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Who goes first? Understanding hepatitis C risk among injecting networks in the prison setting

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ABSTRACT

Background: Hepatitis C (HCV) is a blood-borne virus that is most commonly transmitted through shared injecting equipment. Due to the criminalisation of injecting drug use, HCV is highly prevalent among those incarcerated. Using a risk environment framework, this qualitative study sought to understand the role of HCV risk within injecting networks in the prison setting.

Methods: Thirty-two adult prisoners (n = 24 men; n = 8 women) with a history of injecting drug use participated in this qualitative sub-study. Participants were recruited across four correctional centres.

Results: Social, economic, and environmental risk factors contributed to injecting practices within prison. Commonly, the person supplying the drugs injected first, with the person who owns the injecting equipment going next. HCV did not regularly factor into determining order of injection within networks (i.e., first, second, third), although it was reported that some prisoners claimed not to have HCV in efforts to "jump the queue".

Conclusion: Social, economic, and environmental risk factors contribute to negotiation of injecting order among people who inject drugs in prison. Risk of HCV exposure rarely influenced the injecting order. Harm reduction strategies should consider the social factors influencing injecting drug use in the prison setting especially to optimise the population benefits of the roll-out of highly effective HCV treatments.

1. Introduction

Hepatitis C (HCV) is a blood-borne virus and is most commonly transmitted through shared injecting equipment (Hajarizadeh et al., 2013; Shepard et al., 2005). Injecting drug use is illegal in most countries, contributing to the high incarceration rates of people who inject drugs (WHO, 2014; Wolfe et al., 2010). Once incarcerated, prison is a high-risk setting for HCV due to increased risk of exposure and greater prevalence (Larney et al., 2013; UNODC, 2014). The prisoner population is significantly more likely to have HCV than the general population (Larney et al., 2013).

The majority of those imprisoned in Australia have a lifetime history of injecting drug use (Reekie et al., 2014). It is well known that people in prison may continue to inject drugs while incarcerated, although injecting occurs less often than within the community (Wright et al., 2015). Despite availability of illicit substances, equipment for drug consumption is limited, resulting in a high frequency of equipment sharing (Kinner et al., 2012; Snow et al., 2014), and is bought or hired at premium market rates (up to five or six times the equivalent of one injection of heroin) (Treloar et al., 2016). Fincol (a quaternary amine disinfectant (JASOL, North Ryde, Australia)), a bleach alternative, is available to those incarcerated in Australia; however, it is not equally available in all states and territories (AIHW, 2015). Despite availability of Fincol, there is limited data to show the product's efficacy in reducing transmission in the real-world (e.g., prison) setting (Doerrbecker et al., 2011; Luciani et al., 2014). Limited access to prevention measures such as bleach, in combination with frequency of equipment sharing, has been shown to be associated with increased risk of HCV transmission within the prison population (Cunningham et al., 2017).

There has been little research to understand how HCV and other blood-borne viruses (BBVs) risks are navigated among injecting networks within the prison setting where prevention strategies are limited. It has been conceptualised that relations between individuals and environments jointly influence drug-related harms (Rhodes, 2009), such as transmission associated risks. Social, economic, environmental, and policy factors combine to construct perceptions of risk and shape the available responses to these perceptions (Rhodes, 2002). Furthermore, injecting drug use is a social process; prevention education for risks associated with injecting drug use should consider the social practices of injecting drug use (Fraser et al., 2014). Understanding the injecting networks of people who inject drugs (a social factor) in the prison setting (an environmental factor) in which equipment must be bought

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or hired (an economic factor) without distribution of sterile equipment (a policy factor) is essential for better addressing the unique social mechanisms and behaviours associated with HCV transmission risk in this population group.

Social research complements the work of epidemiologists "by understanding the array of factors which influence the ways in which individuals go about 'doing' risk behaviour" (Rhodes, 1997, 209). This paper seeks to understand injecting networks and perceptions of risk among prisoners with a lifetime history of injecting drug use. The findings presented here provide insight into risk behaviour patterns among injecting networks within prisons and inform HCV prevention education.

