

This is an Author's Original Manuscript of an article published by Taylor & Francis in Journal of Substance Use on 9/12/2014 available online at <http://www.tandfonline.com/doi/abs/10.3109/14659891.2014.987834>

Public injecting and public amenity in an inner-city suburb of Melbourne, Australia

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Abstract

Background Public drug markets and injecting impose significant burden on individuals and the community. This study aimed to document public injecting and amenity in North Richmond, an inner-city suburb of Melbourne, Australia.

Methods A rapid assessment methodology was employed. Data comprised: secondary data on drug use indicators, structured observations, and interviews with key stakeholders. Primary data were collected from May to October 2012. Quantitative data are summarised using descriptive statistics. Basic content analysis was performed on interview transcripts.

Results An average of 1843 needle-syringes were collected per month from syringe disposal bins and street-sweeps in the period Jan-Dec 2012. Discarded needle-syringes and other injecting paraphernalia were observed in a variety of locations. Stakeholder interviews indicated substantial concerns over the presence of needle-syringes and witnessing injecting and overdose.

Discussion Public injecting is widespread, frequent and highly visible in North Richmond and has a substantial negative effect on public amenity. The research identified two main priorities: 1) enhance access to harm reduction services and materials; and 2) improve public amenity. Among other responses, the study findings support the introduction of a supervised injecting facility as a viable component of a comprehensive harm reduction response to illicit drug use in this area.

Key words: public injecting, public amenity, supervised injecting facilities

Introduction

Injecting drug use in open, street-based drug marketplaces not only compromises the amenity of the environment in which the marketplace is situated but also presents major risks for drug consumers such as the risk of arrest or overdose, increased risk of blood-borne virus transmission, and injecting-related injuries from unhygienic and hurried injection (Aitken, Moore, Higgs, Kelsall & Kerger, 2002; Kerr, Small & Wood, 2005; Maher & Dixon, 1999; Rhodes et al., 2006; Small, Rhodes, Wood & Kerr, 2007). Public amenity is compromised by inappropriately discarded injecting equipment, witnessing injecting and intoxication, and other nuisance (Rhodes et al., 2006; Wood et al., 2003). Service responses in the health, welfare and law enforcement sectors have been developed to ameliorate these harms. Some, such as supervised injecting facilities (SIFs) have strong evidence of positive health (e.g., reductions in overdose and syringe sharing) and amenity impacts (e.g., reductions in public injecting, discarded syringes, witnessing injecting) in locations where they have been evaluated (Kerr, Montaner & Wood, 2008; KPMG, 2010; Marshall, Milloy, Wood, Montaner & Kerr, 2011; Papanastasiou, Kirwan, Winter & Power, 2009; Salmon, Thein, Kimber, Kaldor & Maher, 2007); others such as saturation policing, have shown limited, short-term, impact on public amenity with major impacts on the health and well-being of people who inject drugs (PWID) (Aitken et al. 2002; Cooper, Moore, Gruskin & Krieger, 2005; Kerr et al., 2005; Maher & Dixon, 1999).

North Richmond (situated in the City of Yarra local government area, LGA), is an inner city suburb of Melbourne, Victoria with an active and highly visible street-based drug marketplace that has generated a significant amount of public discussion and media exposure on the impact of public injecting. The marketplace has existed for over a decade, with local PWID as well as PWID from other parts of Melbourne coming there to purchase and use heroin and other drugs (Drug Policy Expert Committee [DPEC], 2000; Robson, 2009; Saltau, 2001). Despite ongoing, regular and intensive policing since at least as early as 1999 (DPEC, 2000; King, 2005; P. Munro, 2012), commercial exchange of heroin (and other drugs) and public injecting continues (Kaila, 2012; P. Munro, 2012).

The North Richmond drug marketplace has been described as the ‘perfect storm’ (Munro & Carey, 2011), with a range of characteristics to support its creation and maintenance. These include accessibility due to its proximity to the city and to public transport, an extensive network of alleys and laneways to enable injecting outside of direct public view (Fitzgerald, Dovey, Dietze & Rumbold, 2004)), and considerable pockets of socio-economic disadvantage in the local population. Much of the media and public attention focused on the area has highlighted public health concerns such as overdose, the discarding of injecting paraphernalia, witnessing of overdose and public injecting, and problems associated with

public nuisance attributed to people perceived to be associated with the illicit drug market (Hagan, 2012; Munro & Carey, 2011; Robson, 2009).

