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## TITLE

**Injecting Behaviour and Service Use among Young Injectors in Albania, Moldova, Romania and Serbia**

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## TITLE

**Injecting Behaviour and Service Use among Young Injectors in Albania, Moldova, Romania and Serbia**

## ABSTRACT

**Background:** This study examines socio-demographic profiles, injecting risk, and use of health services among young injectors (15-24) in Albania, Moldova, Romania, and Serbia. The objective was to provide age-disaggregated data to identify differences between adolescents (<18) and youth (18-24), and help fill the gap in knowledge on the youngest injectors in this region.

**Methods:** Cross sectional surveys were conducted in each country using chain-referral sampling to reach diverse networks of people who use drugs (PWID). In Albania and Romania, surveys were conducted in the capitals, respectively Bucharest and Tirana. Respondents were recruited from 3 cities in Moldova (Chisinau, Balti and Tiraspol) and Serbia (Belgrade, Novi Sad and Nis). Data were collected on risk behaviours, service use, and contact with police and other authorities. Analysis focused on associations between unsafe injecting behaviour and key determinants including demographic background, source of needles/syringes, use of harm reduction services, and interactions with law enforcement.

**Results:** Although drug use and health-seeking varied across settings, sources of injecting

equipment were significantly associated with sharing needles and syringes in Moldova, Romania and Serbia. Obtaining equipment from formal sources (pharmacies, needle-exchange programmes) reduced likelihood of sharing significantly, while being stopped by the police or incarcerated increased it. Adolescents relied on pharmacies more than public sector services to obtain equipment.

**Conclusion:** Adolescents comprise a small proportion of PWID in this region, but have poorer access to harm reduction services than older peers. Engaging young PWID through private and public sector outlets might reduce unsafe practices, while use of the justice system to address drug use complicates efforts to reach this population.

**Key Words:** Albania, Moldova, Romania, Serbia, PWID, adolescents

**Word Count:** 4936 (6375 including acknowledgements and references)

## **Injecting Behaviour and Service Use among Young Injectors in Albania, Moldova, Romania and Serbia**

### **Background**

Eastern Europe has one of the fastest growing HIV epidemics, and unsafe injecting practices among drug users remains a key driver, responsible for close to half of new infections in 2010 (ECDC, 2010; Lazarus, Bollerup, & Matic, 2006). Young people who inject drugs (PWID) have attracted particular attention as up to a third of new HIV infections occur among 15-24 year-olds (UNICEF, 2010), and evidence suggests that younger injectors can be at higher risk for HIV (Fennema, Ameijden, Hoek, & Coutinho, 1997), Hepatitis C (HCV) (Garfein, et al., 2007), and overdose (EHRN, 2009). This reflects younger users' more recent initiation of injecting, which is associated with riskier practices (Miller & Schleifer, 2008). Younger injectors also exhibit higher rates of sexual risk-taking (Kral, Lorvick, & Edlin, 2000; Latkin & Knowlton, 2005), and often do not self-identify as PWID, resulting in lower HIV awareness and risk perception (Kleinman, Goldsmiths, Friedman, Hopkins, & Des Jarlais, 1990). Growing popularity of amphetamine-type stimulants (ATS) among young people in the region may introduce injecting at younger ages (EHRN, 2009). Some studies have also found links between ATS and increased sexual risk-taking as well as an independent association with HIV acquisition, although the causal pathway remains unclear (Degenhardt, et al., 2010).

Legal restrictions on providing harm reduction services to minors (under 18) exacerbate young PWID's vulnerability by limiting their access to health and social services, while punitive measures by police and child protection institutions engender distrust of authorities (Curth, Hansson, Storm, & Lazarus, 2009; Merkinaite, Grund, & Frimpong, 2010; Ti, Wood, Shannon, Feng, & Kerr, 2013). In many countries of Eastern Europe the main strategy for dealing with young injectors is through the adult criminal justice system (EHRN, 2009; Merkinaite, et al., 2010). Police harassment and the threat of detention may discourage young people from contact with authorities (Debeck, et al., 2011), while even among those who are willing to obtain sterile injecting equipment from harm reduction services, aggressive policing has been shown to be a structural driver of unsafe injecting practices as PWID look for an opportunity to inject as quickly as possible after obtaining drugs, even if they have not obtained clean equipment (Ti, et al., 2013).

Despite growing concern, there remains a dearth of information on young PWID (Aceijas, et al., 2006). Age disaggregated data on injecting risk behaviours is especially scarce, and has been highlighted as a priority (HRI, 2012). This study describes the characteristics and behaviours of PWID aged 15 to 24 in four Eastern European countries: Albania, Moldova, Romania, and Serbia. We focus on results that can be compared between adolescents (<18) and youth (18-24), and present factors associated with unsafe injecting practices for young injectors in these four countries, highlighting implications for intervention programmes.

