



## Research Paper

# Safe and unsafe spaces: Non-fatal overdose, arrest, and receptive syringe sharing among people who inject drugs in public and semi-public spaces in Baltimore City



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## ABSTRACT

The spaces in which drug use occurs constitutes a key aspect of the “risk environment” of people who inject drugs (PWID). We aimed to add nuance to the characterization of “safe” and “unsafe” spaces in PWID’s environments to further understand how these spaces amplify the risk of morbidities associated with injection drug use. PWID were recruited through the Baltimore City syringe service program and through peer referral. Participants completed a socio-behavioral survey. Multivariable logistic regression was used to identify associations between utilization of public, semi-public and private spaces with arrest, non-fatal overdose, and receptive syringe sharing. The sample of PWID (N = 283) was mostly 45 years and older (54%), male (69%), Black (55%), and heroin users (96%). Compared to PWID who primarily used private settings, the adjusted odds of recent overdose were greater among PWID who mostly used semi-public and public locations to inject drugs. We also found independent associations between arrest and semi-public spaces, and between receptive syringe sharing and public spaces (all  $p < 0.05$ ). This study highlights the need for safe spaces where PWID can reduce their risk of overdose, likelihood of arrest and blood-borne diseases, and the dual potential of the environment in promoting health and risk.

## Introduction

The opioid epidemic in the United States has resulted in the loss of almost a half a million lives since 2000 (Rudd, Seth, David, & Scholl, 2016). In Baltimore City alone, overdose deaths increased 76% from 393 in 2015 to 694 in 2016. The need to understand and find solutions to this crisis at both national and local levels has never been more urgent. The physical settings in which injection drug use occurs is one feature of the “risk environment” and significantly influences the behaviors and health of people who inject drugs (PWID) (Rhodes, 2002, 2009). Paying attention to the microenvironment of the physical location within which drug use occur shifts singular focus from individual behavior as the primary determinant of health outcomes to the primacy of context as a key determinant of health (Rhodes, 2002). Further, a risk environment framework brings to fore the influences of macro-

structural factors such as economics, government policies, and social organizations as significant determinants of health outcomes, which are often mediated through more proximal micro-injecting environments, the environment surrounding the act of injecting (Rhodes, 2009; Rhodes et al., 2003; Tempalski & McQuie, 2009).

Furthermore, existing research identifies micro-injecting environments as a site of significant risk in the injecting lives of PWID (Small, Rhodes, Wood, & Kerr, 2007; Weeks et al., 2001). Public injection is defined as injecting behavior that occurs in any public place, including alleyways, hidden alcoves, and public toilets. The practice of public injection has been associated with increased potential for physical assault, robbery and police intervention, which in turn precipitates rushed injection and unsafe or less hygienic injection practices (Ickowicz et al., 2017). Research has demonstrated that public injection is significantly associated with detectable HIV viral load among PWID with

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HIV infection, greater risk injection practices, as well as greater likelihood of overdose, abscesses, vein damage, and blood-borne viruses including Hepatitis C (Ickowicz et al., 2017; Klee, 1995; Marshall, Kerr, Qi, Montaner, & Wood, 2010; Rhodes et al., 2006; Small et al., 2007).

Physical settings that serve as injection locations can have any number of characteristics that are associated with risky injection practices: lack of access to sterile water and sterile injecting equipment; exposure to public view and to the elements; and the social relationships and hierarchies in sites that regulate injection behaviors (Weeks et al., 2001). Police activity in public locations can also negatively affect use of syringe service programs (SSP) and can lead to rushed injections; both of which can increase syringe sharing and unsanitary injection environments (Shaw et al., 2015; Stoltz et al., 2007). Encounters between police and PWID are also associated with overdose and HIV infection; these meetings affect street-based PWID acutely (Beletsky et al., 2015). Existing literature demonstrates that many elements of a given injection location combine to create the specific risks facing PWID.

Public spaces as related to injecting behaviors are defined in different ways in existing literature. Existing research often groups together public and semi-public spaces when characterizing drug use or discussing health outcomes (Rhodes, 2009; Shaw et al., 2015; Stoltz et al., 2007; Weeks et al., 2001). A great deal of drug use in urban spaces occurs in environments on a gradient between purely public or purely private, and there is some definitional overlap in these terms (e.g., a shooting gallery may be run out of a private home) (Dovey, Fitzgerald, & Choi, 2001; IDUHA, 2015; Weeks et al., 2001). The relevant differences between these spaces are numerous: hygienic conditions like access to sterile water; the presence of other PWID; accessibility to law enforcement; proximity to drug markets; and visibility to the public. For example, a previous study suggests that shooting galleries—a semi-public injecting space—actually promote some harm reduction behaviors (cleaning used needles) even though the space is also host to unsafe injection practices like needle-sharing (Metsch et al., 1999; Weeks et al., 2001). Research also demonstrates that people who use shooting galleries perceive these spaces as “safe environments” where assistance is available in the case of an overdose but injecting in a shooting gallery is also associated with an elevated risk of overdose (Kimber & Dolan, 2007; Philbin et al., 2008). In this sense, the space can be both safe (e.g., someone present in the advent of an overdose) and unsafe (e.g., needles can be shared). Similarly, a spatial analysis and ethnography of PWID in a neighborhood in Melbourne, Australia identified the multiple dimensions of risk (police vs. overdose) and the dilemmas facing PWID in choosing places to inject (Dovey et al., 2001). Fear of arrest and concern about police presence were often reported along with unsafe injection practices, suggesting a relationship between the two (Small et al., 2007).