Participants were recruited from a larger epidemiological study (Surveillance and Treatment of Prisoners living with hepatitis C (SToP-C)) which aims to understand real-world implications of treatment as prevention efforts within the prison setting (The Kirby Institute, 2014). The SToP-C study design includes surveillance of HCV prevalence and incidence across four correctional centres in New South Wales (NSW), Australia followed with implementation of HCV treatment scale-up for prisoners with chronic HCV infection across the four study sites. Monitoring of prevalence and incidence will continue following completion of treatment across the sites to assess effectiveness of HCV treatment as prevention.

2. Methods

The SToP-C clinical trial is being implemented in four correctional centres in NSW, including three men's prisons and one women's prison. Participants in this qualitative study were recruited equally across each of the participating sites, with eight prisoners participating in interviews at each correctional centre (total = 32 participants).

Participants were recruited by the SToP-C study nurses during clinic visits and included prisoners testing HCV RNA+ (meaning they were currently infected with HCV) and those testing HCV RNA-. Verbal consent was obtained by the study nurse who then provided prisoner identification numbers to the interviewer. This ensured prisoners' anonymity was maintained prior to their consent to participate in this qualitative study. The interviewer provided the list of prisoner identification numbers to a correctional officer allocated to the SToP-C study upon arrival at each correctional centre. The SToP-C officer escorted potential participants to the interviewer at which point the interviewer introduced herself and explained the study. Participants were able to decline at any stage. Signed consent was obtained from all participants prior to commencing interviews. Interviews were conducted within a private room in the health clinic at three sites, and in a private room within an educational wing at the fourth site (the study officer was not in the room during interviews). Participants were paid $10 into their inmate account as remuneration for their time.

Interviews were semi-structured and in-depth, asking participants to reflect on knowledge and practice of prevention strategies available within their current correctional centre, knowledge and experience of HCV treatment (both broadly and contextually, i.e., within the prison setting), and perceptions of re-infection (including risk, prevention (and personal strategies for), and concerns). Demographic information included age, gender, time served on current sentence, history of injecting drug use, current drug use within prison, history of HCV (including diagnosis/es, previous treatment/s, spontaneous clearance, and results of most recent HCV test), and whether accessing prescribed opioid substitution therapy in prison. The interviewer (LL) is a post-doctoral social scientist with experience conducting interviews with people in prison, particularly regarding HCV education, care, and treatment. The interviewer is employed at a university independent to both correctional services and correctional health; this was communicated to all participants prior to commencement of interviews.

Participation in the qualitative component of the study was voluntary; deciding not to participate in an interview had no bearing on their involvement in the clinical arm of the study. All participants had been screened for HCV in the previous six months. Purposive sampling was conducted to ensure near equal representation of those currently living with chronic HCV infection and those who were not currently living with HCV.

Interviews were audio-recorded, transcribed, and de-identified. Two authors (LL and JR) engaged in reflective discussion at the end of each day of data collection to discuss emerging themes. Codes were identified from the interview schedule, with sub-nodes emerging throughout the data collection process. Inductive coding was completed to identify themes (Saldaña, 2013). Preliminary coding was completed and discussed among the authors to identify gaps and repetition. The final coding framework was reviewed and agreed upon by all authors.

A second round of coding was undertaken using the risk environment framework (Rhodes, 2002) to identify risks associated with injecting networks within the prison setting. Results are presented to align with the environmental, social, and economic factors associated with drug harms in a risk environment framework (Rhodes, 2009). The policy factors associated with injecting networks and associated risks are beyond the scope of this qualitative analysis and will be not explored in depth. Participants' gender, recent HCV test result, and security classification are provided. Men's prisons included two maximum security prisons and one minimum security prison; the women's prison included both medium and minimum security classifications, as such, women's security classifications are not presented.

Ethics approvals were obtained from all relevant research ethics committees: Justice Health and Forensic Mental Health Network (G621/13); Corrective Services NSW (qualitative sub-study approval on 5 April 2016); and Aboriginal Health and Medical Research Council of NSW (1253/17).

