PREVALENCE OF HIV AND OTHER INFECTIONS AND RISK BEHAVIOUR AMONG INJECTING DRUG USERS IN LATVIA, LITHUANIA AND ESTONIA IN 2007

STUDY REPORT

Expanding Network for Coordinated and Comprehensive Actions on HIV/AIDS Prevention among IDUs and Bridging Population

2009

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ABBREVIATIONS

ACC	anonymous AIDS counselling and testing centre
AIDS	acquired immunodeficiency syndrome
Amph	amphetamine
ARV	antiretroviral
DOT	directly observed treatment
DOTS	directly observed treatment short course
Eph	ephedrine
ESPAD	European School Survey Project on Alcohol and Other Drugs
EST	Estonian
EU	European Union
F	female
Fen	fentanyle
HAART	highly active antiretroviral treatment
HBV	hepatitis B
HCV	hepatitis C
HIV	human immunodeficiency virus
IDU	injecting drug user, injecting drug use
LT	Lithuanian
LTC	low threshold centre
LTS	low threshold services
LV	Latvian
M	male
MDR-TB	multi-drug resistant tuberculosis
MOH	Ministry of Health
MSM	men who have sex with men
MTB	Mycobacterium tuberculosis (M. tuberculosis)
ND	no data
Neg	negative
POL	Polish
Pos	positive
RUS	Russian
SEP	syringe exchange program
STI	sexually transmitted infection
TB	tuberculosis
UKR	Ukrainian
VCT	voluntary HIV testing and counselling
WHO	World Health Organisation
XDR-TB	extensively drug resistant tuberculosis

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CONTENTS

INTRODUCTION

Human immunodeficiency virus (HIV) and hepatitis B and C infections are an important cause of mortality and morbidity among injecting drug users (IDUs) in Europe and result in high costs to society. Data on HIV cases attributed to injecting drug use reported in 2007 suggests that infection rates in this group are still overall falling in the European Union (EU) countries, following a peak in 2001–2002, which was due to outbreaks in Estonia, Latvia and Lithuania (Wiessing 2008).

IDUs are particularly susceptible to HIV infection as a result of unsafe injecting practices and their increased social vulnerability compared to other susceptible groups. Furthermore, HIV infection progresses more rapidly following contaminated injection than other modes of transmission (WHO 2006).

The global tuberculosis (TB) problem has been exacerbated by the pandemic spread of HIV infection and AIDS and the emergence of drug resistance. HIV infection causes a person infected by M. tuberculosis much more likely to develop TB disease. TB is associated with faster AIDS progression and people co-infected with TB/HIV have higher death rates. Up to 40% of all AIDS-related deaths are due to TB (WHO 2006).

In addition to HIV-infection, IDUs are at increased risk of developing TB, a risk that is further increased in IDUs who are co-infected with HIV. TB incidence is higher among IDUs than the general population and this increased incidence is independent of their HIV status (Brassard 2004). However, progressive immunosuppression resulting from HIV infection leads to increased susceptibility to TB. HIV infected IDUs are particularly susceptible to TB even if the prevalence of TB in the general population is relatively low. The extent and rate of progression of the epidemic of HIV-related TB among IDUs depends on the prevalence of TB infection and disease in the population, the rate of spread of HIV infection, and the characteristics of the population concerned (WHO 2006).

The current report provides results from a cross-sectional bio-behavioural study on HIV and related infections and risk behaviours among current IDUs in the capital cities of the three Baltic countries. The first section of the report provides basic information on the three Baltic countries in general, and injecting drug use, HIV and other infections' epidemiological situations, health care and harm reduction services in more detail. The second section focuses on the methodology and results of the study and the third provides a short discussion and guidance for future action to tackle the HIV epidemic and its consequences among IDUs in Baltic countries.

BACKGROUND

General information

The Baltic States or Baltic countries are three countries in Eastern Europe, all members of the European Union: Estonia, Latvia and Lithuania (from the north to the south). They are located on the coast of the Baltic Sea, west from Russian Federation and Belorussia. The Baltic States were formerly part of the Soviet Union and regained their political independence in 1991. The largest of the three countries is Lithuania and the smallest is Estonia. General information about the countries and the capital cities is presented in table 1.

Table 1. General statistics of the Baltic States*

COUNTRY	ESTONIA	LATVIA	LITHUANIA
Population (2007)	1,340,602	2,270,700	3,369,600
Population density (2007)	29/km^2	36/km^2	52/km^2
Ethnic distribution (2007)	Estonians – 69% Russians – 25% others – 6%	Latvians – 59% Russians – 28% Belorussians – 4% others – 9%	Lithuanians – 84% Polish – 6% Russians – 5% others – 5%
Unemployment rate among people aged 15–74 years (2007)	4.7%	4.6%	5.9%
Gini index (%) (2005)	36	38	36
GDP per capita (2005)	$ 15,478	$ 13,646	$ 14,494
Capital	Tallinn	Riga	Vilnius
Population	396,852 (2007)	722,485 (2007)	553,307 (2005)
Unemployment rate among people aged 15–74 years (2007)	3.4%	3.0%	4.5%
Ethnic distribution	Estonians – 55% Russians – 36% others – 9% (2007)	Latvians – 42% Russians – 42% others – 16% (2007)	Lithuanian – 58% Polish – 19% Russians – 14% others – 9% (2001)

* Sources: Wikipedia (http://en.wikipedia.org/wiki/Baltic_countries), Database of Statistical Office of Estonia

Infectious diseases

HIV

The burden of HIV infection in Baltic countries is the highest in Estonia. In 2006, the number of new cases per one million population was 504 in Estonia, 130 in Latvia and 29 in Lithuania (Figure 1) (EuroHIV 2007a).

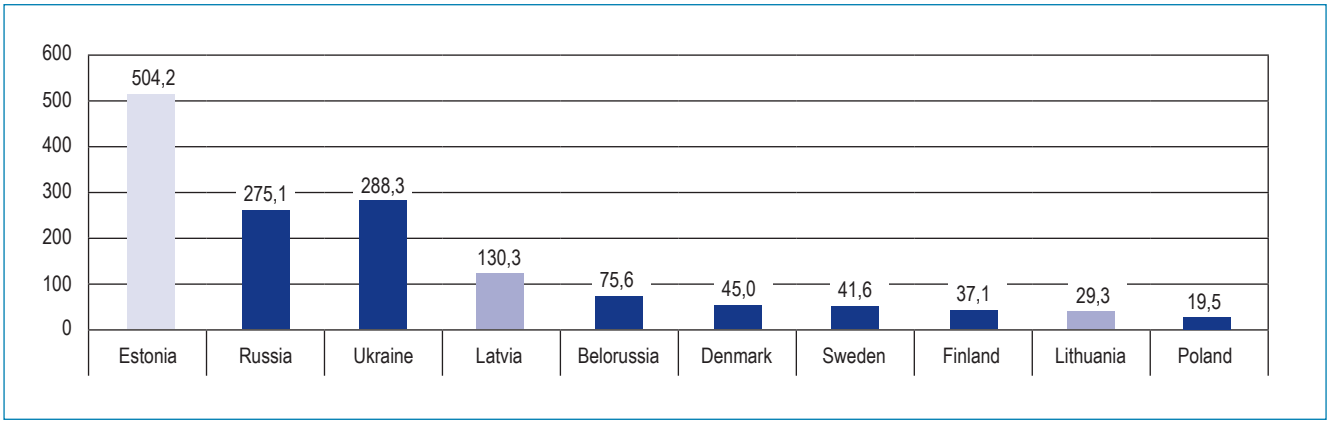

Figure 1. Newly diagnosed HIV cases per million inhabitants in selected European countries in 2006 (based on EuroHIV 2007a data)

Estonia

The first HIV case in Estonia was diagnosed in 1988 and by the end of 2007 a total of 6,364 HIV cases were registered. The total number of people diagnosed with AIDS by the end of 2007 was 191, and the number of people died of HIV disease was 170 (Database of Estonian Health Protection Inspectorate).

HIV epidemic started in late 2000 and in 2001, 1,474 new cases were registered (1,081 per one million population). Due to the sudden increase in the number of HIV infected people since the fall of 2000, the Ministry of Social Affairs proclaimed a concentrated epidemic of HIV in February 2001. New reported HIV cases in Estonia have decreased in the past few years (from 899 in 2002 to 633 in 2007).

In 1988–1999 homosexual and heterosexual transmission were the main routes of HIV transmission. Since 2000, the infection has been mainly transmitted through the sharing of contaminated syringes. In past years, there is some evidence of increasing sexual transmission (mostly from IDUs to their sexual partners). Thus, according to the anonymous AIDS counselling centres (ACC) IDUs accounted for 90% of new HIV cases in 2001, 66% in 2003 and 54% in 2007 (Database of Estonian National Institute for Health Development).

In Estonia, people under 25 years of age accounted for 72% of new cases in 2002, 61% in 2004, and 38% in 2007. The proportion of women among people newly diagnosed with HIV infection has increased from 20% in 2000 to 32% in 2004 and to 41% in 2007 (Database of Estonian Health Protection Inspectorate).

The epidemic was first recognized in the North Eastern part of the country: 92% of newly diagnosed HIV cases were detected among residents of this area in 2000. Already the next year, the number of new HIV cases increased also in the capital city Tallinn. In 2007, 49% of new cases were diagnosed among the residents of the North Eastern part of the country (200 cases per 100,000 population), 38% among the residents of capital city (59 cases per 100,000 population) and 13% elsewhere (7 cases per 100,000 population) (Database of Estonian Health Protection Inspectorate, Database of Statistical Office of Estonia).

Latvia

Latvia so far belongs to the countries in EU where HIV infection rate is high. With 130 cases per million population in 2005–2006, Latvia has double the EU average rate but remains below Estonia, Portugal, UK and Luxemburg. The major HIV increase in Latvia was seen during 2001. Since then, the numbers declined and stabilized during 2005–2007 (UNGASS Country Progress Report 2008).

From 1987 to 2007, a total of 3,981 (175 per 100,000 population) newly diagnosed HIV infections were registered in Latvia. Out of these people, 565 have developed AIDS and 273 have died. The number of new HIV cases registered annually has remained stable in last few years (2004 – 323, 2005 – 299, 2006 – 299, 2007 – 350). The main risk group is IDUs who account for 63% of all registered cases. 17% of the cases have been attributed to heterosexual transmission, 4% to homosexual and 0.6% to mother-to-child transmission. Since 2001, the number of newly diagnosed HIV cases among IDUs has decreased as well as the proportion of IDUs among all new cases. In 2001 – 82% of new cases, in 2003 – 59%, and in 2007 – 40% were among IDUs. On the contrary, heterosexual transmission has been increasing gradually.

At the outset of the HIV epidemic in 2000–2001, males were more affected. However, in recent years, infection is probably moving into female population. In 2000, females contributed 29% of new cases among people 15–25 years old, and in 2006, 41% of new cases. Similar trend is seen also among people older than 25 years (females accounted for 18% of cases in 2000 and 36% in 2006).

As HIV epidemic progressed in Latvia, older people became more affected and their proportion slowly increased. In 2001, up to 58% of new cases were detected among younger age group (15–24 year old), while in 2006, only 26% of new cases came from this group and the rest was detected among older ones (>25 years).

While absolute numbers of HIV cases among MSM are low, as a share of new HIV cases, it is growing, and has increased since 2000 from around 1% to above 5% in 2006 (UNGASS Country Progress Report 2008).

On average, around four cases of vertical HIV transmission are reported in Latvia every year, which amounts to 20 cases per 100,000 newborns. In addition, approximately 30 HIV positive pregnant women are detected annually. As of 31 December 2007, there were 25 HIV infected children born to HIV infected mothers in Latvia. Out of all HIV cases among pregnant women, 49% have been acquired by sexual transmission and in 26%, the women have had a history of injection drug use (Public Health Agency 2007). HIV cases among pregnant women in Latvia are mostly found among mothers who have not received adequate prenatal care.

