data set

ENAADS – European non aggregate AIDS data set

EU – European Union

GFTAM – Global Fund to Fight TB, AIDS and Malaria

HIV – Human Immunodeficiency Virus

IDU – Injecting drug user

KMPS – Knowledge of the modes of protection scale

KMTS – Knowledge of the modes of transmission scale

M&E – Monitoring and evaluation

MDG – Millennium Development Goals

METWG – M&E technical working group

MOD – Ministry of Defence

MOHSW – Ministry of Health and Social Welfare

MSM – Men who have sex with men

MTCT – Mother-to-child transmission

NGO – Non-governmental organisation

PLWHA – People living with HIV/AIDS

PMTCT – Prevention of mother-to-child transmission

STI – Sexually transmitted infections

UHID – University Hospital for Infectious Diseases “Dr.Fran Mihaljević”

UNGASS - United Nations General Assembly Special Session

VCT – Voluntary counseling and testing

Historic overview

As Croatia was one of the Republics constituting the former Yugoslavia up to 1991, it followed the decision made in the beginning of the AIDS epidemic in Yugoslavia that HIV infected patients should be treated at three centers: Ljubljana, Zagreb and Belgrade. Only two confirmatory HIV testing sites existed at that time, one in Ljubljana and the other in Belgrade. However, a local prevention committee was also established in Zagreb in 1987. Also, an intensive education campaign focusing mainly on general population was introduced in Zagreb at that time. Aside from the general population, teachers were also educated to be able to provide further education of youth regarding HIV/AIDS. The first National AIDS Health Protection Program in Croatia, was drawn up in 1983, even before the first AIDS cases were registered in Croatia. It is based upon health education, prevention of

transmission of the virus via blood and blood derivatives, and reducing risk among IDUs and is being updated in accordance with the epidemiological situation at hand. Mandatory HIV/AIDS case notification entered the responsibilities and the infectious diseases surveillance system of the Croatian National Institute of Public Health (CNIPH). It is the CNIPH who developed, and still develops the Program of control and prevention of HIV infection in Croatia including Education programs.

At the University Hospital for Infectious Diseases (UHID) in 1992, a Reference Center for HIV/AIDS was established, the main goals of which are performing confirmatory HIV testing, develop diagnostic and treatment guidelines for HIV/AIDS and opportunistic infections and to treat HIV infected patients.

The HIV/AIDS Prevention Committee at the Ministry of Health of Croatia was established in 1992 soon after the proclamation of independence of Croatia. The Croatian Government has accepted the National HIV/AIDS Prevention Program in 1993. Its main duty was to devise a national HIV/AIDS policy. In its beginnings, the National AIDS Committee usually had very limited funds at its disposal that could be used for prevention activities (up to 20 000 USD per year). With such limited funds the Ministry of Health has on several occasions funded posters, videos, and TV ads on HIV/AIDS prevention. The publishing of leaflets, a publication for people living with HIV/AIDS and for health care workers and a manual for adolescents on HIV/AIDS were also supported, as was a book on HIV/AIDS. The introduction of needle exchange program in Split in 1996/1997 was also supported and funded by the Ministry of Health. Although being formed within the Ministry of Health, the Committee included representatives of the Ministries of education,

justice, social welfare, church representatives, as well as representatives of civil society including a representative of a gay association. A leading role in coordinating the national response to HIV/AIDS, guiding the national strategic planning process and in advising on all national policy matters related to HIV/AIDS was played by the National Committee on HIV/AIDS.

The establishment of the national surveillance system; establishment of a well-functioning system to ensure blood and organs safety nationwide, establishing confirmatory HIV testing and treatment and care of HIV infected persons all represent the early achievements of the National strategy. As far as policy is concerned, the Committee has been cooperating closely with other Ministries when practical conflicts arose (e.g. working with the Ministry of Education on policies to ensure integration of HIV-infected children into the regular school system). Another thing supported and encouraged by the Committee was also the work of NGOs. Needle exchange programs

have been supported by the Committee from the beginning and although controversial at first, needle exchange programs have been introduced and financed by the government without much political or public debate. The first needle exchange program was established in late 1996 in the town of Split by the NGO HELP. The Committee also supported the establishment of NGOs for people living with

HIV/AIDS (PLWHA) in particular the Croatian association of people living with HIV (HUIV).

However, the introduction of universal and free of charge access to highly active antiretroviral treatment (HAART) in April 1998 has been the key achievement of the National Committee.

Sociodemographic situation in Croatia

Today, Croatia can be described as a small, upper-middle income country with a population of 4.4 million. It is classified as a Middle or Southeastern European country with 1778 km of coastline on the Adriatic Sea, neighbouring Slovenia, Hungary, Serbia, Bosnia and Herzegovina and Montenegro on its landward borders.

Over the past 15 years Croatia's birth rate has decreased dramatically and the annual number of births currently amounts to 40 307 per year (2005) with infant mortality of 4.4 ‰. Net primary school enrolment/attendance is high (89%) (1996-2004), total adult literacy rate is 98% (2000-2004) and life expectancy at birth is 72 years for men and 79 for women. During the last two decades Croatia has been affected by many social and economic changes including the 1991-1995

war for independence all of which also had an impact in terms of migration and life losses. Estimates state that Croatia lost about 10% of its population during the period 1991-1995. In the period 1994-1998, 224 175 persons immigrated into Croatia whereas 61 726 emigrated from the country, so the estimates.

Aside from the war, also the change of a formerly communist economic system towards a market oriented economy has had great economic and social impact. At the present, there is still a relatively high unemployment rate 17.9% (2005), high costs of living and the accumulation of wealth to only several individuals and their families. Croatia has a greatly tourism based economy. The gross domestic product per capita was estimated at 8674.4 USD in 2005. However, despite the

1991-1995 war events and other economical difficulties typical for a country in transition

to a market economy no greater increase in HIV/AIDS cases has been observed.

Regulations and data flow

The control and prevention of HIV/AIDS in Croatia is regulated by the Act on the protection of the population from infectious diseases and its Regulations as well as by the National AIDS Health Protection Program in the Republic of Croatia. The Infectious Diseases Epidemiology Service at the CNIPH is monitoring the epidemiologic situation in the country using the epidemiology information system based on individual Registration of the infection/death from an infectious disease.

Individual reports of HIV infected persons and AIDS cases are filled in by a physician at the moment he has in his possession a positive result of a confirmatory HIV test. An AIDS

case is reported if an HIV person is suffering from one of the diseases according to the list of the AIDS related diseases as defined by the World Health Organization. In case an AIDS patient dies, this is also to be reported in the individual report. The physician sends the report to the Epidemiology Service at the County Institute of Public Health and at the same time to the Infectious Diseases Epidemiology Service at the CNIPH. This is the entry data for the Croatian HIV/AIDS patients Register, maintained by the Infectious Diseases Epidemiology Service at the CNIPH. With each individual report of HIV/AIDS disease/death an epidemiologic survey

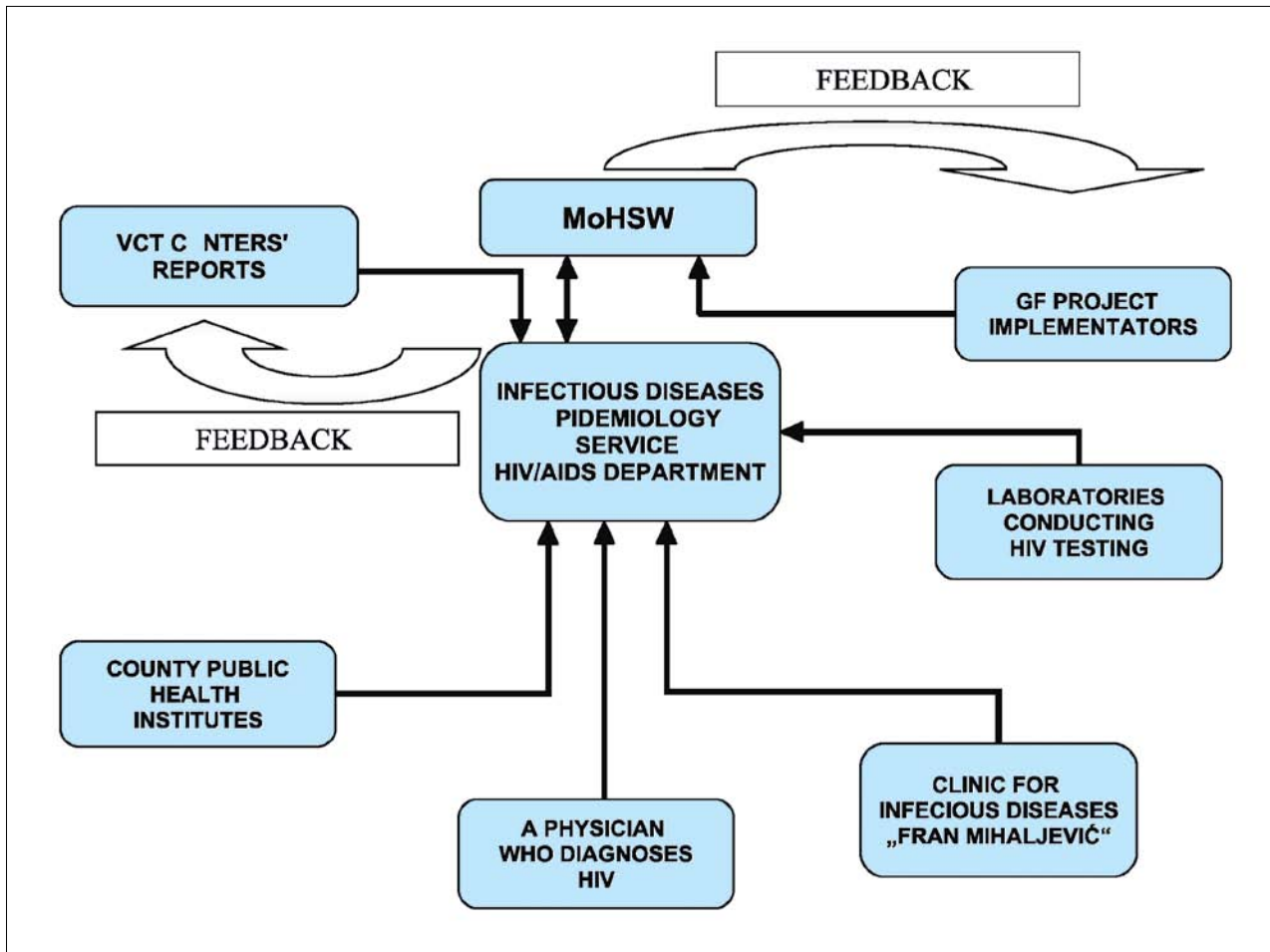
is needed containing relevant epidemiologic data (information on testing, confirmation of the infection, transmission route, diseases accompanying AIDS and death) connected to the same patient which is all compiled in the HIV/AIDS patients Register. According to an agreement with the University Hospital for Infectious Diseases “Dr. Fran Mihaljević” (at which the National reference HIV laboratory is situated) where infection of most patients is diagnosed, reports are being sent directly to the Infectious Diseases Epidemiology Service at the Croatian National Institute of Public Health. Registry data are a part of the world information system and of two reporting networks of individual HIV/AIDS patients registration maintained by the WHO (European HIV infection data set (EHIDS) and European non aggregate AIDS data set (ENAADS)).