### **Methods**

The research was conducted as part of a regional UNICEF programme for reducing HIV vulnerability among most at risk adolescents (MARA), funded by Irish Aid. Studies were conducted by the Institute for Public Health (Albania), the Dr. Milan Jovanovic Batut Institute of Public Health (Serbia), the National Centre of Health Management (Moldova), and the Faculty of Sociology and Social Work at the University of Bucharest (Romania), with technical assistance from the London School of Hygiene & Tropical Medicine (LSHTM). Ethical approval was obtained

separately from each country's National Ethics Committee through the Ministry of Health or national Institute of Public Health, based on country-specific study protocols and instruments.

### *Sampling*

Young PWID (<25) were recruited into cross sectional surveys in each country using a form of chain-referral sampling based on respondent driven sampling (RDS). In each country, 8-10 initial "seeds" were purposively selected to reflect diversity in PWID by gender, ethnicity and age, and requested to pass recruitment vouchers to 2 other PWID (3 in Serbia) in the eligible age range who met inclusion criteria. Not all seeds were aged 15-24, as formative research indicated that older PWID would be familiar with locations in which younger injectors could be found, had the confidence to approach them, and could be considered respected older community members (Rhodes, et al., 2011). While the minimum recruitment age varied between sites, we restrict analysis to respondents 15-24 to facilitate cross-country comparison and reflect the fact legal restrictions in Serbia and Romania, where needle and syringe distribution is prohibited to anyone younger than 15 (HRI, 2012). Respondents were provided with incentives including pre-paid phone cards, canned food, cosmetic products, or small cash payments. Guidelines produced by UNICEF for research and programming among most-at-risk adolescents were followed to ensure adherence to international child protection and ethical standards (Homans, 2008; UNICEF, 2002).

Three hundred PWID were recruited in Romania, 121 in Albania, 350 in Moldova and 248 in Serbia. In Romania and Albania surveys were conducted in the capital cities, respectively Bucharest and Tirana. Respondents were recruited from 3 cities in both Moldova (Chisinau, Balti and Tiraspol) and Serbia (Belgrade, Novi Sad and Nis) to ensure adequate sample sizes.

### *Questionnaire*

LSHTM developed a core questionnaire that included modules covering a range of socio-demographic and behavioural indicators, including age, ethnicity and educational background; migration and living conditions; duration and frequency of injecting; types of drugs injected; sexual behaviour with long-term, casual and commercial partners; knowledge of HIV risk factors; use of locally-available health and harm reduction services; experience of violence; and history of incarceration, child protection services and police harassment. Questionnaires were translated and adapted to local programming needs by changing or adding questions beyond the core indicators.

Locally trained fieldworkers administered the questionnaires during interviews conducted in private in a range of private settings, including mobile clinic vehicles, office space, rented flats, and cafes or isolated street locations. Information about the study aims, objectives, and topics of enquiry were explained to respondents, who were asked to provide informed consent (choice of written or verbal and witnessed by interviewer). No identifying information was recorded. Surveys were conducted between October 2007 and May 2008, and subsequent delays in national-level data analysis, government validation, and in-country dissemination meant that we did not obtain access to all four data sets until 2009.

### *Analysis*

Data from the four countries were merged into one dataset and standardised variables compiled using STATA 11. Although the chain-referral recruitment approach was based on RDS methods to maximise access to hard-to-reach populations, samples from different cities were combined to create country profiles and increase sample sizes (particularly for adolescents). Thus we did not adhere to the statistical principles of RDS, but adopted its sampling approach after judging it to be best suited to our study contexts (McCreesh, et al., 2012; Storer, et al., 2006). We appreciate the biases this may introduce and do not claim that these samples are representative of young PWID in the four countries (White, et al., 2012), but we were able to recruit adolescent PWID with no prior contact with health or social services, thus increasing contact compared with other forms of convenience or location-based sampling (Magnani, Sabin, Saidel, & Heckathorn, 2005; Yeka, Maibani-Michie, Prybylski, & Colby, 2006).

First, characteristics and risk behaviour were compared between adolescents (< 18 years), and young adults (18-24 years) for each country, using Fisher's exact test. Percent distribution, median age, and total numbers (N) in each age group are presented in Table 1 and 2. We did not use the WHO definition of adolescence (10-19) (Ross, Dick, & Ferguson, 2006) but 15-17 instead, for the following reasons: (1) national research guidelines prevented us recruiting respondents younger than 15 in several countries, and (2) all four countries use 18 to mark legal adulthood, with implications for access to services and treatment by the criminal justice system

(EHRN, 2009).

Second, to explore factors associated with high risk injecting, we pooled data across the age groups due to the small number of adolescent respondents. While this limited the amount of age-disaggregated data we present, the data can still be used to address the notable lack of evidence on young PWID <25 overall (Merkinaitė, et al., 2010). Table 3 presents odds ratios (OR) and 95% confidence intervals (95% CI) for these factors. Finally, we conducted multivariate logistic regression analyses. Factors significantly associated ( $p \leq 0.05$ ) with high risk injecting were included in the final models. Adjusted odds ratios were calculated using age, sex, education and ethnic group as control variables, shown in Table 4.