Regions of Latvia are differently affected by the infection. The capital city Riga shows the highest HIV prevalence figures (360 cases per 100,000 residents) along with west of Latvia (in Ventspils 303 cases per 100,000 residents), while the eastern regions of the country – Ludza, Aluksne and Madona have the lowest figures (UNGASS Country Progress Report 2008).

Lithuania

In 1989–2007, a total of 1,306 HIV cases were diagnosed in Lithuania. The total number of people diagnosed with AIDS for the same period was 151, and the number of people died of AIDS was 57.

First HIV cases were reported in the homosexual community in 1989 and up to 1997 the sexual transmission mode prevailed. In 1997, HIV entered the IDU community (Caplinskas 2004). In 2003, HIV was still predominantly transmitted through sharing contaminated needles while injecting drugs. However since 2003, the number of heterosexually transmitted HIV cases has been increasing (Strujeva 2006). In 2007, a total of 106 new HIV cases were identified and 44% of them reported heterosexual transmission. All in all, 77% of all HIV cases have been diagnosed among IDUs, 11% have been transmitted by heterosexual and 7% by homosexual intercourse.

HIV has been mostly reported in the age groups of 25–29 (25%) and 30–34 years (19%), and 76% of total cases have been identified among people aged 20–39 years. The proportion of females among newly diagnosed cases is 14%. Capital city Vilnius and the seaport Klaipeda remain the places with the majority of reported HIV cases (16% and 29% of new cases, respectively). According to social characteristics, 67% of all HIV infected individuals are former convicts, some of whom have served more than one term (Database of Lithuanian AIDS centre under MOH).

Table 2. HIV infection situation in three Baltic countries at the end of 2007

COUNTRY	ESTONIA	LATVIA	LITHUANIA
Total number of HIV cases (n)	6,364	3,981	1,306
Number of new cases in 2007/rate per 100,000 population (n)	633 (47)	350 (15)	106 (3)
Estimated proportion of transmission related to injecting drug use (%)	70%	63%	56%
Proportion of females (%)	30%	29%	14%

Hepatitis B and C

Estonia

The dramatic increase in injecting drug use in the population aged 15–29 years in the early 1990s led to an increased incidence for both hepatitis B and C. Between 1992 and 1998, there was a marked increase in the rates of hepatitis B (6/100,000 in 1992 and 34/100,000 in 1998) and hepatitis C (0.4/100,000 in 1992 and 25/100,000 in 1998). Since 2002, the incidence of both hepatitis B and C has decreased, being (respectively) 3.3 and 2.7 cases per 100,000 inhabitants in 2007. From 1996 until today, IDU is the most frequent risk factor identified among youth, accounting for more than half of all new hepatitis C cases (Database of Estonian Health Protection Inspectorate).

Latvia

In 2000–2001 a rapid increase of hepatitis B infection was observed in Latvia, both in general population and among injecting drug users. A decrease in the incidence of hepatitis B infection has been observed since 2001. A similar situation is observed also with regard to the incidence of hepatitis C infection, i.e. a growth in morbidity was observed until the year 2000, but after that period, there has been a reduction in the incidence of infection. This applies also to infection with hepatitis C among IDUs (Public Health Agency 2007). In 2005, there were 170 cases of hepatitis B (7 per 100,000 inhabitants) registered in the country, 8% of them were IDUs. In the same year, 110 cases of acute hepatitis C were registered (5 per 100,000 inhabitants) and 16% of them were IDUs (The State Addiction Agency 2006).

Lithuania

Data of the Centre for Communicable Diseases Prevention and Control prove a trend of decline in the incidence rate of acute viral hepatitis B since 1989. Incidence rate was 41 per 100,000 population in 1988 and 2.5 per 100,000 in 2007. From 2001 up to 2006, a decline in acute HCV rates was much faster as compared to 1995–2001. In 2000–2006, annual incidence rates declined by 20% and in 1994–2000, noticeably less – by 6%. The steady drop in new cases of viral hepatitis C was also observed during the last 7 years (2001–2007). The last-mentioned indicator declined from 5.4 per 100,000 population (2001) to 1.4 per 100,000 population in 2007. In 2001–2006, an average decline of 16% in the incidence rate was recorded, just to compare with the substantially lower rate of 10% during 1995–2001 (Žagminas 2007). There is no data on general HCV prevalence (including chronic hepatitis C cases) in Lithuania. Chronic HCV cases are not subject to report to the National Database. Estimated number of HCV cases in general population is 50,000–70,000 or 1.5% of total population (Merkinaite 2008).

In 2007, a total of 195 cases of acute viral hepatitis were reported, including 84 cases of acute hepatitis B (43%), 46 cases of hepatitis C (24%), and 23 cases of hepatitis A (12%). Of a total of 84 cases of acute hepatitis B, 11 cases were identified among IDUs (including 10 males and 1 female). This amounts to 13% of all hepatitis B cases. Out of 46 people with acute hepatitis C, 11 cases were reported in IDUs (including 7 males and 4 females), accounting for 24% (Database of Drug Control Department under the Government of the Republic of Lithuania 2008). Routine biological surveillance (including HCV and HBV) system among IDUs does not exist. However, sentinel surveillance testing is periodically performed, which enables assessment of the current situation and planning of interventions in respective risk subpopulations. For example, testing of 336 inmates (with a history of IDU) of Alytus Correctional Facility performed in spring 2002 resulted in the identification of 262 HCV cases (78%). In the same year, 654 IDUs, clients of the Harm Reduction Site at the Lithuanian AIDS Centre, were also tested for hepatitis C, proving an HCV prevalence of 81% (Čaplinskienė 2008). 103 IDUs purchasing drugs in the Vilnius gypsy camp were tested in 2003, 94% HCV prevalence was recorded, while 0.1% were HBsAg carriers (Čaplinskienė 2004). Of 123 IDUs, tested in the Harm Reduction Site at the Lithuanian AIDS Centre in 2004, 97% had HCV and 7% were HBsAg carriers (Čaplinskienė 2006). According to the data of the Lithuanian AIDS Centre, anti-HCV markers were found in 478 (80%) out of 599 analysed HIV cases. The greatest 98% anti-HCV prevalence was identified among HIV infected IDUs. Evidence of prior HBV infection (anti-HBcor) was found in 333 (80%) of 417 HIV infected persons (Uzdaviniene 2008).

Tuberculosis

Estonia

The incidence rate of tuberculosis (TB) started to increase in Estonia in the 1990s and increased rapidly from 21/100,000 in 1992 to 48/100,000 in 1998. Since 1999, the incidence has decreased to 30/100,000 in 2007 (total number of new cases was 408). The number of relapses was 58 in 2007 and, therefore, the overall proportion of TB cases 35/100,000. The incidence was highest in North-Eastern region (45/100,000) and in one of the southern counties called Valgamaa which is next to Latvian border (64/100,000). The proportion of extrapulmonary TB was 7% in 2007 (Database of National TB Registry, Estonia).

Over a quarter of all TB cases in Estonia are resistant to at least one drug. In 2007, the proportion of multidrugresistant TB (MDR-TB) among new cases was 13% and among all cases 15%. Since 2001, there have been 87 cases of extensively drug resistant tuberculosis (XDR-TB) (among both new cases and relapses), eight of them in 2007.

The number of patients with TB and HIV has increased dramatically from 1 case in 1998 to 49 cases in 2007 (throughout the years a total of 183 cases). Most of them were people aged 20–29; 75% of them were male. Among TB/HIV cases the proportion of MDR-TB was 25% in 2007 (Database of National TB Registry).

Latvia

Latvia has also experienced an increase in TB morbidity together with the appearance of drug resistant and MDR-TB since 1991. In 1991, the incidence of TB was 29/100,000, being 74/100,000 in 1998 and 49/100,000 in 2007. Registered MDR-TB cases present a similar tendency: 47 MDR-TB cases were registered in 1994, 335 in 1997 and 108 in 2007. In 2007, the proportion of MDR-TB among new cases was 7% and among all cases 10%.

Since the first patient was registered with TB/HIV co-infection in 1994, the number of patients diagnosed with both infections continues to increase. Between 1994 and 2007, 312 cases of TB/HIV co-infection have been diagnosed, among them 23 persons with 2 episodes of TB. The proportion of extrapulmonary TB cases has been 11% and MDR-TB cases 18% (of all cases) (Database of Latvia Tuberculosis Register). 90 XDR-TB cases were registered in 2000–2007 (11 of them in 2007), which accounts for 6% of all registered MDR-TB.

Lithuania

Since 1998, the TB incidence rate in Lithuania has stabilized being around 70/100,000 in 2005–2006. In 2006, there were 2,097 new cases of TB and 268 relapses (TB incidence was 70 cases per 100,000 population).

Similarly to Latvia and Estonia, Lithuania has faced the problem of drug-resistant TB. In 2006, the proportion of MDR-TB among drug-naïve patients was 9% whereas the proportion of MDR among previously treated patients was 47%.

The first case of active TB in HIV infected individual was registered in 1992. Up to the end of 2007, the total number of TB/HIV co-infections was 64. Of 21 HIV/TB co-infection cases diagnosed in 2007, MDR-TB cases were 29% (Lithuanian Tuberculosis Register).

Injection drug use

Estonia

The use of illicit drugs has grown rapidly in Estonia in the past 15 years. The upward trend has been confirmed by the findings of the European School Survey Project on Alcohol and Other Drugs (ESPAD) 1995, 1999, 2003 and 2007 surveys. In 1995, 8% of Estonian school youth aged 15–16 years had experience with some illicit drug. In 2003, it was 24% and in 2007 – 30%. The injecting drug use among young people shows decreasing trends. The proportion of school youth aged 15–16 who had ever injected drugs was 1.3% in 2003 and 0.5% in 2007 (ESPAD 1995, 1999, 2003, 2007).

The number of patients admitted for care for psychiatric and behavioural disorders caused by the use of illegal drugs tripled during the late 1990s (from 25/100,000 in 1995 to 82/100,000 in 1998) and the number of patients admitted for care of illicit opioids use and alcohol has been increasing during the early years of this decade (Database of Estonian Health Insurance Fund).

The first reports describing the IDU outbreak and the size of IDU population in Estonia were based on field reports and expert opinions. They describe about 10,000–15,000 injecting drug users in Estonia (Kalikova 2001). In 2005, a study based on nation-wide databases showed that the number of IDUs in Estonia was 13,801 (95% CI 8,178–34,732) which correlated to 2.4% (1.4–6.0%) prevalence among adult population. Approximately 72% of IDUs are in capital city Tallinn and the surrounding Harju County and 18% in the North-Eastern region (Uusküla 2007b).

According to different studies among IDUs, the main drugs used in Estonia are amphetamine, fentanyl/3-methylfentanyl („China White", „White Persian") and home made poppy liquid (National Institute for Health Development 2008). The fentanyl street price in Tallinn is fluctuating between 115 and 256 EUR per gram depending on the amount bought (UNODC 2008). Amphetamine street price in Tallinn increased in 2008, from 13 EUR to 26–32 EUR per gram (personal communication with Northern Police Prefecture, 2009).

The prevalence of HIV among IDUs depends on the study sample and location. Prevalence rates of 40–90% have been described (Platt 2006, Uusküla 2007a, Wilson 2007). In a cross-sectional study carried out in 2005, 54% HIV prevalence was described in Tallinn (among 350 IDUs) (Platt 2006).

A study of 57 IDUs found serological markers of HBV in 79% and HCV in 83% of study subjects (Tefanova 1998). In a convenience sample of 159 IDUs visiting syringe-exchange programmes, 96% of participants were positive for HCV antibodies and 85% for HBVcore antibodies (Uusküla 2007a).

Latvia

The national population survey carried out in 2007 (n=4,500) shows that 16% of population aged 15–64 have tried some illegal drugs in their lifetime. The level of the illegal drug use during last year or last month prior to the survey is considerably lower in comparison with usage ever in the lifetime — accordingly 6% and 2%. Compared to the national population survey of 2003, the part of drug-trying population has grown by 4% (from 12% to 16%). Men have tried illegal drugs twice more often than women. The most frequent drug used in the general population is marihuana or hashish (12% of general population) followed by ecstasy (5%), amphetamines (3%), cocaine (2%) and several opioids (3%) (Institute of Sociological Studies 2008).