3. Results

Thirty-two people in prison participated in this study, eight of whom were women. Sixteen participants tested HCV RNA+, 14 tested HCV RNA-, and two participants were awaiting results at the time of interview. The average age of participants was 40, an age slightly higher (by six years) than the mean age of prisoners in custody in NSW at 30 June 2016 (ABS, 2016). Eleven participants reported previously completing interferon-based therapy with cure; one participant had previously commenced interferon-based treatment but had to cease therapy prior to completion due to adverse side-effects. Male participants had served a median of 5.5 years of their current sentence; women had served a median of 3.5 years. Data was only collected on length of time served on current sentence; no information was collected regarding history of incarceration or recidivism. As half of the participants were recruited from maximum security correctional centres, the median of time served may be disproportionally higher than the state average. Nearly half (n = 14; 44%) of participants reported receiving opioid substitution therapy while incarcerated. All participants reported a lifetime history of injecting drug use (meaning they had used drugs intravenously at least once in their lifetime); 33% of men and 38% of women reported current injecting drug use in prison. Among those who reported current injecting drug use in prison, the most frequently used drugs were: methamphetamines, cocaine, and various opioid substitution therapies (e.g., Subutex).

Environmental, economic, and social factors were described as contributing to and/or determining injecting order and relationships among people who inject drugs in prison. Awareness of or concerns about HCV risk and exposure rarely influenced the injecting hierarchy, although some inmates reported having observed others within prison-based injecting networks falsely claiming to not have HCV in order to "jump the queue".

3.1. Environmental risk factors

Prisons are unique risk environments, whereby prisoners are highly surveilled within closed settings which provide no legal means to access sterile equipment. Those caught using drugs in prison may be denied privileges, such as visitations. Environmental factors influencing injecting networks and behaviours in prison included time restrictions and efforts to avoid detection by prison officers. These environmental factors contributed to limited opportunities to clean injecting equipment, thereby contributing to increased HCV/BBV risk among people who inject drugs in prison.

> It's a process, the Fincol. You have to sort of wash your syringe with it a good six to seven times and you know, so sometimes I find that some women are hurrying to try and have their shot and inject, because you've got to watch out for officers and you know, it's not an easy sort of thing to do. (Female, HCV positive)

> It depends on what they're using, how they are using, who's around, how much time they've got. Whether they're in a cell where there are no cameras, you know what I mean? Sometimes they are locked out in the yard under six cameras and we've all got to sort of huddle around and try to smother it so they don't see it. (Male, HCV negative, maximum security)

3.2. Economic risk factors

Economic influences were regarded by participants as responsible for determining the "pecking order" of injections in a group context. Typically, the person who supplied the drugs went first. The next person to use was either the owner of the equipment or a friend of the person supplying the drugs. There were some variations among the order of who injected second, third, and so on, but it was frequently described that the one "financially backing" the "hit" would go first. In this way, those with greater access to drugs (through fiscal means or otherwise) were afforded greater protection against HCV exposure; those with fewer resources were, reportedly, more likely to be risk-exposed through economic hierarchy. The owner of the injecting equipment also held positional hierarchy in determining order of injecting.

> Yeah it depends whose syringe it is and who owns it [the drugs] and who's putting their stuff inside there … it depends … who's putting the stuff in the spoon you know what I mean (Male, HCV positive, minimum security)

> Generally, it would go on who's paid for it or who's supplied it. [*Okay so whose drug it is?*] Or who owns the syringe. […] So whoever owns the fit and whoever is putting in, so usually whoever is financially backing it [the drugs] gets to go first and then whoever supplies the fit gets to go second and then it's whoever is chucking in after that. That's generally the order. (Male, HCV positive, maximum security)

Although the owner of the needle could typically inject next in the queue after the drug supplier, one participant explained that, as the owner of the equipment, he preferred to go last to ensure his equipment was looked after and remained in his possession. This suggests that prisoners who possess paraphernalia for injecting may prioritise the drugs received in exchange for use of equipment above HCV risk. It is important to note that this participant was HCV positive at his most recent test result.

> And going last just makes sure that everybody else is done, because once I'm last then I can do myself in my own time and you can get people out of your cell or out of wherever you're shooting up, because the last thing you need is groups of people just hovering around somewhere. … Some people like to go first, get themselves out of the way, but no one's going to leave their needle behind and let someone else go. (Male, HCV positive, maximum security)

3.3. Social risk factors

Participants reported that HCV status was often not discussed or considered among injecting networks. Economic and environmental factors were described as influencing the injecting order, but HCV was often not considered as an influence on positioning within injecting networks. Instead, there was broad acceptance of HCV risk, with some participants describing exposure as inevitable among people who inject drugs in prison.