Despite substantial government, media and public attention and concern, there has been no comprehensive analysis of the public health and amenity impacts of injecting drug use in North Richmond. This research was designed to address this gap by: 1) gathering and compiling evidence of the existing situation regarding injecting drug use behaviours and impacts on public amenity in North Richmond and; 2) exploring community suggestions for responses to public injecting issues in North Richmond.

Methods

We used a rapid assessment methodology (Rhodes, Kumar & Fitch, 2000) that involved the collection of quantitative and qualitative data on public injecting in North Richmond. Three core datasets were collected and analysed: (1) secondary data on drug use indicators, (2) structured observations, and (3) semi-structured qualitative interviews. These were supplemented with notes made during field observations, informal conversations with key informants and other stakeholders, as well as media and other reports. The study was approved by the Alfred Hospital Human Research Ethics Committee.

1. *Secondary data* collected included data from routine drug surveillance systems (Cogger, Dietze & Lloyd, 2013), local government and contractor data on needle-syringe disposal in the City of Yarra, Ambulance Victoria service data on heroin overdoses (Lloyd, 2012; 2013) and overdose incidents recorded by North Richmond Community Health Needle Syringe Program (NSP).

2. *Structured observations* of public injecting sites (PIS) were undertaken after an initial mapping of public injecting in the North Richmond area on the basis of consultation with local health workers and observation by the first author (RD). PIS were identified on the basis of observations of injection-related litter: discarded needle-syringes (NS) and other injecting paraphernalia (OIP) – i.e. NS wrappers, alcohol swabs and swab packets, spoons, sterile water ampoules, NS disposal containers (yellow bottles or black, single-NS disposal tubes) and small balloons used to wrap heroin deals. All locations where Yarra City Council had installed needle syringe disposal bins were included. Twenty-one specific PIS were identified through initial mapping. These sites were generally secluded laneways or alleys. However, the initial mapping phase revealed that public injecting was not confined to this set of specific locations, instead occurring in a wide range of other locations as well – streets, parks, small car parks, residential driveways, public toilets and the grounds of the local high-rise public housing estate. Monitoring of public injecting thus incorporated the 21 PIS and a total of 43 other sites/locations. Figure 1 details the monitoring zone (indicated by the solid line) for

structured observations of public injecting. The selected monitoring zone was divided into three key monitoring areas (indicated by broken lines). Monitoring area number one (MA1) comprised eight PIS and 14 other locations. MA2 comprised nine PIS and ten other locations. MA3 (split across two geographically separated areas) comprised four PIS and nine other locations. On average, observations were conducted in one MA each visit. Irregular observations of locations outside the three MAs were also conducted.