According to the European School Survey Project on Alcohol and Other Drugs (ESPAD) in 1999, 22% of school youth aged 15–16 years had experience with some illicit drug, the same in 2007 — 22% (ESPAD 2007).

The prevalence of mental and behavioural disorders due to psychoactive substance use has grown in the last years whereas incidence has decreased. In 2006, the rates were 2.1 and 0.5 per 100,000 population, but in 2007 — 2.0 and 0.2 per 100,000 (Latvian Health Statistics and Medical Technology State Agency 2007, 2008).

In 2005, there were 174 patients registered (8 per 100,000 inhabitants) with the primary diagnosis of abuse of narcotics and psychotropic substances. In the last years, the number of registered cases of drug and psychotropic substances addiction has decreased. However, this does not mean that drug use decreases also. It could be explained with changes in drug use habits in last years and with the changes in legislation regarding registration of patients (The State Addiction Agency 2006).

It is estimated that there are 9,588 IDUs in Latvia. Approximately half of them (4,757) are in Riga (Trapencieris 2007). An estimated IDU prevalence among adult population is 0.5%. The most frequent drug injected in Latvia is amphetamine followed by heroin, marihuana or hashish, hanka and ephedrine (Trapencieris 2007). 1 gram of amphetamine costs 10 lats (approximately 14 EUR) and 1 gram of heroine costs 125 lats (approx. 178 EUR) (Public Health Agency 2008).

Lithuania

In 2007, a total of 5,715 people using illegal drugs and psychotropic substances were reported in Lithuania. Incidence rate of drug addiction accounted for 169 cases per 100,000 population, which is 4% higher than in 2006 (163/100,000). The increasing trend of incidence rates observed in 1998–2002 has been reduced immensely in 2002–2007. Incidence rate in Vilnius accounted for 349 cases/100,000 population, total number of drug users in Vilnius County — 2,962 people, in capital — 2,727 people (492 cases/100,000). In 2007, prevalence rate of drug addiction in males was 294 cases per 100,000 population, in females — 60 cases per 100,000 population, i.e. prevalence among males was 5 times higher than among females. Estimated size of IDUs in Lithuania is 4,300. Estimated IDUs' size in Vilnius 2,200, in Klaipeda city — 750 (Database of Drug Control Department under the Government of the Republic of Lithuania, 2007).

77% of all HIV cases diagnosed in Lithuania have been among IDUs. Presently, data of the various studies among IDUs has shown HIV prevalence less than 5% (from 0.2 % to 4 %).

80% of IDUs inject opiates, 1.5% stimulants (including caffeine) and 11% — other drugs (Database of Lithuanian AIDS centre under MOH, 2007).

During the last 7 years, prices of some drugs, especially those of amphetamine-type stimulants, have noticeably fallen. For example, price of one amphetamine pill was 7–12 EUR in 2001, while it was available for 2–4 EUR in 2007. The reduction in amphetamine and methamphetamine prices is due to illegal production in the country. Data of the Police Department under the Ministry of the Interior suggest the price of 1 gram of marihuana to be 8–19 EUR in 2007, that of hashish — 4–11 EUR (one gram), the same amount of methamphetamine — 7–12 EUR; 1 tablet of ecstasy — 2–7 EUR; one gram of heroine — 35–56 EUR, one gram of cocaine — 40–72 EUR. One dose (1 ml) of poppy extract costs 3–4 EUR.

Harm reduction and illegal drug use treatment services

Estonia

Harm reduction (syringe exchange) was introduced in Estonia already in 1997 but the programs ran on marginal resources. Because of the support from the Global Fund to Fight AIDS, Tuberculosis and Malaria and increasing support of the government, the services have been developed immensely in the past 4 years. The number of low threshold centers (LTC) and syringe exchange programs (SEP) has risen from 13 in 2002 to 32 in 2007. They are mostly located in capital city Tallinn and North-Eastern region of the country. They are run by non-governmental organizations, which receive funding from the state budget (National HIV/AIDS Strategy for 2006–2015) and local municipalities. In Tallinn, there is one LTC and two stationary SEPs. Besides that, active outreach work is taking place (Rüütel 2008).

In 2007, 1.9 million needles and syringes and close to 720,000 condoms were distributed to IDUs in SEPs and LTCs. In 2006, approximately 66–76% of all IDUs visited SEP at least once in three months. In 2007, 60% of the clients had been visiting SEP more than a year and approximately 54% of regular clients visit SEP at least once a week (Database of National Institute for Health Development).

Methadone substitution treatment is available in specialized clinics located in capital city Tallinn and North-Eastern region of the country. Participation in government funded programs is free of charge for the client. In 2007, there were about 675 patients receiving methadone substitution treatment in government funded programs. Out of them, 80% were HIV infected (Database of National Institute for Health Development).

Latvia

By the end of 2007, there were 14 LTCs working in 13 cities in Latvia. Besides needle and syringe exchange, they also distribute condoms, provide counselling and information, offer voluntary HIV counselling and testing. Only one of the centres is government-funded. Other 13 LTCs are financed in combination through sate budget and local municipalities.

There are 2 LTCs currently working in Riga. In 2007, there were 1,330 LTC clients — IDUs in Riga (estimated number), and the estimated coverage of IDUs with services is approximately 30%. The number of syringes distributed in Riga in 2007 was 78,608.

At the moment, two opioid substitution treatment programs are operating in Latvia (Riga): Methadone Program (since 1996) and Buprenorphine Program (since 2003); a total of 684 individuals have been served (2000–2006), by the end of the 2007, the methadone program included 74 clients (57 clients in 2006). As regards Buprenorphine Program by the end of 2007, the number of clients was 59 (107 clients in 2006). In 2007, the total number of clients was 130. Methadone Program is free of charge (supported by the government). Payment is required only for the first consultation by doctor-narcologist (substance abuse professional). The buprenorphine substitution treatment program is a paid program of 1 year or longer (Public Health Agency 2008). By the end of 2007, there were 12 institutions rendering inpatient assistance to clients (including four private institutions, three of which are not financed by the state). There are four specialized inpatient addiction treatment and rehabilitation institutions with a bed capacity of 185. There are addiction treatment wards in four hospitals with a bed capacity of 155. There are five other institutions with 51 beds. The rehabilitation centre “Dzīves enerģija” (“Life Energy”) in the parish of Jaunpiebalga runs one more social rehabilitation program for addicted children and minors. As compared to 2006, the bed capacity for treating addictions has been retained at previous levels: 391 (comp. 392 in 2006, 415 in 2005, 419 in 2004). The number of hospitalized clients has slightly grown (by 2%) to 23,374 (22,898 in 2006, 19,313 in 2005) (Public Health Agency 2008).

Lithuania

Presently, there are 9 low threshold centers functioning in 6 cities in Lithuania (Alytus, Druskininkai, Kaunas, Klaipeda, Mazeikiai, Vilnius). The main services in LTC’s include syringes and needles exchange, condom distribution, health education and information, voluntary counselling and testing (VCT), social support and mediation, consultations of IDUs on available testing and treatment, referrals to the dependency treatment programs. In 2007, the number of collected/distributed syringes in the country was 187,227/271,248 (out of them 93,140/173,440 in Vilnius). Opiate substitution treatment is available in Vilnius, Kaunas, Klaipeda and Panevezys Centres for Addictive Disorders, and in 4 Mental Health Centres in Vilnius and 1 in Druskininkai. There are 16 long-term rehabilitation centres for drug users and 4 day care centres (3 in Kaunas, and 1 in Panevezys). Presently, a total of 17 centres of long-term rehabilitation operate in the country with an overall capacity of 300 places. In 2007, 457 people received services of social and psychological rehabilitation, including 430 people in long-term rehabilitation communities (Database of Drug Control Department under the Government of the Republic of Lithuania).

HIV and TB related health care services

Estonia

In Estonia, the cost of most health care services is covered through Estonian Health Insurance Fund. Every person who is officially working has national health insurance. In addition, all children under 19 years of age, all retired people, pregnant women (starting from the 12th week of pregnancy) and some other groups are covered by national health insurance. Approximately 96% of the total population has national health insurance (30.09.2007) (Database of Statistical Office of Estonia, Database of Estonian Health Insurance Fund).

HIV testing has been available in Estonia since 1987. HIV testing is voluntary and it may be performed only upon the person's informed consent. However, testing of donor blood and transplanted organs is obligatory (pursuant to the Communicable Diseases Prevention and Control Act). HIV testing is also recommended for all pregnant women, persons with sexually transmitted infections (STI) and TB patients. Anonymous VCT service is available in seven biggest towns. It is free of charge for all clients (including immigrants and foreigners and those who do not have national health insurance). Anonymous HIV counselling and testing centres (ACC) provide HIV and STI counselling and for HIV, HBV, HCV, and syphilis testing (Rüütel 2008). Altogether about 190,000 HIV tests are performed yearly, out of them approximately 3% in ACCs (Database of Estonian State Reference Laboratory of HIV Diagnostics).

Specific health care services for people with HIV are provided by infectious diseases specialists who see patients in 5 bigger cities. These services are covered through Estonian Health Insurance Fund for those who meet the criteria for insurance and through the state budget for those who do not have insurance. Highly active antiretroviral treatment (HAART) is provided in the same locations and is free of charge for all in need of it. At the end of 2007, 772 people were receiving HAART.

Health care services related to TB diagnostics and treatment are financed from the Estonian Health Insurance Fund and state budget (National TB Control Program operated by National Institute for Health Development). Directly observed treatment short course (DOTS) and DOTS plus have been implemented since 2000 and the coverage is 100%. There are 5 separate TB departments in Estonia with 230 beds, including 30 beds for compulsory treatment. There is one separate department for the prison system (40 beds). Every county (15) has their own Central Hospital which is responsible for TB treatment and some prophylactic activities (contact tracing) in the region. TB diagnostics and treatment for people with HIV are provided in the same departments. There have been no specific TB services for IDUs.

Hepatitis B and C diagnostics and treatment are provided by infectious diseases physicians and other specialists and these services are free of charge only for those people who have national health insurance.

Estonian prison system has its own health care services, which are covered through the Ministry of Justice. All health care services, including HIV testing, HAART and TB diagnostics and treatment are available in all prisons and are free of charge for all prisoners (Rüütel 2008).

Latvia

In Latvia, health care services are covered through Compulsory Health Insurance State Agency. In order to receive health care services free of charge people have to register to a family doctor. For the registration they need to have an official living place (declared living place).

Any medical institution in Latvia can provide HIV testing. The services financed and sustained by the state's health budget include HIV tests for laboratories within surveillance network (free of charge for patients). Pre- and post-test counselling on the other hand is not free of charge for patients. Services provided by laboratories which are not part of surveillance network and private laboratories can be paid partly by the state's health budget. According to the Law on Treatment, the Cabinet of Ministers determines standards for safety and quality for obtaining, testing, processing, storing and distributing human blood and its components – all blood from donors should be tested for HIV. As well it is obligation of maternity service providers to offer VCT to all women during the first 12 weeks of pregnancy. Prophylactic antiretroviral (ARV) treatment for HIV infected women during the pregnancy as well as for their newborns is available free of charge (Regulation of the Cabinet of Ministers No 611, 07.25.2006).

For IDUs HIV testing (HIV test and related counselling) is free of charge only in LTCs (2 sites in Riga).

State agency „Infectology Center of Latvia" is responsible for the care and treatment of people with HIV, therefore the treatment and care is centralized. HIV-positive patients can receive HAART even if they do not have family doctor. So, ARV treatment does not depend on registering with a family doctor. At the end of 2007 a total 381 patients were on HAART (out of 2,675 HIV/AIDS patients).