High risk injecting behaviour was defined as the use (receiving or borrowing) of needles or syringes in the last 4 weeks that had previously been used by others, and is referred to as “sharing syringes”. It does not refer to needles or syringes being passed on to others. We explored the context of injecting behaviour including experience of incarceration (defined as having been in prison and/or child detention), police harassment (defined as “stopped and harassed” as perceived by the respondent, although not necessarily leading to arrest except in Serbia, where “charged with violation of the law” was specified), and source of injecting equipment.

Two variables were used to assess source of needles and syringes in the last 4 weeks (Albania, Romania), or last 12 months (Moldova, Serbia), categorised as either *formal* or *informal*. Formal sources were defined as (1) pharmacies, or (2) needle exchange programmes (NEPs), which included drop-in centres and harm reduction outreach services. Informal sources included “on the street”, drug dealers, friends, sexual partners, and “other”. These variables were not mutually exclusive, as respondents could indicate that they obtained injecting equipment from a mix of sources. During analysis to identify associations between sources of needles and syringes with unsafe injecting behaviour, we re-coded responses on source of equipment into 3 mutually exclusive categories: (1) Informal sources only (the street, drug dealers, friends, sexual partners) coded as 0; (2) Formal sources only (pharmacies and/or NEPs) coded as 1; and (3) combined use of both informal and formal sources, coded as 2. For simplicity, the term *syringes* is used to refer to both *needles and syringes*.

## Results

Data are presented below for each country separately. We present results by country to ensure data remain contextualised and portray the overall risk environment experienced in a given setting by young PWID (Rhodes, 2009). As each survey was designed to serve as a baseline study prior to introduction of UNICEF-supported interventions for most-at-risk adolescents, results need to be interpreted at country level to inform development of appropriate services or locally relevant policy measures to redress vulnerability among this neglected group and track changes over time. Furthermore, each participating country adapted their questionnaire for local use, making some variables slightly different, although broadly comparable. We thus summarise background characteristics, risk and health-seeking behaviour, and likely determinants of vulnerability from each survey. The data presented in the tables complement our brief narrative reports to allow more direct comparison across the region.

### Albania

#### *Background Characteristics*

All respondents in Albania were male ( $N=121$ ). The median age was 22 years, and just 7 respondents were adolescent (5.7%). A third of the sample self-reported as of Roma ethnicity, and almost half (46.3%) had no or lower than primary school education. Roma were significantly less educated than non-Roma, with 87.8% having no schooling or not completing primary school, compared to 25.0% of non-Roma ( $p \leq 0.001$ ). Over a quarter (27.3%) reported that they lived on the streets or in dormitories, and most were single (79.3%). Two thirds of all respondents reported being stopped by the police in the last 12 months, and of these, just over half were stopped more than 5 times. Almost half (47.5%) had ever been incarcerated.

#### *Drug use*

Two thirds (66.8%) of respondents reported that they had injected drugs in the last month, and of these the majority (70.4%) injected heroin, 36.8% injected methadone and 26.2% injected valium. Other drugs included the painkillers tramadol and petidine (9.3%). The median age at first injection was 16, with a third (32.2%) initiating before age 15. Almost all (97.4%) respondents knew that clean syringes were available from pharmacies, while just over a fifth mentioned NEPs and outreach services. Indeed, pharmacies were the actual source of clean syringes for 92.1% respondents, while 33.3% reported getting them through NEPs and outreach services in the last 4 weeks. Of these, just 3% also obtained syringes on the street; none relied

exclusively on the street. Despite this, 21.6% reported sharing syringes in the past month. In bivariate analysis no factors were significantly associated with sharing syringes in the last month, although the odds were raised among those who had been stopped by the police in the last 12 months. The odds decreased among those who accessed syringes from formal sources, but again results were not significant. Because of lack of significant associations multivariate analysis was not conducted for the Albanian sample.

## **Moldova**

### *Background Characteristics*

In total 350 PWID were interviewed, predominantly males (77.7%). The median age was 19, and 70.0% were 18 years or above. Just under half (48.6%) reported that they were either Moldovan or Romanian, 36.0% were Russian or Ukrainian, and 15% reported various other ethnic backgrounds, including "mixed". Fewer than 1% were Roma. Educational attainment, living arrangements, marital status, and contact with the police differed between adolescents and young adults. Adolescents were significantly more likely to be living at home, while young adults had higher rates of co-habiting with a spouse or partner. Adolescents were less likely to have been stopped by the police in the last 12 months, although there was no difference by age in the median number of times stopped (3 times in 12 months). Young adults were more likely to have ever been incarcerated compared to adolescents (18.4% vs 2.9%;  $p \leq 0.001$ ).

### *Drug use*

Overall 78.3% reported injecting drugs in the past month. Opium was injected by 67.6%, while ATS, such as methamphetamines and ephedron, were injected by 46.4%. In the past month, 6.8% of respondents injected heroin. The median age at first injection was 17, although just 5.5% had injected before age 15.