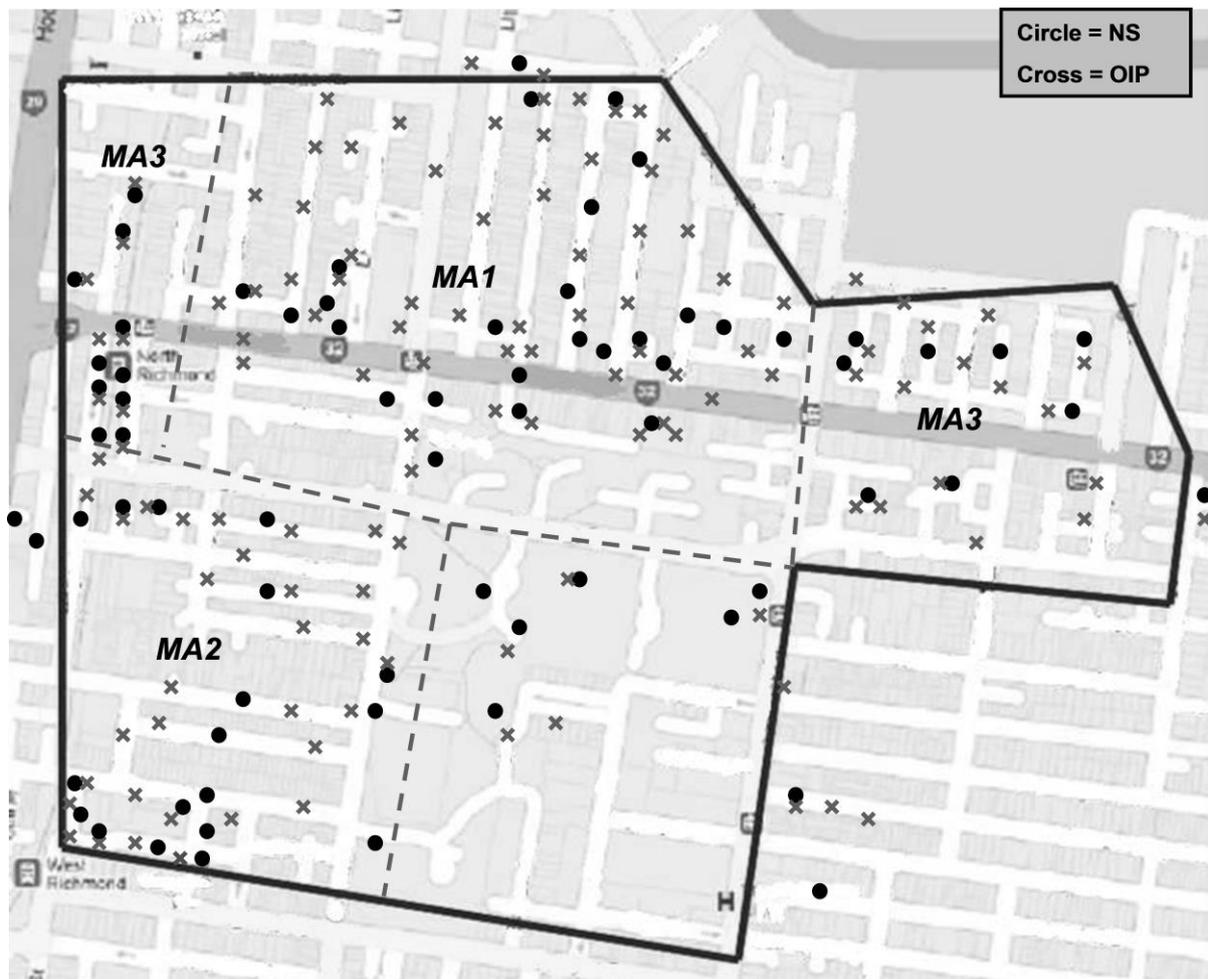


Figure 1. Observed indicators of public injecting (discarded needle-syringes and other injecting paraphernalia) in North Richmond, May-Dec 2012.

Figure 1 details all locations in which indicators of public injecting were observed, providing information on the geographical distribution of public injecting throughout the area. Circles mark locations where discarded needle-syringes (NS) were observed while crosses mark locations where other injecting paraphernalia (OIP) were observed.

On average, PIS were monitored one day per week from May to October 2012. Generally, monitoring was conducted on a Monday or Wednesday throughout this period. However,

there were days when monitoring was not conducted due to inclement weather, because stakeholder interviews were scheduled, or for other unavoidable reasons. In order to assess potential seasonal differences in public injecting, an additional two days of monitoring were conducted in December. A total of 16 monitoring sessions were conducted through the study period. An observation checklist was used to quantify instances of key variables across the domains of visibility of public injecting, litter and amenity such as the number of discarded NS. Observations of drug market activity were also conducted to gather data on general public amenity, nuisance and safety concerns associated with the drug market.