Latvia has established management of the national TB control programme with multidisciplinary qualified personnel setting the policy for TB control. Latvia adopted the DOTS strategy in 1996 and subsequently introduced MDR-TB management in 1998 with 100% coverage. There are 26 regions in Latvia and five of them (Riga, Liepaja, Daugavpils, Rezekne, Jekabpils) have their own TB hospital with ambulatory departments. For other 21 regions there is a TB cabinet included in general health care system. Totally there are 9 TB hospitals with 945 TB beds in Latvia (including 80 beds for prison system and 65 beds in mental health hospital Strenci, hospital "Ceplisi" for compulsory treatment and for alcohol and drug addicts, hospital "Lielberze" for multidrug resistant TB). TB diagnostics and treatment for HIV infected people are provided in the same TB departments (hospitals and cabinets). TB services are free of charge for citizens and EU members according to the state legislation. A pilot project for distributing syringes and needles to

TB patients/IDUs was started in the year 2007 in Riga in both DOT centres.

Hepatitis B and C diagnostics and treatment in Latvia is provided free of charge only by those practitioners of medicine who are in contractual relations with the Health Compulsory Insurance State Agency. Hepatitis B vaccination has been free of charge for all infants since 1997 and for 14-year-old adolescents who haven't received vaccination in the past since 2006. According to the law, employers should ensure vaccination against hepatitis B for employees who regularly (at least once a month) come into direct contact with patients or human biological materials that may contain or transfer virus hepatitis B, or with objects contaminated with such materials, while performing their work duties or during studies. There are no special vaccination programs for IDUs in Latvia.

Latvian prison system has its own health care services, which are covered by the Ministry of Justice (except medicaments for treatment of TB and HIV/AIDS, which are paid from the State budget funds foreseen for health care) (Latvias Association for Family Planning and Sexual Health "Papardes zieds" 2008).

Lithuania

Testing for HIV is available in all districts of Lithuania. In 2007, HIV testing rates were 4,495 per 100,000 population (Database of Lithuanian AIDS centre, 2008). The number of laboratories with HIV testing services is increasing steadily every year. HIV confirmative test is carried out in the National Virology Laboratory of Lithuanian AIDS Centre.

VCT is free of charge for IDUs in LTCs (VCT costs are paid from the special municipalities prevention programmes) and Drug Addiction Treatment Centres in different districts (VCT costs are paid from budget of the Compulsory Health Insurance Fund) (Strujeva 2007).

Since 2007, medical examination of pregnant women has been regulated by Order No. V-1135 of 29 December 2006 of the Minister of Health regarding screening of pregnant women, according to which women are being tested for HIV twice during the period of their pregnancy — before the 12th week of pregnancy and during weeks 29–40. VCT costs are paid from the budget of the Compulsory Health Insurance Fund.

National institution responsible for the HIV/AIDS/STI epidemiological surveillance is Lithuanian AIDS Centre under the Ministry of Health.

Health care services for people with HIV. Patients, diagnosed with HIV/AIDS, are covered with the Compulsory Health Insurance Fund. Starting from 1998, HAART is accessible for all who need it. There are no exclusion criteria for HAART treatment. No co-payment for ARV drugs is requested from the patients. In 2004, the order of compensatory HIV diagnosis and treatment methodology from Compulsory Health Insurance Fund was endorsed by the Ministry of Health of the Republic of Lithuania not only for individuals suffering from AIDS but also for those with high risks of disease progression (Act Nr. V 313/2004). Treatment of opportunistic infections is not fully covered by the Patients State Fund. HIV infected patients may choose a health care centre according to his/her location. Private health care is also available, but the service costs are rather high and only affordable to a limited number of patients.

TB control strategy is outlined in the National Tuberculosis Prevention and Control Program 2007–2010 approved by the Government of the Republic of Lithuania on May 23, 2007. At the end of 2007, there were 9 specialised tuberculosis hospitals and 6 specialised tuberculosis polyclinics in Lithuania. General practitioners (family doctors), internists or paediatricians are expected to set primary diagnosis of tuberculosis and refer a patient for specialist (physical therapists, pulmonologists) consultation according to the approved algorithm, as well as to organise the treatment of TB patients referred to them by the specialists. HIV testing of TB patients is routine (both newly diagnosed TB cases, relapse cases, and MDR-TB cases). 55% of TB cases have undergone HIV testing in 2005 (Database of Lithuanian AIDS centre and Lithuanian TB register). HIV positive patients attending HIV care and treatment facilities are screened for TB symptoms. If patient is suspected to have TB they are referred to the special TB clinic.

STUDY RATIONALE AND OBJECTIVES

The main aim of the study was to evaluate the prevalence of HIV, HBV, HCV, syphilis markers and tuberculosis infection and related risk behaviours among injecting drug users in Riga (Latvia), Vilnius (Lithuania), and Tallinn (Estonia).

Specific objectives

1) To assess the prevalence of HIV, HBV, HCV infections and syphilis markers among IDUs.
2) To identify risk factors related to HIV infection (sexual behaviour, knowledge on HIV transmission, drug use patterns, socioeconomic status, etc).
3) To collect data from IDUs about their contacts with harm-reduction programs, drug-addiction and other health-care services, and imprisonment.
4) To assess the prevalence of M. tuberculosis (MTB) infection markers among IDUs.

Ethical committee approval

The study was approved by the following Research Ethics Committees
1) Tallinn – Tallinn Medical Research Ethics Committee
2) Riga – Ethics Committee of the State Agency of Tuberculosis and Lung Diseases
3) Vilnius – Lithuanian Bioethics Committee

METHODS

A cross-sectional anonymous survey of current IDUs recruited using principles of respondent driven sampling was carried out in capital cities of Estonia, Latvia and Lithuania in 2007.

RECRUITMENT

1. Recruitment sites

Recruitment of the participants, interviewing and blood sample collection took place:
1) in Tallinn in the premises of NGO Convictus Eesti (a syringe exchange program);
2) in Riga in the premises of AIDS Consultation Cabinet of the Public Health Agency and NGO DIA+LOGS;
3) In Vilnius in the premises of harm reduction cabinet of the Lithuanian AIDS Centre.

2. Eligibility criteria

IDUs were eligible for the study if they
1) spoke Estonian, Latvian, Lithuanian, or Russian,
2) were 18 years of age or older,
3) had used injection drugs in the last two months,
4) were capable of providing informed consent,
5) had not been previously interviewed on this study.

To ensure that respondents were active IDUs, their skin was checked for injection marks and/or they were asked to describe the process of preparing drugs for injection.

3. Recruitment strategy

In order to obtain broad coverage of drug users and reduce the bias associated with recruitment from treatment/preventive programs only, respondent driven sampling (RDS) approach was used to recruit subjects for the survey. RDS is a chain-referral method that yields more representative samples of target populations. For hidden populations this method is particularly useful, because there is no sampling frame, as the size and boundaries of the populations is not known. Previous studies have shown the usefulness of RDS to recruit IDUs (Heckathorn 1997, 2001, 2002). RDS seeds were carefully selected to represent the demographic profile and socially and geographically diverse injecting networks of IDUs in Riga, Tallinn and Vilnius.

Number of seeds selected was:
1) Tallinn 6
2) Riga 8 (4 in both sites)
3) Vilnius 6

See key features of the seeds in Appendix.

To avoid subject duplication biometric measures of each respondent were taken (perimeter of each wrist and length of each forearm from elbow to middle finger), and personal characteristics were noted (gender, ethnicity, age). The field work supervisor was responsible for collating these data on individuals, checking the data on a daily basis to ensure that no duplicates are included in the sampling.

4. Incentives for study participation

A dual system of recruitment incentives was used in the study – a primary incentive for being interviewed and secondary incentives for recruiting peers. Every participant had an opportunity to invite maximum three peers.

The primary incentive was given right after participation and the secondary incentives after the invited peers had participated. Secondary incentives were implemented through recruitment coupons and the participant had to come back to the study site for their secondary incentives.

1) In Tallinn, participants received a food voucher for supermarket with the value of 6.4 EUR (100 EEK) as an incentive for participating and with the value of 3.2 EUR (50 EEK) for inviting one peer to the study. Thus, the maximum overall benefit from participation was 16 EUR (250 EEK).

2) In Riga, participants received a gift voucher for supermarket with the value of 7 EUR (5 LVL) as an incentive for participating and with the same value for inviting one peer to the study. Thus, the maximum overall benefit from participation was 28 EUR (20 LVL). If a respondent who was tested TB positive during the research went to the State Agency of Tuberculosis and Lung Diseases for further investigations, he received again a token of 7 EUR (5 LVL).

3) In Vilnius, participants received a food voucher for supermarket with the value of 5.4 EUR (20 LT) as an incentive for participating and the same value for inviting one peer to the study. Thus, the maximum overall benefit from participation was 21.6 EUR (80 LT).

5. Number of participants recruited

1) Tallinn — 350
2) Riga — 407
3) Vilnius — 400

6. Data collection period

Data collection took place:
1) In Tallinn in May — June 2007
2) In Riga in September — December 2007
3) In Vilnius in October 2007 — January 2008

MEASUREMENTS

1. Behavioural data

The interviewers used structured questionnaire to collect behavioural data. The questionnaire was based on WHO, Drug injecting study phase II survey version 2b (rev. 2) (Des Jarlais 2006). Information gathered during Rapid Assessment on October 12–13, 2006 was used to adjust the instrument for the local conditions. To make space for new material, some previous sections were eliminated or reduced in length in order to avoid too long new questionnaire.

The adjusted questionnaire was piloted among local IDUs in Estonia.

The questionnaire domains included:

- Eligibility criteria, interview and recruitment information (Section A);
- Demographic and socioeconomic characteristics (Section B);
- History and recent injection drug use (Sections D and F);
- HIV risk practices associated with injecting drugs (Section E and M);
- Contacts with police and imprisonment information (Section C);
- Sexual behaviour, history of sex work (Section H);
- Previous HIV testing, reported HIV antibody status (Sections K and L);
- Drug treatment history (Section C);
- AIDS knowledge and behaviour change (Section J);
- Contacts with the services for HIV prevention and harm reduction (Section M).

The interview lasted about 40 minutes and was available in Latvian, Estonian, Lithuanian, and Russian.

2. Biological markers

Whole venous blood specimens were collected from all participants for HIV, HBV, HCV and tuberculosis infection markers detection.

Laboratory testing was done with using the following methods:

1) HIV antibodies

- in Riga – Vironostika HIV Uniform II Ag/Ab, BioMerieux and Genscreen Plus HIV Ag Ab, BioRad, France; all positive cases were confirmed with the same test systems (second analysis)
- in Tallinn – VIRONOSTIKA HIV Uniform II Ag/Ab, BioMerieux; positive cases were confirmed with INNO LIA HIV I/II Score Westernblot
- in Vilnius – VIRONOSTIKA HIV Uniform II Ag/Ab, BioMerieux; positive cases were confirmed with INNO LIA HIV I/II Score Westernblot

2) HBV

a) HBV surface antigen

- In Riga – ETI-MAK-4 HBsAg; DiaSorin, ASV-Italy or AxSYM system HBs Ag (V2); ABBOTT, USA

- In Tallinn – ETI-MAK-4 HBsAg; DiaSorin, ASV-Italy

b) anti-HBc antibodies

- in Riga – Enzygnost Anti-HBc monoclonal; DADE Behring, Germany, or AxSYM system CORE; ABBOTT, USA
- in Tallinn – ETI-AB-COREK Plus (anti-HBc core), DiaSorin
- in Vilnius – Monolisa anti-HBc plus; Bio-Rad, France

3) HCV

- in Riga – MONOLISA anti-HCV PLUS version 2.; BIORAD, France or AxSYM system HCV version 3.0.; ABBOTT, USA
- in Tallinn – ETI-AB-HCVK-3 (anti-HCV), DiaSorin
- in Vilnius – Ortho HCV 3.0 ELISA; Ortho Clinical Diagnostics, USA

4) Syphilis (RPR)

- in Riga – RPR method
- in Tallinn – RPR method
- in Vilnius – RPR method

5) Tuberculosis. For assessing infection of M. tuberculosis:

- in Riga - QuantiFERON-TB Gold, Cellestis Europe
- in Tallinn - QuantiFERON-TB Gold, Cellestis Europe
- in Vilnius all participants were tested for TB IgG (Panthozyme MYCO IgG; Omega Diagnostics Ltd, UK). Those who were TB IgG positive were tested again with QuantiFERON-TB Gold.

