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Understanding performance and image-enhancing drug injecting to improve health and minimise hepatitis C transmission:

Findings and recommendations from a national qualitative project

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Executive summary

This report details findings from an Australian Research Council-funded project entitled ‘Understanding performance and image-enhancing drug injecting to improve health and minimise hepatitis C transmission’, undertaken between early 2017 and late 2019. The report presents findings from interviews conducted with men who consume performance and image-enhancing drugs (PIEDs) and relevant health professionals. The project aimed to generate new insights into the experiences of men who consume PIEDs in order to inform more appropriate and sensitive harm reduction initiatives, engagement strategies and hepatitis C prevention resources. Our aim was to develop a balanced understanding of men’s experiences and perspectives, placing issues of blood-borne virus (BBV) transmission in the context of whole lives and diverse priorities. In doing so, we engaged with consumers directly through in-depth, face-to-face interviews to understand the pleasures and rewards of consumption as well as any potential for harm.

Interviews were conducted with 60 men from diverse backgrounds living in cities and regional areas of Victoria, New South Wales, Queensland and Western Australia (see Appendix 1 for full details). The interviews explored the meanings associated with PIED injecting and the forces shaping contemporary dynamics of consumption, injecting practices, knowledge and experiences of hepatitis C transmission, the informational needs and preferences of men who inject PIEDs, and appropriate harm reduction responses to PIED injecting. Interviews were also conducted with 20 health professionals (from general practice, pharmacy, sports science and harm reduction) to explore their views on PIED consumption and appropriate harm reduction strategies (see Appendix 3 for interview schedules). This report presents consumer perspectives on PIED drug injecting, experiences of consumption, hepatitis C knowledge and testing, injecting practices and blood management, general health concerns and information preferences, and consumer and health professional suggestions for improving health and harm reduction services. The report details the project’s findings on these key themes and, where appropriate, makes recommendations for improving policy and service provision.

The main recommendations of this report are:

- 1 Efforts to engage men in harm reduction education and health promotion could be improved by acknowledging the various social dynamics that produce conditions in which men consume PIEDs. Motivations for PIED consumption among men cannot be usefully understood solely through familiar paradigms that focus on notions of drug abuse or masculine insecurity.** Recognising social imperatives around enhancement, efficiency and endurance foregrounds the socially embedded deliberations associated with PIED consumption and challenges more pathologising accounts.
- 2 Health services and research would be improved by acknowledging the positive experiences associated with PIED consumption as well as negative experiences, and by allowing recognition that men who consume PIEDs may be invested in projects of self-improvement that share much with other such projects in Australia and around the world.** Such acknowledgment and recognition would facilitate engagement with men who inject PIEDs on their own terms and increase the credibility of harm reduction initiatives.
- 3 Focusing health promotion materials on post-injecting practices and environmental blood may help engage this population, and in turn encourage more frequent hepatitis C testing.** While the risk of environmental transmission of BBVs is lower than that posed by needle sharing, our research suggests that targeted hepatitis C prevention education on this issue is nevertheless warranted. Possible transmission avenues to emerge from the data include: rubbing the injecting site after injecting, the absence of hand-washing after injecting, group and peer-to-peer injecting, particularly around initiation, and sharing vials and containers.

4 We recommend framing prevention efforts on better injecting technique and blood management via positive discourses of physical health, self-care and well-being.

Efforts to alert men who inject PIEDs to the possibility of hepatitis C transmission, and BBV transmission in general, need to be approached sensitively. Among other things, attention needs to be paid to how the hepatitis C virus, side effects and transmission are constituted in health promotion resources (Winter, Fraser, Booker et al., 2011). As hepatitis C can be transmitted in small amounts of blood, or in ‘unseen’ blood, it can be inadvertently characterised as sneaky, aggressive and elusive (Fraser & Seear, 2011). These articulations can provoke anxiety and stigma both in relation to the virus itself but also in relation to people who inject drugs, such as heroin consumers (Fraser & Seear, 2011). This is all the more pertinent for the development of targeted messages for PIED consumers, some of whom conflate hepatitis C with intravenous drug injecting, dirt and carelessness.

5 New resources could acknowledge more clearly that men who consume PIEDs regularly inject with other people and within training partnerships, particularly during the initiation period.

Prevention education needs to be grounded in the social dynamics and relationships that characterise PIED injecting. Resources could acknowledge the reasons why men participate in peer-to-peer injecting, and also explain that it raises specific issues of blood management, especially if the person doing the injecting has injected others beforehand (including themselves). The resources could also inform consumers that even very small amounts of blood in the environment are possible sources of hepatitis C transmission. Messages clarifying that it is not possible to assess whether a person has hepatitis C based on their appearance, or on a broad assessment of the ‘cleanliness’ of their injecting practice, may also be useful.

6 We recommend GPs increase opportunistic screening and testing for the hepatitis C virus at the time of blood testing for other

health concerns. While approximately half of the consumers in our project reported routine testing for hepatitis C, a general sense of uncertainty persisted around the content of routine sexual health screening and blood tests.

7 Further research is needed on PIED consumption and this research needs to be translated into comprehensible and accessible forms for a general audience.

PIED consumers in this project actively sought technical knowledge and reliable, scientifically based or otherwise credible health information. Consumers and health professionals expressed frustration at the lack of reliable information about different substances, combinations, practices of consumption and processes of stopping consumption.

8 GPs should consider engaging in transparent and informed discussions with men who consume PIEDs, discussing openly the issues they raise without demonising consumption or exaggerating risks.

PIED consumers consistently articulated a desire for an honest and productive relationship with a professional health practitioner – often a general practitioner (GP). This first step would go some way towards addressing men’s articulated desire to have direct, informed conversations with trusted healthcare professionals about their PIED consumption.

9 More targeted services are needed to educate people who inject PIEDs and health professionals on safer injecting techniques, substances, combinations and practices of consumption, in healthcare and community settings accessed by people who consume PIEDs.

PIED consumers and health professionals spoke positively about engaging with the Steroid Education Program, Australia’s only PIEDs-targeted outreach service. Delivered by Your Community Health in Victoria, the program provides health information, clean injecting equipment and referrals to other services for consumers. The program also provides information to GPs and other health and community practitioners.

10 We recommend that Primary Health Networks commission and resource targeted health services to meet the specific needs of PIED consumers to develop better continuity of care. Interview data suggest that better referral and linkage pathways to healthcare for PIED consumers are needed.

11 Embedding education and training for GPs on PIED consumption and associated health issues in the Quality Improvement and Continuing Professional Development Program (Royal Australian College of General Practitioners) could be a useful strategy to improve the professional knowledge and skills of GPs. PIED consumers and health professionals discussed the stigma experienced by many consumers when trying to access informed and knowledgeable GPs.

12 There is a need to address the regulatory and legal processes prohibiting access to, and safer usage of, all drugs – including PIEDs – in that these are widely recognised as producing complex harms and stigma. Criminalisation may be a key driver of the stigmatisation surrounding PIED consumption and those who consume PIEDs.

Aims and background

Some research has suggested that Australia is experiencing a rise in the consumption of performance and image-enhancing drugs (PIEDs). Reliable data on the prevalence of PIED consumption are scarce, but PIED consumers are known to be accessing needle and syringe programs (NSPs) in greater numbers than in the past (Iversen, Topp, Wand et al., 2013; Memedovic, Iversen, Geddes et al., 2017). The category of PIEDs is defined in many ways but typically includes anabolic-androgenic steroids, anti-oestrogenic agents, beta agonists (e.g., clenbuterol), stimulants, human chorionic gonadotrophin, human growth hormone and other prohormones, and insulin (Australian Bureau of Statistics, 2011; Larance, Degenhardt, Copeland et al., 2008). Anabolic-androgenic steroids are reported to be the most widely consumed PIED (Larance et al., 2008). The vast majority of people who consume PIEDs are men, and appear significantly more likely to be heterosexual (Day, Topp, Iversen et al., 2008; Iversen et al., 2013). Research suggests amateur athletes, older men and occupational users (e.g., fitness trainers, security guards) make up the bulk of men who consume PIEDs. Motivations for consumption are diverse but are typically thought to be related to strength, athletic performance and image-related concerns (Kimergård, 2015; Van de Ven, Maher, Wand et al., 2018; Zahnnow, McVeigh, Bates et al., 2018).

Australian research suggests that men who inject PIEDs are at higher risk of blood-borne virus (BBV) acquisition than the general population (Hope, Harris, McVeigh et al., 2016; Rowe, Berger, Yaseen et al., 2017). Like other forms of injecting drug use, injecting PIEDs provides opportunities for transmission of BBVs, especially hepatitis C, due to its high infectiousness compared with HIV (Crofts, Aitken & Kaldor, 1999). Hepatitis C affects the liver and is transmitted by blood-to-blood contact. In more developed nations, most transmission occurs through the sharing of injecting equipment. However, hepatitis C can also be transmitted via small amounts of blood in the injecting environment, on injecting equipment and on the body, most commonly the hands (Crofts et al., 1999; Davis & Rhodes, 2004; Hagan, Theide, Weiss et al., 2001). While rates of needle-sharing among people who inject PIEDs are thought to be

low (Day et al., 2008; Rowe et al., 2017 Santos & Coomber, 2017), certain practices associated with PIED injecting may increase the risk of BBV transmission (Aitken et al., 2002).

One such practice is the use of large-gauge needles for intramuscular injection. PIEDs are generally injected intramuscularly, into large muscle groups such as the gluteus maximus (buttocks) or vastus lateralis (thigh) – rather than intravenously (Hope, McVeigh, Marongiu et al., 2015; Larance et al., 2008; Seear, Fraser, Moore & Murphy, 2015). The greater force required for injecting in this way tends to produce more blood than intravenous injecting. Other contributing practices include the re-use of needles and other injecting equipment, and ‘indirect sharing’ through multi-dose vials and containers (Advisory Council on the Misuse of Drugs, 2010; Larance et al., 2008). Shared injecting spaces, injecting oneself prior to injecting another and injecting into hard-to-reach muscles can mean that miniscule (and invisible) amounts of blood may adhere to hands, and settle in the injecting environment (Rowe et al., 2017; Van Hout & Kean, 2015). Although work has long been underway to reduce BBV transmission among other groups of people who inject drugs, people who inject PIEDs have been largely neglected, both in research and service provision. Importantly, Australia’s existing harm reduction framework does not presently deal with this emerging trend, and is significantly underprepared to meet the unique challenges that it poses. The previous National Drug Strategy 2010-2015 specifically identifies the consumption of PIEDs as a priority area, and its importance is also flagged in the current National Drug Strategy 2016-2025 (Commonwealth of Australia, 2017; Ministerial Council on Drug Strategy, 2011). A recent national consultation of Australia’s alcohol and other drug sector likewise identified PIEDs as a priority area, noting unmet need in service provision (Seear, Murphy, Fraser & Moore, 2015).

Although research interest in PIED consumption is growing, the specificities and embodied practices of PIED consumers have received little attention from researchers (Seear, Fraser et al., 2015; Moore, Hart, Fraser et al., 2019) over the twenty years since Lee Monaghan’s (2001a, b) detailed ethnographic research

into the 'vibrant physicality' of bodybuilding (including PIED consumption). Existing research does, however, highlight the limitations of the dominant conceptual frameworks underpinning knowledge about PIED consumption, and stresses the importance of paying more attention to social context (see Coquet, Roussel, & Ohl, 2018; Bates, Tod, Leavey et al., 2018; Keane, 2009; Kimergård & McVeigh, 2014; Monaghan, 2001b; Santos & Coomber, 2017). Helen Keane (2005), for example, analysed the emergent discourses of steroid use in medical and psychological research as consisting of two equally limiting interpretations: the 'disordered drug abuser' and the 'vulnerable' subject insecure in his masculinity. An analysis of social science research on PIED consumption published since Keane's article suggests that '[i]n quantitative, and to a lesser extent qualitative, research, men who use PIEDs continue to be pathologised as insecure, low in confidence and self-esteem, susceptible to media influence, vulnerable, and as marked by "obsession", "compensatory behaviours" and crisis' (Moore et al., 2019). This analysis also identifies an emerging tendency for the two discourses to overlap, such that 'the male steroid user becomes doubly disordered as both insecure in his masculine body and at risk of drug dependence' (Moore et al., 2019). What might be gained from investigating men's PIED injecting in a way that resists these pathologising assumptions? Improved understandings of the meanings ascribed to PIED consumption, the practices and experiences of individuals who inject PIEDs, and options for effective, non-stigmatising, targeted harm reduction responses are urgently needed if Australia is to reduce the harms associated with PIED consumption and prevent hepatitis C from becoming established in this group.

In 2014-15, the project team conducted a national consultation, seeking the views of health professionals, academics, policymakers and drug consumer organisations with expertise in policy and/or service provision related to PIED consumption, specifically steroids, the most commonly used PIED. The consultation examined existing knowledge on steroid consumption and established an agenda for future research, policy and service provision. It highlighted several important gaps in knowledge. Stakeholders expressed concern that injecting prevalence may be

even higher than data suggest because people who consume steroids are a 'hidden' group. The consensus was that people who inject steroids do not routinely disclose their consumption, and some observed that people who consume steroids do not always appear in illicit drugs data because they do not perceive steroids as 'drugs'. Research, participants explained, was lacking, and not integrated with policy and practice. Many emphasised an urgent need for more knowledge. The consultation recommended further research on who injects PIEDs, including steroids; motivations for injecting; injecting practices; BBV knowledge; how knowledge about harms and risks is disseminated amongst PIED consumers; how people who inject steroids source and share injecting equipment; and whether and how laws that prohibit peer distribution of needles shape injecting practices.

Drawing on this national consultation and our research on the existing literature, the aims of this project were to:

- 1** Explore the meanings given to PIED injecting in Australia, and the individual and social factors shaping the dynamics of use, focusing on the key areas of gender, sexuality and age;¹
- 2** Explore knowledge and experiences of hepatitis C transmission among people who inject PIEDs;
- 3** Investigate the specific practices of PIED injecting among different subgroups;
- 4** Investigate the informational needs and preferences of people who inject PIEDs to inform health and safer injecting advice; and
- 5** Examine the experiences of relevant practitioners, including their views on appropriate harm reduction responses to new and emergent patterns of PIED injecting in Australia.

1 Ethnicity was also a key area for study in the original grant proposal. However, because of reduced funding, and therefore reduced interview numbers, our data do not allow for an analysis of how ethnicity may be implicated in the use of PIEDs.

Method

Past research on PIED injecting has mainly been survey based. This project adopted a qualitative method that facilitated a wide-ranging analysis of PIED injecting, allowing detailed investigation of practices, perspectives and experiences. It collected 80 in-depth semi-structured interviews with PIED consumers and relevant health professionals. This report is based on data generated from the interviews. Interviews were conducted across Australia with 60 men who inject, or have experience of injecting, PIEDs, and 20 health professionals in general practice, pharmacy, sports science and harm reduction. Participants were recruited through a wide range of strategies. Recruitment flyers were placed in NSPs, harm reduction services, primary health services, sexual health services, bars and clubs, supplement stores and sex on premises venues. The project was also advertised on various social media platforms, as well as on steroid and bodybuilding online forums and in Men's Health magazine. During the initial stages of the project, numerous attempts to engage gyms and other fitness organisations in recruitment were unsuccessful, possibly due to the stigma associated with PIED consumption and injecting more broadly (see Fraser, Pienaar, Dilkes-Frayne et al., 2017). In Victoria, consumer participants were also recruited with the assistance of Australia's only Steroid Education Program (Aitken et al., 2002). Consumers were over the age of 18 and had reported injecting a PIED in the last 12 months. Aside from one consumer who solely used peptides, all other participants used a range of PIEDs, and almost all used anabolic-androgenic steroids.