All laboratories conducting HIV testing, are required to report annually on the cumulative number of tested persons, as well as on persons tested according to groups of probable

transmission, i.e. other categories of the tested persons (voluntary blood donors, hospital patients and most-at-risk-groups). From the total number of the tested persons, the laboratories report on the number of positive HIV tests. Data flow is shown in [Scheme 1](#).

The monitoring and evaluation (M&E) framework as such was established recently and it is based on the indicators outlined in the National Action Plan for HIV/AIDS, and the targets outlined in the Proposal for Global Fund to fight tuberculosis, AIDS and malaria (GFTAM). In order to coordinate and develop the methodology of data collection and analysis for the mentioned Project, the Ministry assigned the M&E Technical Working Group. The Group has developed data collection plan according to the agreed indicators:

1. Coverage indicators: Each implementing agency (and/or groups of agencies providing same services at different locations) was assisted in the development of a simple monthly reporting sheet indicating number of services



Scheme 1 Data flow

provided, people trained, commodities distributed etc.

2. Outcome indicators have been identified. For behavior level outcome indicators, M&E Unit developed instruments, sampling procedures and time-lined data collection plan.

3. Impact indicators: the CNIPH provides data on prevalence through strengthened HIV surveillance system.

The national level targets and indicators have been outlined in the National strategic plan, HIV/AIDS implementation program, as well as international documents such as Declaration of Commitment and MDG reports.

Apart from the usual reporting system regarding HIV/AIDS reporting within the CNIPH, data needed to monitor the defined GF indicators are being collected from the implementing organizations of the program through data collection sheets. To ensure the compatibility and uniformity of data from various organizations, some of which are health organizations and some nongovernmental organizations, data collection sheets and the

data to be reported through them were outlined in accordance with the indicators.

In 2005, the HIV Department of the Infectious Diseases Epidemiology Service at the CNIPH started collecting United Nations General Assembly Special Session indicators (UNGASS) with the purpose of improving monitoring and evaluation of the National HIV/AIDS prevention program, for the collection of which Country Response Information System (CRIS) database developed by UNAIDS is in use. A person was employed at the CNIPH to enter these data and was educated through UNAIDS workshops on M&E and how to use the mentioned software effectively. The data collected refer to all activities related to the control and prevention of HIV infection in the country. With respect to the whole epidemiologic information system, all individual data have been put to the highest confidentiality level, in accordance with all ethical principles and those of keeping medical information a secret.

HIV/AIDS epidemic in Croatia

Using the previously described systems, the HIV/AIDS situation has been monitored in Croatia since 1985, when the first AIDS cases were documented here. Between 1985 and 2006, there were 608 documented cases of HIV infection, 258 of which progressed to AIDS. During the same period of time, of the 608 diagnosed HIV 137 patients died. (Figure 1)

Four fifths of HIV/AIDS cases are male (Figure 2), who are mostly infected between the age of 25 – 49 (Figure 3).

The most of the infected patients acquired the infection abroad. The fraction of HIV-infected individuals who have acquired the infection abroad versus domestically varies by risk group. Almost all HIV-infected

heterosexual men in Croatia, for example, have acquired the HIV infection outside the country working as migrant workers, mostly sailors.

The incidence of AIDS cases in Croatia increased yearly until 1994, when it began to stabilize and stayed so till 1999. Between

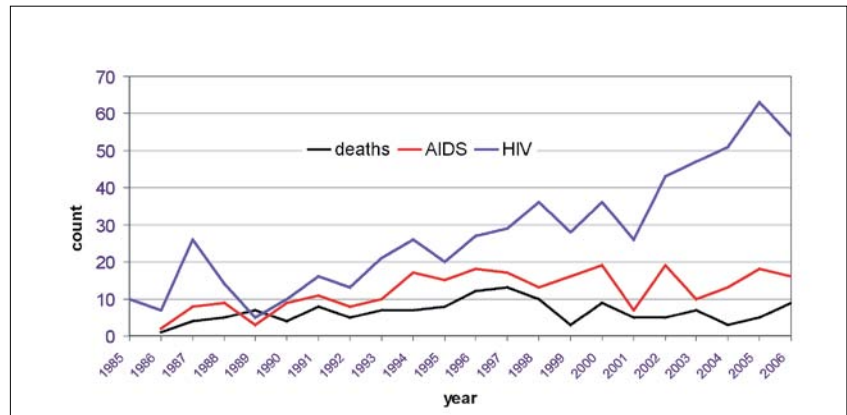


Figure 1 Annual number of persons in the Republic of Croatia with diagnosed HIV infection, AIDS and the number of deaths of persons infected by HIV; for the period 1985-2005

1994 and 1999, there was a mean of 16 diagnosed cases per year. With the introduction of the highly active anti-retroviral therapy, the number of AIDS cases and deaths from AIDS showed a slight decrease, while the number of HIV positive persons increased. This increase can partially be explained by increased repor-

ting due to improved diagnostic measures, especially within MARPs. The annual AIDS incidence is decreasing at a value less than 4 per 1 million inhabitants, and HIV infection incidence is at 10-14 per 1 million inhabitants. These values place Croatia in the category of countries considered to have a low HIV/AIDS incidence.

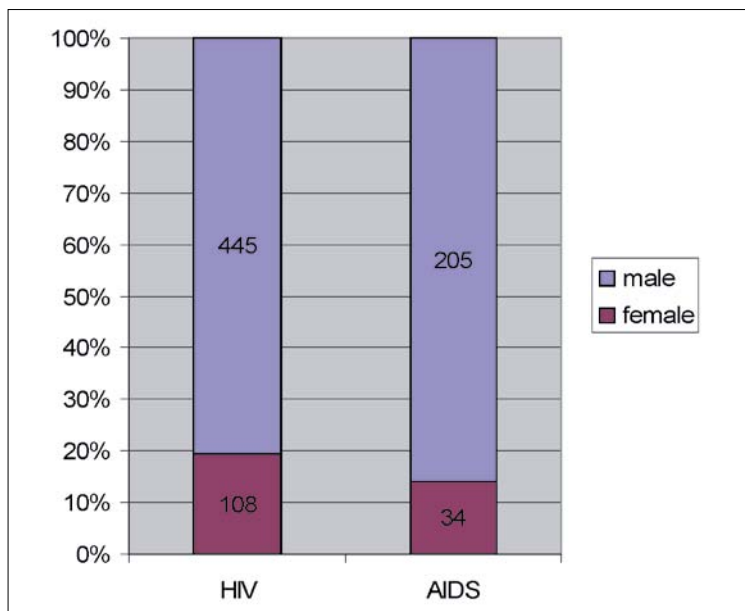


Figure 2 Gender distribution of HIV and AIDS cases in Croatia

From laboratory registries, an average of 170 000 persons are tested each year, and around 80 HIV positive tests are registered annually. This system of monitoring HIV infected persons provides a valuable indicator of trend movements, but as with all the information systems used to collect data from laboratories, it is subject to over-reporting (testing in another laboratory, testing of earlier reported cases). Based on individual reports in 2005 there were altogether 63 new HIV infected persons.