Young adults were significantly more likely to know about NEPs and outreach services as sources of clean injecting equipment, and actual procurement varied significantly by age. Adolescents were more likely to purchase syringes from pharmacies (79.1% vs. 68.2%  $p \leq 0.05$ ) and less likely to use outreach services or NEPs than young adults (11.4% vs. 28.6%;  $p \leq 0.001$ ). Adolescents were both less likely to have obtained free syringes in the past year (not shown, 20% vs. 33.2%;  $p \leq 0.05$ ) or to have registered as drug addicts (not shown, 4.8% vs. 22.9%;  $p \leq 0.001$ ). Obtaining equipment from informal sources was common, reported by 48.6% young adults and 55.2% adolescents, and 15.3% reported sharing syringes in the last month; this did not vary by age. In bivariate analysis being female, ever being incarcerated, and obtaining syringes from informal sources in the last 12 months significantly increased the odds of sharing. On the other hand, accessing syringes through formal channels (pharmacies or NEPs) in the last 12 months was associated with decreased odds of sharing. These associations remained in multivariate analysis. The odds of sharing remained significantly higher for females (OR 4.04; 95% CI 1.71-9.50), and ever being incarcerated (OR 4.58; 95% CI 1.69-12.42). Accessing syringes exclusively through formal sources significantly reduced the odds of sharing (OR 0.11; 95% CI 0.04-0.34), as did use of combined sources (formal and informal) (OR. 0.33; 95% CI 0.12-0.93), as opposed to relying exclusively on informal sources of syringes.

## **Romania**

### *Background Characteristics*

Three hundred respondents were interviewed, of whom 80.7% were male and only 6.3% adolescent. The median age was 22. The majority of the sample described themselves as Romanian (68.2%), and 28.8% as Roma. There were no differences between adolescents and young adults in terms of ethnicity, living arrangements, and experience with the police.

Young adults were better educated and males were significantly more likely to have completed primary school or above than females (OR 2.17; 95% CI 1.17-4.03). Roma PWID were significantly less likely to have completed primary or above compared to non-Roma (OR 0.27; 95% CI 0.16-0.48). Three quarters of respondents reported that they had been stopped by the police in the last 12 months, on average 5 times, and 28.8% had ever been incarcerated.

### *Drug use*

Heroin was the most widely used drug, injected by all but 2 respondents in the last month. Methadone, cocaine or cocaine mixed with heroin were next most widely injected, but used by fewer than 10% of injectors. The median age at first injection was 16 years, and 26.7% started injecting before they were 15.

The majority (71.3%) of respondents accessed syringes through NEPs and outreach services, while 42.3% purchased them from pharmacies. Source of syringes varied significantly by age. Adolescents were significantly more likely to rely on single sources (informal or formal) than young adults, who were more likely to use a combination of informal and formal sources. Just over a quarter of young adults used both formal and informal sources compared to just 5% of adolescents, while over a quarter of adolescents relied exclusively on informal sources, compared to just 8% of young adults. In the past month, 19.0% reported sharing syringes, and 7.0%

reported using non-sterile equipment the last time they injected.

In bivariate analysis the odds of sharing syringes significantly increased among PWID from “other” ethnic groups, those who had been stopped by the police, or who were ever incarcerated. The odds of sharing significantly decreased among those who had accessed syringes through any formal channel, as opposed to relying solely on informal sources. In multivariate analysis the odds of sharing remained elevated among PWID who had been stopped by the police (OR 3.17; 95% CI 1.22-8.19), and ever incarcerated (OR 2.81; 95%CI 1.42-5.55), and decreased among those accessing syringes through formal sources in the last 4 weeks (OR 0.18, 95%CI 0.68-0.49).

## **Serbia**

### *Background Characteristics*

In total 248 PWID were interviewed and 76.2% were male. Most (91.5%) were 18 or older, with a median age of 22. Among adolescents, 52.4% were Roma, compared to 22.0% of young adults. Roma youth were significantly less likely to be educated compared to other ethnic groups. Just over half (52.5%) had no or less than primary education, compared to 3.2% of non-Roma. Females were significantly better educated than males with 72.9% reporting that they had completed secondary school or above, compared to 44.4% of males ( $p \leq 0.001$ ). Data on living arrangements and marital status were not available. Of the sample 49.0% had ever been incarcerated, and this was higher for young adults than adolescents.