> [*Do people ever come forward and say they've got hep C or is it assumed?*] We just assume with everybody. Doesn't matter if someone says they haven't got it, you just assume, you can't go "he's clean so I don't need to bleach it, I'll just water rinse it". (Male, HCV positive, maximum security)

> [HCV] is not the first thing you think of when you are about to have it [inject]. Probably the first thing you think of after you have it, but it's too late then. (Male, HCV negative, minimum security)

Potential for exposure to HCV appeared to be widely accepted, however, there were a range of perceptions regarding non-disclosure of inaccurate or misleading representation of HCV status. For some, there was an assumption that other people who inject drugs had HCV, while for others, social and physical consequences were described for injecting network members who had misrepresented their HCV status.

> The number one thing is everyone walks around and they all say, "I haven't got hep C" and you know what I mean and it's a big thing you know when they say that. [*Yeah, so then to get found out that they do have hep C …*] They would be excluded from that there sort of thing. […] They won't be allowed on that [injecting network] again. (Male, HCV results unknown, minimum security)

Several participants reported a sense of inevitability of HCV exposure among people who inject drugs in prison with indications from some participants that HCV risk was acknowledged within injecting networks. Some participants described that others users would indicate they did not have HCV (irrespective of their actual status) to "jump the queue". These tactics were reported across the security classifications, and were not specific to a single prison; however, false identification of HCV status was not described by female participants but has been reported by women elsewhere (Treloar et al., 2015).

> Sometimes I've had shots with people and they come in and they might say, "I haven't got hep C, can I go first?" But they don't know where the syringe has been or how long it's been around anyway. [*Is there a concern that people are lying when they say they don't have it?*] Yeah, they just say it so they can get to the front of the line. (Male, HCV negative, maximum security)

> That's exactly what you'll get, "oh I don't have it, I'll go first" and chances are they do. That's how I got conned, I got conned, because the guy before me said, "I don't have it" so I said, "I'll go second". (Male, HCV positive, maximum security)

Despite the normalisation of HCV among those at risk of exposure, there was a social expectation that HIV status was disclosed if someone living with HIV attempted to join a network.

> Like you always ask questions, but if you've [got] hep C it doesn't really matter. Like it doesn't matter what strand. Like people don't say, "what strand have you got because I can't have a shot with you" or anything like that, it's just everybody already knows sort of thing. It's just like a common ground, everyone knows the majority of people have got hep C, the only thing everybody is worried about is if they've got HIV. And if we suspect someone's there or like might

have it or something, the other boys will say, "but you don't got that do you" or "you don't have that do you?" "Are you sure about that, because I don't want to be using, I've got kids and that?" The majority of boys say, "I've got kids I've got to go home to mate, so if you've got that, just say it". But yeah, it doesn't matter about the hep C, it's sort of just the norm. (Male, HCV positive, maximum security)

There were descriptions of perceived invulnerability among prisoners participating in injecting networks with known associates, that is, people didn't think they could contract a virus from someone known to them. While some participants described the widespread acceptability of HCV risk, others indicated a denial of these risks among injecting networks.

Oh yeah and then you get to the point where you just see them not even having a flush in between and they are just like one shot and then … it's bullshit. I just think "oh boys", but they're convinced that they're beyond… That they can't get anything. [*That they won't get it?*] Yeah, the crews will say that you can't get it from another brother … You just saw that guy shooting up with other guys and how can you say that? At least a flush in between. (Male, HCV negative, minimum security)

Some participants described efforts to protect against HCV transmission by sharing equipment with only one or two other injecting partners. The trust established in these partnerships, or triads, was cautious, with all parties producing their 'paperwork' (i.e., HCV test results) to evidence their status. These partnerships were negotiated and maintained with ongoing evidencing of HCV-status. Injecting partnerships in the prison are similar to those in the community between couples who inject whereby intimacy and trust are built, sometimes on familiarity, which can include seeing others' paperwork (Rance et al., 2016; Rhodes et al., 2017). Of importance, participants described injecting partnerships in which they believe that all members were HCV-negative.