In Croatia, AIDS is being registered almost exclusively within MARPs (Table 1) and is seen predominantly

among men who have sex with men (42.7%). HIV-infected heterosexuals are almost always men who have spent extended periods of time abroad and their steady female partners in Croatia. In the male heterosexual population, sexual contact with sex workers of the opposite sex is the dominant mode of transmission. Eight children in Croatia have contracted HIV from their mothers, and three have progressed to AIDS.

Among those infected via heterosexual transmission, there are no adolescents. All the infected individuals are above the age of 20.

A number of cases have been reported in Croatia in which HIV has been transmitted through blood or blood products. Since 1985, 13 patients with hemophilia have contracted HIV and 8 have developed AIDS. All patients with hemophilia received imported blood derivatives.

Since 1992, there were no new registered HIV infected patients from this group. There were also two registered non-hemophiliac cases of HIV infection after transfusion of blood from within the country (one in 2003 and the one in 2004).

Voluntary donation, low prevalence of HIV infection, and mandatory blood product te-

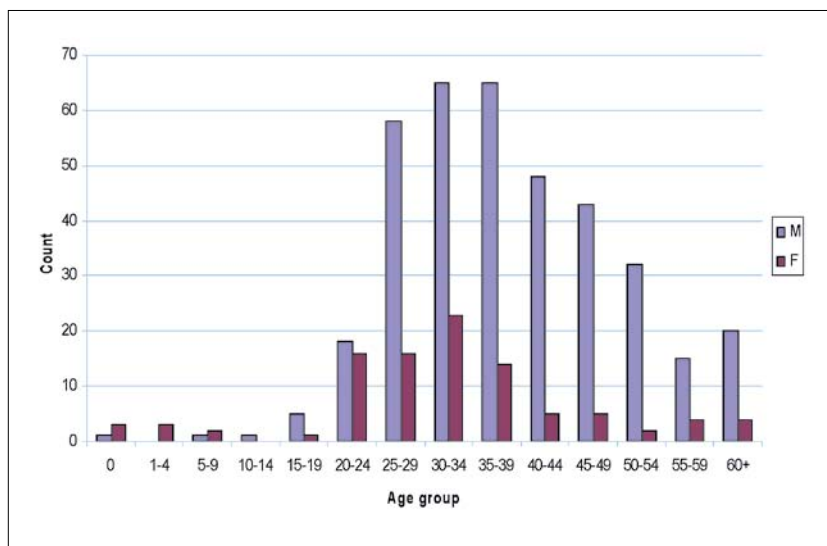


Figure 3 Age/gender distribution of HIV cases at the time of diagnosis in Croatia

Group	Number of cases	%
Men who have sex with men (MSM)	102	42.7
Hemophiliac	8	3.3
Promiscuous heterosexuals	77	32.2
Injecting drug users (IDUs)	20	8.4
Heterosexual partner of a HIV infected person	20	8.4
Child of a HIV infected mother	3	1.3
Unknown	9	3.8
Total	239	100

Table 1 AIDS cases in Croatia according to most at risk groups

sting has kept the rate of infection via receipt of blood and blood products low. In Croatia, all donated blood has been tested on for HIV since 1987, and additional prevention measures are employed when taking blood from higher-risk donors (Figure 4). According to the National HIV/AIDS Health Protection Programme, only blood from donors in Croatia is used, a principle known as “self containment”. This principle is likewise followed with other

blood products. If import of blood derivatives is necessary, a set of procedures exist to ensure the safety of the blood products. Approval by the Croatian Agency for Medicinal Products and Medical Devices is required.

Intravenous drug users (IDUs) comprise 8.4% of total AIDS cases in Croatia and 9.6% of the total HIV infected population. HIV infection among drug users is monitored on

an annual basis, with an average of 800 persons tested annually. Among IDUs, the HIV prevalence is around 1%. The percentage of HIV infected IDUs has not increased over the last 15 years.

Incidence, prevalence (Figure 5), and dominant modes of transmission of HIV vary by region in Croatia. AIDS patients and the HIV infected persons are found in all parts of the country. The incidence and prevalence, of both HIV and AIDS, is somewhat higher in the coastal areas, though the total number of AIDS cases is the highest in the capital, Zagreb. Among the infected in Zagreb, HIV is transmitted most frequently through MSM contact. Epidemiologic data shows that this is the case of virus transmission among the domestic MSM population. In the most southern coastal parts of the country, there is a somewhat higher proportion of transmission via MSM contact. In the coastal

regions (Primorje and Dalmatia) transmission via heterosexual contact is dominant. In these regions, the infection is often transmitted by men infected abroad during contact with promiscuous persons and sex workers. This infection is then conferred to regular sexual partners, usually wives and girlfriends, living in the country. In Istria, transmission via intravenous drug use and needle sharing is dominant, though other routes of transmission present in this area.

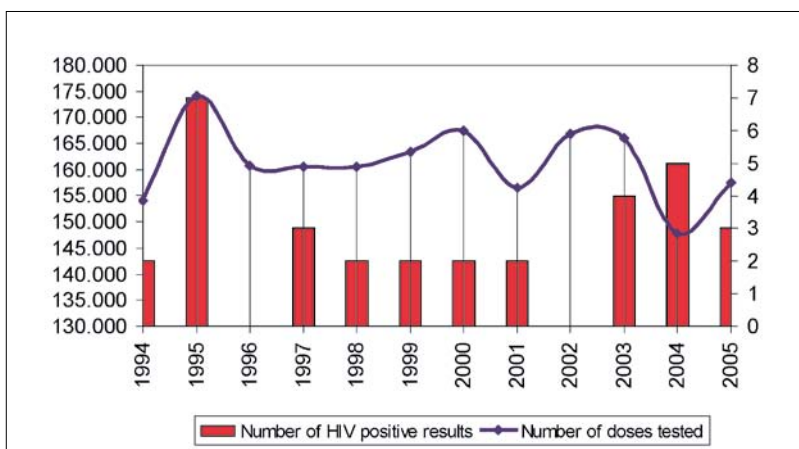


Figure 4 Number of HIV positive tests among voluntary blood donors in Croatia

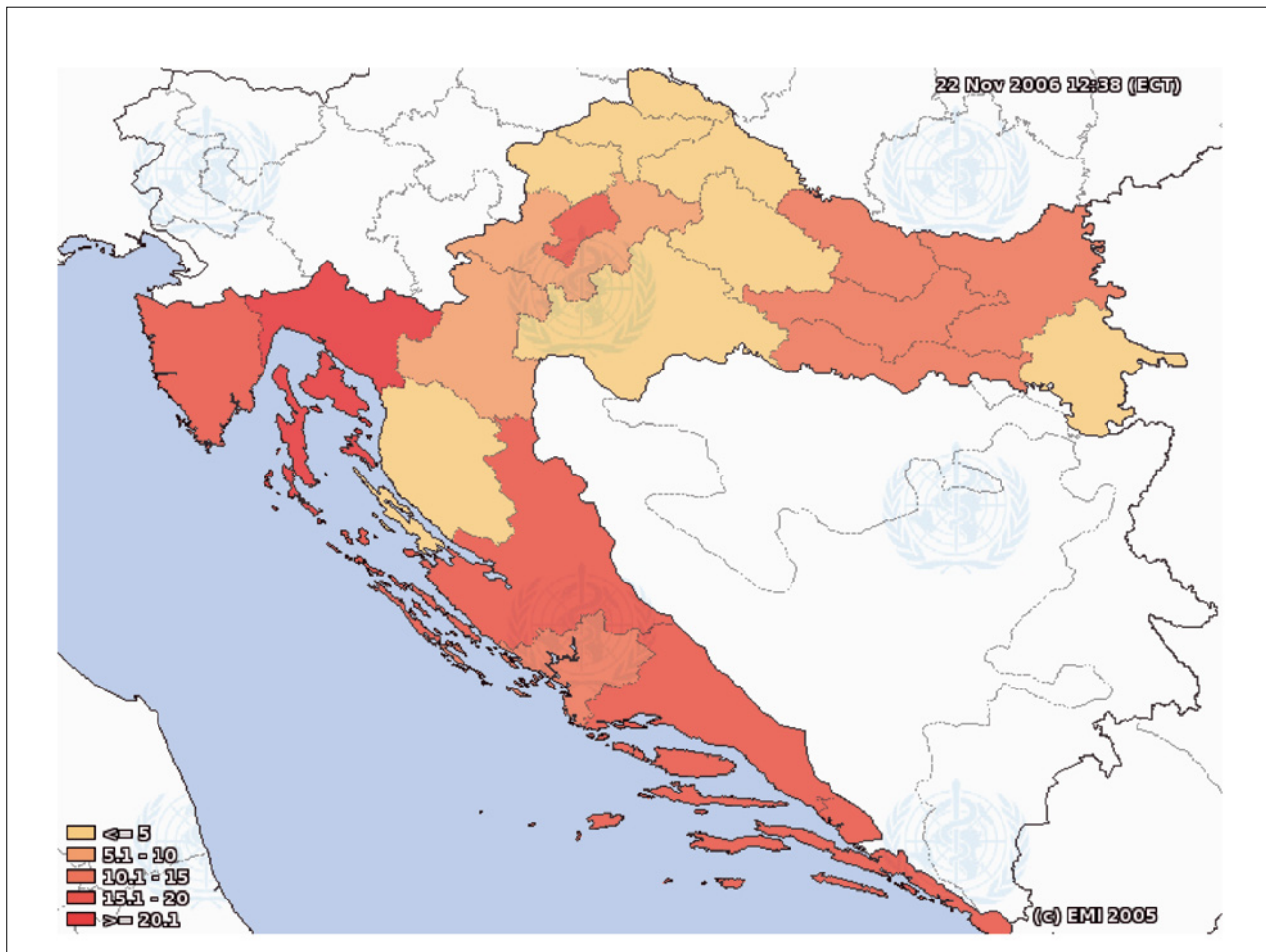


Figure 5 County distribution of HIV cases per 100 000 population in Croatia

Treatment and care

The system of care in Croatia is a centralized one, hence all of the HIV infected patients are treated at the HIV/AIDS center at UHID. There were relatively few patients in care up to 1995. Most of them were hospitalized with major opportunistic diseases and the median survival after being diagnosed with AIDS was 15.8 months in the period 1985-1998.

