

An exploration of 'chemsex' in an Australia sample: When drug use and high risk  
sex intersect.

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**Statement of Originality**

This report contains no material offered for the award of any other degree or diploma, or material previously published, except where due reference is made in the text.

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### **Abstract**

Substance use within the LGBTIQ community has been long established. However chemsex, the use of recreational substances within the context of sexual activity (for the purpose of enhancement), is a new and emerging area of research, particularly in Australia. Chemsex is most commonly associated with men who have sex with men (MSM) and often involves stimulants, such as crystal methamphetamine. The current study was developed in partnership with the Queensland AIDS Council to inform future health promotion. Participants were 663 MSM, the majority of whom resided in South East Queensland. Questionnaires were completed online or on paper. The questionnaire asked about demographic details, substances used in the last 12 months, sexual health details and engagement in a variety of sexual behaviours, including chemsex. Those who reported engagement in chemsex were asked further questions about these behaviours. Descriptive results provided rates of substance use within particular sub-groups. In addition, it was found that crystal methamphetamine was associated with increased rates of condomless anal intercourse (CAI); increased sexual session length was found to increase the likelihood of engagement in CAI; chemsex, use of PrEP and having an undetectable viral load (UVL) were also shown to be significant predictors of CAI. Finally, chemsex and PrEP were shown to be significantly associated with increased reporting of sexually transmitted infections. These results provide useful insight for future HIV prevention, health promotion and clinical intervention planning. Implications for chemsex participants and the wider MSM community are discussed and recommendations for future research are made.

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## Glossary of Terms

**Antiretrovirals (ARV):** An umbrella term for all antiretroviral medications, whether they are used as part of an HIV treatment regime (ART) or as PrEP or PEP

**Antiretroviral therapy (ART):** Usually a three drug treatment regime for people living with HIV

**BBV:** Blood Borne Virus

**CAI:** Condomless Anal Intercourse

**Cisgender:** Someone who identifies with the gender they were assigned at birth

**Harm minimisation:** An overarching term referring to harm reduction, supply reduction and demand reduction

**Hep A/B/C:** Hepatitis strains A, B or C. Strain A and B are vaccine preventable. Strains B and C are difficult to treat and considered chronic once acquired. Strain A is straightforward to treat bearing complications such as immune deficiency

**HIV:** Human Immunodeficiency Virus

**Intersex:** Someone who was born with reproductive or sexual organs that do not fit the standard definitions of 'male' or 'female'

**LGBTIQ:** Lesbian, Gay, Bisexual, Trans, Intersex, Queer/Questioning

**Men who have sex with men (MSM):** This term is used because it names behaviour rather than identity, for example some MSM identify as heterosexual. The term does include bisexual, gay and trans men who have sex with other men

**PLWH:** Person/ People living with HIV

**Post Exposure Prophylaxis (PEP):** a four week course of medication commenced within 72 hours of suspected or confirmed exposure to HIV. It significantly reduces the likelihood of acquiring HIV but is not 100% effective

**Pre-exposure prophylaxis (PrEP):** a daily medication that prevents a person who has been exposed to HIV from acquiring the virus by blocking the enzyme that allows HIV to reproduce in the human body

**Queer:** An umbrella terms for anyone who falls into LGBTIQA+. Is also considered an identity in itself for someone whose gender or sexuality differs from the ‘norm’.

It is only acceptable as a self-identity in the same way as ‘black fella’ for an Aboriginal person or ‘crip’ for a person with a disability.

**Questioning:** Someone who is unsure about aspects of their sexuality or gender

**Serodiscordant:** Two or more people with differing HIV status

**Serosorting:** The practice of choosing to have sex with only those people who have the same HIV status as oneself. i.e., A person who is HIV negative having sex within other people who are also HIV negative to reduce the chances of HIV acquisition

**STI:** Sexually Transmitted Infection

**Trans\*:** Someone who does not identify with the gender they were assigned at birth, they may identify as transgender, agender, multiple genders or another gender identity. The asterisk was originally added in order to be inclusive, however the term ‘trans’, is, at times, considered to be more inclusive.

**Undetectable Viral Load (UVL):** When copies of the HIV virus cannot be detected on a standard test, usually <50 copies/mL. This effectively makes transmission to others impossible.



## **Introduction**

### **General Aims and Purpose**

This project was initiated at the request of the Queensland AIDS Council (QuAC), as they were concerned about anecdotal reports of chemsex behaviour within the Queensland community of MSM (men who have sex with men). The survey questions and research direction were developed in partnership with the Queensland AIDS Council in order to inform future health promotion. Data was collected online and in paper forms primarily by QuAC staff and volunteers over a three month period in 2016. A number of feedback and collaboration opportunities have been a key part of this research project including presentation of a limited selection of the results at the Australian Winter School conference in July 2017.

### **What is ‘Chemsex’ and Why is it a Problem?**

Substance use within the gay male population is prevalent, both recreationally and within the context of sexual activity. Previous research has explored and substantiated numerous reasons for substance use including relief and escape from stigma and discrimination (D. McKirnan, D. Ostrow, & B. Hope, 1996; Mullens, Young, Hamernik, & Dunne, 2009), enhancing sexual experiences (Hurley & Prestage, 2009), relief from stressors related to being members of a minority group (Meyer, 2003), community expectations (e.g. peer pressure), peer norms (Hughes & Eliason, 2002b), sexual disinhibition (Mattison, Ross, Wolfson, & Franklin, 2001) and bar and club culture where LGBTIQ people first felt accepted, among other reasons (Hardesty, Cao, Shin, Andrews, & Marsh, 2012).

‘Chemsex’ is a more recently defined construct, (Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2014) and refers to “...sex between men that occurs under the influence of illicit substances taken immediately preceding and/or during

the sexual session.”(Bourne et al., 2014, p. 8). Authors, such as Schmidt et al. (2016) and Lim et al. (2015), cite similar definitions, “...simultaneous use of drugs to enhance sexual pleasure.” The substances normally associated with chemsex are stimulants such as crystal methamphetamine, gamma-hydroxybutyric(GHB)/gamma-butyrolactone (GBL) and mephedrone. At times, cocaine and ketamine are also used during chemsex, though ketamine is not a stimulant but rather an anaesthetic that has hallucinogenic effects, when used recreationally is considered a ‘designer drug’. Another key feature of chemsex is long sexual sessions and/or large numbers of sexual participants (Bourne et al., 2014). Each of these characteristics are associated with both individual and compounded risks.

There are clear risks associated with the most commonly used chemsex drug: crystal methamphetamine. These effects include sleep deprivation, lack of nutrition and fluids, dental problems, itching and fever (Knoops, Bakker, Bodegom, & Zantkuijl, 2015). These side effects are often found subsequent to use of GHB and mephedrone as well. Of particular relevance to men who have sex with men (MSM) is peripheral numbness resulting from crystal methamphetamine use (Halkitis, Parsons, & Stirratt, 2001). This can lead MSM to combine substances such as erectile dysfunction medications, in order to combat this side effect. Combining substances in this manner can amplify damaging health effects and risks from HIV/STI transmission (Connor, Gullo, White, & Kelly, 2014; Spindler et al., 2007). There have also been reports that use of crystal methamphetamine has influenced absorption of anti-retroviral medications making them less effective, however this was reported to be an effect of some of the older HIV treatments (Colfax & Guzman, 2006; Halkitis et al., 2001). There are also social and mental health risks associated with substance use, such as social isolation from non-drug users, increased anxiety

and paranoia, the cycle associated with substance use and mental health conditions (Knoops et al., 2015), and impulsivity (Halkitis et al., 2001). These risks are well documented and the focus of a wide variety of health promotion and harm reduction strategies (Degenhardt & Hall, 2012). However in this population, mental health effects may be even more pronounced due to homophobia from the general community, internalised homophobia and stigma associated with high prevalence rates of HIV within the community (Herek & Garnets, 2007; S. Russell & Fish, 2016). Higher numbers of the LGBTIQ population live in poverty (DeFilippis, 2016) or social isolation (Mao et al., 2009) as secondary effects of homophobia (Leonard, Lyons, & Bariola, 2015). These disadvantages compound general negative mental health effects of drug use, and can lead to substantive and entrenched mental health disorders and other psychosocial challenges (Mao et al., 2009; Rosario, Schrimshaw, & Hunter, 2006).

There are also substantial sexual health risks associated with chemsex behaviours. Many of these risks such as transmission of HIV, hepatitis and other sexually transmitted infections (STI) are the focus of long standing harm reduction strategies. The emergence of chemsex among MSM is of significant concern given the overlapping and therefore amplified risks of combining of high risk sexual activity and drug use (Bourne et al., 2014). In particular, long sexual sessions, in combination with disinhibition, and the use of drugs used specifically for sexual enhancement (such as Viagra and Amyl Nitrate) can lead to vessel dilation and micro tears within the anus. These abrasions often serve as an entry point for HIV or other infections (Buchbinder et al., 2005; Shoptaw & Reback, 2007). As such, men who take the receptive role during sexual activity, are at greater risk of acquiring HIV. Men who are disinhibited from the effects of substances, may also take greater risks

that involve blood or substantial fluid exchange, and the use of Viagra (sildenafil; in addition to other chemsex factors) increases the likelihood of priapism (prolonged erection), which, if untreated, can cause permanent damage (Burnett & Bivalacqua, 2007). Other sexual health considerations can include implications for increased prevalence of STIs with the uptake of PrEP (Scott & Klausner, 2016) as well as the possibility of treatment resistant STIs as antibiotic resistance becomes an ever increasing concern (Lahra, Ryder, & Whiley, 2014).

Chemsex, has been documented across groups of MSM in many parts of the world (The EMIS Network, 2013), including Australia (Race, 2015). These studies found some men reporting positive attributes of chemsex including improved confidence and decreased self-doubt within a sexual context. Some of the reasons behind the need for increased confidence relate to internalised homophobia in various forms, in addition to body image concerns and for some, coping with a recent HIV diagnosis (Bourne et al., 2014). Another highly endorsed reason for wanting to engage in chemsex is the desire for increased libido and associated heightened physical sensations. Men have also reported that substance use allows them to have greater intimacy and connection with a sexual partner (Bourne et al., 2014). While these benefits persist, it is also important to consider, as with any drug use, chemsex drug use has a tendency to perpetuate itself with associated harms (Bourne, Reid, Hickson, Torres-Rueda, Steinberg, et al., 2015). The addictive nature of the substances being used (Amaro, 2016), the somewhat isolated social circles resulting from sexualised drug use (Ahmed et al., 2016), and the difficulty of returning to sober sexual activities after a period of time engaging in sexualised drug use (Bourne et al., 2014) all present potential health and social problems among these MSM.

### **Chemsex: As Informed by Public Health and Psychological Science**

This study is based on a number of constructs in order to best understand chemsex in an Australian sample. It explores chemsex and the mechanism by which the behaviour developed and is perpetuated. This research explores chemsex in light of social cognitive theory (Armitage & Conner, 2000; Rosenstock, Strecher, & Becker, 1988), the concept of minority stress (Pascoe & Richman, 2009), bio-psycho-social theory (H. Friedman & Silver, 2007) and the social determinates of health (Australian Institute of Health and Welfare, 2016; Marmot, 2005). These theories broadly guide the study design and possible implications, however, they are not explicitly tested. They will help to contextualise the behaviours of interest and their impact on the health and wellbeing of individuals, as well as the broader public health implications. The four theories have significant overlap and serve to understand outcomes in different ways.

Bio-psycho-social theory, as the name suggests, considers the bi-directional impacts of each influence in order to understand behaviour (Engel, 1977). Social cognitive theory (Bandura, 1998), focuses in on learning and expectations, based on that learning. However it too places a strong emphasis on behaviour, as the outcome variable. The additional two theories, the social determinants of health and minority stress theory (Dentato, Halkitis, & Orwat, 2013) consider health as their outcome variables. Understanding a behaviour using theories explaining behavioural outcomes, in addition to theories explaining health outcomes, allows for informed and integrated practice. This facilitates health promotion activities that are most likely to be successful.