The 60 consumer participants (see Appendix 1 for consumer table) were recruited from urban and regional locations in Victoria (n=20), Queensland (n=15), Western Australia (n=13) and New South Wales (n=12). Men were aged 19 to 72 years, with 18 aged under 25 years and 42 aged over 25 years. Forty-seven men identified as heterosexual, eight as gay and one as bisexual. Thirty-three consumers reported that both they and their parents were born in Australia, 13 consumers reported that they were born in Australia and one or both of their parents were born overseas, and 14 consumers reported being born overseas. The 20 health professionals were recruited

through key organisations, snowballing and targeted invitation. They comprised general practitioners (GPs) (n=5), pharmacists (n=4), sports science practitioners (n=3) and NSP workers (n=8).

The interviews ranged from 45 to 90 minutes in duration. The interview schedule was developed with reference to the existing literature, the project's aims and input from the project advisory board, and further developed during the course of the project as the interviews highlighted new issues. The interviews explored experiences of PIED consumption, including: initiation to injecting, injecting settings, fitness settings and routines, practices and patterns of injecting and consumption, experiences of PIED consumption and its effects, interactions with health service providers, and sources of information about safe injecting and hepatitis C. Interviews were conducted between September 2017 and September 2018 by Renae Fomiatti, Emily Lenton, Aaron Hart, Mair Underwood, Jeanne Ellard and Dean Murphy. Private rooms within community health services or public places such as libraries and cafes were used, and some interviews were conducted via telephone. All consumers were given an information sheet in person or via email describing the aims of the project, were asked to sign a consent form, and were reimbursed AUD\$50 for their time and contribution to the research. They were also offered hepatitis C health information. Curtin University's Human Research Ethics Committee approved the project (HRE2017-0372).

All interviews were digitally recorded, transcribed and imported into NVivo 11 for data management and coding. A coding framework was generated using a combination of methods: some codes were identified in response to previous research on PIED consumption, others were developed from emerging themes in the data, and the project's advisory board was consulted. Renae Fomiatti and Emily Lenton coded the interview transcripts, using an iterative process in which they compared coding in collaboration with the lead investigator to maximise coding consistency and comprehensiveness. To protect participants' identities, each was given a pseudonym and all identifying details were removed from the transcripts.

Findings

The following sections discuss the project's key findings and recommendations. They are organised under the headings below, which reflect the focus of the interviews on consumers' experiences of PIED injecting, injecting practices and knowledge of hepatitis C, and health professionals' perspectives on PIED consumption and accounts of harm reduction practice:

- 1 Motivations for PIED consumption
- 2 Experiences of consumption
- 3 Injecting practices and blood awareness
- 4 Hepatitis C knowledge, testing and diagnosis
- 5 General health concerns and information preferences
- 6 Improving health and harm reduction services.

The report concludes with several recommendations to improve the design and delivery of health engagement and harm reduction strategies to support the health and well-being of men who consume PIEDs.

1. Motivations for PIED consumption

The main focus of the consumer interviews was to explore the experiences of men who inject PIEDs and the meanings associated with PIED consumption. Consumers were asked about motivations for consuming PIEDs, physical training, injecting practices, knowledge of hepatitis C and awareness of BBV transmission. This section presents consumers' accounts of their interest in and reasons for using PIEDs.

Enhancing expressions of masculine embodiment

The most commonly described motivation for using PIEDs was to look more manly. This was often described in terms of creating 'a balanced physique' (James², Vic, 35 years) or 'symmetry' (Matthew, Vic, 26) or 'proportion' (Ari, WA, 42), all of which can be understood as expressions of normative masculine embodiment. Forty-three of the men interviewed spoke explicitly about wanting to increase their physical size and muscle definition. For example, Alex (Qld, 38) put it like this:

It's just to maintain what I consider to be a more masculine body type. My natural body weight is seventy-three to seventy-five kilos, [and] I'm just over six-foot tall, so it's really, really lean and I trained for about fifteen years, I guess, at the gym and the highest I ever got up to was seventy-seven kilos, and then I tried human growth hormone.

The relationship between using PIEDs and developing a body expressive of normative gender was made overt in some accounts, such as that offered by Mehmet (Vic, 31):

I first started [consuming PIEDs] when I was twenty-five. I used testosterone and growth hormone because I was a skinny young guy, and I developed within say six months into a quite physical, strong-looking person. So it was

a complete transition from before and after. [...] I went from a seventy kilo skinny guy to one hundred and seven [kilogram] ripped muscular man, yeah. Basically [PIED use] turned me from a boy to [a] man I would say.

Like Mehmet, almost one third of all consumers (n=19) connected their PIED consumption to a desire to overcome being 'naturally' skinny or small. For example, Saurabh (WA, 27) explained that:

Before, I used to think that steroids were unfair – they were cheating – but then I thought what really is fair? Is it fair that this guy gets to have way better genetics than me? Even though I am working out just as hard as him? He is getting way more results than me; that's not fair either.

Some of the men interviewed described specific social contexts (e.g., partying, holidaying and summertime) in which they wanted to look their best, and consumed PIEDs to facilitate the 'healthy look' of muscularity. Sydney, the Gold Coast and 'Australian beach culture' were also mentioned as contexts in which consumers described social expectations that men look their best, especially shirtless. For example, Tibor (NSW, 23) said:

Here [in Australia] it's like really important and everybody wants to be healthy and everybody wants to look good and you know, the thing is when you go to the beach and you see, 'Oh this guy looks good, that guy looks good and everybody looks good on the beach'. But the thing is that many people don't know that they look good because they're on steroids. So the thing is, you start comparing yourself with somebody who's on steroids and you're not.

Several gay consumers discussed wanting to look bigger and more muscular for gay events and parties.

² All participants have been assigned pseudonyms to ensure anonymity and confidentiality.

Social dynamics of bodily enhancement

Consumers discussed additional social dynamics informing PIED consumption, including the widespread uptake of body modification practices. Several consumers suggested that their consumption of PIEDs was similar to other kinds of body modification practices. For example, Cameron (NSW, 36) said:

I think, you know, if you can do either, pay for a way to enhance it, I think people these days are more willing to do that and go through a change, whether you work for it or get it surgically done, you know. You see a lot more women with their lips filled compared to like ten years ago, you know. So I think everyone cares more about how they look and cares more about what other people think [about] how they look.

This social context, in which a range of practices aimed at changing the body were understood to be more socially acceptable, was often cited as a reason that men took up PIED consumption. Cameron (NSW, 36) went on to talk about steroids in this context:

Before, I think, years and years ago, steroids were shunned upon. You know, you'd only be doing steroids if you were actually a bodybuilder or wanted to be a bodybuilder. But now these days ... people do steroids just because they, you know, either want to go to a music festival or want to look, you know, a certain way, whereas I don't know if it's a good or bad thing, but I think just people ... it's more accessible now and it's less taboo to do these kinds of things and change the body where it's more accepted.

Most of the men described their use of PIEDs in relation to wanting to 'look normal'. David (Vic, 27), for example, said:

I just want to look, yeah, have like an aesthetic looking, good-looking body [...] Like a boxer's

body. Yeah, I don't want to get big like one of those big bodybuilder guys, but someone who's sort of got muscle but is lean, doesn't look out of proportion.

Many of the consumers we interviewed suggested body-modification was socially acceptable and 'normal'.

Enhancing stamina and efficiency at the gym

About one quarter (n=16) of the men interviewed talked about using PIEDs as a way to push through an exercise plateau. Joshua (NSW, 46), for example, explained his reasons as follows:

I go to the gym, you know, on a regular basis, keep very fit, and you know with that promise of, you know, by taking performance-enhancing drugs, I may be able to sort of crack that barrier where you've just plateaued and I just can't get over it, and I want to put on a few more kilos of muscle but I just can't with the training that I'm doing and, you know, taking that course of steroids over that period of time will get me over that barrier, you know, to get to that next level that I want to achieve.

Using PIEDs in this way was often seen as a logical step in their exercise progress or physical development, as Henry (Qld, 44) reported:

I'd been a fat kid at school and I'd used gym [training] to, to a degree, transform me physically, but I wasn't making much headway. I'd dropped the weight but I wasn't getting muscularity and that sort of stuff, and I thought I'd try the accelerator pedal.

Several consumers recounted how using PIEDs aided their ability to recover from rigorous training sessions, meaning they could spend less time resting from strenuous exercise, and that this was key in building muscle faster. Glen (Vic, 26), for example, explained:

What I find is that you have the energy to push yourself a little harder. And then you also repair yourself quicker, so where you might still be sore the next day and not go to the gym, with this, you can wake up the next day and you feel fine and so you can go straight back into it and keep going.

Other consumers spoke about a similar experience of using PIEDs to ‘keep going’, to facilitate their ability to work out harder and more often. For example, James (Vic, 35) had this to say:

I train a lot, put a lot of focus into I guess my performance and my training and my image, and it was something that I started when I was in my late teens and have kind of done on and off ever since. It just helps me train more, train quicker, train harder and get better results than I would otherwise.

For others, using PIEDs allowed them to be more efficient at the gym, which meant more time for the demands of their employment or to pursue other interests. Ryan (NSW, 43), for instance, said:

I want to make that one hour that I’m going to be at the gym the most, just basically pull the best out of that hour that I can possibly get. Because I don’t want to spend my life at the gym.

Enhancing work performance and career prospects

Many of the men interviewed also described practical reasons related to their employment that precipitated their consumption of PIEDs. Some worked in industries that demanded a high capacity for strength and endurance, such as construction (n=8) or the military (n=1). As Jake (Qld, 24) explained:

It makes my job easier because I’m lifting really heavy stuff at the moment. These forty-five kilo panels of like recycled concrete [...] My first injection was two days after I started and now I notice putting the panels in, like over the last

few weeks, it’s like so much easier, so strength is definitely improving. Yeah, hands down, so ... it’s making it easier.

For others pursuing careers in the fitness industry (n=8), using PIEDs was described as ‘almost necessary’, as Craig (Vic, 37), who works as a personal trainer, put it. He went on to say:

I have a lot of trouble putting on weight even though I train regularly and I try and maintain a good diet, but due to my metabolism and I don’t have a great appetite, so every year or so, because I am in that industry, it really helps to look good. I get a lot of bodybuilding clients in and a lot of them know that I’ve done a course [of PIEDs] or so, but they know that it’s not cheating really, if you’re doing the training, you’re still getting it done, it’s just an assistance sort of thing [...] It attracts members to train with me. They want to look like that, they want that sort of look.

Heath (Qld, 19), who is involved in multiple fitness industry ventures, exemplified this pragmatic approach when he said:

I just use it for a purpose and a career to make money out of it rather than just because I simply want to get big and look good.

One third (n=20) of the men interviewed outlined that their initial consumption of PIEDs related to a desire for success in competitive sports, most commonly bodybuilding. Evan (WA, 34), for example, said he consumed PIEDs ‘purely for sport’:

I do power-lifting and Strongman competitions [...] I couldn’t compete competitively [if I wasn’t using PIEDs], if that makes sense. I couldn’t keep up with the other guys because I compete through [an association], which is not drug tested.

Steve (Vic, 39) described getting to ‘the limit of where [...] he] could have been naturally’ but wanting to

remain competitive and ultimately win Strongman competitions:

Knowing that I was getting older and, you know, coming into this sport late, but still wanting to...still thinking, whether it's realistic or not, still thinking I can mix it with the best, [and I] decided to give myself the best opportunity.

Similarly, Owen (NSW, 40) explains that he started using steroids after training for a few years and not getting the results of other men who he observed at the gym, and wanting to compete:

Well, my father got me interested in lifting weights and there was never any interest in steroids to begin with, but a couple of years into it, [I] trained at the gym and noticed people were larger than me and I wondered why. I got to know them and just started using and got really good results and I wanted to compete. I just did it for those reasons.

Remedy for health issues

Almost one quarter (n=14) of the men interviewed described using PIEDs as a way to recover from injuries or other ailments. For example, Dale (Qld, 32), who experienced a traumatic brain injury as well as a back injury, said:

I was just trying to get back full strength and then from there, it progressed into just feeling better and getting stronger. [...] I had to take some time off work, [I] put on a lot of weight and just wasn't happy with myself basically. I wanted to get back to full fitness.

Other health issues reported included: recovering from surgery, trouble sleeping, chronic pain, arthritis, depression, anxiety, low testosterone, and counteracting weight loss associated with HIV or methamphetamine consumption. Three of the consumers outlined how they consumed PIEDs as part of a coordinated strategy to abstain from using

other kinds of drugs, such as alcohol or opioids. Some men described using PIEDs as a way to counteract the 'decline' associated with ageing. Ryan (NSW, 43), for example, said:

I'm forty-three [and] I still look really nice. I certainly don't look the same as I did, but it takes a hell of a lot more work to try and look nice.

Conclusion

These diverse accounts indicate motivations for taking up PIED consumption vary. Most common among them was the desire to produce a bigger, more muscular physique, although men gave different reasons for wanting to increase their size. Some of these reasons related to a perceived normalisation of body modification practices and as a way of overcoming an 'exercise plateau'. For those men working in industries where their look and/or strength was considered a key component, such as construction or personal training, using PIEDs was described as a pragmatic response to the demands of their employment. These consumer accounts of managing regular consumption, particularly in relation to work, raise questions about the dominant understanding of PIED consumption as related to body image disorder.

A key finding of this research project is that motivations for PIED consumption among men cannot be usefully understood solely through familiar paradigms that focus on notions of drug abuse or masculine insecurity (see Keane, 2005; Moore et al., 2019). **Efforts to engage men in harm reduction education and health promotion could be improved by acknowledging the various social dynamics that produce conditions in which men use PIEDs.** Recognising social imperatives around enhancement, efficiency and endurance foregrounds the socially embedded deliberations associated with PIED consumption and challenges more pathologising accounts.

2. Experiences of consumption

In addition to asking consumers about their motivations for consuming PIEDs, we also asked them about their experiences of this consumption. Experiences outlined were diverse and wide-ranging, and included a variety of intended and unintended effects (see section 5 for a discussion of the health concerns described by consumers). However, most often, consumers associated PIED consumption with improved health and well-being, described its entanglement with everyday practices associated with fitness and working out, and outlined various social benefits in relation to work and intimate relationships. In this section, we describe these consumption experiences in more detail in order to explore the meanings given by consumers and to illuminate relevant social dynamics informing consumption.

Improved health and well-being

Many of the consumers in our project described the experience of PIED consumption as pleasurable, and as improving health and general well-being (see also Monaghan, 2001a, b). Most consumers pointed out that PIED consumption promoted muscle growth, strength and stamina, improved various forms of physical performance and reduced recovery times. For example, Ryan (43, NSW) explained that PIEDs ‘allowed [him] to perform at higher levels’ and to ‘put on muscle better’.