3. *Semi-structured formal interviews* were conducted with community stakeholders – PWID (n=14), local health, welfare and community workers (n=3), police (n=2), local traders (n=1) and residents (n=2). Interviews covered: basic demographic information (and drug use information for PWID); opinions and experiences of drug market activity and public injecting; experience of and opinions about PIS; and participant opinion on appropriate responses to public injecting in North Richmond. Participants were recruited through contacts from local services and agencies as well as direct approach in their places of business. PWID, trader and resident participants were reimbursed \$20 (or an equivalently-valued gift) for their time and out-of-pocket expenses, in accordance with accepted practice (Fry & Dwyer, 2001; Fry, Hall, Ritter & Jenkinson, 2006)). Other stakeholder participants (i.e. health/housing workers and police) were not reimbursed as interviews were conducted within their usual work time. Verbal informed consent was taken from participants who were assured that the confidentiality of their responses would be maintained subject to legal requirements. Interviews were conducted in various locations (convenient parks, cafes and offices), and digitally-recorded, taking an average of 30 minutes to complete. Interview data were supplemented with information from informal conversations held with a further 11 traders, some of whom were also local residents, one other resident and one other PWID. All these people were informed they were speaking with a researcher and the purposes of the research were explained. Implicit consent was assumed if the conversation continued. The key characteristics of the sample are shown in Table 1.

Structured observation and secondary data were summarised using descriptive statistics. Interview recordings were transcribed for analysis. An explicit focused coding strategy was employed, with codes developed *a priori* based on the research questions. Core coding categories included: public injecting, access to injecting equipment, drug-related harms, drug market impact, amenity and public health strategies. Basic content analysis was performed, delimited to the specific content themes (Silverman, 2011).

Table 1. Demographic and other characteristics of interview participants (n=35)

	n	%
Stakeholder groups		
PWID	15	41
Trader	8	24
Trader/resident	4	12
Resident	3	6
Worker (including police)	5	15
Gender		
Male	19	53
Female	15	44
Transgender	1	3
Age groups		
25 – 30	3	9
31 – 35	7	21
36 – 40	7	21
41 – 45	6	15
46 – 50	8	24
51 – 55	2	6
56 and older	2	6
PWID cultural/linguistic background (CLB) (n=15)		
Anglo-European	5	33
Aboriginal	4	27
Vietnamese	4	27
Arabic	1	7
African	1	7
Other stakeholder CLB (n=19)		
Anglo-European	10	47
East Asian	8	42
Arabic	1	5
South Asian	1	5

Results

Consistent with contemporaneous media reports (Hagan, 2012; Kaila, 2012; P. Munro, 2012)), drug market observations conducted by RD between May 2012 and October 2012 showed an active and visible drug marketplace with people identified as selling and buying drugs (primarily heroin) and people brokering drug transactions for others, at each visit. Public injecting and amenity associated with the drug marketplace are detailed below, along with suggested responses.

Public injecting

Primary and secondary data highlight the nature and extent of public injecting in North Richmond. Routine drug surveillance systems provide information on public injecting, indicating the practice occurs across Melbourne and has been common among PWID over the last decade (Fry & Miller, 2001; Kirwan, Diteze & Lloyd, 2012). In 2012, North Richmond was included as a recruitment site for the Melbourne arm of the Illicit Drug Reporting System (IDRS) drug monitoring project and participants were asked the location of their last injection. While the highest proportion of public injection was reported by study participants in the Melbourne suburb of Footscray (64%), just over one third (36%) of participants from North Richmond reported injecting in public places (Cogger, 2012).

Primary data on public injecting were collected through interviews with stakeholders and observations. Nearly all PWID reported public injecting and the key reasons given were not wanting to be found in possession of drugs by police or being unable to wait – either due to desire for drugs or because of a need to manage effects of withdrawal (see Table 2).

As Figure 1 shows, public injecting was widespread across the research area. Particular concentrations were evident in the areas adjoining the North Richmond/Abbotsford retail precinct as well as the public transport access points. We had initially anticipated that public injecting would most likely occur in locations affording privacy, such as marginal laneways and alleys, or areas offering shelter from observation such as doorway alcoves. While there was evidence of public injecting occurring in these types of locations, discarded needle syringes and OIP were also observed in open areas such as footpaths and parks, as well as street gutters, car parks and residential driveways. A local health worker advised that injecting litter in gutters is most likely attributable to people injecting in cars and then disposing of the equipment in the street. However, litter observed on footpaths and driveways suggests that some people inject in the open, potentially in view of residents and/or pedestrians. This was corroborated by reports from local workers, residents and observations made by RD.