DATA MANAGEMENT AND ANALYSIS

The interviewers filled questionnaires during the interviews, and checked them immediately after the interview. Completed questionnaires were collected, checked and reviewed for inaccuracies by supervisors on a daily basis.

All data was entered twice and the data sets were compared to detect and correct any data entry errors. Cleaned data set was allocated for additional simple range checks to ensure quality of the data.

Statistical analysis was performed with SPSS 14.0 or 16.0 for Windows or with STATA 10.0.

RESULTS

Sociodemographic characteristics

Gender and age

Mean age of the participants in Tallinn (26.5 years) was somewhat lower than in Riga and Vilnius (29.9 and 30.5 years respectively) (table 3).

Proportion of men among study participants was significantly lower in Riga (70%, 95% CI 66–75%) compared to Vilnius (82%; 95% CI 79–86%) and Tallinn (84%; 95% CI 80–88%) (table 4).

Table 3. Age distribution by country

	TALLINN (n=350)		RIGA (n=407)		VILNIUS (n=400)	
Age group	**n**	**%**	**n**	**%**	**n**	**%**
≤19	26	7.4	27	6.6	9	2.3
20–24	109	31.2	95	23.3	63	15.7
25–29	125	35.7	111	27.3	135	33.7
≥30	90	25.7	174	42.8	193	48.3
mean age (min and max)	26.5 (17–54)		29.9 (17–55)		30.5 (18–57)	
median age	26.0		28.0		29.0	

Table 4. Gender distribution by country

	TALLINN (n=350)		RIGA (n=407)		VILNIUS (n=400)	
Gender	**n**	**%**	**n**	**%**	**n**	**%**
male	294	84.0	286	70.3	329	82.3
female	56	16.0	121	29.7	71	17.7

Ethnicity

The proportion of non-ethnic people was highest in Tallinn (85% of participants were non-ethnic Estonians) and lowest in Vilnius (57% of participants were non-ethnic Lithuanians) (table 5). In Lithuania, the most common representatives of other nationalities were Polish (n=75), Byelorussians (n=7), and Gipsies (n=6). In Tallinn, the most common representatives of other nationalities were Ukrainians (n=5), and in Riga Ukrainians (n=8), Byelorussians (n=6) and Polish (n=5).

Table 5. Ethnic distribution by country

	TALLINN (n=350)		RIGA (n=407)		VILNIUS (n=400)	
Ethnicity	**n**	**%**	**n**	**%**	**n**	**%**
Russian	286	81.7	217	53.3	130	32.5
Estonian/Latvian/Lithuanian	53	15.2	159	39.1	173	43.3
other	11	3.1	31	7.6	96	24.0

Education

Less than 9 years of education was reported by the 35% of the participants in Riga, 36% of the participants in Vilnius, and 53% of the participants in Tallinn (table 6).

Table 6. Education of the participants (highest level of formal education) by country

	TALLINN (n=349)		RIGA (n=394)		VILNIUS (n=400)	
Education	**n**	**%**	**n**	**%**	**n**	**%**
basic education	186	53.3	136	34.5	177	44.3
secondary education	88	25.2	167	42.4	172	43.0
vocational education	67	19.2	75	19.0	43	10.7
higher education	8	2.3	16	4.1	8	2.0

Income

For 24% of the participants in Vilnius, 54% of the participants in Tallinn, and 73% of the participants in Riga regular or temporary job had been the main source of income during the last 4 weeks (table 7). Street begging and sex work were very rare sources of income reported. For 5% of the participants in Riga, 32% of the participants in Tallinn, and 38% of the participants in Vilnius theft, robbing, or stealing had been the main source of income during the last 4 weeks (table 7).

Table 7. Sources of income by country

	TALLINN (n=350)		RIGA (n=407)		VILNIUS (n=400)	
Source of money for living	**n**	**%**	**n**	**%**	**n**	**%**
regular job	92	26.3	140	34.4	41	10.3
temporary work	95	27.2	156	38.3	54	13.5
self-employed	-	-	6	1.5	3	0.8
government benefits	18	5.1	29	7.1	78	19.5
spouse's, partner's, relative's, or friend's income	13	3.7	37	9.1	28	7.0
student financial aid/loans/grants	-	-	1	0.2	1	0.3
street begging/panhandling etc	2	0.6	2	0.5	1	0.3
selling drugs	2	0.6	-	-	0	-
sex for money	-	-	-	-	13	3.2
theft, robbing, or stealing	112	32.0	19	4.7	153	38.2
parents'/parent's income	12	3.4	14	3.4	27	6.7

Marital status

At least half of the participants in all three countries were single and had never been married (table 8). 4.6% of the participants in Tallinn, 8.5% of the participants in Vilnius and 9.7% of the participants in Riga were legally married at the time of the study (table 8).

Table 8. Marital status by country

	TALLINN (n=347)		RIGA (n=402)		VILNIUS (n=400)	
Marital status	**n**	**%**	**n**	**%**	**n**	**%**
legally married	16	4.6	39	9.7	34	8.5
living as married	64	18.4	109	27.1	54	13.5
widowed	9	2.6	5	1.2	2	0.5
separated	10	2.9	44	10.9	9	2.3
divorced	1	0.3	5	1.2	46	11.5
never married/single	247	71.2	200	49.9	255	63.7

Place of living

Majority of the respondents (90% in Vilnius, 91% in Tallinn, 96% in Riga) lived either in the house or apartment they owned or rented, and 0.7% in Riga, 3% in Tallinn and 6% in Vilnius had no living place (no fixed address) (table 9).

Table 9. Main place of living in last 6 months

	TALLINN (n=350)		RIGA (n=406)		VILNIUS (n=390)	
Main place of living	**n**	**%**	**n**	**%**	**n**	**%**
own house, flat, or apartment	52	14.8	134	33.0	63	15.7
rented house, flat, apartment, or room	68	19.4	124	30.6	31	7.7
room rented on a daily basis or rooming house	3	0.9	3	0.7	1	0.3
someone else's house flat or apartment	200	57.1	130	32.0	266	66.5
shelter, welfare residence	9	2.6	2	0.5	6	1.5
no fixed address	9	2.6	3	0.7	22	5.5
jail/prison	2	0.6	4	1.0	1	0.3
other	7	2.0	6	1.5	-	-

Drug use and injection drug use

Initiation of illicit drug use

71% of participants in Riga, 68% in Tallinn and 43% of participants in Vilnius have used illicit drugs by other means of administration besides injecting before they started injecting (table 10). Mean age at the initiation of illicit drug use preceding injection drug use was:

- Tallinn — 16.3 years (range 9–40 years; median age 16.0 years)
- Riga — 17.3 years (range 8–36 years; median age 16.0 years)
- Vilnius — 17.4 years (range 12–27 years; median age 17.0 years)

Table 10. Illicit drug use (for non-medical purposes) by other means of administration preceding injection drug use by country

	TALLINN (n=350)		RIGA (n=407)		VILNIUS (n=388)	
	n	**%**	**n**	**%**	**n**	**%**
illicit drug use by other means of administration	238	68.0	290	71.3	166	42.8

Mean age at initiation of illicit drug injection is shown in table 11.

Table 11. Mean age when first injected drugs for non-medical purposes by country

	TALLINN	RIGA	VILNIUS
mean age	18.7	20.2	20
range	10–42	12–40	12–36
median age	18.0	19.0	19.0

Table 12. Duration of injecting drug use (years) by country

	TALLINN (n=350)		RIGA (n=401)		VILNIUS (n=400)	
Duration of injecting drug use (years)	**n**	**%**	**n**	**%**	**n**	**%**
<3	38	10.9	67	16.7	18	4.5
3–5	64	18.3	56	13.9	37	9.3
6–10	158	45.1	143	35.7	171	42.8
>10	90	25.7	135	33.7	174	43.5
mean duration (years, SD)	7.9 (SD 4.4)		9.7 (SD 7.6)		10.4 (SD 5.0)	

In Riga, females were more likely to report shorter injecting duration (less than 3 years) than males (p<0.006). In Tallinn, there were no gender differences in injection duration.

Frequency of injection and drugs injected

Not all people inject drugs daily. The average number of days in last four weeks when participants injected drugs was:

- 27.3 days in Vilnius (range 4–30 days, median 30 days);
- 22.1 days in Tallinn (range 1–28 days, median 28 days);
- 12.7 days in Riga (range 0–31 days, median 10 days).

The proportion of those who injected daily in last 4 weeks was:

- in Tallinn 60.7% (95% CI 55.5–65.9)
- in Riga 27.1% (95% CI 22.6–31.6)
- in Vilnius 76.3 (95% CI 70.7–78.9)

The average number of times injected the last day (when participants injected drugs) was:

- 3.2 in Tallinn (range 1–15; median 3.0);
- 2.1 in Vilnius (range 1–3; median 2.0);
- 1.8 in Riga (range 0–8; median 2.0).

The main drugs injected by participants in Tallinn were synthetic opioids, specifically fentanyl or 3 methyl-fentanyl which was used by 72% of participants (table 13). There were no fentanyl-injectors in Riga and Vilnius. In Riga, the main drug injected was heroin (45% of participants), which was closely followed by amphetamine (44% of participants). In Vilnius, the main drugs injected were poppies (58%) and heroin (32%).

Table 13. Main drug injected in last four weeks by country

	TALLINN (n=344)		RIGA (n=385)		VILNIUS (n=397)	
Main drug	**n**	**%**	**n**	**%**	**n**	**%**
heroin	4	1.2	173	44.9	128	32.2
China White (fentanyl) or White Persian (3-methyl-fentanyl)	249	72.4	-	-	-	-
amphetamine	90	26.1	169	43.9	35	8.8
hanka/poppy*	-	-	20	5.2	231	57.8
cocaine	-	-	1	0.3	-	-
sudafed	1	0.3	-	-	3	0.8
ephedrine	-	-	22	5.7	-	-

* liquid derivate of opium poppy straw

In Tallinn, people younger than 20 years of age were more likely to report amphetamine injection than those 20 years old and older (p<0.001). The similar trend appeared also in Latvia — people younger than 20 years of age were more likely to report amphetamine injection than those 20 years old and older (p=0.02). The older age group was more likely to use heroin.

In Riga, differences where observed also in drugs injected based on gender — females were more likely to use amphetamine than males (p=0.03) and males reported more likely heroin use. In Tallinn, there were no differences in the drugs injected based on gender. There were no differences in the main drugs injected based on gender and age in Lithuania.

In Riga, amphetamine users were more likely to report shorter injecting duration (less than 3 years) compared to heroin users (p<0.001). Similarly, in Tallinn amphetamine users were more likely to report shorter injecting duration (less than 3 years) than fentanyl users (p<0.02).

Injection risk behaviour

Sharing injecting paraphernalia

31% of participants in Riga, 25% in Tallinn and 2% in Vilnius reported sharing syringes and/or needles in last four weeks (table 14).

Table 14. Receptive sharing of syringes/needles within last four weeks by country

	TALLINN (n=350)		RIGA (n=407)		VILNIUS (n=400)	
	n	**%**	**n**	**%**	**n**	**%**
proportion of people who had shared syringes/needles	88	25.1	124	30.5	8	2.0

HIV and hepatitis B and C are transmitted also through sharing other injecting paraphernalia besides syringes and needles. For example, in Tallinn, 21% reported front loading/back loading/splitting; 17% reported sharing a cooker/vial/container; 9% reported sharing filter/cotton; 24% reported sharing blending utensils. All in all 58% of participants (out of all participants) reported sharing at least one of the mentioned items (table 15). In Riga, 54% of participants reported sharing at least one of the mentioned items (table 15).

Table 15. Sharing injecting paraphernalia in last four weeks by country (proportion, %)

ITEM	TALLINN (n=350)	RIGA (n=407)	VILNIUS (n=400)
syringes/needles	25.1	30.5	2.0
front loading/back loading/splitting	21.1	16.0	2.5
cooker/vial/container	17.1	44.7	2.0
filter/cotton	9.4	30.5	2.3
blending utensils	23.7	39.3	2.5
any combination of the previous	58.1	53.8	2.0

The proportion of those who reported sharing syringes within last six months was:

- 45.2% in Riga (n=184);
- 35.4% in Tallinn (n=124);
- 5% in Vilnius (n=20).