Our study aims to add nuance to the discussion of “safe” and “unsafe” spaces in terms of injection environments and to further understand how these spaces amplify the risk of morbidities associated with injection drug use. We characterize *public spaces* as open-air and visible places such as streets, parks and stairwells (Small et al., 2007). *Semi-public spaces* include abandoned buildings and shooting galleries, vehicles, and public bathrooms. These spaces are characterized by some form of enclosure and separation from street-level activity, but are still public in character (Linas et al., 2015). Although the definition of public and semi-public vary in the literature, they are distinct from *private spaces*, most commonly considered homes of PWID or the homes of others which are spaces wholly enclosed and generally inaccessible to anyone except residents (Weeks et al., 2001). We also differentiated between public and semi-public spaces because they were distinct in terms of risk. Specifically, we characterize the association between the primary use of public, semi-public and private injection spaces with significant risks associated with drug injection: arrest; non-fatal overdose; and receptive syringe sharing.

## Methods

The current analysis is a part of a larger study examining the impact of a change in syringe distribution practices of the Baltimore City Health Department’s SSP from one-for-one to a needs-based distribution model. Data collection for this cross-sectional study occurred from April to November 2016. SSP clients were recruited through targeted sampling methods with all SSP sites (N = 16) included in the sampling frame and recruitment targets at each site weighted by client volume. Study staff approached clients after they exited the SSP van and briefly explained the study, conducted a brief screening, and invited eligible clients to participate in a 30-min interviewer-administered Computer Assisted Personal Interview (CAPI) survey. Eligibility criteria included: being a registered SSP client and being at least 18 years of age. As the parent study examined differences in risk behaviors between PWID who did and did not attend the SSP, we simultaneously recruited non-client peers. Recruitment of peers occurred through referral from previously-interviewed clients of the SSP. Eligibility criteria included: (1) never having been a client of SSP, (2) being at least 18 years of age, and (3) self-report injection drug use in the past 30 days.

Informed consent was provided verbally and participation was anonymous. The survey instrument ascertained socio-demographics, housing status, police interactions, drug use behaviors, perceptions of fentanyl presence in drugs, drug treatment, and experiences with overdose, overdose response training and naloxone use. Participants were compensated with a \$25 USD Visa card. The study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

## Measures

The primary outcomes of interest were: non-fatal overdose in the past 12 months; arrest/incarceration in the last 12 months; and receptive syringe sharing in the last 30 days. Non-fatal overdose was constructed from the question, “have you ever experienced an overdose” and, if yes, “when was the last overdose” (within last week/month/6 months/year). Arrest/incarceration was constructed from the question, “Have you been arrested or incarcerated in the last year?” Receptive syringe sharing was constructed from the question “In the last 30 days, how many times did you inject using needles or syringes that you know have been used by someone else?” Race/ethnicity was collapsed into a three-tier variable for multivariable analysis (Non-Hispanic White vs. Non-Hispanic Black vs. Other i.e. Hispanic, multi-racial or other). Housing status was captured using the question, “In the last 3 months, where did you usually sleep at night?” with responses grouped into three categories: own or rent a house or apartment; staying with family or friends/other people; and homeless (streets/car/abandoned houses/shelter/no set place/don’t know).

Exposures of interest included primary location of injection in the last 30 days in a public space or a semi-public space (vs. private). We asked about places in the community where drugs were injected using two items: “In the last 30 days did you inject in the following places?” with responses including: own home; somebody else’s home; abandoned building; street or park; vehicle; shooting gallery; public bathroom; and other. Further, we asked, “Of those places you injected in the last 30 days, where did you inject the most?” Response options to the most frequent place of injection were grouped into private (own home or somebody else’s home), semi-public (abandoned building, vehicle, shooting gallery, public bathroom) and public (street, park).

Drug injection frequency was measured using the question “in the past six months, how often did you inject any drug?” Responses were collapsed into a binary variable consisting of daily or more (more than once a day/once a day) and less than daily (more than once a week/once a week/more than once a month/once a month/less than once a month). Responses on the number of times injected per day item were categorized as 1–3 (once/2–3 times) and > 3 times. Binary (yes/no)

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