Among a range of opportunistic infections that have been diagnosed the two most frequent were tuberculosis and *Pneumocystis jiroveci* pneumonia (PCP). Only very few patients received PCP prophylaxis or zidovudine therapy before 1992; out of altogether 36 AIDS patients in care before 1992 only 2 patients used zidovudine and 3 PCP prophylaxes.

Protease inhibitors became reimbursed by the Croatian National Health Insurance in April 1998; regardless of this, 12 patients had already used them in 1997 but unfortunately,

had to pay for the protease inhibitor before April 1998, which sometimes contributed to the interruption or suboptimal antiretroviral treatment. When compared to the period 1986-1996, survival following the first AIDS-defining illness markedly improved in the period 1997-2000 (adjusted Hazard Ratio for patients surviving more than 6 months: 0.11). Over time, the number of patients taking HAART has increased (Figure 6) and currently (August 8, 2006) there are 277 patients receiving it. The process of registration and approval of antiretrovirals has been slow.

At the moment (September 2006) the following antiretrovirals are on the Croatian National Insurance Drug List: zidovudine, lamivudine, zidovudine plus lamivudine, stavudine, didanosine, abacavir, nevirapine, efavirenz, indinavir, ritonavir, nelfinavir and lopinavir/ritonavir. All antiretrovirals on

the Drug List are provided free of charge. Presently tenofovir and the newly developed fixed combinations of antiretrovirals (Truvada™ and Kivexa™) are not available in Croatia. Fosamprenavir and atazanavir, and drugs used as salvage regimens such as enfuvirtide, tipranavir and darunavir were also not registered in Croatia in 2006.

Among the 277 patients taking antiretrovirals the following combinations are used more frequently: zidovudine plus lamivudine plus efavirenz (22.4%), zidovudine plus lamivudine plus lopinavir/ritonavir (14%), zidovudine plus lamivudine plus nevirapine (11.2%) and abacavir plus lamivudine plus efavirenz (11.2%). The average monthly cost of antiretrovirals for one patient is approximately 800 USD.

The support of the GFTAM project resulted in the establishment of an Outpatient Centre for HIV/AIDS which was opened at UHID in June 2005, the integral part of which is also psychosocial support. HIV infected patients need no referral from primary care physicians, which is usually required for other diseases, to enter care at UHID. Antiretrovirals are also given to patients at UHID from the hospital pharmacy. There is a close collaboration of VCT centers and other hospitals with UHID.

A small renal dialysis unit for HIV infected patients was opened at UHID in 2005.

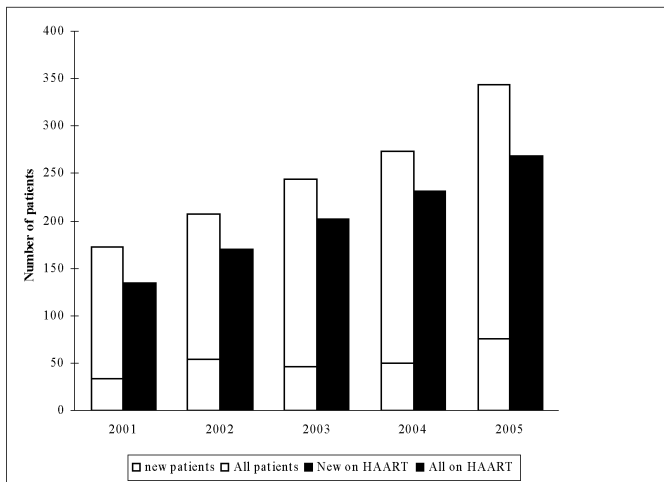


Figure 6 Number of patients in care and number of patients taking highly active antiretroviral treatment (HAART) in the period 2001-2005. New patients in care and starting HAART are also shown.

The Global fund project and the National HIV/AIDS strategy

Prior to the Global Fund project there were only two voluntary counseling and testing (VCT) sites in Croatia. These testing sites were at the University Hospital for Infectious Diseases (UHID) in Zagreb and at the Clinical Center Rijeka. HIV testing, albeit with limited counseling, has also been performed at Transfusion centers throughout Croatia. Anonymous testing was not widely available before the Global Fund project. However, all citizens of Croatia are entitled to Health Care Insurance and HIV testing was free of charge if proof of insurance was presented. The Global Fund project enabled us to open altogether 10 VCT sites during 2004 and 2005. Positive HIV screening tests are sent to the Reference Laboratory at UHID in Zagreb where confirmatory testing is performed.

Until the time of compiling this report, 7529 counseling sessions were held, and 4160 HIV tests conducted, through which 19 infected persons were found. These results are consistent with earlier findings. Croatia has received a GFTAM grant for the period 1. Dec. 2003 – 30. Nov. 2006 with the following key objectives also identified in the national action plan:

1. Maintain the universal access to treatment and improve the psycho-social support to PLWHA.
2. To increase the level of protected behaviors among young people, through school based peer education prevention program.
3. To increase access to VCT services, particularly for members of vulnerable groups

4. To implement targeted interventions for people under increased risks.

5. To strengthen the HIV surveillance system

To proceed with an application to the Global Fund to fight tuberculosis, AIDS and malaria (GFTAM) the National Committee on HIV/AIDS took the role as the Country Coordinating Mechanism (CCM) as of February 2002. A call for proposals was issued to all health care institutions and NGOs wishing to participate in the GFTAM application process. In order to identify the needs and resources in particular sectors, a series of meetings were held with governmental and non-governmental organizations involved in specific activities such as harm reduction for injection drug users (IDU), support to PLWHA, youth groups, organizations of people with different lifestyles, as well institutions involved in the provision of treatment, care and epidemiologic surveillance. All were invited to articulate their needs in terms of scaling-up their current efforts and encoura-

ged to participate in the development of this national proposal. A CCM separate from the National Committee was subsequently established in 2002. Currently the Ministry of Health is the principle recipient of the 4.9 million grant of the GFTAM.

The subprojects are implemented through a joint effort of several subrecipients, all of whom are responsible for a certain portion of the GFTAM Program for Croatia. The subrecipients and their respectable areas of work are:

No.	NAME OF ORGANIZATION	PROGRAM AREA
1.	Children's Hospital Zagreb, Reproductive Health Department	Peer Education in HIV/AIDS for Youth
2.	PRO-REPRO Association for Promotion, Education and Protection of Reproductive Health	Peer Education in HIV/AIDS for Youth
3.	Croatian Association for School Medicine to Croatian Medical Association	Training of School Medical Doctors and Professionals in Implementing HIV/AIDS Prevention Programs in High Schools
4.	Croatian Public Health Institute	Improving Accessibility to Voluntary Counselling and Testing Service for HIV/AIDS
5.	Association Terra	HIV/AIDS and STD Prevention Among Drug Addicts
6.	Association Terra	HIV/AIDS and STD Prevention Among Commercial Sex Workers
7.	Association for Improving the Quality of Life LET	Harm Reduction Program and Outreach Among Drug Users
8.	Association for Improving the Quality of Life LET	Harm Reduction Program and Outreach Among Commercial Sex Workers

9.	Association HELP	Harm Reduction Program for the Split-Dalmatia Region
10.	Croatian Red Cross	Providing Needle Exchange and HIV/AIDS Prevention Among IDUs
11.	International Organization for Migration	Research on and Capacity Building in HIV/AIDS Prevention Among Croatian Migrant Workers
12.	Iskorak - Sexual and Gender Minorities Rights Centre	Prevention of HIV/AIDS Among Men Who Have Sex With Men (STOP-MSM-AIDS)
13.	Croatian Association for HIV (CAHIV)	Centre for HIV Testing and Counselling
14.	Clinic for Infectious Diseases “Dr. Fran Mihaljević”, National HIV/AIDS Reference Centre	Scaling Up Ambulance and Hospital Care for Patients Infected with AIDS (Establishing the Ambulance Centre for HIV/AIDS Patients)
15.	Croatian Public Health Institute	Improving HIV/AIDS Monitoring Activities
16.	Clinic for Infectious Diseases “Dr. Fran Mihaljević”, National HIV/AIDS Reference Center	Estimating HIV Seroprevalence in Croatia (based on Seroprevalence Found in Residual Serum Samples in Hospital Laboratories)

In December 2001 the Committee initiated a process of revising and updating the National AIDS Strategy. After extensive consultations and input from many governmental and non-governmental organizations the revised National HIV/AIDS Plan was accepted by the Croatian government in 2005. The revised strategy aims to ensure that Croatia remains a low prevalence country. It emphasizes the

need to strengthen interventions for vulnerable groups (IDU and MSM), ensure the continued full provision of HAART by the Croatian Health Insurance Institute, scale up prevention particularly among youth, diversify voluntary counseling and testing (VCT) services, strengthen advocacy for PLWHA and other highly stigmatized groups and introduce second-generation surveillance.