So I have shared with someone and that's my celly [cellmate] and we've both done our scans and everything came back clear and that's the only reason we … [*Okay, so you've got that trust with him?*] Yes. We've got trust and yeah we're both meticulous about our cleaning. … Yeah, we didn't do it until after we got our results. [*But you're also very aware of what his cleaning habits are?*] Yes, 100%. That's it, it's even more intense than a relationship, because it is so important in here, because any disease is easily spreadable here. So yeah, and then it's a trust issue there too, because I have to know that if I'm not there and he won't just feel the need [to inject with other people] and if he does, he doesn't share, do you know what I mean? It's strange, but it's functional. (Male, HCV negative, minimum security)

4. Discussion

This qualitative study reports on the injecting networks and partnerships of people who inject drugs in the prison setting. Participants described a number of factors which promoted or hindered harm reduction strategies among injecting networks in prison, including opportunities for injecting (out of view of prison officers) and injecting order (whereby the supplier typically goes first). These determinants were manifested in environmental factors, i.e., the surveilled closed setting of prisons, economic factors such as financial access to drugs and injecting paraphernalia, and social determinants, e.g., injecting networks versus partnerships. The "hierarchy of 'risk priorities'" has been illustrated in social risk assessments of people who inject drugs and HIV risk (Rhodes, 1997, 214). Injecting drug use within the prison setting involves a range of competing risk priorities whereby the need to avoid detection from officers and cameras supersedes opportunity to clean equipment between injections within groups.

A qualitative study conducted in Vancouver, Canada with former prisoners about their experiences of participating in injecting networks whilst incarcerated highlighted three patterns of sharing: networks comprised of friends; members of a clique; and between individuals (facilitated by an exchange of goods or favours) (Small et al., 2005). Participants in the current study reported similar injecting networks, however, injecting partnerships (between individuals) were perceived to provide protection against HCV exposure (and other BBVs) through limiting the number of people injecting with as well as confidence in 'knowing' the partner's status through sharing test results with each other. Similar concerns regarding HIV exposure were reported in the Vancouver-based study: former inmates highlighted the potential risk of HIV transmission, but were less concerned about exposure to HCV (Small et al., 2005). Other research has indicated the social normalisation of HCV among injecting networks (Swan et al., 2010), whereby HCV is commonplace underpinned by perceptions that "everybody's got it" (Rhodes and Treloar, 2008, 1594). HCV exposure was similarly deemed inevitable by some prisoner participants, typically those involved with larger injecting networks (but not those engaged in injecting partnerships).

Research pertaining to HCV avoidance among people who inject drugs in Wales found three categories of drug use practice in the protection against HCV: principles (i.e., personal rules not to share equipment), preparedness (i.e., strategies in place to mitigate withdrawal symptoms), and flexibility (ability to adapt when preparedness measures could not be secured) (McGowan et al., 2013). However, these were assessments of self-protection strategies in the community where access to prevention technologies (e.g., needle syringe programs and opioid substitution therapy) is more widely available. In prison there is limited opportunity for people who inject drugs to protect against BBV transmission. Sharing is common practice as personal equipment is only accessible to the few, and not to the majority. This is illustrated in the example of the participant who reported that if he owned the injecting equipment, he would "drive" the injection and take his turn last to ensure he remained in possession of the equipment. This reflects previous research exploring the prison-based economy of injecting equipment. Through retaining possession, he is in a position to ensure sufficient income, through payment in drugs or other monetary subsidies (Treloar et al., 2016).

Injecting partnerships have been shown to be negotiated as a way of mitigating risk among intimate partners (Rhodes et al., 2017). While this study does not report on the intimacy of partnerships among those people who inject together in prison, trust was a part of these prison injecting partnerships whereby partners were trusted not to inject drugs with others. However, negotiations of entry into partnerships were not founded in trust, as both parties were required to produce their 'papers' to evidence their HCV status. In this way, trust was an ongoing negotiation to be continuously worked on, earned, and won.