The theories highlight a number of key factors, from broad social influences at a societal and cultural level, to individual one-on-one interactions. Here, minority

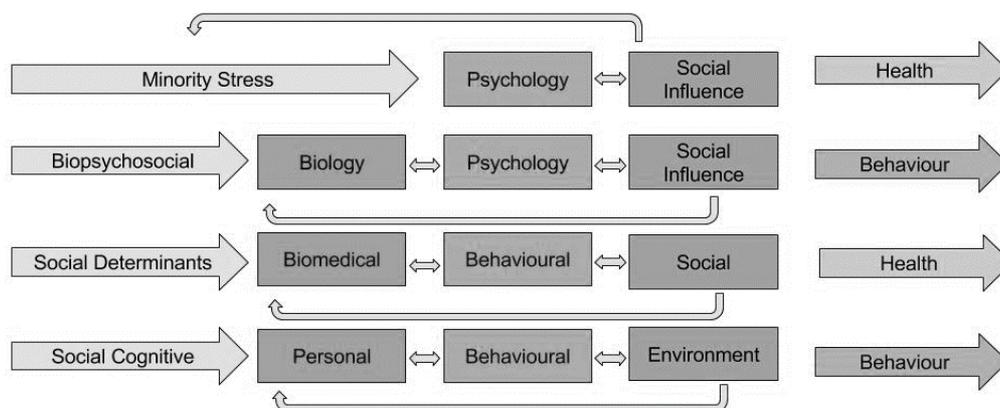
stress theory considers external prejudice and discrimination (Meyer, 2003) and both biopsychosocial theory and the determinates of health theory consider social expectations and norms, peer influences and economic influences (Engel, 1980; Marmot, 2005). In the context of social cognitive theory these broad social influences fall into the category of environment (Bandura, 1998). Essentially, societal level and individual level social influences impact both the behaviours within chemsex and the health outcomes associated with chemsex.

The next key influence which is considered in each of the models is biology or bio-medical factors, and in the context of social cognitive theory, biological factors are considered a sub-category within personal factors. Biological factors look at physical risk factors around vulnerability to disease. This includes the physical bio-medical transfer of HIV and STIs, the physical effects of substances, side effects of medications and any pre-existing medical conditions. Each of these can have an impact on social, psychological and behavioural influences which may influence behavioural or health outcomes.

Next, each model incorporates psychological and/or behavioural aspects in addition to the behavioural outcomes associated with bio-psychosocial and social-cognitive theory. Psychological factors may include mood, affect, personality, education, intelligence, and susceptibility to social influence, among many others (Engel, 1977; Pincus, Burton, Vogel, & Field, 2002). Most parts of minority stress theory are categorised here, among psychological and behavioural factors. These factors include expectations of rejection and internalised homophobia (Meyer, 2003). Social cognitive theory incorporates cognitive and affective influences under 'personal' (Bandura, 1998). A practical example of how each of these factors might influence a case, is that of a new HIV diagnosis. This is likely to have an impact on a

person's psychological wellbeing in terms of coping and rationalising - they may go through a grief like process. A new HIV diagnosis is likely to impact a person socially, as they share the news with friends and family, and what it means for them. It is also likely that a new HIV diagnosis will change a person's behaviour, potentially for better or for worse (R. Holt et al., 1998).

While each of these theories offer something unique and fundamentally helpful when looked at individually, their overarching ideas are helpful from a public health and health promotion perspective: considering the interplay between psychological (including behavioural) influences, social influences and biological influences. In addition, looking at a number of models, helps to understand chemsex both from a behavioural outcomes perspective and from a health outcomes perspective. While it is simplified, the diagram below allows a look at the similarities between the four theories.



*Figure 1.* Similarities between the four theories that inform this applied research

### **Health Promotion and Harm Reduction**

Health promotion targets a number of different aspects of the identified models. Health promotion has been defined by E. Green (1999) as “Any planned combination of educational, political, regulatory, community and organisational

supports for actions and conditions of living that contribute to the health of individuals, groups or communities” (p. 14). Health promotion takes many forms, but the average person’s exposure to health promotion comes in the form of advertising, screening tests, work or school-based education programs and provision of resources such as condoms and toothbrushes (Merzel & D’Afflitti, 2003).

Harm reduction is a type of health promotion. It seeks to improve people’s conditions of living while fully acknowledging the limitations of social, economic, mental and other disadvantages. Harm minimisation began in the 1960s with activists and doctors opposing the criminalisation of substance use (Roe, 2005). In the 1970s and 1980s harm reduction work moved into the prevention of HIV/AIDS among injecting drug users (World Health Organization, 2004). Harm minimisation is an overarching term that seeks to reduce the overall harm caused by behaviours and practices that are detrimental to health – usually in the context of drug use. Harm reduction is one element of harm minimisation. It seeks to reduce harms without aiming to reduce usage, for example needle and syringe programs which aim to reduce the harm caused by drug use but do not seek to reduce the amount of drug being consumed (Ritter & Cameron, 2005).

In the context of chemsex, health promotion aims could encourage abstinence from substance use and abstinence from any sexual activity that could result in HIV or STI transmission. However harm reduction acknowledges that the most ‘ideal’ behaviours are often unrealistic and seeks to reduce some of the dangers of higher risk behaviours (Ritter & Cameron, 2005). This acknowledges many of the psychological and social factors that influences a person’s behaviour. Harm reduction for chemsex involves targeting a number of different issues, primarily STI transmission and substance use. Harm reduction for STI transmission also tends to be



split into HIV prevention and secondarily other STI prevention. The key harm reduction tools for chemsex are condom use (Holmes, Levine, & Weaver, 2004), PrEP and frequent STI testing (Bourne, Reid, Hickson, Torres-Rueda, Steinberg, et al., 2015). Each of these interventions are impacted by levels of health literacy, psychological motivations and perceptions of risk, social expectations and individual responses to those expectations (Ayala et al., 2013; Peng et al., 2017).

Harm reduction for drug use includes strategies such as pill testing for content and additives (Cole et al., 2011). Use of single use injecting tools tends to be the most well-known harm reduction tool, as this is effective for preventing a number of BBV (Ritter & Cameron, 2006). Organisations in Australia and overseas are still campaigning for the decriminalisation of use or possession of small amounts of illicit substances (Cowdery, 2017). This is considered to be harm minimisation. These practices and campaigns can also be viewed in light of social determinants of health. The laws and politics that allow or prohibit these kind of public health campaigns, have a significant impact on behavioural and health outcomes (Saleemi, Pennybaker, Wooldridge, & Johnson, 2017; Zajdow, 2016).

Some harm reduction strategies begin within the community, while others were first implemented as a result of scientific advances, such as PrEP (Daskalopoulou et al., 2014). Harm reduction aims to work with what a person can do or is willing to do and, as a result, some strategies are much less effective than others. For example an injecting drug user may be very willing to use clean injecting equipment but unwilling to reduce how often they are using (Beyrer, Sherman, & Baral, 2009).

Each of these areas of harm reduction is encapsulated by the Ottawa Charter, which is a directive on what health promotion and harm reduction is and how it

should be implemented. The Ottawa Charter outlines a number of areas of intervention for health systems to implement for improved health outcomes. These areas include: Creating supportive environments, reorienting health services, strengthening community action, developing personal skills and supporting people through enabling, mediating and advocating (Potvin & Jones, 2011; WHO, 1986).

The health promoting behaviours specifically investigated in this study are CAI with serosorting (the practice of using HIV status as a decision-making point in choosing sexual behaviour), PrEP use, adherence to antiretrovirals (ARV) as measured by viral load, regularity of HIV/STI testing, frequency of drug use and frequency of engaging in chemsex.

Because of the multi-level interplay between these factors in chemsex, in the current study, participants are asked about their participation in each of these behaviours. The purpose of the present study was to answer a number of key questions about chemsex in Queensland for the industry partner, QuAC. They required some quantitative data about the nature of the chemsex that is occurring in Queensland, in order to design the most effective health promotion and HIV prevention campaigns, target clients effectively and identify the extent of the problem and risk factors.

There is a long history of health promotion within the gay and bisexual community, including other MSM, and those in the community are repeatedly exposed to cues to action in the form of health promoting behaviours (Leonard et al., 2015; Mail & Safford, 2003). The most salient of these is condom use and frequent STI testing (Mail & Safford, 2003). However, in the last twelve months these have, in some contexts, been taken over by the messages to 'come PrEPed' ("Queensland AIDS Council 15/16 Annual Report," 2016; Queensland AIDS Council, 2017).

Trials throughout Australia have been branded under a number of names such as EPIC-NSW and PrEPX (Australian Federation of AIDS Organisations, 2017). Trials are in place to establish the effectiveness of PrEP in Australia in terms of cost effectiveness, adherence, safety and effectiveness of PrEP for HIV prevention in a ‘real world’ sample (D. Russell, 2016). The advent of this new medication is being hailed by some as the ‘gay man’s contraceptive pill’ (Myers & Sepkowitz, 2013). PrEP is the use of antiretroviral medication by an HIV negative person to stop them acquiring the virus (McCormack et al., 2016). While in this study, Australian campaigns are of most interest, there is one international campaign worth noting. The #PREPforLove campaign was created in Chicago (USA) and it puts a positive spin on some of the negative language around HIV. Their slogan is “Love is contractible. Lust is transmittable. Touch is contagious. Catch feelings, not HIV.” While not discounting the risks associated with other STIs the #PREPforlove campaign emphasis’ the positive mental health effects of knowing you are protected from contracting HIV (Pickett, 2017). These campaigns are the next logical step in health promotion for HIV. A successful health promotion for chemsex could build on the momentum of the PrEP campaign, particularly given that PrEP is likely to be a big part of harm minimisation for chemsex, in addition to other health promotion activities and campaigns that target some of the specific chemsex behaviours.

### **History of Drug Use and Interventions within the LGBTIQ Community**

Bars and pubs were for the most part, the main places where historically LGBTIQ people first felt accepted or free to be themselves. This has resulted in these venues playing a significant role in community connections. Strong affiliation with gay culture has been shown to increase the likelihood of drug and alcohol use and misuse (K. Green & Feinstein, 2012). Historically, and to a lesser degree, in the

present, LGBTIQ people have at times used substances to impede their inhibitions and act on same-sex desires (Race, Lea, Murphy, & Pienaar, 2017). At its broadest, the LGBTIQ community have high rates of alcohol and cigarette use (AIHW, 2011; Blosnich, Lee, & Horn, 2013). LGBTIQ people also have the highest methamphetamine usage of any specific group (AIHW, 2011). In fact, gay and bisexual men had three times the likelihood of reporting methamphetamine use compared to heterosexual men in the 2013 National Drug Strategy Household Survey (Roxburgh, Lea, de Wit, & Degenhardt, 2016). All of these factors contribute to the need for effective interventions and harm reduction strategies. Issues experienced by LGBTIQ substance users can include issues around social roles, LGBTIQ specific depression and stress, peer and partner influences and pressures must be taken into account in order to appropriately treat LGBTIQ substance use (Hughes & Eliason, 2002a). Peer influences also play an important role in chemsex; with peers influencing decisions about which drugs to use, methods of ingestion and engagement in high risk activities whilst under the influence (Ahmed et al., 2016). Given this clear need for appropriate and effective interventions, the most recent National Drug and Alcohol Strategy 2016-2025 report has highlighted the substantial need for intervention within the LGBTIQ population (Roxburgh et al., 2016). The present study, which explores chemsex within Queensland, will help to inform health promotion practices within the Queensland AIDS Council who play a key role in health promotion and engagement of the LGBTIQ community, across a number of health areas including drug and alcohol use.

### **Current Perceptions of HIV and STIs and Risks**

Perception of risk, primarily of HIV but also of other STIs, has changed over time within the MSM community. The AIDS epidemic of the 80's resulted in extreme vigilance and fear, followed by a number of advances in the treatment and management of AIDS and subsequently HIV. These advances in medicine, over time, have resulted in increasing quality of life and extended lifespan. Public health campaigns have the challenging task of assuring those who are HIV positive that their condition is highly manageable and treatable with early diagnosis; whilst also encouraging safer sex and trying to minimise the spread of the disease, without creating undue stigma and oppression of those living with HIV.