Goals for the future

At this point of the epidemiologic situation in Croatia, aside from the necessary application of all protection measures according to the National HIV/AIDS Health Protection Program it is a priority to:

1. Continue with the work of Centers for voluntary counseling and testing

2. Intensify health education within the MSM population

3. Systematically and efficiently combat the still existing prejudice towards the HIV infected persons and groups of high risk.

Recent researches on HIV in Croatia

Within the framework of the GFTAM Project several studies were conducted all of which have contributed greatly to our better understanding of the epidemic and more importantly, their results represent a basis for planning of future interventions. Here are the summaries of these studies.

1. Seroprevalence of HIV among high risk groups – preliminary results

This is the first research in Croatia which has included a large number of respondents in hard-to-reach populations which were willing to give a blood sample to be tested for HIV. Most of the respondents were males, which corresponds to the structure of the HIV infected population in Croatia (the ratio of 8:2

in favor of male population). The age of the respondents is also in correspondence to the age structure of the population most-at-risk for HIV infection, which is the sexually active grown up population. The results of the study also show that 74.1% of the respondents are unemployed, which is another aggravating factor particularly among the already marginalized groups of MSM; IDU and CSW.

The overall prevalence among all populations (0.7%) is in accordance with the perception of the HIV epidemic in Croatia: the infection is concentrated among the populations with high risk behaviors where it is almost 100 times higher than what is estimated for the general population.

The prevalence in each MARP was lower than 2%, with the exception of the MSM

group, where id was found to be 3.3%, which corresponds to the structure of HIV infected persons registered in Croatia in the past 20 years. Results show a still low prevalence of HIV among the IDU population, thus corresponding with observations made so far from which a prevalence of around 1% is obtained (Table 2). However, having in mind that almost two thirds of this opulation have shared injecting equipment at some point in

their lives, there is a need for strengthening prevention measures among this population.

To conclude, the results of this research have shown the significance of HIV issues among MARPs, accentuating the need for further following and intervening in this field. If we want to maintain the HIV epidemic at a low level, we will succeed primarily thanks to the work done with these populations.

	Percentage of respondents (%) N=1320	HIV prevalence (%); 95% CI (%)
Intravenous drug users (IDU)	23.9	0.6; 0 – 1.5
Clients of commercial sex workers (CCSW)	23.7	0.6; 0 – 1.5
Men who have sex with men (MSM)	16.1	3.3; 0.9 – 5.7
Migrant workers	39.9	0.2; 0 – 0.6
Commercial sex workers (CSW)	5.1	1.5; 0 – 4.4
More than 2 partners in the last 12 months	42.9	1.2; 0.3 – 2.1
History of sexually transmitted infections (STI) (HBV, HCV, siphilis, gonorrhoea, genital herpes)	18.6	0.8; 0 – 1.9

Table 2. Risk behaviours of the respondents (N=1320) and HIV prevalence

2. The prevalence of seropositivity of HIV in remaining serums in hospital laboratories

Epidemiology research of seroprevalence of HIV among the general population is of utmost importance for prevention measures, education and disease control as well as expecting and planning future needs within the health system, and also for assessing risks of professional exposure of health workers. The goal of this research was to assess the prevalence of HIV infection among the general population in the Republic of Croatia, based on HIV prevalence among patients – users of health services in Croatian hospitals.

In this research 7 hospital institutions in Croatia have taken part. The research was conducted using the so-called serum pools. All the serums were tested at the laboratory of the Clinic for Infectious Diseases “Dr. Fran Mihaljević”, at which the Referent Center for AIDS is situated, which is equipped for such serology tests. Given the fact that in a

population with a low level epidemic, there can be a higher share of false positive tests, a confirmative test was also done (Western Blot) in case of a positive result of a particular serum.

In a sample of 3358 persons tested via pooled serums, an HIV seroprevalence of 0.09% has been found. However given that there are only 553 registered HIV patients (data as at the end of 2005) in Croatia, the prevalence seems high giving an assessment for the general population of 4000 infected persons. It is well known that hospital population is not representative for the general population, our result refers more to seroprevalence in hospitals. Since no hospital within this research showed HIV prevalence in the range from 0.5 to 1%, testing of all patients coming in for emergency examinations or those being admitted to hospital is not necessary.

3. Risks for HIV infection among the population if IDUs in the Republic of Croatia

This research was conducted with the aim of obtaining some insight into risk behaviors of the IDU population, which will be of further use when planning and focusing preventive actions for the IDU population. The research was conducted on three locations: on the premises two NGOs conducting harm reduction program and the Service for Prevention of Addiction at the Public Health Institute. The research was conducted during the period of 45 days on the abovementioned locations, where respondents were asked to fill in the questionnaires.

The questionnaire used in this research was modeled on the Family Health International Questionnaire for intravenous drug users, and it consisted of 39 multiple choice questions. The questionnaire contained sociodemographic data, drug use related activities, knowledge on the existence of places for distribution un-

sed needles and syringes, knowledge on HIV transmission routes and sexual activities.

A total of 239 respondents participated in the research (139 from the capital Zagreb and 100 from the County of Dalmatia). There were 184 male, 51 female respondents and for 4 respondents there was no valid data on their sex. This research has resulted in data on drug use and some sexual habits of the IDU population as well as knowledge on routes of transmission of HIV. The obtained data will serve as basis for future time-location studies and following of trends of risk behavior of IDUs as part of Second Generation Surveillance of HIV in Croatia.

Over 85% of the respondents know that one can get infected with HIV/AIDS when using a needle or syringe which had already been used. With other questions on routes of transmission the smallest number of the respondents knows that HIV cannot be transmitted through a mosquito bite (58.1%) whereas a large number knows that the correct usage of condoms at every sexual intercourse can

protect from HIV. Almost 1/3 of the respondents have shared injecting equipment within the last year, regardless of whether they have used needle exchange services of some NGO or harm programs of the Service for Prevention of Drug Addiction. This corresponds to other studies showing that drug users are continually exposing themselves to risk even though they show a relatively satisfying degree of knowledge on HIV transmission routes. Those IDUs who share injecting equipment do so with close friends or a partner, which also corresponds to IDU behavior found in Central Europe. Two thirds of the respondents who have reported using someone else's injecting equipment knows of a place and a person from which they can obtain unused needles and syringes, which brings us to the conclusion that in spite of the knowledge that unused needles and syringes can be found without any disturbance, they remain unaware of their own exposure to risk of not only HIV but also viral hepatitises. Therefore it is necessary to strengthen the already existing harm

reduction programs and consider introducing peer education of IDUs.

The percentage of condom use among IDU is unsatisfying, generally in a stable relationship and outside one although it is somewhat higher with persons who have sexual contact outside a relationship and with a larger number of partners. Thirty-five percent of those who report sharing injecting equipment have a regular sexual partner who does not use drugs, and most of them (70%) do not, or only rarely use condoms. This opens the possibility for transmitting HIV to general population. Given the fact that 1/4 of the respondents have never tested on HIV/AIDS, stresses the need for education and counseling on HIV/AIDS and the increase in the number of testing on HIV/AIDS.

In spite of the existence and availability of NGOs and the Service for Prevention of Drug Addiction where expert teams work on bringing closer and spreading safer behavior using individual approach, a third of the respondents still does not recognize the benefit of

those services. Even though we cannot speak about a representative sample, the data obtained is a valuable contribution in research of sexual behavior and behavior related to drug use, and will as such also contribute to more focused prevention programs and can serve as comparison basis for future research.

4. Risks for HIV infection among the Croatian population of men who have sex with men

Men who have sex with men are a population of high risk for being infected with HIV. In spite of this, very little systematic research of this population has been conducted in southeastern Europe. Since in Croatia, 40% of persons infected with HIV and 44% of those who developed AIDS belong to the MSM population, this research was conducted with the purpose of obtaining a better insight into risk behavior, which will serve as a basis for improvement of prevention activities for this population.

The research was conducted in a month's period using a questionnaire modeled for this research on the Family Health International Questionnaire, which consisted of 22 questions in the multiple choice form. The questionnaire included several areas: sociodemographic data, knowledge on HIV infection, usage of drugs prior to sexual intercourse, sexual activities with men and sexual activities with women.