Other consumers described more abstract improvements to their health, such as increased energy and overall vitality. For example, Jasar (NSW, 44) explained that he felt ‘full of life [and] energy’. Similarly, Nathan (Qld, 26) explained that with higher levels of testosterone he felt ‘amazing’, ‘confident’ and able to ‘take on the world’, and as though nothing could ‘hurt’ him. Martin (Vic, 26) likewise described the ‘incredible effects’ he experienced after taking oral steroids following a powerlifting injury:

I lost eighteen kilos and my muscle mass increased, my energy levels were better, moods were better, confidence was through the roof; it was incredible.

In these and many other accounts, consumers typically described PIEDs as improving their quality

of life and general health in ways that exceed the common enhancement effects usually attributed to PIEDs (e.g., greater muscle mass and improved performance in the gym). Many consumers explained that PIEDs contributed to more dynamic and vibrant forms of embodiment.

In addition, many consumers described PIED consumption as having profound psychological effects. At times these effects were directly attributed to the substances themselves. For example, according to Michael (Vic, 22):

It makes you think that you're like, especially when you're in a workout, that you're just like the biggest there and it's just like ... it's like you are at the top of the dominance hierarchy instantaneously, because that's just what this chemical's putting in your mind basically.

Many consumers described a state of happiness they found difficult to quantify or explain. For example, Sean (Qld, 30) put it like this: ‘I used to do competitive bodybuilding and then I slowed down because it was like a bit too crazy diet-wise and stuff, so now I do it because I enjoy the actual training component [...] Yeah, but I enjoy it. Like mentally I enjoy it [...] it makes me happy’. Efron (WA, 40) explained how consumption, and the practices it entailed, facilitated greater focus and attention in his everyday life:

I felt myself really slowing down and [becoming] very grounded as well [...] you can feel more clarity in the things around you, a lot more detail in the things surrounding you, and a lot more comfortable in taking in multiple stimuli at one time as well. So feeling a lot more relaxed, a lot more calm, and able to connect to the environment.

These unpredictable and unintended effects suggest that using PIEDs may promote well-being in ways that cannot be reduced to image and/or performance enhancement.

PIED consumption in everyday life

Consumers' accounts repeatedly emphasised the ways in which PIED consumption was embedded within, and inseparable from, a range of other everyday practices. They tended to be well aware – and often critical – of the stereotypical 'effects' of PIED consumption, such as 'addiction', increased aggression ('roid rage') and self-obsession, as well as the purportedly magical transformations they are said to produce. Almost all of the men in this project emphasised the need to work hard and embed PIED consumption within other highly self-disciplined practices (e.g., strict diet, exercise regimes, rest and sleep patterns). For example, Paul (Vic, 50) explained that:

[PIED consumption is] not going to give you results. So you got to actually also train hard and watch your diet. If those two aren't included with it, you [can] take as much as you like, that's not going to change your physique. That's not going to change the way you look because you've got to train hard to achieve the results you want.

It was also apparent from the interviews that PIED-using regimes encompassed far more than weight training. Like many of the men interviewed, Gabe (Vic, 22) undertook rigorous research and adopted a 'state of mind to be able to push yourself,' while Daniel (WA, 29) explained that 'you've still got to grow the muscle yourself [...] it was still a lot of hard work [and] I was very strict with my diet'. This kind of dedication to the pursuit of embodied self-improvement could be wide-ranging, as Ryan (NSW, 43) articulated:

It costs me hundreds of dollars [...] when they look at you they think [...] 'he looks amazing', and I'm like, 'if you only knew the amount of time, energy, money and commitment and everything that it takes to actually get here'.

What is clear from these accounts is how consumers' interest in using PIEDs goes beyond simply wanting to 'look better', and for some includes a desire that the vast amount of hard work required to achieve such a look be recognised.

Consumers typically criticised and resisted the popular conception of PIED consumption as 'cheating' or 'easy'. Instead they drew attention to the role of labour in men's practices of PIED consumption. Paul (Vic, 50), for example, remarked that although 'people think that it's cheating', he did not 'see it as that because you're still putting a lot of hard work into it'. As Glen (Vic, 26) also explained:

Some people seem to believe that [using] steroids is a cheating way to put on size, but you can't just take it and all of a sudden you grow, like you still need to put in hard work and so what I find is that you have the energy to push yourself a little harder. And then you also repair yourself quicker, so where you might still be sore the next day and not go [to] the gym, with this, you can wake up the next day and you feel fine and so you can go straight back into it and keep going.

Many men also spoke about PIEDs as 'recovery enhancers' that improved their ability to work out more frequently. For others, using PIEDs allowed them to be more efficient at the gym, which meant more time to meet employment demands or pursue other interests. Ryan (NSW, 43), for instance, said: 'I want to make that one hour that I'm going to be at the gym the most, just basically pull the best out of that hour that I can possibly get. Because I don't want to spend my life at the gym'. In these accounts it is evident that an imperative of efficiency influences men's PIED consumption. This dynamic aligns more broadly with contemporary social and political imperatives framing healthy citizenship as productive, self-governing and efficient.

PIEDs and social life

In addition to the practices noted above, consumers observed a range of social benefits associated with PIED consumption, especially in regards to their work and intimate relationships. Many consumers gave compelling accounts of the meanings of the work ethic they developed in relation to using PIEDs, and how it benefited other areas of their lives. Glen (Vic,

24), for instance, described his experience in the following way:

Now things are actually really good [at] work, like [I have been] sort of nominated for a few awards and things like that, so it's sort of ... there's a lot of things that are sort of falling into place at the same time that just like everything in general in my life is a lot better. And it's not, I mean, it's not related to doing the steroids, but also I find doing the steroids is making me put the effort in going to the gym, which is putting on size, which is making me happier, which is making me work better and everything sort of seems to be linking back to each other.

In disciplining himself to the habitual practices PIED consumption invited, Glen's work ethic became irreducible to the gym, and the characteristics he developed, such as focus and dedication, were transferred to other areas of self-improvement.

Other consumers described increased assertiveness at work. Don (Vic, 28), for example, explained that steroids gave him 'more security' in his relationships with others:

I'm not always like this but sometimes I feel more dominant and more assertive and more, you know, goal-oriented. And just not intimidated by the people, you know [...] I feel like I don't have to compete with other people because I [...] already] have this level of testosterone there.

Several consumers remarked that they feel more confident at work because of increased testosterone levels due to injecting PIEDs. For example, Martin (Vic, 26) explained:

What I found [...] is that] they make you feel much more confident, and they just enhance what's already there, okay? So I used to always be the guy at work being shat on by someone [...] and I'd be this close to saying [something], but I'd never say it. I'd be like, 'okay, just let it go'. I'd be ... walked on. When I started

performance-enhancing drugs, people [would] try [to] walk on me, and that shit I was thinking would come out.

David (Vic, 27), who works in construction, made similar comments in relation to feeling more confident and assertive at work:

An example [of more confidence] might be when I'm at work and I get told off for something that was done, and maybe it wasn't my fault or there was a reason why a thing was done that way. I felt more confident enough to [say], 'Hey, no, no, no. This is this, rah, rah, rah' – [to] explain and say my part.

Many consumers understood the confidence and assertiveness they experienced to be the result of elevated levels of testosterone in the body. Other consumers perceived testosterone as enhancing their manliness and virility, often describing it as the 'male hormone'. For example, Cameron (NSW, 36) described feeling not only 'stronger and more confident' on steroids, but 'more of a man [...] because] you have more testosterone in your body'. Similarly, Henry (Qld, 44) explained that 'a normal testosterone level' is 'implicit in being male' and '[having] a male sex drive'. Gabe (Vic, 22) explicitly described testosterone as 'the male hormone':

Well the male hormone is testosterone. You put more of that in your body – and we already know what males are like with testosterone. So you put more of that in your body and your sex drive is heightened to such an extreme, so it's probably good not to be in a relationship.

Matthew (Vic, 26) made a similar connection between higher testosterone levels and 'alpha' sexuality:

I don't get that nervous, because testosterone gives you that sense of confidence. I mean that's what testosterone does. It's that flight or fight, you know. You get that sort of alpha feel [...] It amplifies your primitive nature, so you start to feel like you've got this person in

front of you who you're about to have a sexual encounter with, so in your head, you're the alpha, you dominate, so you feel great.

In these accounts, supplementing the body's testosterone is understood to heighten and amplify putatively natural masculine traits such as high libido, sexual assertiveness and dominance.

Conclusion

In this section we have explored consumers' experiences of PIED consumption and focused on the social dynamics informing this consumption. These men most often described PIED consumption as improving their health and well-being in both specific and abstract ways. Many consumers described a more vibrant sense of embodied selfhood. They also observed that PIED consumption was a normal everyday practice, often embedded in training and fitness regimes. Social benefits of PIED consumption were also identified, with many consumers describing more confidence and assertiveness at work and in their social relationships. Some consumers described these experiences in terms of enhanced masculinity and attributed these effects to testosterone.

Health services and research would be improved by acknowledging the positive experiences associated with PIED consumption as well as negative experiences, and by allowing recognition that men who consume PIEDs may be invested in projects of self-improvement that share much with other such projects in Australia and around the world. Such acknowledgment and recognition would facilitate engagement with men who inject PIEDs on their own terms and increase the credibility of harm reduction initiatives.

3. Injecting practices and blood awareness

This section describes consumers' accounts of their injecting practices, exploring their attitudes towards hygiene, blood awareness and infection control. When asked to describe how they inject PIEDs, almost all consumers described employing routine harm reduction practices such as swabbing injection sites, carefully preparing injecting equipment so as not to compromise its sterility, swapping needle tips and vials, warming up the compound prior to injection and aspirating (drawing back the plunger of the syringe prior to injecting to ensure the needle is correctly positioned away from a blood vessel). While consumers tended to closely monitor potential external infection risks, such as dirt and environmental bacteria, less attention was paid to blood in the environment after injecting and in peer-to-peer injecting.

Hygiene and blood management

A key theme in consumers' accounts of injecting was the use of hygiene to maintain health against the risks and potential harms associated with injecting. In describing their injecting preparations, many consumers characterised themselves as 'clean freaks' or 'neat freaks' and described detailed and careful routines for cleaning hands and bodies prior to injecting. As David (Vic, 27) explained, 'I clean myself up, especially my hands, because I'd be handling the stuff first'. Ben (Vic, 44) also described washing and sanitising his hands prior to injecting, while Gabe (Vic, 22) explained that he does not 'go to the gym and then come home and just inject. I have a shower. I make sure my body's completely spotless'. Because of previous infections, showering was also important to Nathan (Qld, 26), a competitive bodybuilder:

So I'll have a shower before I inject [...] I didn't used to do that. I just swabbed the area and, you know, if you're dirty, chances are you're just rubbing dirt around a little bit if you don't do it properly. [...] Yeah, I'm big on that, the showers beforehand now. [...] Since [having] abscesses and things like that, definitely, those were a big wake-up call.

These accounts suggest that men closely monitor external infection risks, such as dirt and bacteria, which might threaten their health and bodily security.

Consumers also reported closely monitoring other infection risks, such as contaminated injecting equipment or dirt and bacteria in the injecting environment. Some consumers, such as Alex (Qld, 38), described monitoring 'exposed surface[s]', and avoiding touching sterile injecting equipment, such as the syringes and vials containing his PIED compounds. Other consumers described paying particular attention to the sterility of the injecting environment. Matthew (Vic, 26), for example, detailed how in his previous house he had had a separate room 'that was like my man cave' with a 'little desk in the corner [...] that had all my sanitary stuff', which he made sure 'was cleaned each week'. In his current apartment, which he shares with his training partner, they inject together in the kitchen:

So we have our gear in the cupboard and all the needles and the syringes and stuff and then we have a clean kitchen top, just pull it out and we just wipe a few swabs over the kitchen top as well to make sure it's really cleaned over and then we get it set up and then we usually do our injections usually on the same day, so I can do mine and then he'll get his ready and then I just have to do the action [injection] for him. (Matthew, Vic, 26)

Although many consumers expressed concern about environmental dirt, blood did not tend to register as a significant concern. As the accounts in this section suggest, risk was typically conceived in relation to perceived environmental contaminants that pose a danger to them, but rarely in relation to outward-oriented risk to others, especially that posed by their own bleeding.

This lack of attention to viral transmission risk and outward blood flow was also evident in men's reports of their post-injecting practices. Following intramuscular injecting, consumers frequently recounted rubbing or massaging the injection site to 'help disperse' the viscous compound and to aid absorption. For example, Basil (Vic, 25) described

giving the injection site ‘a good rub for a couple of minutes just to help disperse the oil through the muscle and warm it up’. Similarly, Dylan (NSW, 19) reported that after he injects, he massages the area:

Dylan: *Pretty much just grab my fingers, or even sometimes if it's a bit tougher, I'll grab my knuckles and I'll just rub where I injected pretty much. [...] Move it all around and get some blood flowing.*

Interviewer: *Yeah, and then what do you do post that [rubbing] to kind of finish up?*

Dylan: *Well, obviously I get rid of my needle in the little disposable box thing that you get from the needle exchange. [...] And just clean up the bench and, you know, get rid of the needles and stuff out of the way in the bathroom, so the family doesn't have to see it, and that's pretty much it. As well, I'll try and make sure that I always have an injection just after a shower.*

When asked what they do after injecting, consumers commonly mentioned rubbing the injecting site and disposing safely of injecting equipment. In general, they paid significantly less attention to any blood remaining after injecting, and rarely mentioned post-injecting hand washing. Hand washing after injecting has been identified as an important BBV transmission prevention strategy, but consumers were much more likely to mention doing so and cleaning surfaces before injecting. This means consumers may have small amounts of blood on their hands and fingertips following injecting, which can increase the potential for the transmission of BBVs, particularly hepatitis C (Hagan et al., 2001; Crofts et al., 1999).

Cleanliness, trust and peer-to-peer injecting

Expressions of trust and intimacy also informed relatively minimal blood management practices in peer-to-peer injecting. Men in this project commonly reported being injected by another person in the context of sexual relationships, with intimate partners

regularly assisting with injections, particularly in hard-to-reach muscles. However, the most common time when consumers reported being injected by, or injecting, other people was during the period of initiation: a period that is known to be associated with higher rates of hepatitis C transmission in injecting drug use of other kinds (Judd, Hutchinson, Wadd et al., 2005; Maher, Jalaludin, Chant et al., 2006). During initiation, men with experiences of PIED injecting were typically relied upon as sources of information, providing advice and guidance on injecting by demonstrating techniques and hygiene processes. For example, Joshua (NSW, 46) described relying on his training partner, who had also studied nursing, to show him how to undertake his first injections, while Grant (NSW, 25) explained that when he purchased his first combination of PIEDs ‘from a friend of a friend of a friend’, he asked his friend to instruct him the first time he injected. Importantly, often these expressions of trust were also entangled with notions of intimacy (see Fraser, 2013), producing perceptions of friends as clean and their practices as sterile. For example, Chris (Qld, 32) described being quite unconcerned about initiating injecting because he was with friends:

So the first couple of injections was me and some friends ... So the first times, yeah, there was three of us who had first tried it, and for the first couple of injections, we had done it to each other, but I dare say, it was very sterile and [we] never shared needles or anything like that.

Despite his lack of familiarity with PIED injecting, and having consulted only a website prior to injecting, Chris made the assumption that the injecting process ‘was very sterile’ because he was with friends and they ‘never shared needles’. Here, trust in his friends (along with the simultaneous repudiation of sharing needles and his scanty knowledge of hepatitis C transmission) overlap with perceptions of sterility, potentially mitigating some of the uncertainty present at initiation (see Rhodes & Treloar, 2008).