HIV optimism, that is, the decrease in perception of severity of HIV, has been hypothesised to result in an increase in high risk sexual behaviours (Van de Ven, Rawstorne, Nakamura, Crawford, & Kippax, 2002). A meta-analytic review found that while having an undetectable viral load did not increase high risk behaviours, both HIV positive and negative people whom had reduced concerns about engaging in unsafe sex, because HIV treatments are readily available and effective, were more likely to engage in these high risk sexual behaviours (Crepaz, Hart, & Marks, 2004). From the framework of the Health Belief Model, this is considered a reduction in the perceived threat of HIV. Albarracin et al. (2005) performed a meta-analysis of a number of health behaviour theories and interventions based on them. Their discussion only tangentially supports the idea that reduced perception of threat has resulted in reduced condom use. Overall, other predictors, as discussed in a number of health behaviour model, such as perceived behavioural control and actually behaviour skills (knowing how to ask for condom use) are much better predictors of

this behaviour (Albarracin et al., 2005). So while HIV optimism has some effect, it's not a key driver of changed behaviour.

Another key concern, is the risk of hepatitis C transmission. Hepatitis C is generally considered to be of most burden to injecting drug users (Garfein et al., 1998), this is a key concern in the chemsex discussion, those who inject their 'chems' are most at risk. However, hepatitis C has also been known to be transmitted via sexual activity. While HIV positive people have increased susceptibility to the virus (Page & Nelson, 2016), HIV negative men engaging in higher risk sexual practices are also at risk (McFaul et al., 2015). An English study found 14.8% of HIV negative men who came for sexual health screening were positive for hepatitis C, only 20.5% of these men were injecting drug users (McFaul et al., 2015). While hepatitis C is now more 'curable' now than HIV, up until recently, the treatments were long and often not well tolerated. Recent advances in hepatitis C medications have resulted in shorter, more effective and are better tolerated treatments. However, they are expensive medications for governments to purchase (Hepatitis Australia, 2015; NHS, 2015). Hepatitis A and B can also be transmitted via CAI and other high risk sexual activities (Hepatitis Australia, 2017). Both are vaccine preventable and the hepatitis B vaccine is on the national vaccine schedule (*National Immunisation Program Schedule*, 2016). Most people who contract hepatitis A experience a relatively short illness and recover (Cuthbert, 2001). However hepatitis B is treatable but not curable and has a chronic course. Other, more common STIs such as chlamydia, syphilis and gonorrhoea are easily treated but the growing threat of antibiotic resistance creates a growing public concern about the future of these treatments (WHO, 2016). Other illness such as cancers caused by the Human Papilloma Virus (HPV) are another risk of unsafe sex. HPV is the main cause of anal

cancer in MSM but the strains of HPV most likely to cause anal cancer are vaccine preventable (Machalek et al., 2012). However the vaccine was only offered to males under the national vaccination program from 2013 onwards. This means that men who finished high school before 2013 are less likely to be vaccinated (Immunise Australia Program, 2017).

A number of the HIV positive participants in 'The Chemsex Study' (UK; Bourne et al., 2014), who chose not to use condoms, were reportedly unconcerned about the risk of acquiring other STIs because there are effective and available treatments. While some participants reported being worried about acquiring hepatitis C, this concern did not translate into harm reduction behaviours (Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2015). Notably this research was conducted before newer hepatitis C treatments became widely available (NHS, 2015).

**Current risks associated with living with HIV. *Medications and their side effects.*** Current guidelines for the treatment of people with newly diagnosed HIV (People living with HIV; PLWH) recommended the use of anti-retroviral medications (ART) regardless of the progression of the disease or their T cell count. T cell count is an immunological marker of a person's level of infection and infectivity. These recommendations are made to reduce the impact on quality of life and to minimise the risk of disease transmission (US DHHS Guidelines with Australian commentary, 2016). Triple antiretroviral combinations are generally recommended in high income countries, such as Australia, because of their proven efficacy over mono and duo type therapies (Hogg et al., 2008). Previously mono or duo therapies were considered sufficient and treatments were generally only initiated when a CD4 cell count of below 350 cells per microlitre had been reached (McCullough, 2011; The HIV-CAUSAL Collaboration, 2011), although there has

been much professional debate around this issue for many years (McCullough, 2011). After the collation and publication of three major randomised control trials which were conducted between 2001-2015 the decision was made to recommend the commencement of ART regardless of CD4 counts and with it the medical research reflected a full circle from the early years of ‘hit hard, hit early’ of the late 90’s to the present day approach of ‘hit hard, hit early’ (Eholie et al., 2016). This is reflected in the Joint United Nations Programme on HIV/AIDS (2015). They have set the challenge of 90-90-90 by 2020, and this has helped to spread the message that initiating proactive treatment early, or as soon as possible after diagnosis, is the most evidence based approach to treatment. The 90-90-90 targets aim for, 90% of PLWH being aware of their status, 90% of those people being on effective treatment and 90% of those people being virally suppressed (have an undetectable viral load). Some public health officials and the media recently declared the “End of AIDS?” (Sachs, 2016; The Lancet, 2015). However HIV as a chronic illness, with serious complications from long term ART use, is still a major public health concern (Deeks, Lewin, & Havlir, 2013). In addition, tertiary illness such as cardiovascular disease, kidney disease, liver disease, cancer, and some neurological diseases are known to result from long term use of ART, resulting in premature death as an indirect result of their HIV (Deeks et al., 2013). In addition to these factors, MSM continue to make up the majority of new HIV notifications and continue to be disproportionately affected, compared to other populations (Chow, Gamagedara, Bellhouse, & Fairley, 2015). This is particularly true within an Australian context (M. Holt, 2017). While an enormous amount of progress has been made over the last 20 years in the ‘fight against AIDS’ and HIV has become a manageable condition, it is still an avoidable chronic illness that still warrants considerable work to reduce the number of new



notifications each year. At present there have been between 1000-1100 each year for the last five years (M. Holt, 2017).

***Transmitting the virus and being undetectable.*** Optimal adherence to HIV medications can result in an undetectable viral load (Chesney, Morin, & Sherr, 2000). This means that there are so few replications of the virus in the body that it is undetectable on tests. This also means the virus is effectively untransmittable for as long as the individual maintains an undetectable viral load (Attia, Egger, Muller, Zwahlen, & Low, 2009). Through adequate medication adherence, viral suppression can be reached within the first 24 weeks of treatment, this is considered ‘optimal adherence’. Good practitioner-patient relationships, motivational interviewing and assessment of barriers such as pill size, pill numbers and daily routines have been shown to improve adherence (Lundahl et al., 2013; Nachega et al., 2014). Poor adherence can lead to a number of treatment complications including, viral load becoming transmittable again and drug resistance resulting in reduced treatment options and poorer long-term prognosis (Chesney et al., 2000). This is pertinent in regard to the potential for extended chemsex sessions to interrupt a person’s medication schedule. Bourne et al. (2014) reported men having chemsex sessions that lasted up to four days. While these long sessions have a number of health implications, adherence to ARVs is one of the most prominent in terms of HIV transmission and prevention. This is one of the ways addressing issues within the chemsex scene could support the United Nations 90-90-90 goals. However, for some people, having an undetectable viral load may lead to decreased likelihood of using condoms and therefore increase the risk of other STI transmission, including hepatitis. Acquiring or passing on different strains of HIV may also be a concern for PLWH who have sub-optimal ARV adherence (Redd, Quinn, & Tobian, 2013).

Despite readily available treatments for both HIV and other STIs, some MSM may not be aware of the risks associated with the multiple differing strains of HIV. HIV co-infection or superinfection occur when one person acquires multiple strains of HIV (Redd et al., 2013). While the most prominent strain in Australia, and worldwide, is HIV-1, 'M group', there are a number of subtypes within the M group as well as three other subgroups at the same level as the 'M group'. There are also a number of strains within the HIV-2 group. HIV-1 → M → B is the most common strain worldwide, and the most common antiretrovirals are created based on this strain.

In addition, people with HIV are already more susceptible to syphilis due to HIV medications (Rekart et al., 2017). Rekart et al. (2017) found that "highly active retroviral therapy [current first line treatment for HIV infection] have the potential to alter the innate and acquired immune responses in ways that may enhance susceptibility to *T. pallidum* (syphilis)"(p. 1). All of these factors must be considered in light of the social determinants of health (US Department of Health and Human Services, 2014).

***Life expectancy.*** Current life expectancy of MSM living with HIV is approaching that of HIV negative peers (Nakagawa, May, & Phillips, 2013). Early diagnosis and treatment is one of the leading causes of this optimistic life expectancy (Nakagawa et al., 2013). Nakagawa et al. (2012) report that, after controlling for other factors, MSM who are HIV positive should expect to live, on average, seven years less than HIV negative men. This of course assumes optimal adherence to ART. Population based samples (i.e., not just MSM) show that injecting drug users with HIV have shorter life expectancies than non-injecting drug users with HIV (Hogg et al., 2008). While Hogg et al. (2008) could not draw causal conclusions

about the reasons for this relationship they suggest that other known factors such as unequal access to treatment, hepatitis co-infection, socioeconomic status, smoking and alcohol use may all contribute to the discrepancy.

*PrEP and other harm reduction methods. Condoms.* Condom use is reportedly low among those who regularly engage in chemsex in the Netherlands (Knoops et al., 2015). Participants cited a number of reasons including: poor fit and latex allergies, sexual activity being less enjoyable while using condoms and unsurprisingly, some participants reported that intentions to use condoms often become less salient after ingesting substances for the purpose of chemsex. Bourne et al. (2014) report that while some men neglect to use condoms when they had previously intended to use them, many also sought out condomless sex for a variety of reasons. Some MSM have stated that their HIV diagnosis was a relief because it meant they no longer needed to use condoms and no longer needed to worry about acquiring HIV (Heijman, Zuure, Stolte, & Davidovich, 2017).

*PrEP.* PrEP is the same medication used by HIV positive people to treat HIV, just in slightly different combinations. When taken by HIV negative people it has been proven to prevent HIV infection (WHO, 2012). PrEP works by blocking the enzyme that allows HIV to reproduce in the human body (Anderson et al., 2012). While optimal levels of the drug are achieved by taking the medication once daily (resulting in 99% effectiveness against acquisition of the HIV virus if exposed to it), taking four PrEP pills within a seven day period will still result in a 96% reduction in HIV risk (Anderson et al., 2012). PrEP was first available in the USA in 2012 and has been available in Australia since May 2016, however access is currently restricted to those who are eligible for clinical trials or can afford to import it from overseas, as it is not currently available on the pharmaceutical benefits scheme (PBS;

Lewin & Wright, 2016). Intermittent use of PrEP has also been a consideration, not just for sub-optimal adherence but also for men who wish to use it for a number of days or weeks while on holiday or when attending LGBTIQ events such as Mardi Gras or other heavily sexualised events (Elsesser et al., 2016). In an American study of more than 7000 participants, 92.6% reported that taking PrEP daily was a barrier to its use. However men who reported having gone on a sex-based vacation in the last 12 months had greater odds of reporting that they would take PrEP for short periods if it was effective as an intermittent medication, compared to men who had not gone on vacation with the explicit purpose of engaging in sexual activity (Elsesser et al., 2016). PrEP needs to be taken for at least seven days in order to have therapeutic efficacy, which for most people is a viable option if they want the protection for a sexualised vacation or holiday (Center for Disease Control and Prevention, 2014; Mascolini, 2014). Continued PrEP use is recommended for serodiscordant couples and for people having regular CAI (Wright et al., 2017).