### *Drug use*

The majority (97.6%) had injected drugs in the past month, but adolescents were significantly less likely to have done so (81% vs. 99.1%;  $p \leq 0.001$ ). Data on type of drug injected were not available. Median age at first injection was 19 years, and 6.1% started injecting before they were 15. Pharmacies were the most important source of syringes for both age groups (84.3%), while young adults were significantly more likely to have used NEP or outreach services compared to adolescents (25.1% vs. 4.7%;  $p \leq 0.05$ ) in the last 12 months. Overall the source of injecting equipment varied significantly by age, with adolescents more likely to rely exclusively on informal sources (23.8% vs. 6.2%), and less likely to use formal (61.9% vs. 71.8%) or a combination of sources (14.3% vs. 22%) compared to young adults. One third reported sharing syringes in the last month, and 20.2% reported using non-sterile equipment the last time that they injected. In bivariate analysis the odds of sharing syringes was significantly higher among Roma, and those with little or no education. The odds significantly decreased among those relying exclusively on formal sources of injecting equipment. The only association to remain significant after controlling for other factors was accessing equipment through formal sources (OR 0.28; 95% CI 0.10-0.81).

## **Discussion**

Our findings demonstrate the diversity in characteristics and patterns of behavioural risk among young PWID in Albania, Moldova, Romania and Serbia, reinforcing the importance of understanding local contexts of injecting practices and their respective “risk environments” for HIV (Marshall, Kerr, Shoveller, Montaner, & Wood, 2009; Rhodes, 2009). Thus while heroin was injected by almost all respondents in Romania, it represented under 10% of drug use in the past month in the Moldova survey, reflecting Moldova’s long tradition of home-produced opium (*shirka*) and economic instability that has limited importation of relatively expensive drugs such as heroin and cocaine (Rhodes & Bivol, 2012). Each country’s ethnic composition and distribution of socio-demographic and educational attributes also inevitably shaped results. Despite structural differences, however, we also note several prevailing trends that are likely to have implications for intervention design and social policy.

### *Risk Profile of PWID Youth*

Our analysis suggests that adolescents are not necessarily more likely than young adults to use syringes or needles previously used by others, although our study is limited by the low number of respondents under age 18 in all countries except Moldova, where 30% of the sample were adolescents. Access to and use of harm reduction services, however, prove more complex and suggest adolescents have poorer contact with formal drug-related services.

Sources of injecting equipment are significantly associated with sharing syringes in 3 countries (Moldova, Romania and Serbia). Obtaining syringes through formal channels (pharmacies, NEP and outreach), as opposed to exclusive reliance on informal sources, reduced this risk, dramatically and significantly, in all 3 countries. PWID in Moldova were 86% less likely to share injecting equipment if they had relied exclusively on formal sources, compared to exclusive use of informal channels. A similar picture emerges in Serbia and Romania.

In Moldova adolescents were significantly more likely than young adults to use pharmacies, but not outreach services and NEPs. This could be due to perceived legal limits on their access to harm reduction; the *Global State of Harm Reduction 2012* reports that while there is no data available on age restrictions for NEP in Moldova, opioid substitution therapy is limited to those 18 and older (HRI, 2012). Adolescents in Serbia were similarly less likely to use NEP and outreach

services compared to young adults, however, despite the fact that the age limit for these services is 15. Although true in Romania and Albania, results are not significant, and should be interpreted with caution because of small numbers. Throughout this region, harm reduction staff have been found to be wary of providing services to minors due to its illegality or ambiguous status (Curth, et al., 2009) and our study suggests that this restricted access to safe injecting equipment disproportionately affects adolescents' sharing behaviour. It is also possible, however, that drug-related services remain unappealing to younger PWID, as other studies have shown that younger injectors can be less likely to actively seek services (Merkinaitė, et al., 2010). Future qualitative research could usefully elucidate adolescents' perceptions of and preferences for different services.

Roma are disproportionately represented among young PWID. For example, in Romania, 28.7% of the sample self-identified as Roma, compared to 2.5% of the population in the 2002 national census (Romanian National Institute of Statistics, 2002). In Serbia, adolescents were over twice as likely to be Roma compared to young adults. Roma respondents reported lower rates of education, suggesting social exclusion consistent with other research (Gerevich, Bácskai, Czobor, & Szabó, 2010; V. A. Gyarmathy, Ujhelyi, & Neaigus, 2008; Qyra, et al., 2011). Roma have historical links to migrant populations from South Asia and experience disproportionately poor health throughout the region (V. Anna Gyarmathy & Neaigus, 2011; V. A. Gyarmathy, et al., 2008), with increased risk-taking by adolescents found in previous studies (Gerevich, et al., 2010). However, Roma respondents were not at higher risk of syringe sharing or less likely to use services in any of our study sites. In Moldova Roma made up less than 1% of the sample, however ethnicity did have a significant bearing on risk of sharing syringes. Respondents grouped as *other* had 6 times the odds of sharing, compared to Moldovan or Romanian injectors. This group, however, represented a diverse mix of backgrounds (Bulgarian, Gaguzian, Roma, and mixed), making their enhanced vulnerability difficult to interpret and a possible area for further investigation.

Gender dynamics also appear to shape risk among young PWID. Females were more likely to use non-sterile injecting equipment than males in all countries (except Albania, where no women were recruited). While this was significant only in Moldova (OR 4.04; 95%CI: 1.71-9.50), other studies indicate female PWID can be dependent on sexual partners for provision of drugs, and often inject with partners, increasing the likelihood that feelings of intimacy and trust will result in sharing syringes (V. Gyarmathy, et al., 2010).