The symbolic connection between perceptions of cleanliness and trust was also evident in consumers’ accounts of injecting and being injected by other

people at times other than initiation. Some consumers described injecting together with relatively cursory attention to blood management and other harm reduction measures, such as avoiding sharing vials and containers. Matthew (Vic, 26) explained that his male housemate and training partner, with whom he regularly injects, used to be injected by his wife, but after they separated Matthew began injecting him. That Matthew took over from his friend's wife is a reminder of the intimate nature of injecting, in which trust, intimacy and safety are central dynamics (Fraser, 2013; Rhodes, Prodanovic, Žikic et al., 2008; Seear, Gray, Fraser et al., 2012). Matthew and his training partner also bought and shared vials of compounds together but used different needles to draw and inject. In describing how he injects with his training partner, Matthew explained:

The way we [inject], he's very anal [fastidious] like I am, and it has to be a certain way. You know, we go through alcohol swabs like [there's] no tomorrow, like we go through boxes of swabs before we finish our actual barrels or anything, the reason being we want everything to be sanitary, we want everything to be clean.

Despite describing their injecting practices as 'on point with everything', Matthew did not mention blood management or hand washing in the interview. Instead, his account focuses on fastidious swabbing and avoiding 'needle to needle' contact by each person using different needles to draw and inject. As Rhodes and Treloar (2008) argue, trust is contingent upon assessments of risk and the social relationship, and here we can see how the intimacy of Matthew's relationship overlaps with his perceptions of cleanliness and hygiene.

Similarly, Martin (Vic, 26) also injects with a male training partner, and on one occasion shared a particular compound with him. Martin described feeling confident in doing so due to his assessment of his partner's injecting practice:

In this case we did [buy and share the compound], I had one injection from it, but I know what his needle protocol is too. I know he

does exactly the same [as] I do, and he's even more anal [fastidious] about it than I am, so that's why I felt safe enough drawing from the same vial as him.

The accounts in this section suggest that being injected by and injecting other people is a regular occurrence for some men who inject PIEDs. However, the presence of blood did not seem to register as a source of potential contamination or warrant the same level of scrutiny towards hygiene. This focus on trust and friendship in experiences of injecting is perhaps understandable considering the criminalisation of PIED injecting, and the absence of easily accessible biomedical knowledge and healthcare, which makes learning about safer injecting difficult. While the risk of environmental transmission of BBVs is lower than that posed by needle sharing, our research suggests that targeted hepatitis C prevention education on this issue is nevertheless warranted.

Injecting drugs other than PIEDs

A small number of consumers in this project (n=11) had experience of injecting other illicit drugs (most commonly methamphetamine, opioids and MDMA). For example, Antoni (WA, 51) regularly injected methamphetamine and used steroids to counter the associated weight loss effects, while Steve (Vic, 39) had previously injected methamphetamine recreationally but now uses only PIEDs to better support his aspiration to be a competitive strong man. Tom (Qld, 26) explained that he had a 'history of addiction'. He no longer uses heroin and understood steroid consumption as 'a healthier option' to pursue his goals and look after his well-being. Of the 11 men who had experience of injecting other illicit drugs, no generalisable differences were observed in the PIED injecting practices or patterns of heterosexual men (n=8) as compared to gay or bisexual men (n=3). However, all three of the latter group reported using methamphetamine in recreational settings and in the context of sexual practices.

Conclusion

Men in our project were attentive to hygiene practices that worked to maintain the security and integrity of their own bodies and physical health. However, they were less concerned with the management of blood produced during injecting and the possibility of infection for others, particularly as these issues relate to hand-washing after injecting. Trust and hygiene also overlapped to shape injecting practices during initiation and among peers. Assumptions about other people's cleanliness informed decisions to share injecting equipment, and to inject and be injected by others.

As we have already noted, while the risk of environmental transmission of BBVs is lower than that posed by needle sharing, our research suggests that targeted hepatitis C prevention education on this issue is nevertheless warranted. Possible transmission avenues to emerge from the data include: rubbing the injecting site after injecting, the absence of hand-washing after injecting, group and peer-to-peer injecting, particularly around initiation, and sharing vials and containers. **Focusing health promotion materials on post-injecting practices and environmental blood may help engage this population, and in turn encourage more frequent hepatitis C testing.**

4. Hepatitis C knowledge, testing and diagnosis

Australia's ambitious aim to 'eliminate' hepatitis C as a public health concern by 2030 requires researchers, policy makers and health practitioners to engage with populations rarely identified as a priority (Australian Department of Health, 2018; World Health Organisation, 2016). Men who inject PIEDs are one such population, yet research suggests they have low rates of knowledge about hepatitis C. As we discussed in the above section, although rates of needle-sharing in this group are thought to be low compared to people who inject other drugs, other risks of blood-to-blood contact exist due to the use of large-gauge needles, intramuscular injection, hard-to-reach injection sites, repeated injecting and peer-to-peer injecting. This section describes consumers' knowledge of hepatitis C and its transmission, and experiences of testing and diagnosis.

Limited knowledge of hepatitis C

Consumers typically described themselves as not being at risk of BBV transmission, although their knowledge of hepatitis C and how transmission can occur was minimal. Some consumers, such as Tibor (NSW, 23), had 'heard of it' but did not know how it was transmitted, while others, such as Ryan (NSW, 43), knew only that it could be 'transferred by people sharing needles' but had little knowledge about what it was or its effects. Importantly, as is evident in Don's (Vic, 28) account, hepatitis C was commonly conflated with ideas of poor hygiene:

How would you get the blood-borne [virus] unless you're sharing needles? Like, how would you get hepatitis C, like unless you're, I don't know, rolling it [the needle] round in filth or something?

Like Don, most consumers linked hepatitis C transmission principally to needle sharing. Other scholars in the field have previously remarked on this conflation of BBV transmission with 'filth', and the symbolic association between hepatitis C, dirt and contamination (Fraser & Seear, 2011; Rhodes & Treloar, 2008). As we discussed earlier, these limitations in PIED consumers' knowledge of hepatitis

C transmission likely inform their strong emphasis on inward-oriented hygiene and foster a habitual lack of attention to the presence of blood during injections by themselves and with others.

In addition to having limited knowledge of hepatitis C, most consumers conflated hepatitis C risk with the intravenous injecting of psychoactive drugs, which was cast as unhygienic and associated with disease. Given the authority and pervasiveness of negative cultural representations of people who inject drugs such as heroin and methamphetamine, it is perhaps unsurprising that the men we interviewed in our project typically distinguished themselves from such people, even though they too inject drugs. Some consumers, for instance, tended to distinguish PIED injecting from other drug injecting by describing it as an individual practice that is regimented, controlled and technical. As Martin (Vic, 26) said, 'It's not like Trainspotting, [where] all the junkies are shooting up, you know what I mean? It's like a regimented thing'. The distinction being made between men who inject PIEDs (as rational, meticulous, controlled and intelligent) and 'junkies' (as irrational, desperate and untrustworthy) also has implications for how consumers thought about hepatitis C transmission. For example, Alex (Qld, 38) explained that he had never considered hepatitis C specifically because of its association with intravenous drug injecting:

I have always tried to have really clean and proper injecting practices just from ... because I'm a neat freak and a clean freak. But to be honest, even I haven't given any thought to hep C, ever. So it's never been like, 'Oh, I can't do that because I might get hep C'. So, as I said before, I don't really know much about it. I know that intravenous drug users get it. I know you get it, like it's a hygiene thing, it's blood-borne I think, but yeah, that's about it.

Here, Alex suggests that hepatitis C is not a concern because he has 'really clean and proper injecting practices', and furthermore he is a 'neat freak and a clean freak'. He has a sense that it is associated with poor hygiene and something that 'intravenous drug users get'. In this account, hepatitis C risk is conflated

with intravenous drug injecting. Reflecting the general knowledge limitations we observed of other consumers in this project, other routes of hepatitis C transmission, including blood in the environment, are overlooked.

Stigma and hepatitis C

Significantly, the stigmatisation of people who inject other drugs, and the conflation of hepatitis C with intravenous drug injecting, function to render hepatitis C transmission and acquisition as irrelevant, remote and implausible for men who inject PIEDs. For example, Don (Vic, 28) explained that although he does not usually bleed a lot, if he 'go[es] through a vein or a capillary' when he is injecting, 'it just, like, pours out'. On these occasions, he explained, he uses 'some tissues' or his hand to 'wipe it off':

Don: Yeah, because I'm pretty comfortable with my own body and my own blood. If it was somebody else's blood, I'd be like, aaah! But it's in my room, it's me, you know. [...] Well, actually where I'm staying now, it's a shared room, but I don't inject in that room.

Interviewer: Where do you inject?

Don: In the shower. [...] Yeah, but I guess people would be there too, one after the other, but yeah. I guess I should, yeah well, like I mean I'm pretty... I'm clean. I don't have hepatitis or anything or AIDS or any of these, but I guess I should be mindful of others.

Here, Don describes himself and his body as 'clean', confirming himself as healthy and un-diseased in comparison to those who have 'hepatitis or anything or AIDS'. Although Don concludes by suggesting he 'should be mindful of others' he describes a relatively cursory approach to outward-oriented blood management and infection control because he does not consider himself vulnerable, or his own blood as risky if others should come into contact with it. While we do not wish to enjoin men who inject PIEDs to adopt a sense of themselves as 'a risk' to others (Davis & Rhodes, 2004), the promotion of heightened

blood awareness during (and after) injections is important for effective and targeted health promotion.

At the same time that hepatitis C transmission is presented as implausible for 'healthy' men who inject PIEDs, acquisition is commonly described as equally inconceivable. As Tom (Qld, 43) explained:

Other intravenous drug users are generally a bit reckless and careless, so they sort of don't give a shit. Whereas you probably find that most steroid-only users are more conscious of their health and their body, so they just have...the idea of sharing a needle to them is just stupid anyway. They're probably not even thinking about hep C. [...] There's a perception... unfortunately, there's a perception that, you know, most people with hepatitis C are either junkies or ... and that's probably true, but so if you're trying to target hep C education to weightlifters in gyms and that, they'd be like, 'What the fuck are they trying to tell us about this for? We're not junkies'.

Here, Tom makes a distinction between 'reckless and careless' intravenous drug users and 'steroid-only users' who are purportedly 'more conscious of their health and their [bodies]'. This binary functions to attribute hepatitis C and risk not to injecting per se (Harris, 2009; Fraser & Seear, 2011), but to specific forms of irresponsible and reckless injecting, where that irresponsibility is attributed to those who inject intravenously. In this sense, this distinction switches the focus from practices to worthy and/or unworthy subjects who are constituted as more or less vulnerable to hepatitis C. Furthermore, not only is transmission presented as irrelevant to PIED consumers, it is suggested here (and by consumers elsewhere) that targeting hepatitis C health education to PIED consumers is intrinsically irrelevant and in and of itself stigmatising, as Tom makes clear. Significantly, it is evident that because hepatitis C is conflated with intravenous drug injecting, health education around hepatitis C is rendered for some consumers a stigmatising enterprise.

Efforts to alert men who inject PIEDs to the possibility of hepatitis C and BBV transmission in

general need to be approached sensitively. Among other things, attention needs to be paid to how the hepatitis C virus, side effects and transmission are constituted in health promotion resources (Winter et al., 2011). As hepatitis C can be transmitted in small amounts of blood, or in 'unseen' blood, it can be inadvertently characterised as sneaky, aggressive and elusive (Fraser & Seear, 2011). These articulations can provoke anxiety and stigma both in relation to the virus itself but also in relation to people who inject drugs, such as heroin consumers (Fraser & Seear, 2011). This is all the more pertinent for the development of targeted messages for PIED consumers, some of whom typically conflate hepatitis C with intravenous drug injecting, dirt and carelessness.

Further, prevention education can operate as a technology that responsabilises individuals for the prevention of health problems in contexts that do not support their efforts (Fraser, 2004). This is a criticism that has been made of prevention education aimed at people who inject other drugs, given that their ability to minimise transmission is largely structurally constrained by the criminalisation of drugs and related measures. In offering these suggestions for prevention education, therefore, we do so cautiously, recognising that many other broader issues need to be addressed to aid hepatitis C prevention efforts.

Testing and diagnosis

Approximately half (n=32) of the men who participated in the project reported being tested for hepatitis C. Significantly, many of the consumers described undertaking hepatitis C testing in the context of routine sexual health screening or health monitoring from their general practitioners. Some consumers, such as Basil (Vic, 25), specifically asked their doctors to test for BBVs:

So, the initial [blood tests] that I did a little while ago, I got them to check for all hepatitis A, B and C just to be sure. They're drawing blood, they might as well draw an extra vial and go and check for everything else at the same time.

However, many consumers reported never having been tested or were unsure about whether hepatitis C testing was included in blood tests or sexual health tests. For example, Alex (Qld, 38) and Joel (Qld, 26) were unsure whether hepatitis C testing was included in routine sexual health screening and testing, while Bart (WA, 37) had assumed hepatitis C was included but upon reflection was uncertain:

I had just a general scan for all kind of STDs [sexually transmissible diseases], which cleared me, [and] I assume that includes hepatitis C. [...] I went to a doctor, [and said] 'I want to get an STD test', like just general testing and, yeah, I assume that's in there. [...] I assume that's in there. [...] But to be honest, I do not know if that's true.

Other consumers undertook routine blood tests to monitor their cardiovascular and endocrinological health, and liver and kidney function, but were unsure whether hepatitis C tests were included. For example, Glen (Vic, 26) explained:

Mostly I do a general blood [test] after my first cycle or sorry, just before I started this second cycle I went and had blood tests done again, which is just also a good way to gauge if your natural testosterone levels are back in check. But I also got tested, because I've had this rheumatoid arthritis, for my inflammation levels and a whole bunch of other stuff the doctor did, so I'm not sure, maybe he might have tested [for] this as well, for hepatitis but [I don't know].

Only three consumers reported testing positive for hepatitis C antibodies or infection, all of whom had previous experience of injecting other drugs. This may reflect that people who inject drugs other than PIEDs have higher rates of testing for BBVs than people who inject PIEDs exclusively. Dylan (NSW, 19), for example, saw his GP regularly for 'blood work' every six months or so and tested positive to hepatitis C antibodies. His doctor carried out further testing and he was informed that his body had cleared the infection without

treatment. Another consumer, Craig (Vic, 37), was diagnosed with hepatitis C after undertaking routine testing during his long-term involvement in a hepatitis C study facilitated by an NSP. Originally, he explained that he was 'suspicious' that he had hepatitis C but then his liver function 'dropped dramatically'. Craig reflected that although the newer forms of treatment were easy to organise, in the past it has taken him 'almost two years to get treatment' because of the difficulty of organising a prescribing GP and finding the right specialist.

Conclusion

Consumers in our project typically described themselves as not being at risk of acquiring hepatitis C, despite very low, if any, knowledge of hepatitis C and how transmission might occur. As we explored in this section and the previous one, these gaps in PIED consumers' knowledge of safe injecting and hepatitis C likely inform inward-oriented hygienic practices and minimal attention to blood management. We have also suggested that the stigmatised association between hepatitis C and intravenous drug injecting has several consequences, not least that hepatitis C transmission and acquisition are presented as implausible for 'healthy' men who inject PIEDs.