Around the world, access to PrEP has been associated with decreased stigma around its use (Ayala et al., 2013) . However some factors decrease how acceptable participants found PrEP to be. Some of the reported barriers to use were cost, perceived efficacy and potential side effects including nausea, headaches and weight loss (Ayala et al., 2013). These barriers were also found in a recent meta-analysis (Peng et al., 2017). Additional barriers to PrEP use were adherence and stigma, (Peng et al., 2017). Peng et al. (2017) found that younger, wealthier and better educated MSM were most likely to report PrEP as an acceptable method of HIV prevention. Men who found PrEP acceptable were also more likely to have previously used post exposure prophylaxis (PEP; a month long course of medication taken after exposure or likely exposure to the HIV virus after condom breakage,

needle stick injury, sexual assault etc.), have more frequent sexual acts and higher numbers of sexual partners (Peng et al., 2017). These last two reasons, are noteworthy features of chemsex (Bourne et al., 2014; Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2015). While the primary purpose and proven efficacy of PrEP is to prevent HIV from replicating in the human body and causing HIV infection, there is also some limited evidence to suggest it has some utility against the hepatitis B virus and herpes simplex virus (Andrei et al., 2011; Lewin & Wright, 2016; Piliero & Faragon, 2002).

*Serosorting.* Serosorting is a term used to describe the behaviour of choosing to have sexual contact with people of the same HIV status. While logical, this method of harm reduction has a number of flaws. The main problem with serosorting is the window between when an individual is infected with HIV and when they test positive for the virus. There can be a period of between a one to two weeks to two to three months when a person can transmit the virus but it is not detected on standard tests (British HIV Association, 2008; Rosenberg, Pilcher, Busch, & Cohen, 2015). In addition, and this is particularly true for men with a lot of partners or frequent sexual encounters, even testing every three months may not be sufficient to detect the virus before it is transmitted to a partner (Rosenberg et al., 2015). Some of the problems have been lessened with medical advances, however it remains an imperfect method of reducing HIV transmission due to the aforementioned concerns (Kurtz, Buttram, Surratt, & Stall, 2012).

Serosorting has also been known to increase stigma around being HIV positive (Golub, Tomassilli, & Parsons, 2009), particularly up until suppression of the virus to undetectable levels was possible through medical advances (Van Den Boom et al., 2013). Men who did disclose their positive status may have been

shunned from some social groups or excluded in other ways (Smit et al., 2012). In the context of chemsex, research has indicated that serosorting is used within chemsex sessions (Knoops et al., 2015). Bourne, Reid, Hickson, Torres-Rueda, and Weatherburn (2015) reported that eight out of 13 HIV positive men in their sample reported always engaging in serosorting during chemsex. However they highlight that, HIV status was at times, assumed rather than explicitly discussed. This evidence indicates that while these men are choosing to engage in harm reduction practices, they are choosing one of the least effective methods. Bourne, Reid, Hickson, Torres-Rueda, and Weatherburn (2015) report that the main reason cited for wanting CAI was increased physical sensation. This is a commonly cited reason for not using condoms, and one that must be addressed in order for harm reduction to be most effective.

### **Chemsex**

As previously mentioned, the concept of chemsex places an emphasis on premediated or planned consumption of drugs for the purpose of then engaging in prolonged or heightened sexual behaviour. This may include consuming substances before and/or during sexual activities but is distinct from deciding to have sex once intoxicated. Much of the existing research on chemsex, focuses on the use of stimulants and high risk behaviours, such as unprotected anal intercourse. Drugs such as crystal methamphetamine, GHB/GBL and mephedrone are most prominent (Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2015; Knoops et al., 2015). While the use of non-stimulant drugs and sexual enhancement drugs such as Sildenafil (Viagra) and Amyl Nitrate used on their own, are technically included in the definition, they are not the primary focus of chemsex literature. However they are commonly used with stimulants to enhance the functioning of sexual organs.

Research on chemsex in Australia is extremely limited. However there is an abundance of research on MSM and their drug use, both in general and specific to the sexual context. Hopwood, Lea, and Aggleton (2015) and Lea et al. (2016) examine general drug use within the MSM community, with Hopwood et al. (2015) reporting 90% of their respondents injecting drugs in a sexual context, with the most popular drug being crystal methamphetamine. As is evident, there are a plethora of public health concerns relating to chemsex (Bourne, Reid, Hickson, Torres-Rueda, Steinberg, et al., 2015).

**Motivations and values associated with chemsex.** MSM have reported a number of motivating factors for engaging in chemsex, the first of which is the ability and freedom to engage in the kind of sex they desire (Race et al., 2017; Weatherburn, Hickson, Reid, Torres-Rueda, & Bourne, 2016). Some of the features of ‘the sex that is wanted’ are: increased libido, confidence, disinhibition and stamina (Weatherburn et al., 2016). While there is limited research looking at ‘chemsex’ motivations specifically, there is ample research describing sexualised drug use by MSM, dating back more than ten years (Kurtz, 2005; D. McKirnan, D. Ostrow, & B. Hope, 1996; Mullens et al., 2009). Hurley and Prestage (2009) reported that one of the key motivations they identified in relation to intensive sex parties was the ‘maximisation of sexual pleasure’. Mullens, Young, Dunne, and Norton (2011b) reported a quantitative analysis of the perceived effects and benefits of a variety of substances. These included cognitive impairment, improved sexual activity and improvement in social engagement, among others.

While the majority of motivations and values reported are viewed within a positive light, Kurtz (2005) reported a much more pessimistic view of sexualised drug use. They suggested that the use of crystal methamphetamine by MSM was

used to escape loneliness to deal with feelings of being unattractive and to reduce sexual inhibitions. While these are all mentioned in passing in more recent research (Weatherburn et al., 2016), they appear to be less prevalent, or at least, less emphasised. Mullens et al. (2011b) reported that each of the perceived effects of a variety of substances tended to differ for differing types of substances however, a variety of individuals tend to report similar desirable effects from a single substance, for example multiple people may report that crystal methamphetamine increases libido (Mullens et al., 2009). In discussing the motivations behind the behaviour it can be easy to pathologise or criticise the desire for heightened pleasure or disinhibition, particularly in light of some of the associated high risks (Hurley & Prestage, 2009). However in order to reduce risks, it is important to acknowledge the perceived benefits, and validate these desires and their normative contexts.

**Norms and social context.** Ahmed et al. (2016) reported that more than half of their sample believed 70-90% of gay men ‘on the scene’ engaged in drug use; and that chemsex is considered to be a normative behaviour. These perceptions are despite 8.3%, 16.5%, and 12.5% reporting having ever used crystal methamphetamine, mephedrone, and GHB/GBL, respectively, in an English sample (Hickson, Reid, Hammond, & Weatherburn, 2016). For comparison, the most recent Gay Community Periodic Survey (GCPS), a large community survey of gay men’s sexual and general health and wellbeing, indicated 9% of participants had used crystal methamphetamine in the previous six months and 3.9% using GHB in the same period. The GCPS did not report use of mephedrone (Lee et al., 2016). Obviously the differences between measures of lifetime use versus six monthly use make it difficult to compare these differing findings. Participants in England and Denmark reported that much of their own drug use, and specifically chemsex



behaviours, occurred in private homes, during sex parties facilitated with the use of geospatial apps (Ahmed et al., 2016; Knoops et al., 2015). Some of the apps on the markets at present are Grindr, Squirt and Hornet. Most are free to download and use.

These private parties, often facilitated by apps, contribute to the perception of normalised sexualised drug use (Knoops et al., 2015). Ahmed et al. (2016) reported that a number of men in their focus groups reported exchanging sexual activities for illicit substances or vice versa. Geospatial apps play a significant part in the facilitation of these encounters and exchanges. Like many things facilitated by new technology, sex parties and ‘hook ups’ have been present among MSM for many years. However the apps provide for these age old practices to happen quickly and at greater volume than in times before smart phones (Miles, 2017). Some of these apps also allow sexual sessions to be filmed and broadcast live, a feature much less accessible before smart phones (Tziallas, 2015). While there are no statistics on exactly how prevalent chemsex is, all these factors influence the normalisation of a behaviour that, while common (Lee et al., 2017), is perhaps not as prevalent as the geospatial sex apps would have you believe.

Ahmed et al. (2016) reported a perception that PLWH were more likely to engage in higher risk behaviours such as ‘slamming’ (injecting drug use), CAI and crystal methamphetamine use, primarily because they have ‘nothing left to lose’. Implied in this is the notion that having HIV is the worst result of these behaviours and nothing could be worse. A number of authors also comment on the differing social expectations of injecting drug use, or ‘slamming’ (Ahmed et al., 2016; Amaro, 2016; Knoops et al., 2015). For some MSM, injecting drug use is considered a hard line they will not cross, while for others it is commonplace and expected (Knoops et al., 2015). Both groups are aware of these subgroups within their communities.

These preferences are often communicated with subtle codes within geospatial apps (Knoops et al., 2015). In spite of these hard limits established by some chemsex participants, peer pressure is readily available and users are encouraged to push boundaries further and begin ‘slamming’ (Knoops et al., 2015).

**Risks to mental health.** Bourne, Reid, Hickson, Torres-Rueda, and Weatherburn (2015) reported that men whom committed to always using condoms during chemsex felt more psychologically secure because they knew they were mitigating the risk of either transmitting or acquiring an STI. However Bourne et al. (2014) also reported an attitude of ‘dammed if you do, dammed if you don’t’ towards many elements of chemsex including drug use and condom use. This is related to the ‘relief’ described by some after a new HIV diagnosis. Specifically, some men have reported a sense of relief of no longer having to worry about acquiring HIV, after having been diagnosed, and felt that diagnosis was a reason to relax their safer sex practices (Heijman et al., 2017). These examples summarise the complex relationships between engaging in enjoyable sexual activity and the same behaviour that often steps into disregard or intentional suppression of thoughts about the risks (Bourne & Weatherburn, 2017). Chemsex seems to span across the spectrum from men who engage in the behaviour for pleasure while also engaging in all reasonable levels of risk reduction – condom use, PrEP use, drug testing and clean tools – through to the men who engage in chemsex to numb the pain of HIV fear, discrimination, shame and internalised homophobia, as well as possible intersectionality with other disadvantage (Bourne et al., 2014; Knoops et al., 2015). The comparatively poorer mental health of the LGBTI population compared to the general population is well established (King et al., 2008) and the subject of research and intervention. As such it can be difficult to separate out the effects of sexualised

drug use on mental health compared to generally poor mental health (Race et al., 2017).

**HIV transmission risks.** The majority of ‘slammers’ only use needles once and do not share. However there is a small subset within the slamming community who intentionally share needles, not out of necessity, but as “the ultimate form of connectedness” (Knoops et al., 2015, p. 31). However this behaviour is generally disapproved of by other ‘slammers’ who have taken heed of the many year of harm reduction work in needle and syringe exchange programs (Knoops et al., 2015).

**Drug use in chemsex.** Some men in *The Chemsex Study (UK)* reported that the use of drugs, specifically crystal methamphetamine, made them more likely to disregard risks associated with CAI and/or high risk sex acts such as fisting (the insertion of one partner’s entire hand into the other partner’s rectum for sexual pleasure), bondage, watersports (sexual activity involving urination) or group sex (Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2015). While a causal relationship has not been established, there is some evidence to suggest that use of crystal methamphetamine is detrimental to PLWH on a chemical level. Ellis, Childers, Cherner, and The HIV Neurobehavioral Research Center Group (2003) reported that people on ARVs for HIV treatment who also used crystal methamphetamine had more replications of the HIV virus, than controls.

**Poly-drug use.** Knoops et al. (2015) reports that nearly all their participants used erectile-dysfunction drugs prior to or during chemsex to help maintain an erection. Users reported taking erectile-dysfunction drugs either because crystal methamphetamine inhibited their ability to maintain an erection during the course of chemsex, or men used the medications to maintain the erection for an extended period of time. Combining crystal methamphetamine with other illicit drugs such as

GHB, ecstasy or mephedrone, was also reported as common. Poly drug use has been associated with increased levels of CAI, in addition to other heightened risk behaviours (Daskalopoulou et al., 2014). Bourne et al. (2014) reported that in the UK The Chemsex Study “Poly drug use is the norm, with few drug users using only one drug” (p. 30).