#### *Implications for Harm Reduction*

Our data show that pharmacies and NEPs play a crucial role in the provision of clean syringes in all four countries. In Albania, Moldova and Serbia pharmacies are the most important single source for both age groups. In Romania, however, formal harm reduction services provide the bulk of clean needles and syringes. With the exception of Albania, the majority of young PWID obtain syringes from safe sources, but a sizeable minority nonetheless expose themselves to increased risk of HIV, HCV and other infections by sourcing syringes from friends, drug dealers or on the street.

Our findings support evidence showing effectiveness of NEPs and pharmacies in reducing injecting risk (Sarang, Rhodes, & Platt, 2008; Vorobjov, et al., 2009). Vorobjov et al. (2009) found pharmacies in Estonia served PWIDs who were at an earlier stage in their injecting career, and played a key role in connecting PWID with methadone treatment and preventive services. Working with pharmacists to capitalise on injectors' own preferences holds promise as a means to reach young injectors. Using pharmacies as an "entry point" to a wider range of comprehensive harm reduction could address adolescents' needs, and strategies could be adapted from successful programmes implemented in other settings (Fuller, et al., 2007).

#### *Interactions with Police*

Adolescents and young adults both reported high levels of police harassment and detention. Half of respondents in Albania and Serbia, 28.8% in Romania, and 13.8% in Moldova have ever been in prison or juvenile detention. PWID in Moldova who had ever been incarcerated had 5.4 times the odds of sharing compared to those who had not been incarcerated. The role of police harassment, however, also appears to shape injecting practices. Our findings demonstrate extremely high rates of police stoppages of young injectors. Three quarters of PWID in Romania, two thirds in Albania, and half in Moldova have been harassed by the police in the last year. Interactions with police appear frequent, for example Romanian PWID reported being stopped by police on average 5 times in the past year, and having been stopped increased risk of sharing syringes by over 3 times. Research elsewhere shows that injectors can be reluctant to carry injecting equipment or visit NEPs for fear of coming into contact with the police (Rhodes, et al., 2004), or may resort to rapid and unplanned injecting if they fear imminent police presence (Ti, et al., 2013). We do not have information on whether the police concentrate their activities in areas close to NEP or other services, confiscate injecting paraphernalia, or target drug selling locations, all of which have been shown to limit safe injecting and reduce confidence in harm reduction



(Debeck, et al., 2011; Mimiaga, et al., 2010).

### **Limitations**

Our study is limited by low numbers of PWID younger than 18. While it is likely that adolescents make up a small proportion of youth who inject drugs, qualitative research from the region demonstrates that they may participate in different social and injecting networks from older drug users (Rhodes, et al., 2011), making RDS less successful in reaching them, even with careful selection of seeds. Furthermore, 32.2% respondents in Albania and 26.7% in Romania reported initiating injecting prior to age 15, suggesting that unless drug-use has changed in the last decade, a larger proportion of PWID are likely to be adolescents than were identified in our surveys.

Proportions of female PWID in each country were slightly lower than the 30% estimate for the region (Aceijas, et al., 2006), with the notable exception of Albania, where no women were recruited. Injecting drug use is highly stigmatised in Albania, and stronger sanctions against women's participation may exist; a previous RDS study was only able to identify 14 female injectors out of a total sample of 210, concluding that females were both less likely to inject drugs and also not integrated into wider networks (Stormer, et al., 2006). We were thus unable to disaggregate our datasets by age and sex for key indicators.

Furthermore, differences in how study protocols and survey instruments were adapted to each country context may have affected comparability across sites. However, many of our findings reflect trends found in other studies, suggesting results are sufficiently robust to contribute to a regional understanding of PWID risk profiles and implications of health and social policy targeting young injectors.

### **Conclusion**

This study is among the first to provide age-disaggregated data on the extent and distribution of injecting risk among adolescent and young adult PWID in Eastern and Central Europe. It confirms that while adolescents remain a small proportion, they appear to have poorer access to harm reduction services than older peers. Their ability to obtain clean injecting equipment from pharmacies, however, suggests motivation to adopt safe practices, which could be better harnessed by programmes. Our findings clearly demonstrate the importance of contact with formal health services, as PWID reporting *any* use of pharmacies, NEP or outreach exhibited a lower likelihood of sharing equipment, even among those who also obtained syringes from potentially unsafe sources. Thus expanding engagement with young PWID through both private and public sector outlets might result in positive behaviour change. On the other hand, experience of police harassment, incarceration or juvenile detention clearly exacerbate risk-taking among young PWID and diminish trust in authorities, which will complicate efforts to reach this marginalised population.