Efforts to alert men who inject PIEDs to the possibility of hepatitis C transmission, and BBV transmission in general, need to be approached sensitively. Among other things, attention needs to be paid to how the hepatitis C virus, side effects and transmission are constituted in health promotion resources. **To this end, we recommend framing prevention efforts on better injecting technique and blood management via positive discourses of physical health, self-care and well-being.**

Prevention education also needs to be grounded in the social dynamics and relationships that characterise PIED injecting. **New resources could acknowledge more clearly that men who consume PIEDs regularly inject with other people and within training partnerships, particularly during the initiation period.** Resources could acknowledge the reasons why men participate in peer-to-peer injecting, and also explain that it raises

specific issues of blood management, especially if the person doing the injecting has injected others beforehand (including themselves). The resources could also inform consumers that even very small amounts of blood in the environment are possible sources of hepatitis C transmission. Messages clarifying that it is not possible to assess whether a person has hepatitis C based on their appearance, or on a broad assessment of the 'cleanliness' of their injecting practice, may also be useful.

While approximately half of the consumers in our project reported routine testing for hepatitis C, a general sense of uncertainty persisted around the content of routine sexual health screening and blood tests. **We recommend GPs increase opportunistic screening and testing for the hepatitis C virus at the time of blood testing for other health concerns.**

5. General health concerns and information preferences

Alongside discussing their PIED-related motivations, experiences and injecting practices, and knowledge of hepatitis C, consumers were asked to describe their health concerns and favoured sources of health information and advice. In this section we describe the various health concerns consumers identified regarding PIED consumption. These include organ and hormonal function, cycling and cessation, injecting technique and hygiene, and side effects arising from PIED consumption. We also explore how consumers prefer to access health information and the topics they identify as important to them.

Physical harms, managing side effects and mood

Consumers described concerns regarding the potential harms to their health relating to PIED consumption, including increased blood pressure, liver and kidney damage, high cholesterol and thyroid function. Owen (NSW, 40), for example, explained:

I'm looking to get health checks done like blood works, etc., to see if my liver, kidneys, cholesterol, thyroid [are] in good working safe order.

Some of the men in this project also articulated concerns about fertility and took precautions to maintain their reproductive health:

I'll also get semen testing to make sure that nothing's gone wrong down there because I don't have kids yet, but I'd like to someday. (Basil, Vic, 25)

Other consumers described various side effects they experienced and managed, including acne, testicular atrophy, gynecomastia, hair loss and hair growth. As Tom explained:

So I actually want to avoid testosterone-based steroids because the side effects are absolutely shit and I don't want them. Gynecomastia, baldness, acne, and I think ... I actually got ... I do have mild gynecomastia and that was from

testosterone back in my twenties. There's too many side effects with testosterone.

However, for some consumers, such as Richard (Qld, 25), side effects tended to abate when completing a cycle:

Back then, I used to get the acne, the hair growth, the testicular atrophy, but that goes away once you come off. It's just while you're on because your body just stops producing natural testosterone while you're on. So they do shrink but then [after] a couple of weeks you come off, especially when you're on PCT [post-cycle therapy] and stuff like that, that all goes back to normal and I haven't had any problems with that.

Lowered libido and sexual issues were also identified as an issue for some of the men in this project. After experiencing erectile difficulties, Grant (NSW, 25) decided to do a 'power post-cycle therapy' to come off his regular regime of testosterone and the drug Deca-Durabolin:

To be honest with you, it was actually a fairly easy transition. Like, can I just be blunt and honest with you? [...] The old fellow [penis] didn't work very well [laughs]. That's the best way to put it. As you know, if your manhood doesn't work, the shit hits the fan.

Fabian (NSW, 22) also experienced troubling effects on his libido, so decided to consume smaller amounts:

So, at the moment, [the side effects] are something I'm trying to minimise with low[er] amounts of what I'm using. So the last cycle I probably had very harsh, adverse mental effects. [My] mind was just warped and [I] couldn't see that, but everyone else could [...]. Your sex drive obviously can be affected. Obviously your testicles stop working as soon as you inject an exterior source of testosterone into your body. So that kind of sucks a lot.

For Fabian, issues with his sexual drive and function were closely related to concerns about 'natural' testosterone levels and normal biological functioning.

Other consumers were concerned about injecting-related injuries, including the development of scar tissue, abscesses and infection. For example, Owen (NSW, 40) explained that he developed an abscess after injecting into scar tissue:

Approximately three years ago, I injected in my right butt cheek and I actually injected into a bit of scar tissue that was like a hard lump. It wasn't painful but I injected into that and I ended up with an abscess. [...] Yeah, I had to attend hospital and have the abscess cut open because of the extreme pain and stitched up type of thing. That's the only bad experience I've had.

In addition to the physical side effects identified above, some consumers describe undesirable effects on mood, particularly in the form of heightened anger and aggression. For instance, Alex (Qld, 38) explained that 'the main thing with steroids is that sometimes your aggression gets a little bit too much', while Owen (NSW, 40) described getting 'a little edgy' and experiencing 'a bit of anger'. Importantly, although consumers in our project noted these 'effects', they were not framed as inevitable and did not function to absolve responsibility for behaviour.

Concerns about PIED regimes, cycles and cessation

Consumers in this project also expressed concern about the health effects of specific PIED compounds, dosage and regimes, and the hormonal effects of cycling and cessation. For example, Simon (Vic, 32), like other consumers, expressed concerns about the effects of specific PIED compounds:

Testosterone is generally used just as a base, so if you're going to be using anything, as a male anyway, you will use testosterone as a base drug. Then you would use other things that will be more performance-based, so, for

example, Trenbolone is the one that I use. Now Trenbolone has been known to be, or it can be, toxic on the liver if you used [it] for extended periods of time and used at high doses. So I only ever use it for six weeks at a time and I use fairly moderate doses of it. There are things stronger than that that I refuse to use because I don't want to risk it basically.

Other consumers were concerned about aromatisation, the chemical process in which excess testosterone is converted to oestrogen, during a cycle. According to Phil (WA, 35), the aromatisation of testosterone to oestrogen had 'made [him] feel a bit more down', while Martin (Vic, 26) was certain that the 'roid rage' and high emotions he experienced were actually caused by oestrogen. As he put it, in starkly gendered terms, they made him feel 'like a woman'.

For other consumers, like Cameron (NSW, 36), 'cycling off' (coming off or stopping) PIED regimes, cessation and post-cycle therapy to manage hormonal and other health issues were of significant concern:

I think the biggest issue at the moment is the actual post-cycle therapy where [you need to] learn what to use, to get from, you know, your testosterone levels from say one hundred and twenty, down to like [a] normal range of fifteen or more, whatever it is, easily because I think these days so many guys cycle off and they just shut down and they don't know what to take.

Consumers were concerned that cycling off or cessation would cause hormonal changes, as well as changes in mood and libido, and depression. Significantly, many consumers suggested that hepatitis C transmission was not of concern to them, despite very low, if any, knowledge of hepatitis C and how transmission might occur.

Information preferences

PIED consumers in this project actively sought technical knowledge and reliable, scientifically based or otherwise credible health information. Many consumers had health concerns relating to their PIED

consumption, were keen amateur researchers, and expressed frustration at the lack of reliable information about different substances, combinations, practices of use and processes of stopping consumption.

Consumers articulated their informational preferences in different ways, but common areas they described were advice on ways of refining dosage and combinations of drugs, avoiding side effects, hormonal and health monitoring, and access to prescribed drugs to avoid the use of unverified 'mail order' and other illicitly accessed drugs. For example, Jake (Qld, 24) explained that he would have liked his doctor to help him manage side effects, drug combinations and dosage:

If they told me where to inject and then gave me a lot of information, like if they said, 'If you start noticing these side effects, that means this is too high', and then I would've also thought it would be good if they told you to ... like emphasised how important blockers were for oestrogen levels and prolactin instead of just having testosterone and Deca[-Durabolin], like if they actually said, 'Oh, if you're having testosterone, you really need to make sure you're having Arimidex as well at the same time or this'. Even though they can't give them to you, they can tell you what you need to get or like really put an emphasis on it. I think that would've been good.

Most consumers identified GPs as their preferred source of information and support about PIEDs, but simultaneously explained that such relationships were almost impossible to create. The following exchange with Jasar (NSW, 44) is a good example of the kind of remarks consumers made about accessing information and professional support:

Interviewer: *What's your sense of the best places to target men who use steroids to give them information? [...]*

Jasar: *Doctors. The doctors have got to be more open to it. They have to. If they see a person on steroids. You can tell when men are*

on steroids. You can tell. It's not hard to pick, yeah. Especially if it's your local GP. He's your local GP. He sees you all the time. He sees the change in you. He can tell. They're not ... it's not very hard not to pick a person [whose] body has changed and it's got to be ... I don't know, I've gone to the doctor several times and asked for help, and the door gets shut in my face.

Even when GPs were open to discussing PIED consumption, consumers said they may not be equipped to provide useful information or support. Grant (NSW, 25) explained that when talking to his GP, 'no expert advice [was] available'. Other consumer accounts, such as Simon's (Vic, 32), suggest that when consumers do approach GPs for advice or help, they are often confronted with very different concerns from their own:

Like I've said to you before, one of the concerns GPs always raise is the cholesterol. I've always taken dietary [measures] to counteract that. I always make sure that if there's something that I can be doing or taking or eating that will have a good effect around those potential side effects, I'm doing that stuff. So really, it's just the blood pressure and that's one of those things that I'm generally on top of and keep track of, but at the same time, I know that they are strong drugs, so I know that that's a potential risk there.

Significantly, six of the gay men we interviewed for this project (n=8) reported seeing GPs and accessing NSPs through LGBTIQ-focused health organisations. Most reported receiving hepatitis C information via these sexual health services.

Consumers in this project also sought reliable and credible information from NSPs, and from internet consumer forums and other non-medical sources, such as peers. They observed that more PIED-related information should be made available in gyms, medical centres, relevant occupational industries and sites, pharmacies, sexual health clinics and supplement stores. Although consumers described actively seeking out credible information and healthcare, many

emphasised that health promotion and engagement initiatives needed to be discreet because of the stigma associated with PIED consumption. For these reasons small pamphlets or leaflets distributed with injecting equipment, or information in online forums and social media, were suggested.

Conclusion

Men in this project described various concerns associated with PIED consumption, including potential physical harms and side effects, and changes in mood. They were also concerned with managing the various health effects associated with cycling and cessation. They consistently articulated a desire for an honest and productive relationship with a professional health practitioner – often a GP. According to their comments, however, this desire is rarely capitalised on by health professionals, who are seen as responding in unhelpful ways.

Consumers expressed frustration at the lack of reliable information about different substances, combinations, practices of consumption and processes of stopping consumption. **Further research is needed on PIED consumption and this research needs to be translated into comprehensible and accessible forms for a general audience.**

6. Improving health and harm reduction services

In this section we draw on both consumer and health professional interviews to explore how health and harm reduction services for PIED consumers may be improved. We explore how health and harm reduction services might better engage men who inject PIEDs on their own terms and how harm reduction approaches might be improved by engaging the priorities and knowledge of PIED consumers.

Consumer perspectives on appropriate harm reduction responses

Acknowledging the pleasures and benefits of PIED consumption

A key finding from this project is that in order to improve the design and delivery of harm reduction strategies to support the health of men who consume PIEDs, services need to engage these men on their own terms. A crucial strategy for health professionals and service delivery is to acknowledge the positive experiences and benefits of PIED consumption. As we noted earlier, men in this project described experiencing a more vibrant physicality and a variety of social benefits from their PIED consumption as their bodies came to more closely resemble contemporary ideals of maleness and masculinity. Cameron (NSW, 36), for instance, said: ‘When you’re using it, you feel a lot more stronger and more confident and more, well, I suppose more of a man’. Although drug injecting carries particular risks of infection, in terms of bacterial infection at injection sites and via the transmission of BBVs (e.g., hepatitis C, HIV), PIED-specific harm reduction would do well to mobilise attention to safer injecting practices as a form of self-care and as part of the wide-ranging labours involved in PIED consumption regimes. In so doing, PIED consumers could be addressed as active participants in a harm reduction that simultaneously supports and exceeds their own health, since the reduction of BBV transmission benefits all. Acknowledging the positive experiences of using PIEDs would also increase the credibility of harm reduction information.

Improving services at NSPs

Most consumers described positive experiences at NSPs. These include being able to acquire injecting equipment and disposal services free of cost, the non-judgmental attitudes of staff members, the confidential nature of the service, the trustworthy and credible information they received about injecting protocol and hygiene, and referrals to the Steroid Education Program (in Victoria). Considering the broader stigmatisation of PIED consumption, consumers also commented on the positive affective experiences of attending NSPs. For example, Fabian (NSW, 22) described attending his local NSP as a ‘safe’ experience:

It's the most comforting, no I wouldn't say comforting, yeah, it just feels safe. [The information is] here in front of you. It's displayed, no one's hiding anything from you. If you have any questions, you ask and they also give you the answer.

Despite the overwhelmingly positive terms in which people described NSP services, sometimes consumers perceived the information they received as not particularly relevant or useful. As we noted in section four, despite having little knowledge of hepatitis C many consumers explained that hepatitis C information and prevention advice was not relevant to them. Others were unsure of whether they had received targeted hepatitis C information.

Other consumers explain that NSPs could be improved by providing more targeted harm reduction advice tailored to consumers' experiences and needs. Below, Tom (Qld, 43) explained that sometimes he is given injecting information not tailored to his experience:

I shouldn't say that because they do have a duty of care to tell people [about recommended needle gauge size]. I've got to realise, and I do realise, that not everyone's going to probably have the level of experience that I have going in there. So, it's probably good that they do that. In fact, I wouldn't say to them, don't do it. To me, it's just, yeah, I don't need to know that, I already know that.

The most common suggestion for improving services at NSPs was to make more information about their services and location more readily available to PIED consumers. As Dylan (NSW, 19) explained:

There definitely needs to be more information as to where the needle exchanges are and how to access them because I found it very hard to find out anything at the start. [...] Even when I called the main reception at hospital and asked them about it, they pretty much treated me like I was a junkie.

Enhancing the doctor-patient relationship

As we explained in the previous section, many consumers identified GPs as their preferred source of health information and advice but described their relationships with GPs as often unsatisfactory or non-existent. In their eyes, GPs dwelt too heavily on the dangers of PIED consumption, lacked credibility and were often ill-informed or unhelpful. In describing their relationships with GPs, consumers often highlighted the absence of open dialogue, and the difficulty in having their priorities and concerns respected. For example, when Joel (Qld, 26) approached GPs for advice or help, he was often confronted with very different concerns from his own. It took him several attempts to find a GP who would assist him:

I had to go around to quite a few doctors before I found one that didn't think that steroids injection would just kill you [...] But yeah, once I actually did find one of those doctors, yeah, he was really good. I talked to him about everything that I was thinking about taking. He would give me some advice [...] I'd get as much information until I felt like I was prepared to try something and I knew what to expect and, yeah, I'd say about every single time there were no surprises for me and so it all actually worked out pretty well.

At the same time, consumers had a great deal of specialist knowledge on drug choices, patterns of consumption and other issues. Many of our consumers described highly complex regimens of PIED consumption, demonstrating a very high level

of commitment to developing knowledge of PIED pharmacology, dosing patterns, drug combinations and the temporality of cycles (also see Kimergård, 2015; Underwood, 2017). The consumers saw themselves as possessing enough reliable knowledge to recognise the limits of GP expertise. In their estimation, GPs should be able to provide such knowledge or, where they reach the limits of their knowledge, should take steps to learn more.