**Extended sexual session times.** A key feature of chemsex is the extended time frames, with sexual activities lasting from a few hours to a few days. The longer events are facilitated by the effects of substances such as stimulants, with sex enhancing drugs making sexual intercourse over many hours possible. This creates a risk over and above the issues associated with drug use and sexual health issues during shorter time frames. Chemsex participants have noted issues associated with drug use in these extended time periods including sleep deprivation, and lack of nutrition and fluids (Bourne et al., 2014; Knoop et al., 2015). However, the public health focus is concern around adherence to ARV, either PrEP or HIV treatment regimes. While suboptimal adherence to PrEP still provides a reasonable level of protection (four pills in seven day is 96% effective where seven pills in seven days is 99% effective), in conjunction with high risk sexual practices even small increases in risk of HIV transmission are cause for concern (Anderson et al., 2012). Prolonged sexual activity can cause abrasions and other damage to the rectum, which increases the likelihood that HIV can enter and replicate in the body of an HIV negative person (Baggaley, White, & Boily, 2010). The use of Sildenafil also increases this risk by making sexual intercourse over many hours possible (Crosby & Diclemente, 2004). PLWH also face significantly increased risk from extended chemsex sessions. Reback, Larkins, and Shoptaw (2003) report that use of crystal methamphetamine over a number of days has been associated with non-adherence to ARVs. This non

adherence can be either planned or unplanned. Men will sometimes acknowledge they are going to be intoxicated and make a decision not to take their medication for several days; Or they do not make plans in advance and as a result do not take their medication for the duration of their intoxication. While HIV transmission is a risk during these times, the development of drug resistance is also a major concern (Reback et al., 2003).

### **Demographic Characteristics Expected to Influence Chemsex**

**Age.** Age is a key variable and often expected to have an impact on participant's behaviours. It is likely there will be differences in age between those who engage in chemsex, those who engage in CAI while intoxicated and those who do not engage in these behaviours. In public health research, age is often associated with differing sexual behaviours, and research will adjust for age accordingly. Knowing if and where these age differences occur is helpful in planning interventions. Bourne et al. (2014) interviewed 30 MSM who all engaged in chemsex, these men had a mean age of 36 and a range of 21-53. Knoop et al. (2015) reported an age range of 23-60 years with a mean of 42.8. Sewell et al. (2017) reported that men aged less than 30-39 years were most likely to be engaged in chemsex drug use. It is expected that this age bracket of men in their 30's will be most likely to engage in chemsex and CAI while intoxicated in the present study. Age is also a noteworthy variable because young MSM account for that largest proportion of new HIV diagnosis each year (The Kirby Institute, 2016).

**Sexuality.** While directionality is not hypothesised, it is expected that there will be differences between those who identify as homosexual versus those who identify as heterosexual or bisexual. The mechanism for these differences may be differing levels of engagement within the LGBTIQ community, peer influences

and/or unknown mechanisms. There is evidence (M. Friedman et al., 2014) to suggest that bisexual people sometimes have worse health outcomes than their homosexual peers.

**Place of residence.** While drug use within the general community is slightly more prevalent within rural and regional areas of Australia (National Rural Health Alliance, 2015). Male same sex couples are more likely to live in cities (Australian Bureau of Statistics, 2013) and are therefore more likely to have more access to sex on premises venues (SOPV) and private venues for chemsex, than those who live in regional or rural areas. As such it is expected that more of the men living in cities will be reporting engagement in chemsex.

### **The Present Study**

The aim of the present study was to establish key characteristics of chemsex in Australia, with a focus on SEQ, in an exploratory and descriptive manner. The research on chemsex, to date, has been based largely on populations in the United Kingdom (Bourne et al., 2014; Sewell et al., 2017) and Europe (Knoops et al., 2015; Schmidt et al., 2016), with a few studies in parts of Asia (Lim et al., 2015). The research was undertaken to provide Australian specific data to Queensland AIDS Council (QuAC) on the extent of chemsex within Queensland and Australia, and to help inform appropriate areas for future intervention and health promotion. QuAC were an industry partner in this project and the data is primarily intended to provide detailed information to assist with developing prevention, health promotion and harm reduction materials. It is hoped that the present study can help to inform future health promotion and harm reduction strategies in a real world context.

All hypotheses that use the term “CAI” refer to the variable that asked participants “Have you had condom-less anal sex in the past 12 months with any

partners of unknown or serodiscordant status whilst drunk or high?” This is a salient risk factor for HIV and STI transmission.

The first aim is to report on current rates of drug use and sexual activity among people who report engaging in chemsex. It is hypothesised that people who do engage in chemsex will be significantly different from those who do not engage in chemsex on sexuality, gender, age, Aboriginal or Torres Strait Islander status, place of birth, place of residence, ethnic background, HIV status, STI rates, reports of CAI, HIV testing recency, and PrEP use (Hypothesis 1). One of the key chemsex drugs (crystal methamphetamine, GHB or mephedrone) will have more of an influence on CAI than the others. (Hypothesis 2). It is hypothesised that longer chemsex sessions will increase the likelihood of participants engaging in CAI (Hypothesis 3). It is hypothesised that the combination of ARV use and chemsex will be associated with more CAI. (Hypothesis 4). It is predicted that chemsex will be associated with an increase in CAI which will increase the risk of acquiring non HIV, STIs due to the use of antiretrovirals (undetectable or on PrEP )(Hypothesis 5).

## **Method**

### **Participants**

The total sample comprised of 663 MSM, 644 (97.1%) identified as male and 16 (2.5%) identified as trans and 3 (0.5%) identified as non-binary. See Appendix D for an explanation of gender identity. Participants ranged in age from 18 years to over 80 years, with the mean age falling into the 30-39 years range. As per the ethics application (Appendix A), participants were recruited via convenience sampling from community settings such as gay clubs, community events, LGBTIQ online spaces and visitors to Queensland AIDS Council premises in response to flyers

calling for participants (Appendix C). Cisgender women were excluded from the study. Recruitment targeted MSM, particularly those who engage in drug use. Participants included trans men who have sex with men and trans women who have sex with men. There were 516 (77.8%) participants whom identified as gay or homosexual, 119 (17.9%) identified as bisexual, 14 (2.1%) identified as heterosexual, six (0.9%) identified as pansexual, eight (1.3%) identified as another sexuality such as 'queer' or 'homoflexible'. Most participants identified their ethnicity as Australian ( $n = 512$ , 77.2%) and were born in Australia ( $n = 540$ , 81.4%). A further breakdown of ethnicities indicated that 85% identified their ethnicity to be from a country in the Asia-Pacific, with the next biggest group identifying ancestry from within Europe (7.2%). Please see Table 1 for further details. Attempts were made to identify participants who reported ancestry from countries with high HIV prevalence. However there were less than 20 participants who identified as being from North East or South East Asia or Sub-Saharan Africa, which are higher HIV endemic countries. The study included a number of Aboriginal and Torres Strait Islander participants ( $n = 49$ , 7.5%), at a rate slightly higher than the population rate reported by the Australian Bureau of Statistics (ABS; 4.2% in QLD). The majority of participants lived in cities ( $n = 508$ , 76.6%), with about one in five participants living in regional or rural areas ( $n = 104$ , 15.7%;  $n = 27$ , 4.1%). Of those participants who reported their HIV status and time of their last HIV test, who reported as negative or unknown, one sixth ( $n = 101$ , 16.8%) reporting having tested in the last month and more than a third reporting having tested in the last 1-6 months ( $n = 199$ , 33.1%). Twenty-Seven participants (4.5%) tested more than four years ago and 16% ( $n = 96$ ) reported having 'never tested'. Under 10% of participants reported being HIV positive ( $n = 62$ , 9.4%), and 10.9% ( $n = 72$ ) reported 'not knowing' their



status. A small number (3.5%) did not answer this question regarding HIV status. Of those who reported being HIV positive, 88.7% ( $n = 55$ ) reported having an undetectable viral load with seven participants (11.3%) reporting a detectable viral load. Of those who did not report being HIV positive (participants who reported being negative, unknown or did not answer the question), 11.6% ( $n = 70$ ) reported current PrEP use, 67 of these reported their status as negative, three reported their status as unknown. None of the participants who did not report their HIV status reported being on PrEP. Due to the sensitive nature of the material in the study, as per the ethics application (Appendix A) most questions were not compulsory. As a result, there are small amounts of missing data for each question. Of the collected data of 671 cases, two were cisgender women, who were removed from the data set. Six other cases were removed due to blank or severely inconsistent responses. Those who did not respond to the question “Have you engaged in chemsex in the last 12 months?” were different on a number of variables, see Results for full details. There were 582 participants who provided data on this question. There were 81 participants who did not provide a response to this question and therefore were excluded in the predictive analyses. They were however included in the descriptive analyses of overall drug use, STIs and other sexual risk questions.

### **Design**

The current study adopted a cross sectional prospective sampling design with a single point of data collection. It used a descriptive and exploratory data analysis to guide future prevention and health promotion. The design was informed by a request for specific information on the chemsex practices within the LGBTIQ community at this point in time. This was required to help inform future health promotion and prevention efforts.

Table 1

*Demographic characteristics of participants*

	<i>n</i>	%
Gender		
Male	644	97.1
Trans*/Other	19	2.9
Sexual Orientation		
Gay/Homosexual	516	77.8
Bisexual	119	17.9
Heterosexual	14	2.1
Pansexual	6	0.9
Other	8	1.3
Age		
18-29	198	29.9
30-39	153	23.1
40-49	148	22.3
50-59	103	15.5
60-69	43	6.5
70-79	15	2.3
80+	3	0.5
Ethnicity		
Anglo-Australian	512	77.2
Other	151	22.8
Ethnicity as derived from free text responses		
Asia-Pacific region	573	86.5
Europe	48	7.2
Asia	21	3.2
South America	9	1.4
North America	5	0.8
Africa	4	0.6
Other/Unknown	3	0.5
Country of Birth		
Australia	540	81.4
Overseas	111	16.7
Not reported	12	1.8
Aboriginal and Torres Strait Islanders		
Aboriginal	29	4.4
Torres Strait Islander	17	2.6
Aboriginal and Torres Strait Islander	3	0.5
Place of Residence		
Urban/City	508	76.6
Regional	104	15.7
Rural/Remote	27	4.1

Table 2

*Other relevant characteristics of participants*

	<i>n</i>	%
Last HIV test (if not HIV positive)		
1-4 weeks ago	101	16.8
1-6 months ago	199	33.1
7-12 months ago	74	12.3
1-2 years ago	52	8.7
2-4 years ago	27	4.5
More than 4 years ago	27	4.5
Never tested	96	16
Not reported	25	4.2
HIV status		
Positive	62	9.4
Negative	506	76.3
Unknown	95	14.4
Last Viral Load test if HIV+		
Undetectable	55	88.7
Detectable	7	11.3
PrEP use (all self reported HIV positive participants excluded)		
On PrEP	70	11.6
Not on PrEP	416	69.2
Never heard of PrEP	69	11.5
Not Reported	46	7.7

**Procedure**

The current study was conducted as a collaboration between Queensland AIDS Council, Lives Lived Well and the University of Southern Queensland (USQ). USQ Human Research Ethics Committee granted approval for the study (H16REA116; Appendix A). The study involved the completion of a 15 to 20 minute survey which participants completed online (75.1%) or in paper form (24.9%), depending on where they were recruited. Participants were able to complete a paper form if they wanted to complete it at the time or were given a web address to complete at their leisure. The survey was hosted through Survey Monkey (<https://www.surveymonkey.com/r/QChemSex>). Surveys completed in paper format were manually enter into survey monkey and checked for fidelity by QuAC staff. The first page of the questionnaire on either the electronic or paper form was a

participant information form which included a description of the study, potential risks and benefits to the participant, the ethics approval number, information for contacting the researchers and request for participant consent. Participant consent was deemed provided by completion and submission of the questionnaire, and was stated explicitly to participants on participant information sheet (see Appendix B). Participants were not offered any incentives to participate in the study. There was no expected direct benefit to participants, other than to contribute to a greater understanding of the lives and experiences of MSM and to inform health promotion for this community. As outlined in the participant information sheet and ethical approval, no identifying data was collected from participants.

### **Measures**

**Target behaviours.** The questionnaire asked participants about a number of specific target behaviours aligned with the project aims, including engagement in chemsex, which was defined as “chemsex...involves the use of drugs, to facilitate or enhance sexual activity, with or without other drugs.” Participants were also informed that they may know this behaviour as ‘party and play’. The other target behaviour was CAI with partners of unknown or serodiscordant HIV status. Participants were asked if they had engaged in this behaviour either sober and or whilst intoxicated (“drunk or high”). To operationalise this behaviour participants were provided with the definition “*serodiscordant status* means one partner is HIV positive and the other is HIV negative.”