Quantity of discarded needle-syringes and other injecting paraphernalia

While the quantity of discarded NS was not always high, there was no monitoring occasion when discarded needle-syringes were not observed. Across all monitoring sessions (n=16), an average of 14 discarded NS were observed each visit. However, a substantial number (n=34) of discarded NS were identified on the 1st October. This monitoring session included the first thorough examination of both sides of a railway line embankment – a relatively inaccessible site for collection of discarded NS. Additionally, a substantially higher number of NS were also found in the monitoring session conducted on the 10th December. In contrast to a usual

monitoring session, this visit covered all of the monitoring zone except for the smaller component of MA3 (Figure 1). Excluding the NS identified on these two exceptional monitoring sessions, an average of 10 discarded NS were found per monitoring session.

The ready accessibility of used NS is of significant concern given the reduced access to sterile injecting equipment in North Richmond after-hours and on weekends (at the time of data collection the NSP operated 9am-5pm on Monday, Wednesday and Friday and 9am-6pm on Tuesday and Thursday). In interviews and informal conversations, PWID and health workers reported that this reduced access frequently gave rise to requests to borrow equipment already used by other PWID or use of discarded needle-syringes (including NS removed from syringe disposal bins).

In contrast to observations of discarded NS, observations of OIP were frequent and widespread. These observations provide additional evidence of the significant rate of public injecting in North Richmond. Importantly, our observations provide some evidence that most public injectors make attempts to discard needle-syringes appropriately as OIP were observed much more frequently than discarded NS.

Trends in public injecting

Data collected by Yarra City Council on NS retrievals from disposal bins and street-sweeps (hand collection of loose NS conducted Monday-Friday on a fixed geographic schedule) are a key indicator of public injecting. Figure 2 shows that, while there are large variations in the monthly totals of NS collected, an average of 1843 NS were collected per month from disposal bins and street-sweeps in North Richmond/Abbotsford across 2012. The locations of many of the disposal bins in alleys and laneways and the nature of the street-sweeps means that the vast majority are from public injecting. Between 2010 and 2012 there was a 72% increase in the number of NS collected, driven largely by increases in the number of NS collected each month from disposal units (Figure 2).

An additional 16 disposal units were installed by Yarra City Council in August 2011 which accounts for some of the increase in numbers. However, the decline in NS collected from street-sweeps in the latter months of 2010, has been largely sustained from that period onwards. These data highlight that the majority of PWID dispose of injecting equipment appropriately.

