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High-risk behaviors after release from incarceration among people who inject drugs in St. Petersburg, Russia

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ABSTRACT

Background: Injection drug use, infectious disease, and incarceration are inextricably linked in Russia. We aimed to identify factors associated with time to relapse (first opioid injection after release from prison) and using a non-sterile, previously used syringe at relapse in a sample of people who inject drugs in St. Petersburg.
Methods: We collected data on time from release to relapse among individuals with a history of incarceration, a subsample of a larger study among people who inject drugs. Proportional hazards and logistic regression were used to identify factors associated with time to relapse and injection with a non-sterile previously used syringe at relapse, respectively.
Results: The median time to relapse after release was 30 days. Factors that were independently associated with relapsing sooner were being a native of St. Petersburg compared to not being native (AHR: 1.64; 95% CI 1.15–2.33), unemployed at relapse compared to employed (AHR: 4.49; 95% CI 2.96–6.82) and receiving a previous diagnosis of HBV and HCV compared to no previous diagnosis (AHR: 1.49; 95% CI 1.03–2.14). Unemployment at relapse was also significant in modeling injection with a non-sterile, previously used syringe at relapse compared to those who were employed (AOR: 6.80; 95% CI 1.96–23.59).
Conclusions: Unemployment was an important correlate for both resuming opioid injection after release and using a non-sterile previously used syringe at relapse. Linkage to medical, harm reduction, and employment services should be developed for incarcerated Russian people who inject drugs prior to release.

1. Introduction

Relapse to opioid use is a significant public health problem among people who inject drugs, and the problem can be heightened when returning to the community following incarceration. Upon release, people who use opioids have an increased risk of death (Binswanger et al., 2007; Christensen et al., 2000; Farrell and Marsden, 2008; Kariminia et al., 2007; Merrall et al., 2010) and experiencing a non-fatal overdose (Kinner et al., 2012). Specifically, prior studies have consistently shown a marked increased risk of death due to drug overdose within two to three weeks of release from incarceration in the US and the UK (Binswanger et al., 2007; Bird and Hutchinson, 2003; Seaman et al., 1998).

In Russia, non-violent drug users are disproportionately affected by the criminal justice system, as evidenced by the fact that an estimated 50% of the inmate population in St. Petersburg is incarcerated due to drug offenses (Csete, 2004). Furthermore, Russia has one of the highest incarceration rates in the world (Walmsley, 2011) fueled in great part by the post-Soviet epidemic of heroin injection and making it the country with the largest heroin consumption globally (UNODC, 2010). Previous studies have documented that over 40% of people who inject drugs in Russia have been previously incarcerated (Dolan et al., 2007) and despite an incarceration rate of over 500 per 100,000 (Walmsley, 2011), the Russian prison system suffers from a lack of effective linkage to care services for prisoners being released. This is especially evident regarding opioid substitution therapy, which remains illegal in Russia despite compelling

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international evidence that it can reduce the incidence of reincarceration (Larney et al., 2012), death (Dolan et al., 2005; Huang et al., 2011; Kinlock et al., 2009) and delay relapse (Gonzalez et al., 2004).

Russia has also experienced an epidemic of HIV that is concentrated among people who inject drugs. With an estimated 83,000 individuals who inject drugs in St. Petersburg (Heimer and White, 2010), or about 1.8% of the population, HIV prevalence exceeds 50% (Eritsyan et al., 2013; Niccolai et al., 2010) and more than 90% are infected with HCV (Heimer et al., 2014; Paintsil et al., 2009). Mandatory HIV testing occurs in Russian prisons and it is where many individuals first learn of their HIV infection (Niccolai et al., 2010). In sum, the high rates of incarceration, injection drug use, and bloodborne pathogens may constitute a syndemic in Russia.

Despite the high prevalence of bloodborne diseases, people who inject drugs in the Russian prison system, and heroin use in the general population, no studies have yet to examine the time to relapse to injection opioids and correlates of high risk injection practices, such as syringe sharing, immediately following release from prison. Syringe sharing is a risk factor for bloodborne disease transmission and has been documented to be more elevated in a cohort of people who inject drugs who reported recent incarceration in Vancouver (Milloy et al., 2009; Wood et al., 2005). High frequency of syringe sharing in Russian prisons has been reported and was responsible for at least one HIV outbreak that occurred in a Russian prison (Bobrik et al., 2005), however the frequency of syringe sharing after release has not been determined. Additionally, this outcome could serve as a marker of high-risk injection behavior directly following release from prison, and then be used to better identify inmates who would most benefit from referral to harm reduction services prior to release.