**Questionnaire.** Participants were asked a number of questions about their drug use and sexual health in addition to the Drinking Expectancies Questionnaire (DEQ-MSM; Mullens et al., 2011b) and the Stimulant Expectancies Questionnaire (SEQ-MSM; Mullens, 2011). Participants who endorsed the target behaviour of

chemsex were asked further questions about their experiences of chemsex and their drug use during the course of chemsex. Participants who did not endorse the target behaviour of chemsex were not asked further questions. In addition to demographic variables, participants were asked how they heard about the study, and how they would most like to access further information about sexual health and substance use. In addition to these questions, the survey considered of a section on general drug use and a number of questions on sexual health practices.

**Person-related variables.** All wording of questions and response options were developed based on the format and phrasing of the GCPS (Lee et al., 2017) in addition to consultation with health promotion staff at QuAC.

**Age.** Participants' age was collected at the beginning of the questionnaire. The age ranges were in 10 year brackets, with the exception of the first and last bracket which included 18-29 years and 80+ years. These brackets were coded in ascending order (1) = 18-29 years to (7) = 80+ years.

**Gender.** Participants' self reported gender was also collected at the beginning of the questionnaire. Participants were given the options: "male", "female", "trans\*" and "Other/ Decline to answer (please specify)". Free text responses were later allocated to either (1) = male or (2) = trans\*, depending on responses. As a result, trans participants may identify as 'gender non-conforming' or other variations.

**Sexual Orientation.** Participants self reported sexuality was collected, participants were given the options 'gay/homosexual', 'bisexual', 'heterosexual' and 'other (please specify)'. Six participants specified their sexuality as 'pansexual' and these were given their own category, all other specified sexualities were defined as 'other'. Each category was coded (1) = gay/homosexual, (2) = bisexual, (3) = heterosexual, (4) = pansexual, (5) = queer and (6) = other.

***Ethnicity.*** Participants were asked two separate questions about their ethnicity. Specifically about their Aboriginal or Torres Strait Islander status and their “ethnic background”. Australian indigenous status was coded, (1) = Aboriginal, (2) = Torres Strait Islander, (3) = Aboriginal and Torres Strait Islander or (4) = neither Aboriginal nor Torres Strait Islander. Ethnic background was coded as either, (1) = Anglo-Australian or (2) = other.

***Residence.*** Participants were asked where they were born, this was coded (1) = Australia, (2) = Overseas. Participants were also asked where they currently live. Post codes were collected as four digit numeric numbers. Participants were also asked if they lived in an urban, regional or rural area. This was coded as (1) = Urban/City, (2) = Regional and (3) = Rural or Remote.

***Drug and alcohol use. Drug use time frames.*** Participants were provided the following list of drugs and asked to indicate if they had used the drug in one of three time frames: “the last 0-3 months”, “the last 3-6 months”, and “the last 6-12 months”, these were scored as a binary of either endorsing the time period (1) or not endorsing the time period (0). The list of drugs as is follows: Marijuana, Amyl (Amyl Nitrate), Ecstasy, Amphetamine (speed), Crystal Methamphetamine, Sildenafil (Viagra), Cocaine, Ketamine, GHB, Heroin, Steroids and Alcohol. This list was chosen based on the prevalence rates of these drugs as reported in The Gay Community Periodic Survey 2015 (Lee et al., 2016) and consistent with published research in this sector (Mullens et al., 2009).

***Drug use frequency.*** Participants were given an identical list of drugs as those listed above and asked to rate the frequency of use. From (7) = Everyday, (6) = 2-3 times a week, (5) = once a week, (4) = once a month, (3) = once every 3 months, (2) = once every 6 months and (1) = once every 12 months.

**Sexual health. *HIV testing.*** Recency of last HIV tested was established by asking “When was your last HIV test?” participants were given seven options from (1) = one to four weeks ago through to (6) = more than four years ago and (7) = never tested.

***HIV status.*** Participants were given three options in relation to their HIV status: (1) = positive, (2) = negative and (3) = not sure.

***Viral load.*** Those participants who reported being HIV positive were further asked about their most recent viral load test. Responses were reported as (1) = undetectable, (2) = detectable. For use in the analysis UVL became a dummy variable with UVL = (1).

***PrEP.*** Participants who reported being HIV negative were asked if they were engaging in safer sex through the use of PrEP. Options for response were (1) = yes, (2) = no and, (3) = never heard of PrEP. This also became a dummy variable with participants taking PrEP coded as (1).

***ARV.*** Participants who reported either being on PrEP or being HIV positive and having an undetectable viral load were coded as (1) on this variable. All other participants who provided a response in either the PrEP question or the HIV status question were coded as (0).

***Other STIs.*** Participants were asked to indicate if they had acquired one or more STIs in the preceding 12 months. As per the investigated drugs, the list of STIs is based on prevalence rates from the 2015 Gay Community Periodic survey (Lee et al., 2016). The list is as follows: human papilloma virus (HPV), syphilis, herpes, hepatitis A, hepatitis B, hepatitis C, gonorrhoea, chlamydia and LGV (lymphogranuloma venereum). Participants were also given the option “I did not

contract any of the above in the last 12 months”. For use as an outcome variables this data was coded as (1) = reported at least one STI.

**Target behaviours – CAI and chemsex . CAI.** Participants were asked if they had engaged in CAI in the preceding 12 months with partners of unknown or serodiscordant status and were provided the previously stated (see page 36) definition of “serodiscordant”. The options for response were: (1) = yes, (2) = no and, (3) = unsure. The unsure option was provided in this question and the following question in order to capture participants who may have engaged in the behavior but do not have a clear recollection of the experience due to intoxication or other factors.

*CAI: intoxicated.* This question was identical to the previous question, but to add the words “whilst drunk or high”. The response options were also identical. To include this data in the analysis, the “unknown” responses were dropped and the remaining data was coded as, yes = (1), no = (0).

*Chemsex.* As previously stated, the operationalized definition of chemsex was given to participants, followed by a question asking if they had engaged in chemsex in the last 12 months. Options for response were (1) = yes and (0) = no. Only participants who responded in the affirmative were asked the following questions about their activities and drug use during chemsex.

*Frequency of chemsex.* Participants were given five options as to how often they had chemsex: (1) = daily, (2) = weekly, (3) = fortnightly, (4) = monthly and, (5) = yearly.

*Duration of chemsex sessions.* Participants were asked about the duration of their chemsex sessions. Time periods of four hour blocks were presented from (1) = one to four hours, through to (12) = 45-48 hours. This data was extremely skewed. After attempting to use the full set of data in analysis, the cells at one end were far



too small to give meaningful results. The data was re-coded into two separate dummy variables for, five to eight hours and nine plus hours.

***Sexual positioning during chemsex.*** Participants were asked two questions with respect to sexual positioning during chemsex. These questions were used as a further indication of sexual health risk, as the receptive partner is more susceptible to HIV transmission biologically (Varghese, Maher, Peterman, Branson, & Stekettee, 2002). Participants were asked if they had engaged in receptive CAI and were provided with the following response options, (1) = yes, (2) = no and, (3) = not sure. Participants were asked the same question in respect to insertive CAI and were provided with the same response options.

***Substances used during chemsex.*** Participants were presented with the same list of drugs that had been previously presented, with one addition, mephedrone ('meow meow') and were asked if they had used any of the drugs during chemsex, with (1) = yes and (2) = no response options. They were also given an "other" option to enter any other drugs they may have used. Participants were also asked about the frequency of drugs used during chemsex. The same list of drugs was presented with response options: (5) = always, (4) = very often, (3) = often, (2) = sometimes and (1) = never. Participants were also given an "other" option in this question.

## **Results**

### **Preliminary Analyses**

Preliminary analyses showed that none of the test variables fulfilled the assumption of normality due to the categorical nature of the data, therefore non-parametric statistics were used for most analyses. Chi-Square tests were used for some categorical comparisons, this test compares the expected cell sizes with actual cell

sizes to give a likelihood that the difference in cell sizes occurred at random, or due to an effect. Mann-Whitney U is a test that compares median values. This test was used for a number of comparisons comparing ordinal data. Logistic regression was used to test a number of the study hypotheses. This test outlines the contribution to the model that each variable made. The primary assumption of logistic regression are linearity of logit. As per Field (2009) each model was tested for linearity of the logit and all results of these analysis were non-significant. This indicted that the assumption of linearity of the logit was not violated.

The total sample included 663 cases. A further subset of the data formed the basis for much of the statistical testing. The key grouping variable of interest was whether or not participants had engaged in chemsex, 211 participants reported having engaged in chemsex in the last 12 months.

### **Missing Data Implications**

Chi-square analysis was run to explore the differences between those who did answer the key questions and those who did not. Those who did not respond to the question “have you engaged in chemsex in the last 12 months?” were more likely to be bisexual ( $\chi^2 = 16.50, p <.01, n = 661$ ), but showed no significant difference on age ( $\chi^2 = 11.98, p =.06, n = 663$ ), gender ( $\chi^2 = 1.06, p =.59, n = 663$ ), place of birth ( $\chi^2 = 1.75, p =.19, n = 651$ ) or Aboriginal or Torres Strait Islander status ( $\chi^2 = 2.46, p = .48, n = 657$ ) compared to those who did provide a response to the question. Where the  $n$  values fall below 663, respondents did not provide a value for that demographic variable. Those who did not respond to the question “when was your last HIV test?” were more likely to identify as transgender ( $\chi^2 = 8.66, p =.013, n = 661$ ), bisexual ( $\chi^2 = 31.85, p <.01, n = 661$ ), and have been born overseas ( $\chi^2 = 17.85, p <.01, n = 651$ ). They did not differ on age ( $\chi^2 = 2.53, p =.87, n = 663$ ), place of residence ( $\chi^2 = .41, p$

=.82,  $n = 639$ ) or Aboriginal or Torres Strait Islander status ( $\chi^2 = 1.58, p = .66, n = 657$ ). People not reporting their HIV status were more likely to be born overseas ( $\chi^2 = 5.3, p = .02, n = 651$ ), more likely to identify as bisexual ( $\chi^2 = 36.96, p < .01, n = 661$ ) and more likely to identify as transgender ( $\chi^2 = 11.52, p < .01, n = 663$ ). They did not differ on other demographic variables. While the amount of missing data was small, the results must be interpreted in light of the fact that it may be underrepresenting transgender people, people not identifying as gay or homosexual and members of the community who are born overseas.

All hypotheses that use the term “CAI” refer to the variable that asked participants “Have you had condom-less anal sex in the past 12 months with any partners of unknown or serodiscordant status whilst drunk or high?”

### **Differences Between Online Verses Paper Form**

The differences between those who completed the survey online verses those who completed it in paper form were explored. Participants who completed the survey on paper were primarily recruited and had their responses recorded at SOPV's which gives insight into the behaviours of this particular group. Participants completing the paper form were more likely to have had a recent HIV test. The differences between those who completed the survey online verses those who completed it in paper form were explored. Participants who completed the survey in paper were recruited and had their responses recorded at SOPV's. Participants completing the paper form were more likely to have had a recent HIV test ( $\chi^2 = 28.55, p < .01, n = 635$ ), more likely to be older ( $\chi^2 = 43.75, p < .01, n = 663$ ), more likely to be Aboriginal or Torres Strait Islander, ( $\chi^2 = 12.68, p < .01, n = 657$ ), more likely to be born overseas ( $\chi^2 = 4.40, p = .04, n = 651$ ) and more likely to be on PrEP, ( $\chi^2 = 18.83, p < .01, n = 572$ ). There were no difference on sexuality ( $\chi^2 = 6.03, p$

= .30,  $n = 661$ ) or gender ( $\chi^2 = .10$ ,  $p = .61$ ,  $n = 663$ ) and they were not more likely to have engaged in chemsex in the last 12 months ( $\chi^2 = 2$ ,  $p = .10$ ,  $n = 582$ ).