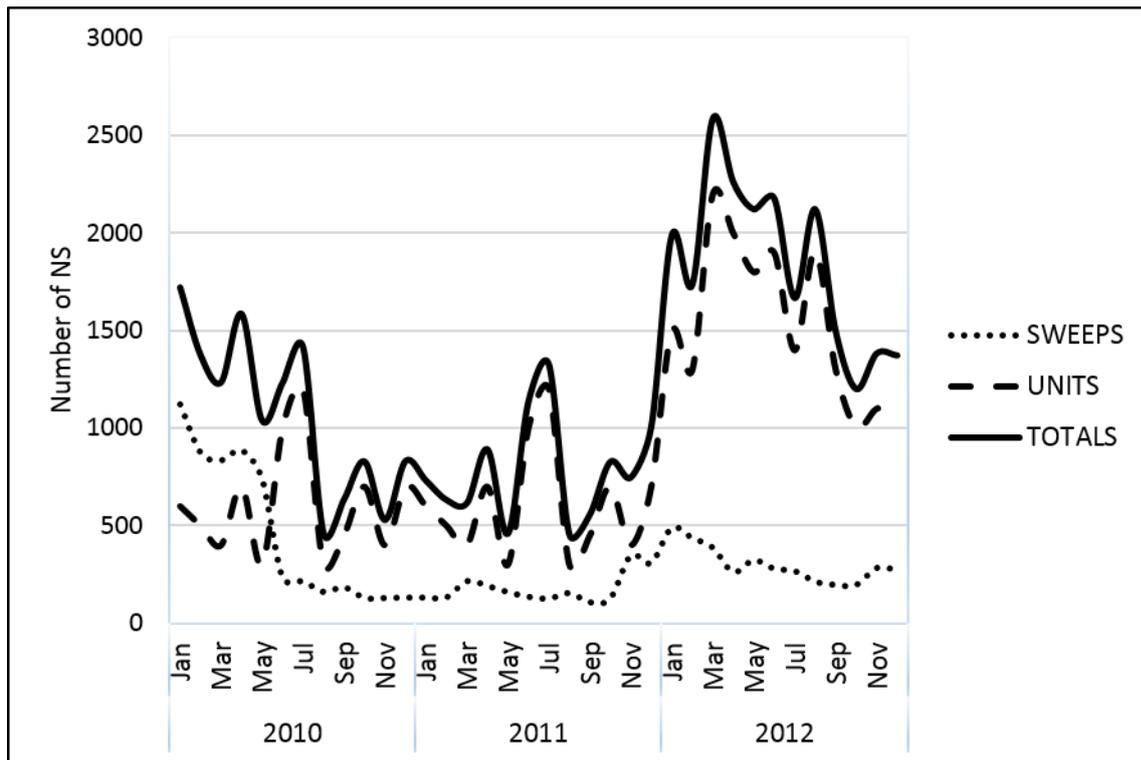


Figure 2. Needle syringe retrievals from disposal units and street-sweeps in North Richmond/Abbotsford, Jan 2010 to Dec 2012.

Overdose

The City of Yarra typically has the highest number of ambulance attendances at heroin-related overdose¹ of any LGA in Melbourne (Lloyd, 2012; Lloyd, 2013; Lloyd, Matthews & Gao, 2014). Over the two years preceding the study, the number of heroin-related overdose attendances reduced in Yarra, but remained approximately 1.5 times as many as in the Melbourne LGA (340 vs 224 in 2010/11; 336 vs 231 in 2011/12). The majority (70%) of the heroin-related overdose ambulance attendances in Yarra in 2011/12 were located in the suburbs of Richmond and Abbotsford that surround the PIS identified in Figure 1 (Lloyd, 2013). In comparison with 2011/12, during the study period and the six months following, heroin-related ambulance attendances in Yarra increased, while those in Melbourne LGA decreased (352 vs 193 in 2012/13) (Lloyd, Matthews & Gao, 2014).

The North Richmond Community Health NSP also records overdoses attended by NSP (and other) staff. These critical incident data indicated that staff attended (and resolved) an average of two heroin overdoses per month throughout 2012 (range 0-5), meaning that at least another 24 non-fatal heroin overdoses occurred in Yarra over and above the ambulance data obtained.

Public amenity

Interview and observation data also highlighted the amenity impacts of public injecting and the drug marketplace. All PWID and nine other stakeholders had witnessed people injecting in public and all participants had observed injecting-related litter. Most PWID reported that they discarded their own equipment appropriately – either in disposal bins, or in general rubbish bins. The most common reason given for disposing appropriately was to protect children from needle-stick injuries and exposure to injecting-related litter (see Table 2). However, PWID reported that other people did not discard appropriately. The two most common reasons for equipment being discarded inappropriately were that people were concerned about being stopped by police and found in possession of injecting equipment, and that ‘some users don’t care’. While most PWID understood that it was not illegal to be in possession of sterile or used injecting equipment, they commented that being found in possession of injecting equipment meant an increased risk they would be more thoroughly searched by police (including being strip-searched) and that police would conduct checks to determine if they might have outstanding warrants.

Most discarded NS were observed in locations where there were no disposal bins, although on rare occasions discarded NS were found within a metre of a disposal bin (most commonly around a railway car park). The efficacy of disposal bins for reducing the number of discarded NS was particularly highlighted at one PIS. A council disposal bin had been located at this PIS when monitoring commenced. However, two months into the research, the bin was removed by a person or persons unknown. At each monitoring visit subsequent to its removal, discarded NS were observed within the vicinity. Discarded NS were also found near disposal bins when the bins were full. Sometimes bins were full because people had also disposed of OIP – in particular, NS wrappers and the paper bags in which injecting equipment had been provided.