How could the doctor-patient relationship be improved? Importantly, the knowledge and priorities of each party (e.g., doctors and PIED consumers) needs respectful engagement, and active processes for identifying and working with overlaps in each party's interest. It may be that open, non-judgmental discussion of this kind creates room for other engagements and new kinds of reflection on consumption and related priorities and interests.

Health professional perspectives on improving health and harm reduction responses

Workforce education and development

A common theme in the interviews with health professionals was that more easily accessible and publicly available research was needed on PIED consumption, especially in regards to the long-term effects of consumption and the sorts of health services PIED consumers desired. Robert (NSW, NSP worker) explained that the 'research and evidence' on PIED consumption is not extensive and has largely been conducted in the United Kingdom. Andrew (Vic, GP) explained that because of limited research, it is hard to access reputable sources of information to advise men who see him for healthcare and monitoring:

I've done this before where people will give me a list of [products] to look up, [including] what types of testosterone they are going to take, and if you look ... you actually do searches on these substances, most of [the results] are just commercial websites. There's nothing available scientifically or anything, so there's no real information about it.

Similarly, Susie (Qld, NSP worker) expressed concerns that their 'views were out of date' because there has not been enough research into the perspectives of people who consume PIEDs:

Because some of our views are out of date. Because [consumers] know that steroids or some of the body enhancement drugs can make changes in their life, you know [...] they are using them in some positive ways as well and there hasn't been enough.... I don't think we do enough study about that. I feel there's a big gap there where you know, they are legal in a lot of other countries as well. They [consumers] are getting lots of studies and information from those countries and quite often, they do know a lot and then when they hear from medicine or they hear from needle and syringe workers, they are hearing a title message that is probably a bit out of date you know, probably the harms that we are fearful of are not quite as in line with the actual truth.

In sum, health professionals thought they could work more effectively if more research and policy was available to guide them.

In addition to more research, further education, training and workforce development was also identified as a priority so that health professionals could better understand the issues and service needs identified by consumers as important. However, it is worth noting that the pharmacists we interviewed for this project often reported having little engagement with PIED consumers and did not perceive them as 'core' business. Reflecting the views of some of the consumer participants, many GPs explained needing more education around PIED products, regimes, endocrinology and metabolic monitoring:

I've just done [a consumer's] first metabolic monitoring and got some results back. In fact, I've got an endocrinologist starting here next week, so I'm going to have a talk to her a bit about the findings, because they're interesting to me. Like I said, I am on a learning curve myself as this is new to me and this is an area

that I haven't worked in very much in the past. (Corey, NSW, GP)

Professionals who worked in NSPs also spoke about the need to upskill in order to deliver targeted information beyond the traditional focus on injecting and BBVs. For example, Kenneth (WA, NSP worker) said:

I had to refocus [our staff training package] and to refocus that, I had to increase my knowledge and so I learned from [a more knowledgeable] member of staff and learned stuff online and learned from resources and developed contact with the steroid educator worker.

While many NSP workers felt confident delivering injecting advice, at the time of the interviews, consumers from all over Australia were often referred (via phone and face-to-face contact) to the Steroid Education Program in Victoria for more detailed advice about dosage, PIED regimes and side effects. This was thought to limit engagement and rapport-building with men who consume steroids and impede the upskilling of NSP workers:

We've got this kind of like one-size-fits-all engagement around sterile equipment, and sterile equipment being important, but we've been banging that same drum for a really, really long time. So, I don't think we're particularly good at engaging that client group. [...] They do their best in trying to engage the person and to open up some dialogue and some conversation and hopefully that conversation includes a whole range of things, but it culminates with them being referred to the state-wide peer steroid educator [...] which] means that we're sending someone outside of our service for help or support and we wouldn't dream of doing that with any other service user. [...] So that's the first thing that we're looking at changing, is actually increasing the skill set of [NSP workers]. (Nick, Vic, NSP worker)

The development of up-to-date, targeted and effective harm reduction and health promotion materials was also identified as key issue:

We have really only two [pamphlets] and one of them is being redone at the moment and the other one is about injecting insulin and steroids which is a really, really, really old pamphlet [...] There's been no new stuff out specifically for steroid users and I think that you do have to have things specifically for steroid users, and some posters, pamphlets, cards, those types of things, things that are visual, stuff that when they come in, they can see [...] because it's a different cohort, they're totally different [from other NSP service users], you know, in the way they think about themselves, the way they inject, what they inject, the method of injecting and preparation. (Andrea, Vic, NSP worker)

The importance of health promotion messages needing to acknowledge differences from other forms of injecting drug use was mentioned, as well as targeting resources to differing levels of experience:

[We have decided to take] a really structured and planned approach to developing three resources because the person who first accesses the service or hasn't been using for very long needs different information to the more advanced user who needs different information to the health worker. So rather than try to cram all of that into one three-fold brochure, we went, 'Well, there's a clear need for three different types of information', and so the idea is that we produce a resource for the new user, which is largely about safer injecting practices and risk factors and some of the stuff within that that consumers have told us that they want to see. Then the more advanced resource, so talking about cycles and stacking and pyramiding and just giving more detailed information, and then the resource for the worker because workers often don't have any idea of how to engage with or support [men who consume PIEDs]. (Kenneth, WA, NSP worker)

Several of the health professionals we interviewed also discussed the importance of peer perspectives, expertise and involvement in the design and delivery of health services and health promotion resources. Like the consumers we interviewed, health professionals spoke positively about engaging with the Steroid Education Program, Australia's only PIEDs-targeted outreach service. This program has extensive experience working directly with PIED consumers. It provides health information, clean injecting equipment and referrals to other services for consumers, as well as information to GPs and other health and community practitioners.

Improving referral and linkage

Most of the health professionals we interviewed spoke about the need to improve existing processes for referral and linkage to better assist PIED consumers access services for ongoing monitoring and support and build continuity of care. Tailoring engagement strategies to build rapport and improve trust between consumers and health professionals was discussed in most interviews. For example, Nick (Vic, NSP worker), explained that initial engagement with consumers should be led their knowledge and priorities:

You need to look at all that research about what's important to them and BBV was relatively low down that list. It's not that it's low down on our list, but it shouldn't be at the top of our list if we're thinking about engagement. What should be at the top of our list for engagement purposes is the stuff that's important to them, you know, cycles and size and product and injecting soreness and all that sort of stuff. That's a much better engagement tool than using BBV.

As we mentioned in the previous section, most of the men we interviewed discussed wanting to build an ongoing relationship with a GP. However, many professional participants in this project said that existing frameworks for referral and linkage with other health services and providers, especially GPs, were inadequate. In particular, NSP workers encountered

difficulties identifying knowledgeable and non-stigmatising GPs to refer clients to:

I'll use the example of someone that comes in that's injecting heroin for argument sake or tablets. Let's say someone's coming in, they're injecting pharmaceutical opioids, and they're having all sorts of injecting issues, we would send those people to a friendly GP to get whatever the issue is looked at. It doesn't have to be anything to do with treatment or abstinence or, you know, stopping what they're doing, it's about maintaining their health and their well-being [...] and we can't do that currently for people that are using steroids. [... We can't provide] decent pathology and medical checks pre and post cycle and ongoing kind of stuff, so that was a huge gap, it seemed like the gap was everywhere across Victoria. (Nick, Vic, NSP worker)

To overcome this challenge, some NSPs were providing support and monitoring for PIED consumers via their own clinical services. Some spoke about having success engaging PIED consumers in monitoring and BBV testing via their sexual health services. For example, Kenneth (WA, NSP worker) explained that his service had some success engaging men who consume PIEDs via its on-site sexual health clinic:

So if you talk to them about sexual health and getting a sexual health check-up, which would incorporate HIV and Hep C, then that's far less confronting [than talking about BBVs] and we have more success getting consumers to use our clinical service in that way.

A significant theme across the interviews was the limitations of existing referral pathways and absence of targeted health services. PIED consumers and health professionals also commonly discussed the stigma they experienced when trying to access informed and knowledgeable GPs.

Policy, legal and regulatory responses may produce harms

While professional participants identified practical impediments to the effective delivery of health and harm reduction services, they also highlighted broader structural and systemic barriers to the development of more effective harm reduction strategies.

A few health professionals observed that there was little investment in harm reduction services for PIED consumers, as Nick (Vic, NSP worker) described below:

There certainly seems like there's more research happening, but there's been no investment in steroid use or harm reduction strategies for steroid users by the government, and I don't expect there to be either. I've never expected a great deal from the government in [that] regards.

Some health professionals thought that the criminalisation and illicit status of PIED consumption limited the development of effective harm reduction and likely increased harms experienced by consumers. In the extract below, Corey (NSW, GP) argues that the illegality of PIED consumption hinders informed discussion about the risks of consumption, limits the availability of resources and information, and produces stigmatising attitudes towards consumers:

[Consumers] looking at stuff and beliefs and experiences and anecdotes and the fact that the greatest risk is that people can't discuss it. [They] can't go and see an endocrinologist and have a rational open discussion and have someone sign off on what they're doing. You know, they are treated as if they are criminals, which under the legal system, they are.

Shane (NSW, Pharmacist) also said that the criminalisation of PIED consumption likely prevents consumers from accessing information and approaching health professionals:

I'd be happy for PIED users to [dispose of their used syringes at the pharmacy], but I think sometimes [...] it's really hard to get

[consumers] to even do research [about disposal]. I think they [consumers] want to keep it their [...] little secret sort of thing, because it is a grey area of the law and they don't want to be broadcasting it and some of them just want to keep it a secret.

One professional participant, Florence (NSW, GP), suggested that some research into PIED consumption has the potential to contribute to marginalisation and harms through the use of insulting and stigmatising concepts:

So [a hospital] has had incredible problems trying to recruit [PIED consumers for a research study]. So I've been recruiting for them [...] If you read the ethics submission, it's called 'the anabolic abusers study' or something like that, and I think, you know, part of the deal for me recruiting is that they got rid of the whole 'abuse' [...] You know, it was a word that my clients, you know, wouldn't see. So automatically they've put in an ethics submission about steroid abusers. You know what I mean? The boys themselves don't see themselves as abusing anything.

These findings suggest that criminalisation may be a key driver of the stigmatisation surrounding PIED consumption and those who consume PIEDs. Stigmatisation impedes policy development, accessible harm-reduction information and informed discussion, healthcare access and service delivery. Stigmatising concepts may also be reproduced by researchers, reinforcing unhelpful ideas and further marginalising consumers who are already suspicious of researchers and health professionals.

Conclusion

In this section we have suggested how health and harm reduction services might be improved for men who consume PIEDs. Consumers' suggestions centre on better acknowledging the reasons why men consume PIEDs, improving access to NSPs and improving doctor-patient relationships. **GPs should**

consider engaging in transparent and informed discussions with men who consume PIEDs, discussing openly the issues they raise without demonising consumption or exaggerating risks.

This first step would go some way towards addressing men's articulated desire to have direct, informed conversations with trusted healthcare professionals about their PIED consumption.

Key suggestions from health professionals include the development and expansion of targeted services to educate people who inject PIEDs and health professionals about PIED consumption, in addition to improved pathways for referral and linkage. **More targeted services are needed to educate people who inject PIEDs and health professionals on safer injecting techniques, substances, combinations and practices of consumption, in healthcare and community settings accessed by people who consume PIEDs. We also recommend that Primary Health Networks commission and resource targeted health services to meet the specific needs of PIED consumers to develop better continuity of care.**

PIED consumers and health professionals also discussed the stigma experienced by many consumers when trying to access informed and knowledgeable GPs. **Embedding education and training for GPs on PIED consumption and associated health issues in the Quality Improvement and Continuing Professional Development Program (Royal Australian College of General Practitioners) could be a useful strategy to improve the professional knowledge and skills of GPs.** Our findings also suggest that criminalisation may be a key driver of the stigmatisation surrounding PIED consumption and those who consume PIEDs. **There is therefore a need to address the regulatory and legal processes prohibiting access to, and safer usage of, all drugs – including PIEDs – in that these are widely recognised as producing complex harms and stigma.**

Conclusion and recommendations

This report has outlined key findings from a national ARC-funded project exploring PIED consumption in Australia, undertaken between early 2017 and late 2019. The findings are based on interviews with 60 men who consume PIEDs and 20 relevant health professionals in general practice, pharmacy, sports science and harm reduction. Interview questions addressed the meanings associated with PIED injecting and the forces shaping contemporary dynamics of consumption, motivations, injecting practices, knowledge and experiences of hepatitis C transmission, injecting practices, the informational needs and preferences of people who inject PIEDs, and appropriate harm reduction responses to PIED injecting.

This project found that men described taking up PIED consumption for a diverse range of reasons. Although most men reported wanting to cultivate a more muscular physique, the reasons for this varied. Common themes to emerge were the normalisation of body modification practices, overcoming exercise plateaus and responding to occupational injunctions to meet the demands of specific employment industries, such as construction and personal training.

Most consumers described PIED consumption as improving their health and well-being (although some consumers held health concerns and encountered health problems – see section 5). While many men in this project observed specific improvements in fitness and strength, others described broader effects such as a more vibrant and energetic sense of self. They also spoke about PIED consumption as part of normal everyday practices embedded in regular training and fitness regimes. The social benefits of PIED consumption were also identified, with many consumers describing more confidence and assertiveness at work and in their social relationships. Some consumers described these experiences in terms of ‘enhanced masculinity’ and attributed these benefits and effects to testosterone.

In relation to hepatitis C, consumers had little knowledge of the virus and how its transmission might occur. This limited knowledge of hepatitis C likely informed the inward-oriented hygienic practices and minimal attention to blood management that were described in the interviews. The stigmatised

association between hepatitis C and intravenous drug injecting also informed PIED consumers’ perspectives that hepatitis C transmission and acquisition are implausible for ‘healthy’ men who inject PIEDs. While over half of the consumers in our project reported having been tested for hepatitis C, on closer questioning they were uncertain whether hepatitis C testing was included in sexual health screening and blood tests.

Men in our project were attentive to hygiene practices, such as swabbing, that worked to secure their own bodies and physical health. However, they were less concerned with the management of blood produced during injecting and the possibility of infection for others, particularly as these issues relate to hand-washing after injecting. Perceptions of trust and hygiene also overlapped to shape injecting practices among peers during initiation. More generally, assumptions about the cleanliness of other people informed decisions to share injecting equipment, and to inject and be injected by others. Given these findings, targeted hepatitis C prevention education is warranted, and we outline some recommendations for engagement below.

Although most consumers described improvements in health and well-being associated with PIED consumption, they also described various concerns, including potential physical harms and side effects, and changes in mood. They also undertook harm reduction practices to manage the various health effects associated with cycling and cessation. The men in this project consistently articulated a desire for an honest and productive relationship with a professional health practitioner – most often a GP. This finding points to an ongoing need for health professionals to capitalise on this desire, whom our consumers viewed as responding in unhelpful ways.