### **Descriptive Analysis of the Data (Hypothesis 1)**

The first aim of this study was to report on current rates of drug use and sexual activity among people who report engaging in chemsex. It was hypothesised that people who did engage in chemsex would be significantly different from those who did not engage in chemsex on key demographic variables, including: sexuality, gender, age, Aboriginal or Torres Strait Islander status, place of birth, place of residence, ethnic background, HIV status, STI rates, reports of CAI, recentness of HIV testing, and PrEP use.

Presented in Table 3 are the descriptive frequencies, totals, means and medians of drug use within the overall sample. Lower means indicate lower levels of substance use. Based on the median and mean scores across all time periods the three most commonly used illicit substances were: alcohol, marijuana and amyl nitrate. The substance with lowest reported usage was heroin. The percentage of participants who did not answer the question are included, this allows for easier comparison across substance type. While it may be possible that participants did not want to report on their drug use, given the anonymity of the study it is more likely that participants reported as missing had not used the substance in the last 12 months. Table 4 provides descriptive frequencies on key sexual health variables within the whole sample. Table 5 provides descriptive frequencies on key sexual health variables within the chemsex subset of the data.

Table 3

*General Drug Use Within the Overall Sample*

	Total	Median/ Mean	Everyday	2-3 times per week	Once per week	Once a month	Once every 3 months	Once every 6 months	Once every 12 months	Missing
Alcohol	81.1% (538)	5/ 5.02	10.7% (71)	24% (159)	21.3% (141)	14% (93)	6% (40)	3% (20)	2.1% (14)	18.9% (125)
Marijuana	34.1% (226)	4/ 4.11	5.9% (39)	5.7% (38)	3% (20)	5.3% (35)	5.1% (34)	3.9% (26)	5.1% (34)	65.9% (437)
Amyl	43.6% (289)	4/4.09	0.9% (6)	10.7% (71)	8% (53)	8.6% (57)	7.1% (47)	3.8% (25)	4.5% (30)	56.4% (374)
Crystal Methamphetamine	17.5% (116)	4/ 3.90	1.4% (9)	2.1% (14)	4.2% (28)	3% (20)	2.4% (16)	1.2% (8)	3.2% (21)	82.5% (547)
Sildenafil (Viagra)	23.8% (158)	4/ 3.80	0.3% (2)	2.4% (16)	6.2% (41)	6.3% (42)	3.3% (22)	2.4% (16)	2.9% (19)	76.2% (505)
Steroids	2.4% (16)	3/ 3.13	0.2% (1)	0% (0)	0.5% (3)	0.5% (3)	0.5% (3)	0.2% (1)	0.8% (5)	97.6% (647)
Heroin	1.8% (12)	3/ 3.08	0.2% (1)	0.2% (1)	0.2% (1)	0.2% (1)	0.5% (3)	0.2% (1)	0.6% (4)	98.2% (651)
Amphetamine (‘Speed’)	12.9% (86)	3/ 3.08	0.9% (6)	1.8% (12)	2.1% (14)	2.1% (14)	1.2% (8)	1.5% (10)	3.3% (22)	89% (590)
GHB	7.5% (50)	3/ 2.86	0% (0)	0.6% (4)	0.9% (6)	1.4% (9)	1.1% (7)	1.2% (8)	2.4% (16)	92.5% (613)
Ecstasy	21.7% (144)	2/ 2.069	0% (0)	0.8% (5)	1.5% (10)	3.6% (24)	3.9% (26)	5% (33)	6.9% (46)	78.3% (519)
Ketamine	4.4% (29)	2/ 2.07	0% (0)	0% (0)	0% (0)	0.6% (4)	1.1% (7)	0.8% (5)	2% (13)	95.6% (634)
Cocaine	10.1% (66)	1/ 2.02	0.2% (1)	0.5% (3)	0.2% (1)	0.6% (4)	1.4% (9)	1.8% (12)	5.4% (36)	90% (597)

N = 663

Table 4

*Sexual Health Data – Whole Sample*

	<i>n</i>	%	Missing
STI acquisition last 12 months			4.4% (29)
Did not acquire an STI	514	77.5%	
Acquired an STI	120	18.1%	
Acquired more than one an STI	37	5.6%	
CAI U/S HIV S* in the last 12 months			14.9% (99)
Yes	182	27.5%	
No	330	49.8%	
Unsure	52	7.8%	
CAI U/S HIV S* while ‘ <i>drunk or high</i> ’			14.6% (97)
Yes	145	21.9%	
No	398	60%	
Unsure	23	3.5%	
Low Risk (PrEP or UVL)	125	18.9%	-
High Risk (No ARVs and CAI)	103	15.5%	13.6%
Engaged in chemsex			12.2% (81)
Yes	211	31.8%	
No	371	56%	

Note. \*= CAI with partners of unknown or serodiscordant HIV status in past 12 months  
N = 663

Table 5

*Sexual Health Data – Chemsex Subset*

	<i>n</i>	%	Missing
Frequency of having chemsex.			2.4% (5)
Daily	1	0.5%	
Weekly	28	13.3%	
Fortnightly	30	14.2%	
Monthly	72	34.1%	
Yearly	75	35.5%	
Receptive CAI during chemsex			0.5% (1)
Yes	126	59.7%	
No	77	36.5%	
Unsure	7	3.3%	
Insertive CAI during chemsex			0.5% (1)
Yes	119	56.4%	
No	87	41.2%	
Unsure	4	1.9%	

N = 211

**Demographic and sexual health differences: Chemsex compared to no chemsex.**

Demographic differences were assessed using chi-square. There were no significant differences between those who did report engaging in chemsex in the last twelve months and those who reported not doing so on these demographic variables: sexuality ( $\chi^2 = 10.11, p = .07, n = 582$ ), gender ( $\chi^2 = 0.57, p = .75, n = 582$ ), age ( $\chi^2 = 24.02, p < .01, n = 582$ ), place of birth ( $\chi^2 = 0.06, p = .80, n = 582$ ) or place of residence ( $\chi^2 = 1.03, p = .60, n = 582$ ).

**Sexual Health and Demographic Differences**

**Chemsex compared to no chemsex.** Those who engaged in chemsex were more likely to be HIV positive ( $\chi^2 = 24.71, p < .01, n = 582$ ) and they were more likely to have contracted an STI in the last 12 months ( $\chi^2 = 12.38, p < .01, n = 580$ ). Those who engage in chemsex are also more likely to be on ARVs ( $\chi^2 = 38.06, p < .01, n = 582$ ). Participants who reported engaging in chemsex also reported having more CAI with serodiscordant or unknown partners both overall ( $\chi^2 = 38.74, p < .01, n = 582$ ) and in the context of being 'drunk or high' for the whole sample ( $\chi^2 = 115.62, p < .01, n = 582$ ), just for people with UVL ( $\chi^2 = 9.44, p < .01, n = 49$ ), just for people on PrEP ( $\chi^2 = 13.09, p < .01, n = 63$ ) and for people not on ARVs ( $\chi^2 = 69.74, p < .01, n = 430$ ).

Those who are not HIV positive (reported as negative or unknown) who do engage in chemsex are more likely to have had a more recent HIV test than those who have not engaged in chemsex in the last 12 months ( $U = 25472.500, p = .02, n = 520$ ). Participants who are either HIV negative or unknown and have had chemsex in the last 12 months, are also more likely to be on PrEP than people who have not had chemsex in the last 12 months ( $\chi^2 = 17.54, p < .001, n = 503$ ).

Of those who are HIV positive, there is no significant differences on viral load between those who do engage in chemsex and those who don't ( $\chi^2 = 0.22$ ,  $p = .47$ ,  $n = 60$ ).

Participants reported on how often they used a number of drugs, ranging from 'once every 12 months' to 'everyday'. Using Mann-Whitney U to compare participants who did and did not engage in chemsex, with the exception of alcohol ( $U = 38314$ ,  $p = .67$ ,  $n = 582$ ), those who did engage in chemsex were significantly more likely to use all listed drugs, as follows: marijuana ( $U = 24404.50$ ,  $p < .01$ ,  $n = 582$ ), Amly Nitrate ( $U = 21626.50$ ,  $p < .01$ ,  $n = 582$ ), Ecstasy ( $U = 26665.50$ ,  $p < .01$ ,  $n = 582$ ), Speed ( $U = 31519.50$ ,  $p < .01$ ,  $n = 582$ ), Crystal Methamphetamine ( $U = 20246.50$ ,  $p < .01$ ,  $n = 582$ ), Sildenafil ( $U = 25921$ ,  $p < .001$ ,  $n = 582$ ), Cocaine ( $U = 32534$ ,  $p < .01$ ,  $n = 582$ ), Ketamine ( $U = 34401$ ,  $p < .01$ ,  $n = 582$ ), GHB ( $U = 30964$ ,  $p < .001$ ,  $n = 582$ ), Heroin ( $U = 37351$ ,  $p = .003$ ,  $n = 582$ ), steroids ( $U = 37579.50$ ,  $p = .02$ ,  $n = 582$ ).

**Demographics of chemsex participants.** Of those who engaged in chemsex 78.7% ( $n = 166$ ) identified as homosexual or gay, 18% ( $n = 38$ ) identified as bisexual and 3.4% ( $n = 7$ ) identified as another sexuality. There was 50 (23.7%) 18-29 year olds, 58 (27.5%) 30-39 year olds, 61 (28.9%) 40-49 year olds, 34 (16.1%) 50-59 year olds and 8 (3.8%) participants over 60 years old. Of those who engaged in chemsex 49.3% ( $n = 104$ ), reported having CAI with partners of unknown or serodiscordant status while drunk or high, a further 6.6% ( $n = 14$ ) were unsure if they had done so. Most participants reported having chemsex yearly (36.4%,  $n = 75$ ) however 35% ( $n = 72$ ) reported having chemsex monthly, 14.2% ( $n = 30$ ) reported having chemsex fortnightly and 13.3% ( $n = 28$ ) reported having chemsex weekly. The majority (42.7%,  $n = 90$ ) of participants reported their chemsex sessions lasted for 1-4 hours



and the median session length was 5-9 hours. Of those who engaged in chemsex 26.6% ( $n = 56$ ) reported having been diagnosed with an STI in the last 12 months.

The following table details the drug use during chemsex of the 211 participants who reported they engaged in chemsex in the last 12 months.

Table 6

*Drugs used during chemsex*

	Always % ( $n$ )	Very often	Often	Sometimes	Never	Missing
Amyl Nitrate	21.8(46)	14.7% (31)	11.4% (24)	24.2% (51)	11.4% (24)	16.6% (35)
Crystal Methamphetamine	16.6% (35)	11.4% (24)	5.2% (11)	14.7% (31)	25.6% (54)	26.5% (56)
Marijuana	10% (21)	10.9% (23)	7.6% (16)	19% (40)	25.6%(54)	27% (57)
Sildenafil	8.5% (18)	13.3% (28)	10% (21)	17.5% (37)	24.2% (51)	26.5% (56)
Alcohol	8.5% (18)	8.5% (18)	10.9% (23)	32.2% (68)	22.3% (47)	17.5% (37)
Ecstasy	1.9% (4)	3.8% (8)	3.3% (7)	27.5% (58)	34.1% (72)	29.4% (62)
Amphetamine	1.9% (4)	3.3% (7)	3.8% (8)	16.6% (35)	39.3% (83)	35.1% (74)
GHB	1.4% (3)	2.8% (6)	4.7% (10)	10.4% (22)	42.7% (90)	37.9% (80)
Cocaine	0% (0)	0.9% (2)	0.5% (1)	7.6% (16)	50.2% (106)	40.8% (86)
Steroids	0% (0)	0.9% (2)	0% (0)	0.9% (2)	55.9% (118)	42.2% (89)
Heroin	0% (0)	0.5% (1)	0.5% (1)	0.5% (1)	57.3% (121)	41.2% (87)
Mephedrone	0% (0)	0% (0)	0.5% (1)	2.8% (6)	55.5% (117)	41.2% (87)

*Note.*  $n =$  for each cell is in brackets

**Correlations**

Presented in Table 7 is the correlations for each of the variables used in the following analyses. Numbers on the horizontal axis correspond to the equivalent numbers and variables on the vertical axis.