The research was conducted by the CNIPH and the NGO Iskorak – sexual and gender minorities' rights center. A total of 1127 respondents was included in the research: the overall response rate was 19% and the median age was 27. The respondents were recruited on three physical (disco club, café, sauna) and one virtual (www.gay.hr) site frequented by MSM population. Respondents were asked to fill in the questionnaire and return it into a prepared box for gathering filled in questionnaires. At the club, respondents were given a pre paid envelope to post their response. A regular visitor of the club was asked to motivate the

visitors to fill in the questionnaires. All registered users of www.gay.hr portal were sent an e-mail with the attached questionnaire and asked to fill it in. The respondents were excluded from the study in case they have already filled in the same questionnaire within the last month. Strong stigmatization of MSM in Croatia explains such a low response rate.

Even though the results obtained are merely of informative value and are far from being representative, it is undeniable that they are the first behavior data obtained on a relatively large sample. The results will serve as basis for future time-location studies and following trends of risk behavior within Second generation surveillance of HIV infection in Croatia.

As far as testing on HIV, the largest proportion of persons who have tested so far (9/10) was found in the sauna. This information may cause satisfaction, despite the small sample, if one considers that sauna also contains facilities where sexual intercourse is conducted. Marijuana and “poppers” are more commonly

used among the Croatian MSM population and heroin less. As the use of light drugs has shown to be a risk for entering unprotected sexual intercourse, further research and analyses are required in order to identify which sub-population uses drugs more frequently so that we could be able to aim focused interventions towards those subpopulations.

The median number of partners with whom the respondents had other sexual intercourse (those excluding oral and anal intercourse) was 1, the minimum amounting to 0 and the maximum to 300. As far as sexual intercourse with men is concerned, over 90% of the respondents practiced oral, and over 85% anal sexual intercourse during the last year. Even though the median number of partners was one for oral and two for anal intercourse, there are respondents who had a large number of partners in one year (up to 70 for oral and 100 for anal intercourse). Further research of this kind should identify characteristics related to a higher number of sexual partners and based

on that, further prevention activities should be organized for the most-at-risk population.

The fact that almost 40% of the respondents have not used a condom at last anal intercourse is of great concern. The results suggest that decision (of having Unprotected anal intercourse - UAI) was based mostly on trust into the HIV status of the partner or happened due to not thinking of risk or not finding pleasure in sexual intercourse using condoms which is consistent to the results of other studies worldwide. On the other hand, a very small number of respondents (0.1%) finds the condom too expensive, which is a very positive result in the sense of availability of protection to the populations with heightened risk. During last anal intercourse only 40% of the respondents used a lubricant. Less than a half of the respondents have used a correct product, while 52% used some other products that can cause damage or rupture of the condom and so lead to using inefficient means of protection.

This is also a valuable result which will be of use for further education activities aimed at the MSM population in Croatia.

A little over a third of the respondents (34%) had sexual intercourse with women (MSM/MSW) in the last 12 months, and only a fifth of them regularly used protection (Figure 7, Figure 8), which is consistent to finding in Croatia's neighbouring country – Hungary. From this reason we can conclude that the so called bridging population's behavior is very risky and that there is danger of transmitting

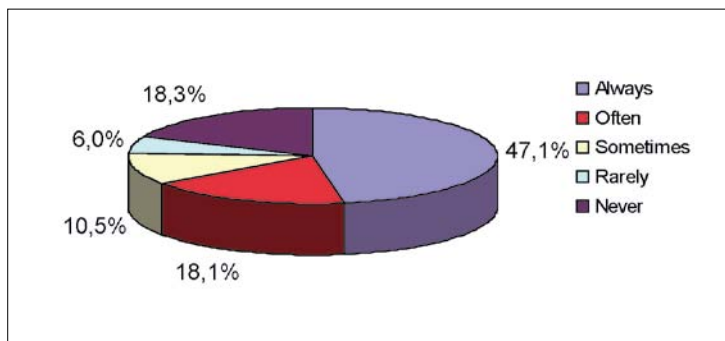


Figure 7 Condom use during anal intercourse with men

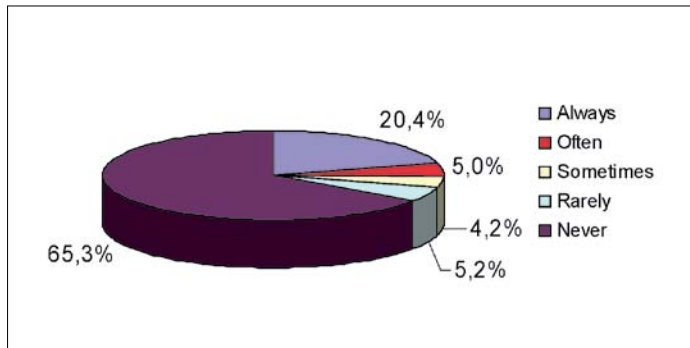


Figure 8 Condom use during vaginal intercourse with women

the outbreak from MSM into the general population through a heterosexual route of transmission.

Even though we cannot speak of the representativeness of results of this research, the sample size gives a certain weight to the information obtained. We still cannot be satisfied with the knowledge or behavior related to HIV risks within the MSM population in Croatia. The obtained findings will serve for focused and effective prevention activities and a basis for comparison in future research. With good cooperation with nongovernmental

organizations, we hope for a better response of the MSM population in future studies, all with the purpose of decreasing risk for HIV in a population which for the time being, seems to be at greatest risk for this infection in Croatia.

5. Knowledge and attitudes of physicians on HIV/AIDS in primary health care – a pilot study in the town of Zagreb and the Zagreb county

This study should give an answer to three questions:

1. Is there discrimination within the Croatian health care system which has influence on health or well-being of patients suffering from HIV/AIDS?
2. Do health workers consent to give treatment to patients with HIV/AIDS?
3. Which factors have effect onto discriminating behavior of health workers? This

study should also provide answers to existing questions related to the necessary social measures to lessen discrimination and stigma within the Croatian health care system and propose the application of new, more effective interventions of the Ministry of Health and Social Welfare of the Republic of Croatia.

This research was designed and conducted as a pilot study, which means it is not representative and does not show the true assessment of the situation in primary health care in Zagreb and the Zagreb County. From the total of 676 teams of general/family medicine (384 private practitioners and 114 teams within health centers in the town of Zagreb and 126 private practitioners and 52 within health centers in the Zagreb County), using the random choice method, for our sample we have chosen a total of 300 teams (203 in Zagreb itself, and 97 in the Zagreb County). Questionnaires were distributed by mail with an enclosed paid reply envelope. We gathered a total of 68 questionnaires which makes 22.7% out of the 300 distributed questionnaires. A relative

low response rate (besides a secured paid reply and a subsequent individual telephone reminder) is to be explained by summer leaves of physicians at the time of the study, and a socially sensitive subject which is potentially discrediting for the respondents.

As a measuring instrument we used an adapted combination of two validated questionnaires by Gerbert B. 1991 and Gemson D.H. 1991. The questionnaire consisted of 46 questions about demographic features of the respondents, additional education, experience with patients suffering from HIV/AIDS, physicians' fears and attitudes to HIV and MARPS and knowledge about transmission routes.

Physicians of general/family medicine in Zagreb and the Zagreb County reported a low experience rate of treating HIV patients (66.2% reported to having no such experience at all) due to the fact that the HIV/AIDS epidemic in Croatia falls into the low level category but also due to a centralized health care system. Despite this, a large proportion

of physicians (around 78%) have taken part in some form of a further education on HIV/AIDS. This indicates their wish for a better preparation for possible larger numbers of HIV/AIDS patient in the future due to the inevitable rise of prevalence (more newly infected persons, a more successful treatment and longer life expectancy). Incidents such as refusing to provide help for the HIV/AIDS patients or giving away confidential information to family members or other persons have occurred very rarely or almost not at all, according to the physicians involved in this study. However, it is worrying that 51.5% of the respondents expressed fear when contacting HIV/AIDS patients, mostly fear from infecting the staff and spreading the virus.

In this sample, 83.8% of the respondents feel that testing should be mandatory for some groups and only 11.8% feels that testing should be conducted almost exclusively on a voluntary basis. Those physicians who had no experience with HIV/AIDS patients have expressed a greater concern and stated that

they would not like to have them as patients because the care to be provided for HIV/AIDS patients is too complicated for primary care. This is partly a consequence of a widespread but wrong opinion that the HIV/AIDS epidemic due to its currently low prevalence in Croatia, does not represent a major public health problem.

Attitudes of physicians on persons of homosexual orientation and intravenous drug users (IDU), are directly connected to their knowledge on HIV/AIDS. Negative attitudes to alternative lifestyles can have a negative influence the wish of the physician to be additionally educated on diseases in close connection to those lifestyles. For this reason, education during and following the completion of medical education should also include education on alternative lifestyles or sexual orientation. As a logical continuation of this pilot study it is necessary to conduct a representative research for the whole of Croatia. In the future, this research should be also conducted in hospitals where HIV/AIDS

patients receive consiliary and specialist examinations, which because of their nature cannot all be preformed in the Referent center for AIDS.

6. Knowledge and attitudes on HIV/AIDS of sixth year medical students at the Medical faculty of the Zagreb university

The research was conducted among sixth year medical students of the Medical faculty at the University of Zagreb. Out of 127 potential respondents, 106 of them have taken part in the study (83.5%). The questionnaire used consisted of 50 questions and was developed for the purposes of research into attitudes and behavior related to HIV/AIDS. Demographic data, knowledge on HIV/AIDS, attitudes and beliefs about HIV/AIDS and homosexual orientation, sources of information on HIV/AIDS and general opinion on HIV/AIDS in Croatia were the being assessed during this research.