Health and harm reduction services can be improved for men who consume PIEDS by better acknowledging the reasons why men consume PIEDs, improving access to NSPs, improving the doctor-patient relationship and improving hepatitis C prevention education. Health professionals raised several important suggestions for improving and developing harm reduction for PIED consumers. More accessible and publicly available research was needed on PIED

consumption, as well as further education, training and workforce development so that health professionals could better understand the issues and service needs identified by consumers as important. Sector-wide coordination is needed to improve existing processes and avenues for referral and linkage to assist PIED consumers access services for ongoing monitoring and support. Finally, existing legal frameworks that criminalise the safer usage of all drugs – including PIEDs – impede the development of more effective harm reduction strategies. There is therefore a need to review regulatory and legal processes prohibiting access to, and safer usage of, PIEDs.

Below we outline recommendations from these findings for better engaging with men who inject PIEDs, both for the purposes of future research and for more targeted and effective harm reduction:

- 1** Motivations for PIED consumption among men cannot be usefully understood solely through familiar paradigms that focus on notions of drug abuse or masculine insecurity. **Efforts to engage men in harm reduction education and health promotion could be improved by acknowledging the various social dynamics that produce conditions in which men consume PIEDs.** Recognising social imperatives around enhancement, efficiency and endurance foregrounds the socially embedded deliberations associated with PIED consumption and challenges more pathologising accounts.
- 2** Health services and research would be improved by acknowledging the positive experiences associated with PIED consumption as well as negative experiences, and by allowing recognition that men who consume PIEDs may be invested in projects of self-improvement that share much with other such projects in Australia and around the world. Such acknowledgment and recognition would facilitate engagement with men who inject PIEDs on their own terms and increase the credibility of harm reduction initiatives.

- 3** While the risk of environmental transmission of BBVs is lower than that posed by needle sharing, our research suggests that targeted hepatitis C prevention education on this issue is nevertheless warranted. Possible transmission avenues to emerge from the data include: rubbing the injecting site after injecting, the absence of hand-washing after injecting, group and peer-to-peer injecting, particularly around initiation, and sharing vials and containers. **Focusing health promotion materials on post-injecting practices and environmental blood may help engage this population, and in turn encourage more frequent hepatitis C testing.**
- 4** Efforts to alert men who inject PIEDs to the possibility of hepatitis C transmission, and BBV transmission in general, need to be approached sensitively. Among other things, attention needs to be paid to how the hepatitis C virus, side effects and transmission are constituted in health promotion resources (Winter et al., 2011). As hepatitis C can be transmitted in small amounts of blood, or in ‘unseen’ blood, it can be inadvertently characterised as sneaky, aggressive and elusive (Fraser & Seear, 2011). These articulations can provoke anxiety and stigma both in relation to the virus itself but also in relation to people who inject drugs, such as heroin consumers (Fraser & Seear, 2011). This is all the more pertinent for the development of targeted messages for PIED consumers, some of whom typically conflate hepatitis C with intravenous drug injecting, dirt and carelessness. **To this end, we recommend framing prevention efforts on better injecting technique and blood management via positive discourses of physical health, self-care and well-being.**
- 5** Prevention education also needs to be grounded in the social dynamics and relationships that characterise PIED injecting. **New resources could acknowledge more clearly that men who consume PIEDs regularly inject with other people and within training partnerships, particularly during the initiation period.** Resources could acknowledge the reasons why

men participate in peer-to-peer injecting, and also explain that it raises specific issues of blood management, especially if the person doing the injecting has injected others beforehand (including themselves). These resources could also inform consumers that even very small amounts of blood in the environment are possible sources of hepatitis C transmission. Messages clarifying that it is not possible to assess whether a person has hepatitis C based on their appearance, or on a broad assessment of the 'cleanliness' of their injecting practice, may also be useful.

6 While approximately half of the consumers in our project reported routine testing for hepatitis C, a general sense of uncertainty persisted around the content of routine sexual health screening and blood tests. **We recommend GPs increase opportunistic screening and testing for the hepatitis C virus at the time of blood testing for other health concerns.**

7 PIED consumers in this project actively sought technical knowledge and reliable, scientifically based or otherwise credible health information. Consumers and health professionals expressed frustration at the lack of reliable information about different substances, combinations, practices of consumption, and processes of stopping consumption. **Further research is needed on PIED consumption and this research needs to be translated into comprehensible and accessible forms for a general audience.**

8 PIED consumers consistently articulated a desire for an honest and productive relationship with a professional health practitioner – often a GP. **GPs should consider engaging in transparent and informed discussions with men who consume PIEDs, discussing openly the issues they raise without demonising consumption or exaggerating risks.** This first step would go some way towards addressing men's articulated desire to have direct, informed conversations with trusted healthcare professionals about their PIED consumption.

9 PIED consumers and health professionals spoke positively about engaging with the Steroid Education Program, Australia's only PIEDs-targeted outreach service. The program provides health information, clean injecting equipment and referrals to other services for consumers. The program also provides information to GPs and other health and community practitioners. **More targeted services are needed to educate people who inject PIEDs and health professionals on safer injecting techniques, substances, combinations and practices of consumption, in healthcare and community settings accessed by people who consume PIEDs.**

10 Interview data suggest that better referral and linkage pathways to healthcare for PIED consumers are needed. **We recommend that Primary Health Networks commission and resource targeted health services to meet the specific needs of PIED consumers to develop better continuity of care.**

11 PIED consumers and health professionals discussed the stigma experienced by many PIED consumers when trying to access informed and knowledgeable GPs. **Embedding education and training for GPs on PIED consumption and associated health issues in the Quality Improvement and Continuing Professional Development Program (Royal Australian College of General Practitioners) could be a useful strategy to improve the professional knowledge and skills of GPs.**

12 Criminalisation may be a key driver of the stigmatisation surrounding PIED consumption and those who consume PIEDs. **There is therefore a need to address the regulatory and legal processes prohibiting access to, and safer usage of, all drugs – including PIEDs – in that these are widely recognised as producing complex harms and stigma.**

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Appendix 1:

Participant tables

Consumer participants (N=60)

Location	
Urban	47
Regional	13
State	
New South Wales	12
Queensland	15
Victoria	20
Western Australia	13
Age	
18-25	18
26-60+	42
Sexual identity	
Homosexual/gay	8
Heterosexual	51
Bisexual	1
Cultural and ethnic background*	
Australian	45
Maori	1
Northern & Western European	3
Southern & Eastern European	6
Other cultural/ethnic background	5
Education	
Incomplete secondary	12
Complete secondary	12
Tertiary certificate/diploma	16
Undergraduate	19
Postgraduate	1
Employment ⁺	
F/t employed	36
P/t employed	3
Unemployed	10
Casual	11
Student	13
Occupation type ⁺	
Trade	14
Health/fitness	12
Hospitality/retail	5
Sales	4
Professional	4
Security/defence	3
Student	13
Other	7
Not specified	2

Health professional participants (N=20)

Service type	
General practitioner	5
Pharmacist	4
Sports science practitioner	3
Needle and syringe program worker	8
State	
New South Wales	6
Queensland	4
Victoria	7
Western Australia	3
Location	
Urban	13
Regional	7

* Reporting of cultural and ethnic background follows the Australian Standard Classification of Cultural and Ethnic Groups, developed by the Australian Bureau of Statistics. Cultural and ethnic background was classified according to a combination of self-reported group identification with particular cultural or ethnic groups, participants' birthplace and their parents' birthplaces.

+ Numbers do not sum to 60 because some participants occupy more than one category.

Appendix 2:

Publications and presentations

Refereed journal articles

Hart, A. (2018). Making a difference? Applying Vitellone's *Social Science of the Syringe* to performance and image enhancing drug injecting. *International Journal of Drug Policy*, 31, 69-73.

Vitellone's *Social Science of the Syringe* investigates epistemologies of injecting drug use. She argues for a methodology that can be simultaneously sensitive to biopolitical power regimes; the trajectories of social stratification; and the resistance, creativity and dignity of human agency. She proposes a methodological focus on the syringe-in-use as an active participant in these dynamics. Harm reduction policy and service provision frameworks have paid little attention to the phenomena of performance and image enhancing drug (PIEDs) injection. One way of assessing the merit of Vitellone's proposal is to use it to investigate these phenomena. I argue that Vitellone's method can be used to articulate a range of significant differences between people who inject PIEDs and other people who inject drugs, and that these differences can inform harm reduction initiatives. When compared to the heroin syringe, the PIED syringe participates in different socio-economic and material contexts, gendered identities, and biopolitical governance regimes. These differences materialise in different rates of syringe sharing and blood-borne virus transmission; and different experiences of needle exchange services. I offer a thought experiment demonstrating how a different syringe might alter the structural dynamics, biopolitical governance, and the agentic choices of people who inject PIEDs. Judging by the productive effects of diffracting Vitellone's analysis through an empirical concern with PIED injecting, I concur with Vitellone's proposition that 'something objective may be gained from an empirical investigation of the syringe-in-use' (p. 33).

Moore, D., Hart, A., Fraser, S., & Seear, K. (2019). Masculinities, practices and meanings: A critical analysis of recent literature on the use of performance and image-enhancing drugs among men. *Health*, early online, <https://doi.org/10.1177/1363459319838595>

The use of performance and image enhancing drugs (PIEDs) has been a topic of considerable research interest since the 1980s. Originally the domain of elite athletes and recreational bodybuilders, PIED use has expanded to other groups, with the vast majority of those who use PIEDs being men. In this article, our point of departure is an article published in 2005 by Helen Keane, in which she critically analyses 'the discursive constitution of male steroid users' as psychologically disordered subjects. We extend Keane's insightful analysis by examining the constitution of masculinity in post-2005 social science research on PIEDs. We ask: (1) to what extent does Keane's analysis of PIED research discourses on masculinity remain applicable to the more recent literature? (2) how have her illuminating insights been taken up in the post-2005 literature, and (3) to what extent does this work attend to the specificity and varied meanings of steroid practices?

Latham, J. R., Fomiatti, R., Fraser, S., Moore, D., Seear K., & Aitken, C. (2019). Working out in makeover culture: Men's performance and image-enhancing drug use as self-transformation. *Australian Feminist Studies*, 34, 427-443.

This article investigates how men who inject performance and image-enhancing drugs (PIEDs) describe their experiences of embodiment and masculinity, locating that analysis in the context of contemporary 'makeover culture' (Jones 2008) and the imperatives of self-transformation (Heyes 2007). Drawing on qualitative data from interviews we conducted with 60 men who inject PIEDs in Australia, our analysis suggests there is a pragmatic logic associated with PIED use that challenges much research concerning this population, which tends to pathologise men who use PIEDs as disordered in their relationship to their bodies and cultural norms of masculinity. We unpack how the men interviewed describe everyday practices of doing gender in the context of illicit drug use, the implications in normative understandings of maleness and masculinity, and how PIED consumption practices encouraged particular attention to working on the self. Our findings suggest that drug-injecting practices can be understood as forms of self-transformation in makeover culture that have the potential to make new, unexpected possibilities for being in the world, and can inform harm reduction measures, including the de-stigmatisation of drug use more broadly.

Fomiatti, R., Fraser, S., Latham, J. R., Moore, D., Seear K., & Aitken, C. (in press). Messengers of sex? Making testosterone matter in motivations of anabolic-androgenic steroid injecting. *Health Sociology Review*. (Accepted 20/09/19).

Anabolic-androgenic steroids are synthetic derivatives of testosterone. They are thought to be the most commonly used performance and image-enhancing drug (PIED) in Australia. The motivations for men's use of steroids and other PIEDs is a key area of interest for researchers. Established ways of understanding these motivations highlight men's performance and/or image-related concerns, such as the desire for increased physical size and strength, or body-image dissatisfaction, in the context of contemporary masculinities and gender norms. Researchers have paid little attention to how the social and political features of testosterone shape and transform steroid use. Instead, testosterone tends to be taken for granted as a 'messenger of sex' that acts on the body in predictable and routinised ways (e.g. increasing muscle mass and size). This paper takes a different approach, drawing on interviews conducted for a new Australian research project that focuses on men who consume PIEDs to consider how their understandings of testosterone co-produce their consumption patterns and experiences. Drawing on feminist science studies, we investigate how the cultural and symbolic meanings assigned to testosterone shape the ontological politics of consumption. Approaching testosterone – as an emergent social and biopolitical actor rather than as a stable sex hormone – allows us to better understand how men's PIED consumption is mediated, particularly by pervasive ideas about sexual difference and the biology of gender.

Fraser, S., Moore, D., Fomiatti, R., Seear, K., & Aitken, C. (in press). Is another relationship possible? Connoisseurship and the doctor-patient relationship for men who consume performance and image-enhancing drugs. *Social Science and Medicine*. (Accepted 11/10/19).

Consumption of steroids and other performance and image-enhancing drugs (PIEDs) is thought to be on the rise in Australia. Along with the benefits experienced by consumers come a range of health risks. This article draws on interviews conducted for an Australian research project on men who inject PIEDs to consider the ways in which information about managing these risks can be provided, the sources of information men use and value, and the professional relationships most effective for securing the best outcomes for them. As we will show, the men in our project expressed a very strong desire for reliable, credible information about risks and how to manage them, but also described often having to rely on information gleaned from sources of questionable reliability such as online forums and friends and acquaintances. Among the sources of information, advice and monitoring they expressed a desire to access were general medical practitioners (GPs), but such interactions were, they argued, rarely possible. Using the recent work of Isabelle Stengers, particularly the notions of connoisseurship and symbiosis, we argue that new modes of engagement need to be developed that might allow men who consume PIEDs to access the information and support they need, including through their GPs. Following Stengers, we characterise the men in our project as ‘connoisseurs’ of PIEDs, and we consider what might be at stake and made possible were GPs and PIED connoisseurs to enter into more collaborative relationships to manage PIED-related health issues. In conducting our analysis, we argue for greater recognition of the complexities GPs face when encountering people engaged in illegal forms of consumption, and call for new symbiotic models of engagement beyond both zero tolerance-style refusals to help, and narrowly focused harm reduction approaches.

Further articles are under review and in preparation on blood management and hepatitis C prevention among men who inject PIEDs, and healthcare practitioners’ theories about men who inject PIEDs.

Presentations

Hart, A. *Understanding performance and image enhancing drug (PIED) injecting to improve health and minimise hepatitis C transmission*, NDRI 30th Anniversary Symposium, Perth, Australia, November 2017.

Hart, A. *Understanding performance and image enhancing drug (PIED) injecting to improve health and minimise hepatitis C transmission*. Blood-borne virus workforce network meeting: Australian Research Centre in Sex, Health and Society, La Trobe University, Melbourne, Australia, November 2017.

Hart, A. *Fit for purpose: The legal, medical and social barriers and enablers to PIED injecting*. ARCSHS, La Trobe, SSAC, NDRI, Curtin University and Monash University. Melbourne, Australia, February 2018.

Lenton, E. *Blood-borne virus prevention and blood awareness among men who inject performance and image-enhancing drugs*. Poster presented at 2018 Australasian Viral Hepatitis Conference, Adelaide, Australia, August 2018.

Fomiatti, R. *Making testosterone matter in motivations for steroid injecting*. Paper presented at Society for Social Studies of Science Annual Conference, Sydney, Australia, August-September 2018.

Fomiatti, R. *Blood-borne virus prevention and blood awareness among men who inject performance and image-enhancing drugs*. Presentation and poster at 2018 NDRI Annual Symposium, Melbourne, Australia, November 2018.

Latham, J. R. *Drug practices in makeover culture: Self-transformation and performance and image-enhancing drugs.* Paper presented at Victorian Substance Use Research Forum, Melbourne, Australia, April 2019.