Table 2. Stakeholder experiences and perceptions of public injecting and amenity (n=35)

	PWID (n=15)	Other stakeholders (n=20)
Inject in public places	13	N/A
Reasons inject in public		
Unable to wait (<i>desire for drugs/manage withdrawal</i>)	8	
Concern over being found in possession by police	7	
Homelessness	3	
Can't inject at home (<i>children/housemates</i>)	2	
Live elsewhere but in drug market during day	4	
Discard injecting equipment appropriately	12	N/A
Suggested reasons for appropriate disposal		
Protect children (<i>from needle-stick/exposure to injecting</i>)	10	
Consideration to rest of community	3	1
Suggested reasons for inappropriate disposal		
Concern about police	7	2
Some users 'don't care'	7	2
Not locals (<i>so don't care</i>)	4	-
Intoxication	3	1
Not enough disposal bins	3	-
Stash for re-use on weekends when can't get new NS	3	1
Only a minority that dispose inappropriately	6	2
Witnessed public injecting	15	9
Observed injecting litter	15	19
Clean up injecting litter	7	-
Instruct other PWID to discard appropriately	7	-
Responded to overdose (<i>call ambulance/provide CPR</i>)	11	4
Impacts of public injecting and drug market		
Bad for business	-	4
Safety fears	2	7
Witnessing arguments/violence	7	7
Witnessing injecting	-	9
Witnessing intoxication/overdose	15	4
Negative reputation of area	5	8
Comments re effects on children	8	6
Managing community concerns	5	5
Concern over BBV risk/needle-stick injury	-	5
Avoid certain areas/particular times of day	-	3
Suggested responses to public injecting/drug market		
Improved NS distribution and coverage	7	3
Installation of syringe vending machines	5	2
Installation of more disposal bins	4	4
Increased policing of the area	-	10
Policing just displaces temporarily	15	7
Supervised injecting facilities	15	9
Improved agency cooperation/collaboration	-	4
Improved treatment access	1	3
Broad strategies to address socio-economic determinants	4	3

Table 2 also presents some of the impacts of public injecting and the drug market experienced by local agencies, services and organisations as well as by local traders and residents. In addition to these, other impacts of the drug market and public injecting included regular telephone calls to police, health services and Council from members of the public reporting discarded NS. Throughout the study period, RD was told by several community workers of one particular resident who regularly contacted them with concerns about people injecting in her driveway. At RD's final visit, she observed that this resident had installed an expensive roller-door across her driveway in response to the persistent injecting and discarding of NS on her property. Sara, a local resident interviewed for the study, likewise noted that she had held discussions with her neighbour about installing a gate to block access to the laneway behind their houses. Sara also reported that a local business owner she knew had installed a roller-door across the alley next to their business because they 'were regularly finding people OD'ed [overdosed] there and they were worried that one day they'd find someone dead'. Residents with primary school-aged children reported that their local primary school has syringe handling policies, with children instructed in the appropriate response (i.e. not touching and notifying a teacher). Teachers at the school reported having to monitor the grounds each day for discarded injecting equipment before children arrive. Similar practices occurred in a second local primary school. Cleaners employed by Office of Housing at the high-rise public housing estate are required to systematically rake all the children's playgrounds each morning as well as regularly patrolling housing estate car parks to collect discarded NS. Public injecting incurs costs for the council for calls to the Syringe Disposal Hotline as well as the costs of conducting daily street-sweeps and emptying syringe disposal bins. Rather than contacting the council or the Syringe Disposal Hotline, RD was told by some residents and traders that they simply disposed of NS themselves.

Suggested public health responses

Stakeholders suggested a range of strategies to address public injecting, health and amenity concerns (see Table 2). These included: improved NS distribution and coverage, installation of syringe vending machines, installation of more disposal bins, increased policing of the area, and supervised injecting facilities (SIFs). SIFs featured prominently as an interview topic – participants either introduced the topic of supervised injecting facilities (19 of 35) or were asked their opinion of SIFs by RD (12 of 35). Attitudes towards SIFs were mixed with universal support for a SIF evident among PWID, but a diversity of opinion expressed by traders and residents. Of the 20 non-PWID stakeholders, nine supported SIFs (although one did not want a SIF in the local area), six were against the idea of a SIF and one was undecided. Three traders were not asked their opinions of SIFs as the conversation was interrupted by their needing to return to their work and one trader/resident was not asked as

he was reluctant to discuss the public drug market and drug injecting. Opposition to SIFs was grounded in fear that it would entrench drug use in the area, would bring more drug users to the area (the ‘honeypot’ effect) and further reduce public amenity. Supporters suggested that it would improve public amenity, reduce overdose and blood-borne viruses.