Other authors have argued that the physical environments where injection occurs can influence perceptions of risk acceptability among drug user networks (Rhodes, 1997). Among participants in this study, the expectation that peers within injecting networks were living with HCV, and risk of exposure was an acceptable feature of drug use in the prison setting, highlights the ways in which prisoners who inject drugs have socialised HCV risk in the context of limited prevention strategies. Interestingly, the declaration of a HCV negative status was deemed valuable and worthy of protection by a higher place in the injection queue. This suggests a complex picture whereby living with HCV is at once acceptable and normalised but also something that inmates will support others to avoid (by giving up highly prized status in the injecting queue). In this context, HCV prevention strategies should reflect the wider social context of the patterns and behaviours of injecting networks (Fraser et al., 2014; Winter et al., 2013). Harm reductions strategies must consider the social, economic, environmental, and policy circumstances which may influence risk behaviours and opportunities for protective measures, such as injecting partnership

negotiations within resource limited settings (i.e., limited access to sterile equipment), or networks existing within highly governed settings (e.g., having to avoid detection by officers and cameras).

4.1. Limitations

This study sought to understand social behaviours of HCV risk and risk management among people in prison with a history of injecting drug use. As such, participants were asked about current injecting practices within the prison setting. Some participants may have underreported their drug use within prison, or withheld specific practices of use, for fear of consequences. The interviewer made efforts to communicate independence from correctional authorities.

5. Conclusion

There are myriad relationships which must be considered in developing education, prevention, and harm reduction strategies within the prison setting. Injecting partnerships between prisoners are organised around trusted relationships where HCV status is explicitly discussed. However, networks of prisoners who inject drugs, with looser ties, may operate without this explicit discussion and with assumptions of HCV status, or not engage in this discussion at all. Other circumstances appear to contribute to a person's navigation of risk, such as possession of injecting equipment. People with the financial resources to supply drugs may be at lowered risk as they can negotiate to go first in an injecting episode.

The SToP-C study is a world-leading study in trialling treatment as prevention as a strategy for the elimination of HCV in the prison setting (The Kirby Institute, 2014) through the roll out of direct-acting antiviral pharmaceutical treatments for people with hepatitis C (an all-oral regimen with cure rates exceeding 95% (Pawlotsky, 2014)) at a scale to achieve reduction. Further research should examine whether changes in injecting networks occur following treatment scale-up within the correctional centres, and subsequent reduction in prevalence, and if so, whether rapid change in HCV status at a population level affects the order in which people inject and negotiation of HCV (re-)infection.

These results can inform targeted prevention and harm reduction strategies as understanding injecting networks, and the associated harms and negotiations of risk among these networks, is critical to minimising risks of re-infection following prison-wide treatment. Future research should continue to understand, and the use of qualitative methods would be central to this, the social culture of injecting networks and navigations of risk factors.

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Contributors

LL conducted the interviews, completed the analysis, and drafted the manuscript. JR developed the interview guide, assisted with analysis, and provided input into the manuscript. CT developed the study design, assisted with analysis, and provided input into the manuscript. All authors have approved the final manuscript.

The SToP-C Protocol Steering Committee members include: Stuart Loveday (Chair, Hepatitis NSW), Gregory Dore (UNSW Sydney), Andrew Lloyd (UNSW Sydney), Jason Grebely (UNSW Sydney), Tony Butler (UNSW Sydney), Natasha Martin (University of California San Diego), Georgina Chambers (UNSW Sydney), Carla Treloar (UNSW Sydney), Marianne Byrne (UNSW Sydney), Roy Donnelly (Justice Health and Forensic Mental Health Network) Colette McGrath (Justice Health and Forensic Mental Health Network), Julia Bowman (Justice Health and Forensic Mental Health Network), Lee Trevethan (Justice Health and Forensic Mental Health Network), Luke Grant (Corrective Services NSW), Terry Murrell (Corrective Services NSW), Nicky Bath (NSW Health), Mary Harrod (NSW Users and AIDS Association), Alison Churchill (Community Restorative Centre), Kate Pinnock (Community Restorative Centre), and Sallie Cairnduff (Aboriginal Health and Medical Research Council).

Conflict of interest

None

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