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### **References**

- Aceijas, C., Friedman, S. R., Cooper, H. L. F., Wiessing, L., Stimson, G. V., & Hickman, M. (2006). Estimates of injecting drug users at the national and local level in developing and transitional countries, and gender and age distribution. *Sexually Transmitted Infections*, *82*, iii10-iii17.
- Curth, N. K., Hansson, L. N., Storm, F., & Lazarus, J. V. (2009). Select barriers to harm-reduction services for IDUs in Eastern Europe. *Central European Journal of Public Health*, *17*, 191-197.
- Debeck, K., Wood, E., Zhang, R., Buxton, J., Montaner, J., & Kerr, T. (2011). A dose-dependent relationship between exposure to a street-based drug scene and health-related harms among people who use injection drugs. *J Urban Health*, *88*, 724-735.
- Degenhardt, L., Mathers, B., Guarinieri, M., Panda, S., Phillips, B., Strathdee, S. A., Tyndall, M., Wiessing, L., Wodak, A., Howard, J., Reference Group to the United Nations on, H. I. V., & injecting drug, u. (2010). Meth/amphetamine use and associated HIV:

Implications for global policy and public health. *Int J Drug Policy*, 21, 347-358.

ECDC. (2010). HIV/AIDS Surveillance in Europe 2010. In. Stockholm: European Centre for Disease Prevention and Control.

EHRN. (2009). Young People and Injecting Drug Use in Selected Countries of Central and Eastern Europe. In (pp. 130). Vilnius: Eurasian Harm Reduction Network.

Fennema, J. S. A., Ameijden, E. J. C. V., Hoek, A. V. D., & Coutinho, R. A. (1997). Young and recent-onset injecting drug users are at higher risk for HIV. *Addiction*, 92, 1457-1466.

Fuller, C. M., Galea, S., Caceres, W., Blaney, S., Sisco, S., & Vlahov, D. (2007). Multilevel Community-Based Intervention to Increase Access to Sterile Syringes Among Injection Drug Users Through Pharmacy Sales in New York City. *Am J Public Health*, 97, 117-124.

Garfein, R. S., Golub, E. T., Greenberg, A. E., Hagan, H., Hanson, D. L., Hudson, S. M., Kapadia, F., Latka, M. H., Ouellet, L. J., Purcell, D. W., Strathdee, S. A., & Thiede, H. (2007). A peer-education intervention to reduce injection risk behaviors for HIV and hepatitis C virus infection in young injection drug users. *AIDS*, 21, 1923-1932.

Gerevich, J., Bácskai, E., Czobor, P., & Szabó, J. (2010). Substance Use in Roma and Non-Roma Adolescents. *The Journal of Nervous and Mental Disease*, 198, 432-436  
410.1097/NMD.1090b1013e3181e1007d1051.

Gyarmathy, V., Li, N., Tobin, K., Hoffman, I., Sokolov, N., Levchenko, J., Batluk, J., Kozlov, A., & Latkin, C. (2010). Injecting Equipment Sharing in Russian Drug Injecting Dyads. *AIDS and Behavior*, 14, 141-151.

Gyarmathy, V. A., & Neaigus, A. (2011). The association between social marginalisation and the injecting of alcohol amongst IDUs in Budapest, Hungary. *International Journal of Drug Policy*, 22, 393-397.

Gyarmathy, V. A., Ujhelyi, E., & Neaigus, A. (2008). HIV and selected blood-borne and sexually transmitted infections in a predominantly Roma (Gypsy) neighbourhood in Budapest, Hungary: a rapid assessment. *Cent Eur J Public Health*, 16, 124-127.

Homans, H. (2008). Ethical and Protection Issues in HIV Programming for Adolescents Engaging in HIV Risk Behavior. In. Geneva: UNICEF.

HRI. (2012). The Global State of Harm Reduction: Towards an Integrated Response. In. London: Harm Reduction International.

Kleinman, P. H., Goldsmiths, D. S., Friedman, S. R., Hopkins, W., & Des Jarlais, D. C. (1990). Knowledge about and behaviors affecting the spread of AIDS: a street survey of intravenous drug users and their associates in New York City. *International journal of Addictions*, 25, 345-361.

Kral, A. H., Lorvick, J., & Edlin, B. R. (2000). Sex-and Drug-Related Risk Among Populations of Younger and Older Injection Drug Users in Adjacent Neighborhoods in San Francisco. *Journal of Acquired Immune Deficiency Syndromes*, 24, 162-167.

Latkin, C. A., & Knowlton, A. R. (2005). Micro-social structural approaches to HIV prevention: a social ecological perspective. *AIDS Care*, 17 Suppl 1, S102-113.

Lazarus, J. V., Bollerup, A., & Matic, S. (2006). HIV/AIDS in Eastern Europe: more than a sexual health crisis. *Central European Journal of Public Health*, 14, 55-58.

Magnani, R., Sabin, K., Saidel, T., & Heckathorn, D. D. (2005). Review of sampling hard-to-reach and hidden populations for HIV surveillance. *AIDS*, 19, S67-S72.