The answers were analyzed individually as well as in the form of the overall sum of the test points on knowledge and transmission routes of HIV for each respondent (the minimum value amounting to 8 and the maximum to 40), and are grouped in such a way that a larger number of points means a higher degree of knowledge. The Cronbach alpha scale was 0.69. The assessment of the students' attitudes was based on 9 statements (adjusted to Likert scale answers 1–5). The answers were analyzed individually and as a total sum of points for each student with a range from 9–45. A smaller number of points indicated to more negative attitudes. The Cronbach alpha scale value was 0.77.

Individual answers were analyzed as well as the total score (the minimum value being 5 and the maximum 25). The Cronbach alpha scale value was 0.89. The questions were organized in such a way that a higher score indicates a stronger homophobia. Sources of information on HIV/AIDS included the daily papers, magazines, books, posters, TV

and radio shows, friends, school, physicians or other medical staff, lectures within the framework of health education and politicians. Using the yes/no answer format, it has been assessed how many different sources of information on HIV/AIDS the students used. The importance of HIV/AIDS in Croatia was assessed using 4 questions, two of which were related to condom use. The results show that only 60.4% of the students had experience with HIV/AIDS patients during their university education. Out of a total of 40 possible points on the questionnaire related to HIV transmission routes, the students achieved a middle value of 37.0 ± 2.6 (arithmetic mean \pm standard deviation). This indicates a high level of knowledge on HIV transmission routes. No statistically important difference in the level of knowledge with respect to sex or place of origin.

Generally, male students have shown to be more tolerant than their female peers. That they have a right to refuse to treat an AIDS patient is the opinion of 13% of the students.

All the patients admitted to hospital would have to be tested for HIV is the opinion of 11% of the students and more than 60% of them believe that they have a right to know the patient's HIV status. On contrary, male students have shown a significantly higher level of homophobia than their female peers.

The most common source of information on HIV/AIDS was a conversation with a physician and the rarest source were the politicians. Almost all of the students have heard about HIV/AIDS from a physician (93%) whereas only 5% of them have heard it from politicians.

Only 15% of the students believe mutual faithfulness to one partner is the most appropriate mode of prevention of sexual transmission of HIV in Croatia. 80% of the students believe the use of condom and the promotion of safer sex is the most important in prevention of HIV/AIDS. When asked to name the best means of protection with a new partner, 82% stated that this would be condom use, and only 15% would protect themselves from HIV

by getting to know their partner, with finally only 2% of students choosing abstinence with a new partner.

Most of the students (86%) are of the opinion that HI/AIDS is an important issue in Croatia and almost all the students (99%) believe that high school students should obtain more information on HIV/AIDS and 96% of them is of the opinion that high school students should be informed explicitly and unambiguously an sexual intercourse within the framework of their school education. That a unanimous educational campaign is needed in Croatia is the opinion of 97% of the students.

Even though the results of this research are encouraging there are still many negative attitudes as well as a strong tendency to perform HIV tests without the patients' consent as well as tendencies of not honoring the patients' right to confidentiality. Homophobia is still very much present. Even though this research proved the Croatian sixth year medical students to have a high level of knowledge on

HIV transmission routes, still their attitudes are not tolerant enough. One in eight students believes he/she has a right to refuse to give treatment to an HIV/AIDS patient. This belief probably reflects the general fear and prejudice relate dot AIDS, and it seems that students do not have a developed conscious that as health workers, they will sometimes have to sacrifice some of their own individual rights when confronted with patients' rights to protection. The male students have generally shown as more tolerant than the females, but with males there is a higher level of homophobia present.

This research has several limitations. First of all, it was developed as a cross-sectional study and as such it does not allow for any causative conclusions to be brought. However, this research included a relatively large number of respondents from various social backgrounds. Another possible limitation is the length of the questionnaire which might have caused respondents to lose concentration towards the end of the questionnaire. Also, other factors

also influencing attitudes (such as parents' education, income etc.) were not included in the research. Having these limitations in mind, the research has shown evidence that sixth year medical students have a high level of knowledge on HIV/AIDS but in spite of that show intolerance and prejudice are still present. It would be useful to enable the students to spend more time with AIDS patients during their education, which in itself is not as easy due to the relatively small number of AIDS patients in Croatia. Professors working with students should be aware of the need of changing attitudes and not only strengthening factual knowledge. This also includes education of educators.

7. The quality of life among people living with HIV/AIDS in Croatia

This research was aimed to investigate into the existing quality of life among people living with AIDS in Croatia. For the purposes of this

research, the definition of quality of life by the WHO was used, according to which says that the quality of life is an individual assessment of one's own happiness with the way of life in the context of a culture and the value system in which a person is living and in relation to this/her own goals, expectations, standards and preoccupations and their connection with the environmental conditions.

Research conducted so far has given various results, particularly regarding predictors of poor quality of life. Contradictory results were obtained with respect to sex, and some literature indicates to a connection between younger age and a better quality of life. According to some authors, a lower level of education significantly correlates with a lower quality of life when compared to a higher level of education.

In Croatia ARV treatment is free of charge for all HIV infected persons. The introduction of ARV has significantly decreased morbidity and mortality connected to HIV infection and has significantly increased the quality of

life of persons living with AIDS. Imminent threat to physical existence has been replaced by fear and uncertainty about medications and their side effects, long term benefits and resistance to them. Stigma and discrimination in issues of employment, finding institutional care and insurance and medical care are still largely present and cause difficulties to HIV patients.

For the purposes of this study, a shortened version of the questionnaire (WHOQOL-HIV BREF) compiled by the WHO was used to assess the quality of life of each respondent. This questionnaire consisted of 26 questions not related to HIV and 5 specifically related to HIV. The questions were aimed to assess the subjective perception and evaluation of overall quality of life and general health and the following broad aspects of individual life: physical health, psychological health, the level of independence, social relationships, surroundings, religion, spirituality, personal beliefs.

The questionnaire was offered to 134

persons, out of whom only 23 persons failed to fill in the questionnaire that was offered, mostly stating that lack of time to be the reason. The response rate for this study is fairly high (83%). Patients who refused to take part in the study fear discovering their identity and some feel overwhelmed by the number studies they have taken part in so far which seems plausible, considering the number of HIV/AIDS patients found in Croatia. The assessed quality of life of PLWHA in Croatia obtained in this study show that the respondents assess their quality of life as good towards very good. However, the quality of life of Croatian PLWHA seems to be lower than that of PLWHA in other countries such as Italy. The social domain is the one that is disrupted most, which suggests that the strongest influence of HIV is found in the social aspect of the quality of life. This is to be expected due to the fact that persons suffering from HIV/AIDS are often subjected to social isolation, derogatory situations, stigmatization, discrimination and marginalization.

Younger HIV/AIDS patients expressed more positive feelings, better cognitive functioning, higher “self-esteem”, higher degree of satisfaction with their physical looks and “body image”, and generally more satisfaction within the psychological domain of their lives, when compared to older persons. Marital status also influences the quality of life. Patients who are married or in a relationship and have better social support. Moreover, some HIV positive persons are in long-lasting relationships with persons who are themselves HIV positive and get additional support from their partners. Persons who are involved in long-lasting relationships also lessen the anxiety related to discovering their HIV status because they are revealing it to only one person – their partner.

The level of education is a predictor of higher quality of life in domains of independence and domain of surroundings. The patients who were currently feeling ill stated having poorer quality of life. The average result of quality of life is significantly lower for

those showing progression when compared to patients who state having a stable or improved health condition. This research showed no significant relation of the domains of quality of life with the stage of the HIV infection.

There are certain limitations to this study, the first being the cross-sectional design which makes us unable to make conclusions on relations of cause and consequence between the quality of life and sociodemographic variables and variables connected to the disease itself. The second limitation is the fact that this is not a random choice of respondents i.e. HIV patients living in Croatia.

The persons taking part in this study are those who regularly come for check-ups whereas those who did not come regularly were not included in the study, which has to be considered when making generalized results for the HIV patient population in Croatia. In order to pave the way for a better quality of life for people living with AHIV/AIDS, it is necessary to secure them with access to psychosocial support, medical and legal ser-

vices and to focus future interventions toward educating the general population as well as health workers and to raise awareness on HIV. Physicians should also be educated on how the HIV disease influences the patients' quality of life. An improved understanding of health workers on how HIV influences the quality of life can improve the doctor-patient relationship enable the provision of more comprehensive care for the patients.

8. HIV/AIDS and youth – Croatia 2005: knowledge on HIV/AIDS, attitudes and sexual behavior in a national youth sample

The aim of this research study was to investigate the level of knowledge about HIV/AIDS, HIV/AIDS-related attitudes and beliefs, and patterns of sexual behavior among youth in Croatia in order to improve national HIV prevention and control system. The objectives included exploring associa-

tions between the three dimensions, as well as assessing the prevalence and incidence of STI-related symptoms.

The study was carried out on a nationally representative sample (n = 1093) of young men and women, aged 18-24 years, who were interviewed in their homes in February 2005. The response rate was 80%; only 5% of the approached individuals refused to participate due to the subject of the study. The second part of the questionnaire, which contained the questions regarding sexual behavior, was self-administered.