The overall purpose of this study was to understand to what extent sociodemographic and pre-relapse factors have on time to resumption of injecting opioids post release and injection with a non-sterile previously used syringe at the time of relapse to opioid use. Additionally we were interested in receipt of a positive diagnosis for infectious diseases associated with unsafe injection. Inclusion of this was based on previous studies that reported on the association between awareness of serostatus and injection risk behaviors (Hagan et al., 2006; Metsch et al., 1998; Ompad et al., 2002; Vidal-Trecan et al., 2000). The specific aims of this study were to characterize and identify correlates among a sample of previously incarcerated people who inject drugs on two outcomes of interest: (1) elapsed time from release from prison to first injection and, (2) injection with a non-sterile previously used syringe at the moment of relapse.

2. Methods

2.1. Recruitment of participants

Recruitment for the parent study occurred in St. Petersburg via respondent driven sampling (RDS), a modified form of peer referral commonly used to recruit individuals from hidden populations (Heckathorn, 1997, 2002). Briefly, our RDS used dual incentives through a structured coupon disbursement procedure where respondents receive an incentive for both participating and recruiting peers. Recruitment began with initial respondents, known as "seeds" who were known to outreach workers and given coupons to distribute to peers (of the same target population). Peers scheduled an appointment to determine eligibility by study staff. The eligibility criteria for the parent study and this analysis were the same: at least 21 years of age, injected drugs in the past 30 days, and ability to provide informed consent. However this analysis was limited to only those who reported ever being incarcerated. Individuals who began injecting drugs after their most recent release from prison were excluded in this analysis ($n = 5$).

Trained interviewers administered a questionnaire to eligible participants to collect information on access and use of drug treatment and medical services, incarceration, alcohol, tobacco, and drug use, HIV risk practices associated with injecting drugs, sexual behaviors, HIV, TB, and hepatitis knowledge, overdose risk, physical and mental health, HIV disclosure and stigma. Data collection occurred from September 2012 to June 2013. Participation was voluntary and anonymous. IRB approval was granted by the Yale University Human Investigation Committee and ethical committee of Stellit, a non-governmental organization in St. Petersburg that specializes in HIV services among marginalized populations. After completing the study, participants were reimbursed with a gift worth approximately $15 consisting of personal hygiene products, mobile phone and gift cards, and provided HIV prevention information.

2.2. Outcomes

Our primary outcome was the elapsed number of days from the participants' most recent release from incarceration to resumption of injecting opioids. We defined relapse as the first moment when the respondent began injecting opioids after release into the community. Since all participants were actively injecting drugs at the time of the interview, no participants were censored: all reported a time to event. Our secondary outcome, injection with a non-sterile previously used syringe at relapse, was dichotomized (yes/no). We piloted the questions that specifically related to our analysis to ensure fidelity and no loss of meaning after translating from English into Russian. None of the study staff reported that the respondents had difficulty in understanding these items and at an interim analysis after 2 months from when data collection began, we verified that all respondents were providing valid, non-missing responses.

2.3. Independent variables

To avoid any issues with temporality between our independent variables and outcomes, variables that could only have occurred before relapse were included in this analysis. Therefore, we included the following sociodemographic and bio-behavioral characteristics: age (at relapse), sex, ethnicity, age at first drink of alcohol, education, how long they had been injecting drugs at the time of their most recent relapse, number of times incarcerated, and whether any drugs were injected during their most recent incarceration. We also created variables that captured receipt of a positive HIV, HCV, and HBV diagnosis prior to the moment of relapse. We included these variables to be markers of prior interaction with the medical system or drug treatment clinics where HIV, HCV and HBV testing is conducted routinely (personal communication with addiction psychiatrist in St. Petersburg). Receipt of positive disease diagnosis was ascertained by the following items: "Has a doctor/medical personnel ever told you that you were infected with HIV/HCV/HBV?" Among those who answered "Yes" to a particular disease, participants were asked when (month/year) the doctor/medical personnel informed them. We added the number of infectious diseases known at the moment of relapse in order to examine the possible effect of multiple comorbid conditions. Previous research has shown important differences in levels of risk by number of comorbid infections in similar populations (Pallas et al., 1999; Ramezani et al., 2014; Saiz de la Hoya et al., 2011).

2.4. Statistical analysis

Univariate statistics were generated to describe the sample in terms of sociodemographics, incarceration related characteristics,