During the first injection 24% of participants in Riga (92 people out of 384), 13% in Tallinn (40 people out of 325), and 6% in Vilnius reported using sterile syringes/needles during the first injection (23 people out of 400).

Sources of shared needles within last 6 months are shown in table 16 and the reasons for sharing in table 17. The main source of shared syringes in all three countries was a close friend and the main reasons for sharing were not having syringes themselves and choosing carefully with whom syringes are shared with.

Table 16. Sources of shared needles within last 6 months (among those who report sharing syringes/needles within last 6 months) by country

	TALLINN (n=124)		RIGA (n=184)		VILNIUS (n=20)	
Source of shared needles/syringes	**n**	**%**	**n**	**%**	**n**	**%**
a regular sex partner	46	37.7	56	30.4	0	0
a relative	8	6.6	17	9.2	5	25,0
a close friend	78	63.9	103	56.0	15	75,0
a dealer	8	6.6	15	8.2	13	65,0
someone else they did not know well	42	34.4	32	17.4	11	55,0

Table 17. Reasons for sharing needles (among those who report sharing syringes/needles within last 6 months) by country

	TALLINN (n=123)		RIGA (n=184)		VILNIUS (n=20)	
Reason	**n**	**%**	**n**	**%**	**n**	**%**
other drug users put pressure on me	4	3.3	2	1.1	2	10
I thought it was safe because I cleaned the needle/syringe	53	43.1	59	32.1	9	45
I am careful whom I share needle/ syringe with	93	75.6	92	50.0	8	40
I was in prison	25	20.3	20	10.9	2	10
I didn't have my own needles and/or syringes	107	87.0	134	72.8	7	35
needles and/or syringes are hard to get	24	19.5	22	12.0	-	-
needles and/or syringes are expensive	25	20.3	8	4.3	-	-

Overdoses

44% of participants in Riga, 48% in Vilnius and 63% in Tallinn reported ever having an overdose of injection drugs. The number of overdoses is shown in table 18. The higher number of overdoses in Tallinn can be related to the use of fentanyl, which is easier to overdose because its effect is stronger.

Table 18. Number of overdoses (among those who have ever had an overdose) by country

	TALLINN (n=222)		RIGA (n=174)		VILNIUS (n=190)	
	n	%	n	%	n	%
once	43	19.4	57	32.8	63	33,2
twice	42	18.9	45	25.9	69	36.3
3–5 times	80	36.0	56	32.2	49	25.8
6–10 times	27	12.2	8	4.6	6	3.2

Utilization of prevention, harm reduction and health care services

Sources of sterile needles

The main source of new and sterile syringes and needles in last six months in Tallinn was syringe exchange program (for 42% of participants) and pharmacy in Riga (87%) and in Vilnius (61%) (table 19).

Table 19. The main source of new needles and/or syringes in last 6 months by country

	TALLINN (n=344)		RIGA (n=392)		VILNIUS (n=244)	
Main source	n	%	n	%	n	%
pharmacist/chemist	133	38.7	341	87.0	148	60.7
hospital	-	-	1	0.3	-	-
outreach worker or street unit	50	14.5	14	3.6	30	12.3
sex partner	-	-	1	0.3	1	0.4
family member, not a sex partner	1	0.3	-	-	-	-
friends	14	4.1	2	0.5	-	-
drug dealer	1	0.3	-	-	15	6.1
needle/syringe exchange program	145	42.1	33	8.4	50	20.5

Syringe exchange programs

In Riga, 43% of participants reported using syringe exchange program in their lifetime, in Tallinn 82%, and in Vilnius 98% of participants.

In Tallinn, people who had injected drugs less than 3 years were less likely to report ever visiting syringe exchange program than those with longer duration of injecting (p=0.004). People who reported fentanyl as their main drug had also more likely visited SEP than those whose main drug was amphetamine (p=0.008). There were no significant differences based on gender and age.

In Riga, people who had injected drugs less than 3 years were less likely to report ever visiting syringe exchange program than those with longer duration of injecting (p=0.04). People who reported heroin as their main drug had more likely visited SEP than those whose main drug was amphetamine (p=0.009). There were no significant differences based on gender and age.

Drug abuse treatment

In Tallinn, 39% (n=136) of participants have been on drug treatment at least once in their lifetime, in Riga 41% (n=165), and in Vilnius 55% (n=220) of participants. At the time of the study, 16% of participants in Tallinn (n=22) were on some kind of drug treatment (proportion of those who have ever had a drug treatment). In Riga and in Vilnius, these figures were 18% (n=30) and 23% (n=51) respectively.

Current treatment types are shown in table 20.

Table 20. Current treatment type by country (n)

TREATMENT TYPE	TALLINN (n=22)	RIGA (n=30)	VILNIUS (n=51)
non medical treatment (outpatient counselling/ psychotherapy)	1	7	5
short-term detoxification (methadone/ buprenorphine)	10	4	1
long-term detoxification (methadone/ buprenorphine)	9	11	45
rehabilitation with stationary treatment	-	2	-
self-support/support groups	-	1	-

Coverage with health insurance

In Riga, health care services are covered through Compulsory Health Insurance State Agency. In order to receive health care services free of charge people have to register to a family doctor. For the registration, they need to have an official living place (declared living place). In our study sample, 78% of the surveyed IDUs had a family doctor and were eligible for free of charge health care services.

In Tallinn, the costs of most health care services are covered through Estonian Health Insurance Fund. Every person who is officially working has national health insurance. In addition, all children under 19 years of age, all retired people, pregnant women (starting from the 12th week of pregnancy) and some other groups are covered with national health insurance. Approximately 96% of the total population has national health insurance. In our study sample, 43% of the surveyed IDUs had national health insurance.

In Vilnius, 35% of the surveyed IDUs were covered with national health insurance. The Lithuanian Law on Health System indicates groups of patients that are entitled for the state guaranteed free health care services, including: persons with TB, STIs and alcohol and drug addiction and other diseases from the list determined by the Ministry of Health. The Law on Health Insurance lists groups of persons who are insured with the state finances. Among these are: persons having communicable diseases dangerous for society, being included into the list (HIV is the first on the list) is determined by the Ministry of Health.

Imprisonment

The proportion of those participants who had ever been in jail or prison was 71% in Vilnius (n=283), 58% in Tallinn (n=204) and 45% in Riga (n=184). Out of those who had been in prison, 27% in Vilnius, 44% in Riga and 45% in Tallinn reported injecting drugs in prison.

Sexual behaviour and sexual risk behaviour

The vast majority of participants were heterosexual (table 21). 73% (n=256) of participants in Tallinn, 81% (n=331) in Riga, and 87% (n=349) in Vilnius had been sexually active in last 6 months (vaginal, anal or oral sex). The number of sexual partners in last 12 months is presented in table 22.

Table 21. Sexual orientation by country

	TALLINN (n=341)		RIGA (n=381)		VILNIUS (n=392)	
Sexual orientation	n	%	n	%	n	%
heterosexual	333	97.7	353	92.7	389	99.2
homosexual (gay or lesbian)	3	0.9	2	0.5	3	0.8
bisexual	8	2.4	26	6.8	0	0

Table 22. Number of sexual partners in last 12 months by country

	TALLINN (n=347)		RIGA (n=376)		VILNIUS (n=390)	
Number of partners	n	%	n	%	n	%
no intercourse	69	19.9	36	9.6	51	13.1
1 partner	122	35.2	179	47.6	200	51.3
2 or more partners	156	44.9	161	42.8	139	35.6

Primary partners

Tables 23–25 present data on the number of primary partners, condom use during sex with primary partners, and known HIV/hepatitis status of primary partners.

Table 23. Number of primary partners in last six months (among those who have had sexual intercourse in last 6 months) by

	TALLINN (n=256)		RIGA (n=286)		VILNIUS (n=189)	
Number of partners	n	%	n	%	n	%
no primary partners	84	32.8	4	1.4	0	0
1 partner	142	55.5	215	75.2	173	91.5
2 or more partners	30	11.7	67	23.4	16	8.5

Table 24. How often was condom used with primary sex partner(s) in last six months (among those who have had sexual intercourse with primary partner(s) in last 6 months) by country

	TALLINN (n=172)		RIGA (n=282)		VILNIUS (n=189)	
Frequency of condom use	n	%	n	%	n	%
always	57	33.1	55	19.5	20	10.6
not always	115	66.9	72	25.5	15	7.9
never	-	-	155	55.0	154	81.5

Table 25. Primary partners who have HIV or hepatitis (among those who have had sexual intercourse with primary partner(s) in last 6 months) by country

	TALLINN		RIGA		VILNIUS	
	n	%	n	%	n	%
infected with HIV	50 (out of 166)	30.1	30 (out of 269)	11.2	11 (out of 189)	5.8
infected with hepatitis	46 (out of 152)	30.3	67 (out of 269)	24.9	65 (out of 189)	34.4

Casual partners

Tables 26–28 present data on the number of casual partners, condom use during sex with casual partners, and known HIV/hepatitis status of casual partners.

Table 26. Number of casual partners in last 6 months (among those who have had sexual intercourse in last 6 months) by country

	TALLINN (n=252)		RIGA (n=105)		VILNIUS (n=349)	
Number of partners	n	%	n	%	n	%
no casual partners	122	48.4	2	1.9	130	37.2
1 partner	29	11.5	22	21.0	39	11.2
2 or more partners	101	40.1	81	77.1	180	51.6

Table 27. How often was condom used with casual sex partner(s) in last six months (among those who have had sexual intercourse with casual partner(s) in last 6 months) by country

	TALLINN (n=133)		RIGA (n=103)		VILNIUS (n=219)	
Frequency of condom use	n	%	n	%	n	%
always	79	59.4	49	47.6	23	10.5
not always	54	40.6	21	20.4	112	51.5
never	-	-	33	32.0	84	38.4

Table 28. Casual partners who have HIV and/or hepatitis (among those who have had sexual intercourse with casual partner(s) in last 6 months) by country

	TALLINN		RIGA		VILNIUS	
	n	%	n	%	n	%
infected with HIV	36 (out of 130)	27.7	12 (out of 94)	12.8	4 (out of 219)	1.8
infected with hepatitis	29 (out of 125)	23.2	19 (out of 94)	20.2	142 (out of 219)	64.8

Sources of condoms

The main source for condoms was pharmacy in Riga and Vilnius and syringe exchange program in Tallinn (table 29).

Table 29. Main source of condoms last four weeks by country (among those who were sexually active in last 4 weeks)

	TALLINN (n=206)		RIGA (n=293)		VILNIUS (n=277)	
Main source	n	%	n	%	n	%
do not use condom	46	22.3	125	42.7	204	73.6
pharmacy	37	20.0	97	33.1	8	2.9
shop/kiosk	34	16.5	26	8.9	29	10.5
syringe exchange program	80	38.8	24	8.2	27	9.4
outreach worker	16	7.8	9	3.1	3	1
partner bought	3	1.5	12	4.1	6	2.2

Contraception use with main partner

48% of participants in Riga, 40% in Tallinn and 58% in Vilnius reported that they did not use any contraception method with their main partner (table 30). The main contraceptive method in all three countries was condom use.

Table 30. Contraception use with main partner (among those who have had sexual intercourse with primary partner(s) in last 6 months) by country

	TALLINN (n=172)		RIGA (n=282)		VILNIUS (n=189)	
Main method	n	%	n	%	n	%
none	69	40.1	134	47.5	110	58.2
condoms (male or female)	78	45.3	122	43.3	35	18.5
hormonal contraceptives	21	12.2	31	11.0	26	13.8
other	6	3.5	41	14.5	18	9.5

Sharing needles and syringes with sexual partners

2% (n=9) of participants in Vilnius, 13% in Tallinn (n=46), and 18% in Riga (n=60) reported sharing syringes and/or needles with sexual partners in last 6 months (out of all participants).