According to the findings, nearly one out of five respondents lacked basic information regarding the modes of HIV transmission and the methods of protection. Young women and better educated respondents were found to have more complete knowledge of HIV/AIDS. In comparison to an earlier national study carried out in 1989 (Ajduković Ajduković i Prišlin, 1991), the level of HIV/AIDS knowledge among young people has decreased slightly.

The attitudes towards people living with HIV/AIDS were shown to be mildly liberal: acceptance was more frequent than rejection. The comparison with the aforementioned 1989 study pointed to increased acceptance and tolerance towards people living with HIV/AIDS. Again, young women and respondents with better (formal) education expressed higher levels of acceptance. Religious respondents were found to be less accepting than others.

During the last 30 years the sexual behavior of youth in Croatia has been under the strong influence of a global culture of permissiveness. This was particularly demonstrated by sexual experiences of young women (and/or the willingness to disclose them). Unlike in the 1970's, the difference in the age of sexual initiation of young men and women has mostly disappeared; young men experience the first intercourse at the age of 17.2, and young women at the age of 17.6. Formal education and religiosity delay the onset of coital activity.

On the occasion of their first sexual intercourse 60% of respondents used a condom (38%

did not use any means of protection). On the occasion of their most recent intercourse, regardless of the type of partner, 53% used a condom (13% percent used hormonal contraception and 27% did not use any form of protection). More than a fifth of respondents (21%) reported regular condom use, which is a four-fold increase from 1989.

Slightly more than half of the respondents who were sexually active in the last 12 months had a single sexual partner during this period, 16% had two, 19% had three, 4% had four, while less than 4% reported five or more sexual partners. The analysis of the lifetime number of sexual partners revealed that one third of sexually experienced respondents had five or more partners. On average, young men reported a higher number of sexual partners (mean 5.5) than young women (mean 3.3). Slightly less than a third of sexually experienced respondents (31%) had a "one night-stand" in the past 12 months.

For both young women and young men, information on sexuality is mostly provided

by friends, partners, and TV. Some basic information, mostly on HIV/AIDS, was also provided by schools, but not for all respondents. Not surprisingly, 86% of respondents were in favor of introducing some form of sexual education into schools.

Sexual victimization was reported by 3.1% of young women and 0.6% of young 15 men. In addition, two per cent of respondents were unsure if things that had happened to them constitute sexual abuse, while 12% refused to answer the question.

Sexual risk taking (SRT) was assessed by two indicators: condom use at last sexual intercourse, and consistency of condom use during the last 12 months. Taking into account gender-specific trajectories of risk taking, multiple regression analyses of the SRT indicators were run separately for young men and women. Knowledge about HIV/AIDS was not found to be associated with SRT indicators. Young women were more likely to have used condom during last intercourse if it had been used during their

first intercourse, and less likely to have used it if they grew up in religious families or if they were not living with their parents. For young men, the probability of condom use during last intercourse was positively related to condom use at first intercourse and the experience of casual sex, but negatively associated with the acceptance of myths regarding condom use, lower parental control, and greater self-esteem. Condom use consistency in young women was predicted by condom use at first sexual intercourse (positively) and the acceptance of myths regarding condom use (negatively). For young men, condom use consistency was associated with condom use at first intercourse, beliefs regarding the efficacy of condoms in protecting from STIs, and the level of parental control. The last variable was negatively correlated with the indicator. Overall, the findings emphasized the importance of habit formation (condom use) in HIV and STI prevention.

The analysis of data on the experience of symptoms of STIs and reproductive tract in-

fections (RTIs), assessed as unusual discharge, dysuria and genital itching, among sexually active youth, suggested that 11.8% of young men and 44.5% of young women experienced such symptoms at least once. (The considerably higher rates of symptom reporting in young women is due to the presence of STIs that are not necessarily sexually transmitted.). The results of multivariate analyses showed that young women who used condom at first intercourse and those with fewer sexual partners had lower likelihood of STI-related symptoms. Among young men, the likelihood of experiencing STI-related symptoms was negatively related to knowledge about STIs. Chlamydial infection in the past year was reported by 2.4% of young women. In case of young men, reported urogenital symptoms seemed to be concentrated among those who reported having sex with men and those who paid for sex.

There is need for focusing on systematic HIV prevention and interventions among young people. The proposed measures are: HIV/

AIDS and STI surveillance, pointing out serious deficiencies in the present system, the introduction of comprehensive school-based sexual education, while the role of media and NGOs in HIV prevention among Croatian youth, as well as among socially marginalized and often stigmatized subgroups.

9. Knowledge on HIV/AIDS, attitudes and sexual behavior of migrant workers in the Republic of Croatia

Due to geographic mobility and long periods of separation from their intimate partners, migrant workers are at increased risk of STIs including HIV/AIDS. In Croatia, unfortunately, only two descriptive studies on sexual knowledge and behavior of migrant workers have been carried out. This report is the first in-depth, analytical study based on the survey of 570 respondents, of whom 566 are men (female respondents were excluded from the analyses). The survey used a short self-

administered questionnaire. The average age of the respondents was 38.2, ranging from 19 to 64. They were recruited during a periodical medical exam on seven locations throughout the country (Čakovec, Slavonski Brod, Rijeka, Zadar, Split, Dubrovnik and Zagreb). Most of the respondents are seamen (77.3%), the rest work in the construction industry (20.5), or are truck drivers (1.2%). Slightly over half of the respondents are married (56.5%), while an additional 21.5% are in stable relationships. During the last 24 months, the average time spent working out of the country was 11.6 months.

In order to measure the respondents' knowledge on HIV/AIDS, two composite instruments of satisfactory reliability were constructed: KMTS (knowledge of the modes of transmission scale) and KMPS (the knowledge of the modes of protection scale).

The average score on both instruments was moderately high, but a more detailed analysis pointed to several gaps in respondents'

knowledge. Only 18.5% answered all 13 questions correctly.

In regards to patterns of sexual behavior, the average number of sexual partners during the last 12 months was 1.9 (median = 1; max. = 20). In the majority of cases the last sexual partner was a spouse or steady partner (83.9%); 12.7% of respondents reported a casual partner and 2% a sex worker. A substantial number of respondents did not use a condom during the last intercourse (44.7%). Among the respondents whose last intercourse was with a sex worker, 16.9% did not use condoms. 13.3% were under influence of alcohol at the time of the last intercourse, while 0.6 (3 respondents) were high on narcotics. Only 2 respondents reported sharing needle/injecting equipment ever.

Only 3.1% of men in our sample reported having sex with men in the last 12 months. Have there been any changes in sexual activity caused by a HIV/AIDS risks? Over one third of the respondents (39.4%) did not change their sexual behavior, mostly because they do not

consider their sexual behavior risky. Among those who did change their sexual behavior, 69.3% reported that they have ceased having casual sex.

Asked if individuals living with HIV/AIDS should be isolated from the rest of the population, 16.1% of the respondents answered in the affirmative (15% did not know). Over two thirds of respondents (68%) would work with someone living with HIV/AIDS; 55% would eat together and 59.6% would stay friends with such a person. Only 7.1% of our respondents reported that they knew someone who was HIV-positive. 43.8% of respondents tested for HIV antibodies, but only 23.8% because they have decided to do so. For the rest the testing was required. Of concern is the fact that almost two thirds (65.2%) did not know where they could get anonymous HIV tests.

The quality of available information is seriously in question, especially since 68.7% of respondents reported that HIV/AIDS related information is available in their immediate

working environment. Attitudes toward condom use were measured by 4 items aggregated in ATCUI (the Attitudes toward condom use index). The average score points to a moderately positive overall attitude.

Contrary to expectations, age was not correlated with ATCUI. The analysis of the relationship between knowledge, attitudes and patterns of sexual behavior provided several important insights. Both measures of HIV/AIDS related knowledge (KMTS and KMPS) were shown to be significantly correlated with attitudes toward condom use (ATCUI). Although the correlations were low, more knowledge is related to more positive attitudes. In addition, knowledge seems to have a positive effect on social tolerance and acceptance of individuals living with HIV/AIDS.

Logistic regression analyses were carried out on several indicators of sexual risk taking. Number of sexual partners was found to be predicted by age, marital status, faith in God, and personal HIV risk perception. All four

variables were negatively correlated with having two or more partners. Attitudes toward condom use, co-workers HIV/AIDS concerns and the length of migrant status (during the last two years) were shown to be significant predictors of condom use at the last intercourse with a casual partner.

With regard to changes in sexual behavior, only age, length of migrant status and co-workers HIV/AIDS concerns turned out to be significant correlates. Younger respondents were more likely to have changed their sexual behavior in response to perceived HIV/AIDS risks, as well as the respondents who spent more time working abroad, and the respondents whose co-workers were concerned with HIV/ AIDS. The effect of HIV/AIDS related knowledge did not reach statistical significance in any of the analyses.

Overall, the results point out the deficiencies in HIV/AIDS prevention materials available to Croatian migrant workers, especially in their immediate working environment. Moreover, new intervention strategies and educational programs focusing on behavioral change seem to be imperative. Unsatisfactory patterns of migrant workers' condom use and their ignorance over HIV testing call for immediate expert response which would focus on attitude and behavioral change.

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