Fomiatti, R. *Hepatitis C prevention needs among men who inject performance and image-enhancing drugs.* Paper presented at Public Health Association of Australia Conference, Melbourne, Australia, June 2019.

Fomiatti, R. *The politics of the 'threshold' in healthcare for men who inject performance and image-enhancing drugs.* Paper presented at Fifth Contemporary Drug Problems Conference, Prato, Italy, September 2019.

Fraser, S. (2019). *Is another relationship possible? Connoisseurship and the doctor-patient relationships for men who consumer performance and image-enhancing drugs.* Paper presented at Fifth Contemporary Drug Problems Conference, Prato, Italy, September 2019.

Nourse, G. (2019). *Performance and image-enhancing drugs as agents of 'change'? Reconceptualising drugs, masculinities and effects as co-emergent.* Paper presented at Fifth Contemporary Drug Problems Conference, Prato, Italy, September 2019.

Appendix 3:

Interview guides

PIED consumers: Interview guide

Opening information for participants

- ▶ This project explores experiences of performance and image enhancing drugs, PIED injecting and access to injecting equipment and information about health and safer injecting. It will help us develop strategies for alcohol and other drug workers to engage people using PIEDs and reduce hepatitis C transmission.
- ▶ Participation is voluntary and how you answer the questions is up to you. You don't have to talk about anything you feel uncomfortable about or answer any questions you don't want to answer.
- ▶ Everything you say is kept confidential and a range of strategies will be used to protect your identity if you are quoted (as outlined in the consent form you have signed).
- ▶ The interview can be terminated at any time you choose. Please let me know if you would like a break or to stop completely.

Demographic questions

- ▶ What is your highest level of education?
- ▶ What is your occupation / vocation?
- ▶ If working, are you full-time, part-time, casual, not working/ unemployed
 - ▶ If not working, what is your source of income?
- ▶ How old are you?
- ▶ What country were you born in?
- ▶ What country were your parents born in?
- ▶ Primary language spoken by parents?
- ▶ Are you enrolled / participating in any studying at the moment?
 - ▶ If studying, degree/course and area of study
- ▶ How would you identify your sexual orientation (e.g., gay or homosexual; straight or heterosexual; bisexual; queer; other)

Opening question

- ▶ Can you tell me why you were interested in participating in this study or why you thought this study was relevant to you?

Motivations for PIED use

- ▶ Why do you inject PIEDs?

Probe for

- ▶ What are you aiming to achieve by injecting PIEDs? (e.g., size, look, strength, speed, agility, stamina)
- ▶ Has your PIED use achieved these objectives?

- ▶ Does your PIED use have any effect on how you feel?

Probe for

- ▶ older or younger?
- ▶ when you walk into a room?
- ▶ about the way people perceive you?

Physical training environment

- ▶ Do you participate in any physical training? If so, what do you do and where does this happen?

Probe for

- ▶ When and how often do you go there?
- ▶ Is there anyone you see there often?
Who are they?
- ▶ Is this a social place at all?
- ▶ Do you enjoy the training or is it more a means to an end?
- ▶ Is how you look important to you when you are there?
- ▶ Does anyone there know about your PIED use?
- ▶ Do you train with anyone in particular?
Does this relationship affect your PIED use in any way?
- ▶ Have you ever heard people there make reference to hepatitis C? What did they say?

Hepatitis C knowledge

- ▶ Can you please tell me what you know about hepatitis C?
Probe for
 - ▶ What it is and its effects
 - ▶ How it is transmitted
- ▶ Is there any other information in your training environment about hepatitis C? (e.g., pamphlets, posters)
- ▶ Do the guys you know who inject ever talk about hep C? What do they say? Do they seem knowledgeable about it?
- ▶ At present there are very few hep C education resources aimed at men who inject PIEDs. What's your sense of how information about hep C might be best communicated to these men? (Probe for: media – online, hard copy pamphlets, posters etc; location – gyms, online, NSPs, GPs etc.; eye catching and persuasive imagery – fit bodies, training scenarios, scientific 'experts', etc.)
- ▶ Have you ever seen/read any public health advice about hep C? Please describe it and say what you thought of it.

Injecting practices

- ▶ Would you mind walking me through your most recent experience of injecting PIEDs? It would be great if you could include as much detail as possible.
Probe for:
 - ▶ Where were you?
 - ▶ Who were you with?
 - ▶ Did you inject yourself or did someone do it for you?
 - ▶ How did you source the drugs?
 - ▶ Where did you source the injecting equipment?
 - ▶ What gauge needles did you use
 - ▶ Did you use separate needles for drawing from the ampoule/vial/bladder
 - ▶ How were they packaged (ampoule/vial/bladder etc.)?
 - ▶ How did you extract the liquid from the packaging?
 - ▶ Which part of your body did you inject?
 - ▶ Did you draw back on the needle before injecting?

- ▶ Was there any blood afterwards at the injection site or in the environment? If yes, how did you manage it?
- ▶ How did you dispose of the syringe?
- ▶ Did everything go as planned?
- ▶ Tell me more about the room / place where you injected? Does anyone else inject any sort of drug there? Is there ever any blood around?

- ▶ How did you learn to inject initially?

Probe for:

- ▶ What year was it?
- ▶ What did you know about hepatitis C when you first started injecting?
- ▶ Has your injection routine changed at all between then and now?

- ▶ Tell me a little bit more about where you access your injecting equipment
 - ▶ Why is that the best source? How does it feel when you go there?
 - ▶ What do you do if when/ if you run out of needles?
 - ▶ Do you ever get injecting equipment for other people?
 - ▶ When was the last time you had to share a needle or other injecting equipment?
 - ▶ Where do you get information about safe injecting? Does it seem useful and accurate?
 - ▶ Have they ever mentioned hep C? What did they say?

Blood awareness

- ▶ Are there other locations where you have injected? Where? (e.g., at the gym, at home, at your friend's house, etc.)
- ▶ Does anyone else inject any sort of drug there? Is there ever any blood around?
- ▶ Have you ever been injected by anyone else? Who? (Probe for why)
- ▶ Have you ever injected anyone else? Who? (Probe for why)
 - ▶ Did you recap the syringe after use?
- ▶ Have you ever shared an ampoule, vial or bladder? Describe that scenario

- ▶ Have you ever shared a syringe?
Describe that scenario
- ▶ Are there any ways that you have changed your injection technique to minimize the risk of infection or contact with somebody else's blood?

Hepatitis C testing and diagnosis

- ▶ Have you ever had a hep C test?
 - ▶ Do you know if your test result was positive for the antibodies, or the virus itself?
If positive, probe
 - ▶ What happened then?
 - ▶ Did you receive further tests?
 - ▶ Have you taken part in any treatment?
When? How did that go?
 - ▶ Have you had any recent tests on the viral load in your blood?
 - ▶ What do you know about the hep C treatments that have recently become available?
 - ▶ Have you changed your injection practices since becoming aware of the infection? How so?
 - ▶ Are there other things that you have changed in your life as well? (e.g., alcohol consumption, use of complementary therapies, diet and exercise, etc.)

Products and patterns of use

- ▶ Tell me about the specific drugs you use and your particular patterns of use
 - Probe for**
 - ▶ PIEDs used in the past month
 - ▶ PIEDs used in lifetime
 - ▶ Where do find out what substances to use, correct dosage and so on? Was there any information about hepatitis C?
 - ▶ Is there one person in particular who you go to for advice? Do you know them personally or online? Did they provide any information about hepatitis C?
 - ▶ Have you noticed any changes in the availability and popularity of different substances over time? What do you think drives these changes?
 - ▶ Are there times when you use more than others, or change the drugs you are using? Why?
 - ▶ Have you ever felt that it would be difficult to stop using?

- ▶ Have you ever injected drugs not related to performance and image enhancement? Which substances? In what ways was this similar or different to using PIEDs?

General health concerns and advice

- ▶ Do you have any health concerns about your PIED use? What are they?
- ▶ Have you ever experienced an abscess, local infection or other adverse effect? What do you think caused it? What did you do?
- ▶ Apart from the places we discussed earlier, have you ever gotten information about PIEDs use from other professionals?

Probe for

- ▶ Was it a doctor, pharmacist, drug worker, psychologist, social worker, trainer, other?
- ▶ What did you think about the information you received?
- ▶ What was the information about (e.g., medical, psychological, addiction, drug abuse?)
- ▶ Was hepatitis C specifically mentioned?
- ▶ Is there anything that you can think of that might have made that encounter more useful?

Further info about PIED use, time permitting?

- ▶ Does your training and PIED use relate to your employment in any way?
- ▶ Has it changed anything about your sex life or your interactions with prospective sexual partners?
- ▶ Without giving me any identifying information, can you tell me about where you get your PIEDs from?

Probe for:

- ▶ Do you purchase individually or in a group?
- ▶ Why do you trust this source?
- ▶ Have you ever sourced other types of drugs from the same place you access PIEDs?
- ▶ Have you ever discussed hepatitis C with this person / these people?

- ▶ Have you encountered some products that were lower quality than others?

Probe for:

- ▶ How do you tell if it is a quality product?
- ▶ Have you ever experienced effects that indicate poor quality

-
- ▶ Does the packaging matter?
 - ▶ Does the liquid or tablet look different?
 - ▶ Have you ever refused to purchase or use a product because of concerns about its quality?
-
- ▶ Tell me about the financial cost of your PIED use
- Probe for:**
- ▶ What costs do you incur?
 - ▶ Does the cost impact on other areas of your life?
If so, how?

Final points

- ▶ The aim of this project is to find out
 - ▶ Why people inject PIEDs and how injecting figures in the lives of consumers
 - ▶ What people use and how they, to improve our understanding of PIED use
 - ▶ Inform people who inject PIEDs about hepatitis C and health issues.
 - ▶ Given these aims, can you think of anything we haven't discussed already that we need to know?

Note: Close the interview by offering the participant harm reduction materials, recruitment flyers and administering the participant details forms.

Health professionals: Interview guide

Opening information for participants:

- ▶ This project explores experiences of performance and image enhancing drugs, PIED injecting and access to sterile injecting equipment and information about health and safer injecting. It will help us develop strategies for alcohol and other drug workers to engage people using PIEDs.
- ▶ Participation is voluntary and how you answer the questions is up to you. You don't have to talk about anything you feel uncomfortable about or answer any questions you don't want to answer.
- ▶ Everything you say is kept confidential and a range of strategies will be used to protect your identity if you are quoted (as outlined in the consent form you have signed).
- ▶ The interview can be terminated at any time you choose. Please let me know if you would like a break or to stop completely.

Opening questions

- ▶ Tell me about your job: what does it involve and how long have you been doing it?
- ▶ How do you come into contact with men who inject PIEDs?
- ▶ Does your work with this population have a focus on hepatitis C at all? How?

Perspectives on meaning and motivations

- ▶ In your experience, what are some of the different motivations for men to use PIEDs?

Probe for

- ▶ Psychological issues (muscle dysmorphia, eating disorders)
- ▶ Addiction (dependence, withdrawal, habit)
- ▶ Social motivations (gender norms, media images, peer pressure, sexual attractiveness, youth and ageing, ethnicity, social class, identity)
- ▶ Performance motivations (occupational, competitive)

Service encounters with PIED consumers

- ▶ Beyond your role, are there any other ways that your organization engages with men who inject PIEDs?
- ▶ Without giving any identifying information, can you describe a recent service encounter with a man who injects PIEDs?

Probe for

- ▶ How would you describe the client / patient?
- ▶ How did the service encounter unfold?
- ▶ Did hepatitis C come up at all?

- ▶ Can you give another example?

Probe for

- ▶ How would you describe the client / patient?
- ▶ How did the service encounter unfold?
- ▶ Did hepatitis C come up in this encounter?

- ▶ Is there a typical encounter with a man who injects PIEDs?

- ▶ What makes it typical?
- ▶ How does it unfold?
- ▶ Does hepatitis C come up at all? If yes, in what ways?

Health concerns

- ▶ If men who inject PIEDs present with health concerns, what do they seek your assistance with?

Probe for

- ▶ Psychological issues (depression, mood fluctuation, anger/aggression, irritability etc.; loss of interest in other things; quality of relationships with others)
- ▶ Hair (loss/gain) and skin (rash, acne, abscess)
- ▶ Sexual function and effects on sexual organs
- ▶ Breasts (change in size)
- ▶ Organs (liver, heart, others?)
- ▶ Blood-borne viruses (Hep C, HIV)
- ▶ Abscesses and local infections

- ▶ Do you perceive other health issues in addition to the ones the men express concerns about?

Probe for the same themes as question above

- ▶ How do the consumers you encounter access sterile injecting equipment?
- ▶ What is your understanding of the BBV risk associated with PIEDs injecting, and how does this risk differ from other injecting drug use?
- ▶ What have you observed about the level of knowledge about BBV transmission risk among men who use PIEDs?
- ▶ Have you come across any injecting practices of particular concern?

Probe for

- ▶ How did you respond?
- ▶ Did you provide any information on hep C? What did this entail?
- ▶ How did they respond?
- ▶ (If medical practitioner) Do you ever perform tests for the effects of PIED use?

Probe for

- ▶ What kind of tests? e.g., blood tests (specific, general); organ function (liver, heart); physical examinations, psych tests, insulin resistance, other?
- ▶ Do you ever test for hepatitis C or other BBVs?
- ▶ What do you find?
- ▶ What similarities or differences do you perceive between men who use PIEDs and other people who inject drugs?

Probe for

- ▶ Shame or stigma
- ▶ Level of health
- ▶ Identification with service using population
- ▶ Social and material resources, employment and lifestyle
- ▶ What are your views about how these similarities and differences should be reflected in eligibility and provision of services?
- ▶ Do you have any reflections about how your service might be suitable and accessible, or not suitable and accessible, for this population?

- ▶ What have you observed about the specific substances being injected?

Probe for

- ▶ Fluctuations in the popularity of specific substances
- ▶ Indeterminate substances
- ▶ Counterfeits and fakes; adulterants and contaminants
- ▶ Strength and dosage
- ▶ Cycles
- ▶ Multiple PIED use

Providing harm reduction information

- ▶ Where do you think men usually get their information about PIEDs from?
- ▶ What kind of information do men who use PIEDs seek?
- ▶ Have you ever provided information about non-PIED methods for achieving muscularity or other 'fitness' goals? Does this seem like a useful thing to do?
- ▶ What's your sense of where men get information on PIEDs prior to starting use and injecting?

If from the practitioner, probe for:

- ▶ How do they ask?
- ▶ What do you say?
- ▶ How do they respond?
- ▶ How do you build rapport with PIED users?
- ▶ How do you think information can best be provided to this population? What formats and media do you think are likely to be most relevant? Why?

Final questions

- ▶ Do you have any suggestions for targeted responses to PIED injecting and hep C risk that could be developed?
- ▶ We're developing a website from this research that will inform PIED users and those working with them about harm reduction practices, relevant research and treatment services. Do you have any suggestions about the most important information to make available on this website?
- ▶ The aim of this project is to find out how PIEDs figure in the lives of men who inject them, to enhance hepatitis C prevention among these men, and to inform responses to other related health issues that affect them. Given these aims, can you think of anything we haven't discussed already that we need to know?
- ▶ Would you like to receive a copy of the final report? Would you like to be notified of the website launch? (if yes, record contact details on PIED consumer interview details sheet)