Sex work

5% of participants in Vilnius (n=19), 3% in Riga (n=13), and 2% in Tallinn (n=7) reported ever receiving money, drugs or any other commodities for sex.

In last four weeks, one person in all three countries reported receiving money or drugs for sex (among those who reported sex for money, etc.) once, and 17 people in Vilnius, 2 in Riga and 3 in Tallinn reported receiving money or drugs for sex more than once.

HIV/AIDS prevention knowledge

In Tallinn, 97% of participants (n=341); in Riga — 99% (n=401), and in Vilnius 99.8% (n=399) reported ever hearing about HIV or AIDS.

In table 31 data on answers for three most commonly asked questions on HIV transmission and prevention knowledge is presented.

Table 31. Proportion of people who have answered correctly questions about HIV and AIDS (among people who have heard about HIV and AIDS)

	TALLINN (n=341)		RIGA (n=401)		VILNIUS (n=399)	
	n	%	n	%	n	%
Can a person protect themselves from HIV by using a condom?	329	96.5	370	92.3	378	94.7
Do you think a person can be infected with HIV (the virus that causes AIDS) and look well?	329	96.5	380	94.8	378	94.7
Can a person be infected with HIV using a syringe somebody else has previously used?	338	99.1	391	97.5	380	95.2
Correct answer to all 3 questions	309	90.6	348	86.8	386	96.7

In table 32 possible ways of HIV transmission named by participants are listed by country.

Table 32. The ways that people can become infected with HIV (among people who have heard about HIV and AIDS)

HIV TRANSMISSION ROUTE	TALLINN (n=341)		RIGA (n=401)		VILNIUS (n=399)	
	n	%	n	%	n	%
don't know any	3	0.9	5	1.2	1	0.3
sharing needles and/or syringes	290	85.0	340	84.8	371	92.8
sharing other injecting equipment/drug solutions	183	53.7	299	74.6	183	45.8
having sex	270	79.2	358	89.3	253	63.3
having unprotected sex	193	56.6	282	70.3	95	23.8
contact with infected blood	115	33.7	298	74.3	225	56.3
transfusion of blood/blood products	42	12.3	245	61.1	55	13.5
perinatally, from mother to child	42	12.3	208	51.9	62	15.5

Proportion of those participants who believed that HIV treatment is effective was 50% in Tallinn, 46% in Vilnius, and 45% in Riga. Proportion of those participants who believed that they can get treatment if they got infected was lower — 35% in Tallinn, 41% in Vilnius, and 30% in Riga.

Infectious diseases

In table 33 the proportion of participants (by country) who report (self-reporting) ever having some infectious disease or sexually transmitted infection is presented.

Table 33. Proportion of those who have ever had any of the following infectious diseases by country (%):

INFECTION/DISEASE	TALLINN (n=350)	RIGA (n=407)	VILNIUS
Tuberculosis	2.0	8.1	7.5
Syphilis	2.3	3.9	ND
Gonorrhoea	4.9	8.4	ND
Genital herpes	1.7	3.4	ND
Chlamydia	4.0	4.2	ND
Hepatitis	54.1	31.9	ND
HIV	34.6	15.1	ND

Previous HIV testing and counselling

The majority of participants in all three countries have been tested for HIV at least once in a lifetime (table 34). Out of those who have been tested for HIV more than half of the participants in Riga and Tallinn report receiving both pre- and post-test counselling (table 35).

Table 34. Proportion of those who reported testing for HIV during the lifetime and in last 12 months by country (out of all participants)

	TALLINN		RIGA		VILNIUS	
	n	%	n	%	n	%
HIV testing ever	297	84.6	292	71.7	379	94.8
HIV testing in last 12 months	199	56.9	180	44.2	290	72.5

Table 35. Pre- and post-test counselling (out of those who have been tested for HIV)

	TALLINN (n=296)		RIGA (n=290)		VILNIUS (n=379)	
	n	%	n	%	n	%
no	46	15.5	85	29.3	54	14.2
pre test counselling	63	21.3	41	14.1	31	8.2
post test counselling	12	4.1	5	1.7	10	2.6
pre and post test counselling	175	59.1	159	54.9	284	74.9

The results of the last HIV test are presented in table 36 (self-reporting).

Table 36. The proportion of people whose result of the last HIV test was positive (out of those who have been tested for HIV) by country (self-reporting)

	TALLINN (n=297)		RIGA (n=292)		VILNIUS (n=379)	
	n	%	n	%	n	%
People whose last HIV test was positive	121	40.7	44	15.1	24	6.3

Previous hepatitis B and C testing

Many participants have also been tested for hepatitis B (HBV) and C (HCV) serologic markers at least once during their life (table 37). The proportion is especially high in Vilnius where more than 80% of participants have been tested for both HBV and HCV.

Table 37. Proportion of those who reported testing for hepatitis B and C during lifetime and in last 12 months by country (out of all participants)

	TALLINN (n=350)		RIGA (n=407)		VILNIUS (n=400)	
	n	%	n	%	n	%
HBV test ever	230	65.7	195	47.9	339	84.8
HBV test in last 12 months	128	36.6	85	20.9	306	76.7
HCV test	226	64.6	212	52.1	361	90.3
HCV test in last 12 months	129	36.9	98	24.0	177	44.4

Table 38. The proportion of people whose results of the last HBV and HCV tests were positive (out of those who have been tested for HBV and HCV) by country

	TALLINN		RIGA		VILNIUS	
	n	%	n	%	n	%
Positive HBV test	114	49.6	51	26.2	32	9.4
Positive HCV test	121	53.5	114	53.8	288	79.8

Hepatitis B vaccination

Proportion of those reported being vaccinated for hepatitis B was 21% in Tallinn, 7% in Riga, and 1.5% in Vilnius.

Antiretroviral treatment

Proportion of those on HAART (% of those who's last HIV test was positive):

- in Lithuania 4% (n=1);
- in Tallinn 13% (n=16);
- in Riga 23% (n=10).

See also table 36 for self reported HIV status.

Serologic test results

Testing for HIV antibodies

HIV prevalence among the participants was significantly higher in Tallinn (55%; 95% CI 50–60%) compared to Riga (22%; 95% CI 19–27%) and Vilnius (8%; 95% CI 5–11%)(table 39).

Table 39. Anti-HIV antibody test results by country

	TALLINN (n=347)		RIGA (n=407)		VILNIUS (n=400)	
Anti-HIV antibody test result	**n**	**%**	**n**	**%**	**n**	**%**
positive	192	55.3	92	22.6	32	8.0
negative	155	44.7	315	77.4	368	92.0

In Riga, 57% of those who were tested HIV positive during the study had reported that the result of their last HIV test had also been positive.

In Tallinn, 65% of those who were tested HIV positive during the study had reported that the result of their last HIV test had also been positive (120 out of 192 HIV-positive).

In Vilnius, 75% of those who were tested HIV positive during the study had reported that the result of their last HIV test had also been positive.

Testing for HCV antibodies

HCV prevalence was the lowest in Riga (74%; 95% CI 70–79%). In Tallinn, the prevalence was 93% (95% CI 91–96%) and in Vilnius 95% (95% CI 93–97%).

Table 40. Anti-HCV antibody test results by country

	TALLINN (n=347)		RIGA (n=406)		VILNIUS (n=400)	
Anti-HCV antibody test result	**n**	**%**	**n**	**%**	**n**	**%**
positive	327	93.4	302	74.2	379	94.8
negative	20	5.7	104	25.6	21	5.3

In Riga, 55% of those who turned out to be HCV positive during the study had reported that the result of their last HCV test had also been positive.

In Tallinn, 38% of those who turned out to be HCV positive during the study had reported that the result of their last HCV test had also been positive (124 out of 327).

In Vilnius, 90% of those who turned out to be HCV positive during the study had reported that the result of their last HCV test had also been positive.

Testing for HBV antibodies

HBVcore antibody prevalence was the lowest in Riga (56%; 95% CI 51–61%). In Tallinn, the prevalence was 77% (95% CI 72–81%) and in Vilnius 82% (95% CI 78–86%).

Table 41. Anti-HBV-core test results by country

	TALLINN (n=349)		RIGA (n=407)		VILNIUS (n=400)	
Anti-HBV-core antibody test result	**n**	**%**	**n**	**%**	**n**	**%**
positive	268	76.8	227	55.7	328	82.0
negative	81	23.1	179	44.0	72	18.0

Participants with HIV, HCV and HBV co-infections are shown in table 42.

Table 42. HIV, HCV and HBV test results by country (out of all participants)

	TALLINN (n=349)		RIGA (n=407)		VILNIUS (n=400)	
	n	%	n	%	n	%
HIV neg, HBV neg, HCV neg	17	4.9	85	21	16	4
HIV pos, HBV pos, HCV pos	164	47.4	63	15.6	27	6.8

Syphilis

In Riga 4% (n=18) participants, in Tallinn 9% (n=33) and in Vilnius 7% (n=28) tested positive for syphilis markers.

Tuberculosis

7 participants in Tallinn (2%), 30 in Vilnius (8%) and 33 in Riga (8%) reported ever having tuberculosis. In table 43 data on interferon-gamma test results (marker of latent tuberculosis) is presented.

Table 43. Interferon-gamma test results by country

	TALLINN (n=208)		RIGA (n=387)		VILNIUS (n=102)*	
Interferon-g test result	n	%	n	%	n	%
positive	21	10.1	89	23.0	25	24.5
negative	186	89.4	276	71.3	77	75.5
indeterminate	1	0.5	22	5.7	-	

* In Vilnius all participants were tested for TB IgG (Panthozyme MYCO IgG; Omega Diagnostics Ltd, UK). Those who were TB IgG positive were tested again with QuantiFERON-TB Gold. The results are shown only for those who were TB IgG positive.

In Tallinn, the prevalence of latent TB among HIV positive participants was 9% and among HIV negative participants 12%. In Riga, the prevalence of latent TB among HIV positive respondents was 17% and 23% among HIV negative respondents.

DISCUSSION AND CONCLUSIONS

All three Baltic countries have experienced increase in injecting drug use in the 1990s and this has contributed to the increased spread of blood borne infections — HIV, hepatitis B and C.

Based on the results of the present study the majority of IDUs in the capital cities of three Baltic countries are young single men. The oldest participants in the research were from Lithuania (mean age 30.5), and the youngest from Tallinn (mean age 26.5). A significant proportion of them is not ethnic people but representatives of other nationalities (Russians, Polish, Ukrainians, etc.). Many IDUs have been imprisoned at least once in a lifetime and less than one quarter has vocational or higher education. For 24% of the participants in Vilnius, 54% of the participants in Tallinn, and 73% of the participants in Riga regular or temporary job had been the main source of income during the last 4 weeks preceding the study. Street begging and sex work were very rare sources of income reported (only in Vilnius). For 5% of the participants in Riga, 32% of the participants in Tallinn, and 38% of the participants in Vilnius theft, robbing, or stealing had been the main source of income during the last 4 weeks. The study showed that more respondents from Vilnius were receiving government benefits (20%) compared to respondents from Riga and Tallinn. However, over twice as many IDUs from Tallinn and Riga reported having a permanent or a temporary job as a main source of income compared to IDUs from Vilnius.

71% of participants in Riga, 68% in Tallinn and 43% in Vilnius have used illicit drugs by other means of administration besides injecting before they started injecting. Mean age at the initiation of illicit drug use was 16.3 years in Tallinn, 17.3 years in Riga and 17.4 years in Vilnius. This indicates the need to improve primary prevention of illegal drug use among children and adolescents through school-based, peer education, and other programs. In addition, programs targeting youth that are using illegal drugs in order to prevent starting injecting drug use are very important. Young people with substance abuse problems are often not reachable through schools and, therefore, institutions and organizations working with risky youth as well as primary care system should be involved in these activities.