Discussion

The data collected for this research highlight that there is a substantial public injecting and amenity problem in North Richmond that imposes a significant burden on individuals and the community. Public injecting was widespread, frequent and highly visible in North Richmond and there was significant community concern over discarded injecting equipment, although evidence showed that the number of NS discarded appropriately was far greater than the number disposed of inappropriately. For PWID, poor access to sterile injecting equipment after hours and on weekends led some people to inject with used NS, placing them at risk of BBV infection. This is of significant concern given the high prevalence of hepatitis C infection among Melbourne PWID. At July 2011, of 352 people providing a blood sample in a cohort study of Melbourne PWID (including people accessing the North Richmond drug market), 52 percent had current hepatitis C virus (HCV) infection and a further 22 percent had a previous infection (O’Keefe, Aitken, Higgs & Diteze, 2013). More recently, in the 2013 annual survey of Australian NSP attendees, 67 percent of participants in Victoria were HCV antibody positive. HIV prevalence was significantly lower, at 1.3 percent of Victorian NSP attendee participants (Iverson, Chow & Maher, 2014). Overdoses were also an issue, with ambulances frequently attending heroin-related overdoses in North Richmond.

New and/or improved public health responses are required to address the significant burden imposed on individuals and the community by the drug market in North Richmond. Two priorities were identified: 1) improving access to harm reduction materials and services and 2) improving public amenity.

PWID who inject drugs in North Richmond remain at significant risk of health harms. The two key risks identified were the risk of transmission of blood-borne viruses through use of non-sterile injecting equipment and the risk of undetected overdose through public injecting in marginal locations. The reduced access to sterile injecting equipment after hours and on weekends places PWID at risk of BBV exposure. Improved access in North Richmond is urgently required: syringe vending machines and changing legislation to enable peer-to-peer distribution of needle syringes are cost-effective interventions to extend needle syringe provision hours and coverage (Jones, Pickering, Sumnall, McVeigh & Bellis, 2010)). Overdose risk in North Richmond could be significantly decreased if PWID had improved access to peer-based training in overdose response and to the opioid antagonist, naloxone.

The efficacy of providing PWID with peer-based training in overdose response and expired air resuscitation (EAR) is supported by the research literature (Kerr, Dietze, Kelly & Jolley, 2009; Sherman, Gann, Tobin, Latkin, Welshe & Bielensohn, 2009)). New work highlights how providing naloxone to peers of PWID is a cost-effective way of reducing overdose (Coffin & Sullivan, 2013; Walley, et al. 2013). All the preceding initiatives are consistent with state government strategy (State of Victoria, Department of Health, 2012).

Yarra City Council is active in addressing the reduced amenity associated with public injecting through daily street-sweeps and installation of needle syringe disposal bins. The research indicates these activities should be continued and their efficacy might be further improved by installation of additional disposal units (including larger bins) and increased monitoring to ensure bins are not over-full.

Finally, consideration should be given to the introduction of a supervised injecting facility as a viable component of a comprehensive harm reduction response to illicit drug use in North Richmond. Conditions of high rates of overdose, public injecting, discarded injecting equipment and reduced amenity have led to the establishment of supervised injecting facilities in other cities (Papanastasiou, et al., 2009) and the evidence clearly demonstrates they are effective in improving amenity and health (Kerr, et al., 2008; KPMG, 2010; Maher & Salmon, 2007; Marshall, et al., 2011; Salmon, et al., 2007; Wood, Tyndall, Lai, Montaner & Kerr, 2006).

Footnotes

1. Defined as attendances where there is a positive response to naloxone or where evidence of heroin use is established through clinical assessment by ambulance paramedics and/or by the patient or their associates.

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