Marshall, B., Kerr, T., Shoveller, J., Montaner, J., & Wood, E. (2009). Structural factors associated with an increased risk of HIV and sexually transmitted infection transmission among street-involved youth. *BMC Public Health*, 9, 7.

McCreesh, N., Frost, S. D. W., Seeley, J., Katongole, J., Tarsh, M. N., Ndunguse, R., Jichi, F., Lunel, N. L., Maher, D., Johnston, L. G., Sonnenberg, P., Copas, A. J., Hayes, R. J., & White, R. G. (2012). Evaluation of Respondent-driven Sampling. *Epidemiology*, 23, 138-147.

Merkinaite, S., Grund, J. P., & Frimpong, A. (2010). Young people and drugs: Next generation of harm reduction. *International Journal of Drug Policy*, 21, 112-114.

Miller, A. M., & Schleifer, R. A. (2008). Through the Looking Glass: Abstinence-Only-Until-Marriage Programs and Their Impact on Adolescent Human Rights. *Sexuality Research & Social Policy*, 5, 28-43.

Mimiaga, M. J., Safren, S. A., Dvoryak, S., Reisner, S. L., Needle, R., & Woody, G. (2010). "We fear the police, and the police fear us": structural and individual barriers and facilitators to HIV medication adherence among injection drug users in Kiev, Ukraine. *AIDS Care*, 22, 1305-1313.

Qyra, S. T., Basho, M., Bani, R., Dervishi, M., Ulqinaku, D., Bino, S., Kakarriqi, E., Alban, Y., Simaku, A., Vasili, A., Rjepaj, K., Piperi, P., Duro, V., Byku, B., & Koraqi, A. (2011). Behavioral risk factors and prevalence of HIV and other STIs among female sex workers in Tirana, Albania. *New Microbiol*, 34, 105-108.

Rhodes, T. (2009). Risk environments and drug harms: a social science for harm reduction approach. *International Journal of Drug Policy*, 20, 193-201.

Rhodes, T., & Bivol, S. (2012). "Back then" and "nowadays": social transition narratives in accounts of injecting drug use in an East European setting. *Soc Sci Med*, 74, 425-433.

Rhodes, T., Bivol, S., Scutelnicu, O., Hunt, N., Bernays, S., & Busza, J. (2011). Narrating the social relations of initiating injecting drug use: Transitions in self and society. *Int J Drug Policy*, 22, 445-454.

Rhodes, T., Judd, A., Mikhailova, L., Sarang, A., Khutorskoy, M., Platt, L., Lowndes, C. M., & Renton, A. (2004). Injecting Equipment Sharing Among Injecting Drug Users in Togliatti City, Russian Federation: Maximizing the Protective Effects of Syringe Distribution. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 35, 293-300.

RomanianNationalInstituteofStatistics. (2002). Census of Population and Dwellings 2002. In Bucharest: <http://www.insse.ro/cms/rw/pages/rpl2002.en.do>.

Ross, D., Dick, B., & Ferguson, J. (2006). Preventing HIV/AIDS in Young People: a systematic review of the evidence from developing countries. In Geneva: The World Health Organization.

Sarang, A., Rhodes, T., & Platt, L. (2008). Access to syringes in three Russian cities: Implications for syringe distribution and coverage. *International Journal of Drug Policy*, 19, 25-36.

Stormer, A., Tun, W., Guli, L., Harxhi, A., Bodanovskaia, Z., Yakovleva, A., Rusakova, M., Levina, O., Bani, R., Rjepaj, K., & Bino, S. (2006). An Analysis of Respondent Driven Sampling with Injection Drug Users (IDU) in Albania and the Russian Federation. *Journal of Urban Health*, 83, 73-82.

Ti, L., Wood, E., Shannon, K., Feng, C., & Kerr, T. (2013). Police confrontations among street-involved youth in a Canadian setting. *International Journal of Drug Policy*, 24, 46-51.

UNICEF. (2002). Children Participating in Research, Monitoring and Evaluation: Technical Guidance Notes. In New York: UNICEF.

UNICEF. (2010). Blame and Banishment: The underground HIV epidemic affecting children in Eastern Europe and Central Asia In Geneva: The United Nations Children's Fund.

Vorobjov, S., Uuskula, A., Abel-Ollo, K., Talu, A., Ruutel, K., & Des Jarlais, D. (2009). Comparison of injecting drug users who obtain syringes from pharmacies and syringe exchange programs in Tallinn, Estonia. *Harm Reduction Journal*, 6, 3.

White, R. G., Lansky, A., Goel, S., Wilson, D., Hladik, W., Hakim, A., & Frost, S. D. (2012). Respondent driven sampling—where we are and where should we be going? *Sexually Transmitted Infections*, 88, 397-399.

Yeka, W., Maibani-Michie, G., Prybylski, D., & Colby, D. (2006). Application of Respondent Driven Sampling to Collect Baseline Data on FSWs and MSM for HIV Risk Reduction Interventions in Two Urban Centres in Papua New Guinea. *Journal of Urban Health*, 83, 60-72.