Mean duration of injecting drug use ranged from 7.9 years in Tallinn to 10.4 in Vilnius. The most prevalent main drug injected in Tallinn was fentanyl (72%), followed by amphetamine (26%). In Riga, the main injected drug was heroin (45%), closely followed by amphetamine (44%). In Vilnius, hanka (poppy liquid) was the main injected drug for 57% and heroin for 32% of participants. Amphetamine was less often the main injected drug in Vilnius (9%). Amphetamine users were more likely to report shorter injecting duration (less than 3 years) compared to opioid injectors in both Tallinn and Riga.

39% of participants in Tallinn, 41% in Riga, and 55% in Vilnius have been on illegal drug treatment at least once in their lifetime. Considering the high number of IDUs and the relatively long duration of injecting, there is clearly a need to improve the availability and quality of illegal drug use treatment and rehabilitation including oral substitution treatment for those who are opioid dependent and could benefit from it. Programs must consider the different needs of injectors of different substances (opioid versus stimulant injectors). SEPs and LTCs should actively refer clients to treatment and rehabilitation programs.

44% of participants in Riga, 48% in Vilnius and 63% in Tallinn reported ever having an overdose of injection drugs. Harm reduction programs must pay attention to overdose prevention and share information on “safer dosing and injecting”.

31% of participants in Riga, 25% in Tallinn and 2% in Vilnius reported sharing syringes and/or needles in last four weeks. Besides that, quite many reported sharing other injecting paraphernalia. It has been clearly demonstrated that sharing of drug preparation equipment (such as cotton and cookers) can be an important route of HIV and HCV transmission. Hagan and colleagues found that 54% of the incident HCV infections among those who did not share syringes were attributable to the sharing of drug preparation equipment (Hagan 2001). Programs to reduce HIV and HCV transmission among injection drug users will need to focus on preventing the sharing of any injecting paraphernalia as well as the sharing of needles and syringes. Information distribution and counselling is essential and wherever possible also other clean injecting equipment (so called “safer-injecting-kits”) should be distributed. Developing programs targeting IDUs with shorter duration of injecting is important as they are less likely to be in contact with services, yet they engage in both injecting and sexual risk behaviours.

Needle and syringe exchange program as the main source for clean syringes was reported by 42% of participants in Tallinn, 40% in Vilnius and 8% in Riga. Outreach work as the main source was reported by 15% of participants in Tallinn, 4% in Riga and 0.3% in Vilnius. Serious attention should be paid to improving syringe exchange services in order to reach more IDUs.

Buying syringes from the pharmacies was quite common. These can be considered additional sites for syringe exchange and counselling in the future in countries like Estonia where IDU and HIV are very serious problems. Involvement of pharmacies is quite common in the developed world and has been proved as a useful alternative for specialized syringe exchange programs and low threshold centres (Strang 1996, Lurie 1998, Matheson 2002, Thein 2003).

A substantial proportion of the participants reported being in prison, and around one third of them also reported continuing injecting while incarcerated. Previous studies have shown strong relationships between incarceration and HIV infection (Kang 2005, Wood 2005). Lithuania has experienced a major HIV outbreak in Alytus prison in 2002 (Likatavicius 2003). In Estonia, approximately 15–20% of all new HIV cases have been diagnosed in prisons (Database of Estonian State Reference Laboratory of HIV Diagnostics). By the end of 2007, 26% of all registered HIV cases were diagnosed in prisons (at the entry to the prisons) in Latvia.

Prison setting is an environment where blood borne infections can spread rapidly and, therefore, more attention should be paid to behaviour change interventions, harm reduction and illegal drug treatment (including drug free treatment) in these settings.

Based on the results, we can see that IDUs are sexually active and many of them have had several partners in last six months. Sexual risk behaviour (not using a condom and sharing syringes with sexual partners) was common. Contraception use with main

partners was low. 48% of participants in Riga, 40% in Tallinn and 58% in Vilnius reported that they did not use any contraception method with their main partner. The main contraceptive method in all three countries was condom use.

A part of the studied IDUs also reported (only in Lithuania) ever receiving money, drugs or any other commodities for sex. As sexual partners of IDUs are considered a bridging population through whom HIV and other blood-borne infections can spread to general non-injecting population sexual risk behaviour reduction should be pursued (education, skills development, distribution of free condoms in syringe exchange programs).

Our results show that even people who are aware of their HIV-infection still occasionally engage in risk behaviours (both sexual and IDU). This only proves that the level of implementation of behavioural change interventions is not sufficient. All harm reduction programs and LTS centres should pay special attention to those already infected with HIV and/or other infections.

The prevalence of HIV among IDUs in this study samples was high — 55% in Tallinn, 23% in Riga and 8% in Vilnius. This corresponds to earlier studies — HIV prevalence among 350 IDUs recruited in Tallinn in 2005 was 54% (Platt 2006). In Latvia in 2005, the prevalence of HIV among 325 young IDUs was 22% (Public Health Agency 2005). HIV prevalence among 320 IDUs recruited in Vilnius in 2006 was 10% (Caplinskiene 2008). High HIV prevalence rates have also been described elsewhere in Eastern Europe. In Togliatti, Russian Federation (2001), 56% of IDUs tested in community settings and 47% in Saint Petersburg (2006) were HIV positive. In Belorussia, the HIV prevalence among IDU in harm reduction programs in the city of Zlobin was 52% in 2006 (EuroHIV 2007b).

The prevalence of HCV in this study was even higher — 93% in Tallinn, 74% in Riga and 95% in Vilnius. HCV is quite common in populations of IDUs, with seroprevalence rates typically from 60% to 80% (Des Jarlais 2001). Prevalence rates as high as 92% have been described in Eastern Europe (Naumov 1999). HCV infection also frequently occurs early in a drug injection career. A study in Baltimore, USA, showed that HCV infection rates were 60% among injection drug users with less than 2 years of experience with injection (Garfein 1998). Approximately 80% of persons infected with HCV become chronic carriers, and HCV is readily transmitted through sharing of injection equipment. For the minority of infected persons who develop severe disease, the estimated period from initial HCV infection to the development of end-stage liver disease is 20–30 years (Des Jarlais 2001).

2% of participants in Tallinn and 8% in Riga and Vilnius reported ever having tuberculosis. The prevalence of latent TB was 10% in Tallinn and 23% in Riga. People who have TB infection without HIV co-infection have a 5–10% lifetime risk of developing TB disease, whereas in people living with HIV there is a 5–10% annual risk of developing TB disease (Selwyn 1989).

High HCV prevalence rate and the likelihood of chronic status show that health care systems must consider the increasing need for HIV and hepatitis treatment and care. It also has to prepare for the possible tuberculosis epidemic among injecting drug users, especially among those who are HIV infected.

Proportion of those ever tested for HIV ranged from 72% in Riga to 92% in Vilnius. HCV and HBV testing was even lower in Tallinn and Riga. High testing coverage in Vilnius correlates with high participation rates of respondents in needle/syringe exchange programmes, where all visitors are suggested to take a test for HIV and viral hepatitis. The proportion of those who reported receiving pre- and post-test counselling was less than 75%. In Riga 43%, in Tallinn 38% and in Vilnius 25% of those who were tested HIV positive during the study were not aware of their status. Evidence shows that 25% of those unaware of their HIV infection account for 54% of new infections (Marks 2006). The research shows that it is essential to expand VCT services and provide staff training.

HIV and other blood borne and sexually transmitted infections voluntary counselling and testing services should be enhanced and offered in locations safe and convenient for IDUs. Referral system from testing to treatment and care should be developed. Approach based on case management principles (collaboration of medical staff and social workers) can enhance the enrolment and adherence of patients to both illegal drug use and ARV treatment.

Not all of the studied IDUs were covered with national health insurance or the equivalent. This could be one of the barriers in accessing health care services and should be addressed in planning and providing health care services. It is likely, however, that a significant part of IDUs do not seek help from health care institutions because of potential fear of being stigmatized by medical staff.

Approximately half of the participants believed that HIV treatment is effective. Proportion of those participants who believed that they can get treatment if they got infected was approximately one third. Real and perceived barriers in access to treatment and care should be further studied and addressed.

Notwithstanding the relative stabilisation of HIV prevalence among IDUs in all three countries, there exist associated risks for future spread of HIV and other blood borne infections by sexual transmission to the sexual partners of IDUs and to the wider population. One of the keys in reducing the burden of HIV and other blood borne infections is prevention of illegal drug use and especially injecting drug use.

Integration of health and social care services is required for effective response. All prevention and care programs should take into consideration the international evidence and experience but must also adapt to local patterns and take into consideration the social and cultural aspects of injecting drug use.

RESEARCH TEAMS

Research team in Riga

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Andris Ferdats	Public Health Agency	Study design, analysis of results and publications
Anda Karnite	Public Health Agency; Riga Stradins University, Department of Public Health and Epidemiology	Study design, data input, analysis of results and publications
Inga Brokere	Public Health Agency	Study design, data input, analysis of results and publications, supervision of study sites
Baiba Eglite	Public Health Agency	Data input
Ieva Tuca	Public Health Agency	Study design, analysis of results and publications, supervision of study sites
Gunta Kirvelaite	State Agency of Tuberculosis and Lung Diseases	TB study design
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Research team in Tallinn

NAME	INSTITUTION	DUTIES
Anneli Uusküla	Department of Public Health, Department of Dermatology University of Tartu	Study design, analysis of results and publications
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Ave Talu	National Institute for Health Development	Study design, analysis of results and publications, supervision of study site
Katri Abel-Ollo	National Institute for Health Development	Study design, analysis of results and publications, supervision of study site
Liilia Lõhmus	National Institute for Health Development	Analysis of results and publications
Kai Kliiman	National TB Program, National Institute for Health Development	TB study design
Igor Sobolev	NGO Convictus Eesti	Supervisor

Research team in Vilnius

NAME	INSTITUTION	DUTIES
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Irma Caplinskiene	Lithuanian AIDS centre under MOH, Head of Epidemiology department, M.Romeris University	Study design, supervision of study site, analysis of results and publications
Vilnele Lipnickiene	Laboratory, Lithuanian AIDS Centre under MOH, laboratory physician	Laboratory study design, testing supervisor
Janina Kulsiene	Harm reduction site, Lithuanian AIDS Centre under MOH	Interviewing site manager
Lilija Kochanovskaja	Harm reduction site, Lithuanian AIDS Centre under MOH	Data collection, referring respondents for testing
Romualdas Gurevicius	Vilnius University, Assoc. Professor	Study consultant

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APPENDIX. DATA ON SEEDS

Riga, Latvia

	SEED 1	SEED 2	SEED 3	SEED 4	SEED 5	SEED 6	SEED 7	SEED 8
Gender	M	M	M	F	M	M	M	M
Age	24	36	30	28	32	29	26	36
Nationality	RUS	RUS	UKR	RUS	LV	LV	RUS	Chechen
Main drug	Heroin	Eph	Amph	Amph	Amph	Amph	Heroin	Amph
Sex for money	No	No	No	Yes	No	No	No	No
Imprisonment	No	No	Yes	No	Yes	Yes	Yes	Yes
HIV status (self reported)	Neg	Not tested	Not known	Neg	Neg	Pos	Neg	Neg
Number of waves	9	7	9	9	2	5	3	13

Tallinn, Estonia

	SEED 1	SEED 2	SEED 3	SEED 4	SEED 5
Gender	F	M	F	M	M
Age	24	35	19	23	21
Nationality	RUS	RUS	RUS	EST	EST
Main drug	Fen	Fen	Amph	Fen	Amph
Sex for money	No	No	No	No	No
Imprisonment	No	Yes	No	Yes	Yes
HIV status (self reported)	Pos	Neg	Pos	Neg	Neg
Number of waves	15	16	2	1	4

Vilnius, Lithuania

	SEED 1	SEED 2	SEED 3	SEED 4	SEED 5	SEED 6
Gender	M	M	M	F	F	M
Age	30	35	42	18	25	36
Nationality	RUS	LT	LT	LT	POL	LT
Main drug	Heroin	Heroin	Poppies	Poppies	Poppies	Heroin
Sex for money	No	No	No	No	Yes	No
Imprisonment	Yes	No	Yes	No	No	Yes
HIV status (self reported)	Pos	Neg	Neg	Neg	Neg	Pos
Number of waves	9	10	6	2	4	5