Table 7

*Bivariate correlations of variables including alpha levels.*

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. PrEP	1								
2. UVL	-.11**	1							
3. STIs	.27**	.04	1						
4. Chemsex	.15**	.20**	.15**	1					
5. CAI	.22**	.17**	.28**	.46**	1				
6. Length	.10	.27**	.04	-	.32**	1			
7. GHB	.17	.18*	.10	-	.24**	.36**	1		
8. Mephedrone	.13	-.10	.02	-	-.02	.08	.4	1	
9. CM	.06	.30**	.04	-	.32**	.58**	.48**	.04	1

\*  $p < .05$ , \*\*  $p < .01$ ;

Note. CM = Crystal Methamphetamine; Length = Length of sexual session.

### **Data Analysis of the Relationship Between CAI and Various Chemsex Drugs**

#### **(Hypothesis 2)**

It was predicted that one of the key chemsex drugs (crystal methamphetamine, GHB or mephedrone) will have more of an influence on CAI than the others (Hypothesis 2). As such, this analysis only contains data for people who did report engaging in chemsex. The relationships between these variables were best tested using a logistic regression model. The constant was a binary response of, “yes, I engaged in CAI in the last 12 months” or “no, I did not engage in CAI in the last 12 months”. Yes was coded as 1, while no was coded as 0. Participants were asked “how often do you use the following drugs during chemsex?”, and they were able to select multiple drugs and time periods, they may or may not have used each of the drugs together.

A logistic regression analysis was conducted to predict CAI. Reported engagement in CAI was the outcome variable, while the use of crystal methamphetamine, GHB and mephedrone use during chemsex were the predictors. The model before predictors were entered (Step 0, constant only model) is presented in Table 8. A test of the full model against a constant only model was statistically

significant, indicating that the predictors of chemsex and use of crystal methamphetamine, GHB and mephedrone during chemsex are significant predictors of CAI ( $\chi^2 = 13.89, p < .01$  with  $df = 3$ ). A Nagelkerke's  $R^2$  of .16 (-2 Log likelihood = 135.24; Cox & Snell R Square = .12) indicated a moderately strong relationship between prediction and outcome. Prediction success overall was 64.8% (76% for not having engaged in CAI and 55.2% for having engaged in CAI). The Wald criterion of 5.04 demonstrated that crystal methamphetamine usage made a significant contribution to the model ( $p < .01$ ). However, no other predictors were significant. This finding supported Hypothesis 2.

Table 8

*Logistic Regression, Exploration of the relationship between CAI and crystal Methamphetamine, GHB and Mephedrone*

		<i>B</i>	<i>SE</i>	Wald ( $\chi^2$ )	<i>OR</i>	CI lower	CI upper
Step 0	Constant	.15	.19	.59	1.16		
Step 1	Crystal Methamphetamine	.34*	.15	5.0	1.4	1.04	1.87
	GHB	.39	.31	1.61	1.48	.81	2.69
	Mephedrone	-.34	.75	.21	.71	.16	3.10
	Constant	-.86	.88	.95	.43	.16	3.10

\* $p < .05$ , \*\* $p < .01$

Note:  $n = 108$ ;

To judge the odds change for crystal methamphetamine, a follow up logistic regression was run, using crystal methamphetamine as a single predictor. The results are shown in Table 9, they show that a significant Wald (13.51;  $p < .01$ ) was found. The odds ratio of 1.54 indicates that when taking crystal methamphetamine during chemsex, participants were one and a half times more likely to have CAI than when not taking crystal methamphetamine. The regression was highly significant

with a  $p < .01$  and an effect size of .13 (Nagelkerke R square; -2 Log likelihood = 179.60; Cox & Snell R square = .10). Chi-square for the model was 14.97.

Table 9

*Logistic Regression, Exploration of the relationship between CAI and crystal Methamphetamine only*

	<i>B</i>	<i>SE</i>	Wald ( $\chi^2$ )	<i>OR</i>	OR CI lower	OR CI upper
Crystal Methamphetamine	.43**	.12	13.51	1.54	1.23	1.95
Constant	-.85	.34	6.32	.427		

\*\* $p < .01$

Note:  $n = 142$ ;

The analysis was also conducted on the group of participants who were not on PrEP, did not have an undetectable viral load and had not otherwise reported use of any ARVs. This model showed a significant Wald criterion (8.30;  $p < .01$ ). It showed that participants in this group were 1.55 times more likely to engage in CAI during chemsex if they were using crystal methamphetamine. Results are shown below in Table 11. Effect sizes were moderate (-2 Log likelihood = 112.12; Cox & Snell R Square = .10; Nagelkerke R Square = .13). Chi-square for the model was 9.14 ( $df = 1$ ). Due to the small number of cases these results should also be interpreted with caution.

Table 11

*Logistic Regression, Exploration of the relationship between CAI and crystal Methamphetamine only*

	<i>B</i>	Standard Error	Wald ( $\chi^2$ )	<i>OR</i>	CI for Exp (B) lower	CI Exp (B) upper
Crystal Methamphetamine	.44**	.15	8.30	1.55	1.15	2.08
Constant	-1.17**	.41	8.34	.31		

\* $p < .05$ , \*\* $p < .01$

Note:  $n = 88$

If sufficient data were available, a further analysis would have been conducted looking at the relationship between CAI and crystal methamphetamine use for PLWH who had a detectable viral load, however there were only eight participants who had a detectable viral load, meaning that a meaning analysis would not be possible.

### **Length of Chemsex Session and its Effect on CAI (Hypothesis 3)**

In order to test the hypothesis that longer chemsex sessions will increase the likelihood of participants engaging in CAI (Hypothesis 3), a logistic regression was run. In order to use the three levels of the variable, one to four hours, five to nine hours and nine or more hours, two dummy coded variable were created and entered into the model. The constant in addition to the five to nine hours dummy and the nine or more hours dummy were entered into the model. The model before predictors were entered (Step 0, constant only model) is presented in Table 12. A test of the full model against a constant only model was statistically significant, indicating that with each increasing time period, likelihood of CAI increases. A Nagelkerke's  $R^2$  of .13 (-2 Log likelihood = 241.19; Cox & Snell R Square = .10) indicated a moderately strong relationship between prediction and outcome. Prediction success overall was 65.1%, (62.5% for not having engaged in CAI and 67.3% for having engaged in CAI). The Wald criterion for 'more than nine hours' (17.92) makes a significant contribution to the model, as do the Wald criterion associated with 'five to nine hours' (4.38) and the constant (5.38). Sessions of more than nine hours were significant at  $p < .01$ . The constant, which account for sessions of less than five hours, was significant at  $p = .02$  and sessions of five to eight hours were significant at  $p = .04$ . Chi-square for the model was 19.93 ( $df = 2$ ;  $p < .01$ ). These findings supported the hypothesis that increasing chemsex session length would increase CAI.

Table 12

*Logistic Regression, Exploration of the relationship between increasing time intervals and their effect on CAI*

		B	Standard Error	Wald ( $\chi^2$ )	OR	OR CI lower	OR CI upper
Step 0	Constant	.14	.15	.89	1.15		
Step 1	More than nine hours	1.55**	.37	17.92	4.69	2.29	9.59
	Five to nine hours	.81*	.39	4.38	2.26	1.05	4.83
	Constant	-.51*	.22	5.38	.60		

\*p <.05, \*\*p<.01;

Note. n = 189

#### **Condomless Anal Intercourse as an Outcome Variable (Hypothesis 4)**

Due to the protective power of ARVs, it was expected that people engaging in chemsex were more likely to be using ARVs and this would lead to more CAI (Hypothesis 4). In order to test this hypothesis, two logistic models was fitted looking at how CAI varied by UVL, PrEP, chemsex and an interaction term for each test. Each of the main effects were significant however the interaction terms were not. Then a model was fit looking at main effects for each of UVL, On PrEP and chemsex, all of which were significant predictors of CAI, with a moderate effect size (; -2 Log likelihood = 497.42; Cox & Snell R Square = .22; Nagelkerke R Square = .32). Chi-square for the model was 132.15 ( $p < .01$ ;  $df = 3$ ).

Table 13

*Logistic Regression, exploring to contributions to the outcome of CAI*

		B	Standard Error	Wald ( $\chi^2$ )	OR	OR CI lower	OR CI upper
Step 0	Constant	-1.01**	.10	107.74	.37		
Step 1	UVL	.96**	.35	7.73	2.62	1.33	5.17
	On PrEP	1.30**	.31	16.98	3.65	1.97	6.76
	Chemsex	2.03**	.23	80.00	7.58	4.86	11.82
	Constant	-2.24**	.18	154.37	.11		

\* $p < .05$ , \*\* $p < .01$

Note:  $n = 542$

### **Sexually Transmitted Infections as an Outcome (Hypothesis 5)**

It was predicted that chemsex would increase the risk of acquiring non HIV STIs due to the use of ARVs (undetectable or on PrEP) in conjunction with CAI (Hypothesis 5). In order to test this hypothesis, a logistic model was fitted looking at how STI is varied by PrEP and UVL and CAI together, including an interaction term. The main effects were found to be significant ( $p < .01$ ;  $p < .01$ ), with the exception of UVL ( $p = .89$ ), but the interactions were not found to be significant ( $p = .82$ ).

Then a model was fit, looking at how STI varied by on PrEP, UVL and chemsex together including interaction terms. Being on PrEP was a significant predictor ( $p < .01$ ) and chemsex was not a significant predictor ( $p = .06$ ). The interaction terms were not significant ( $p = .33$ ).

Then a model was fit looking at main effects for each of CAI, chemsex and UVL and on PrEP and CAI. On PrEP ( $p < .01$ ) and CAI ( $p < .01$ ) were found to be significant predictors but chemsex ( $p = .81$ ) and UVL ( $p = .35$ ) were not. CAI and chemsex are highly correlated, as shown in Table 7, with a correlation of .46. The analysis with four main effects, two of which are significant are shown in Table 14.

Effect size for the model was moderate (-2 Log likelihood =454.11 ; Cox & Snell R Square = .10; Nagelkerke R Square = .17) with a chi-square of 57.42 ( $df=4$ ).

Table 14

*Logistic regression showing PrEP and CAI making a contribution to the outcome of having acquired an STI.*

	B	Standard Error	Wald ( $\chi^2$ )	OR	OR CI lower	OR CI upper
Step 0 Constant	-1.51**	.11	182.01	.22		
Step 1 Undetectable viral load	.36	.38	.88	1.43	.68	3.04
On PrEP	1.37**	.31	19.95	3.95	2.16	7.21
CAI	1.18**	.28	18.02	3.24	1.88	5.58
Chemsex	.07	.28	.06	1.07	.62	1.84
Constant	-2.22	.18	152.16	.11		

\* $p < .05$ , \*\* $p < .01$

Note:  $n = 540$

## Discussion

The current study has provided a detailed investigation of key behaviours and demographics of MSM who are engaged in sexual activity and drug use (chemsex) within an Australian sample. Australian research on chemsex has been limited and mostly qualitative (Lea et al., 2016; Race, 2015). The current study included a sample of over 650 participants who reported on their engagement in sexual activity and drug use, shedding needed light on the related and harmful behaviours associated with chemsex. First a summary and explanation of the results found in this study are provided, followed by how the study is consistent with and aligns with previous research. Clinical implications are then discussed in detail, given that one of the key aims of the project was to provide useful evidence-based data for QuAC to guide future health promotion and HIV prevention. Strengths and limitations are provided and directions for future research as discussed.



## Summary and Interpretation of Findings

Before discussing the interpretation of the results, it is worth noting the underrepresentation of a number of groups within the sample, as it is pertinent for the implications of the study. The missing data in this study indicated that a number of groups were underrepresented. It is also likely these groups may be underrepresented in other research of this kind (Fish, 2008). People born overseas and MSM who do not identify as ‘gay or homosexual’, including transgender people and bisexuals, were distinct subsets of people who declined to respond to a number of key questions within the survey. This lack of engagement indicates the possibility that these populations are further stigmatised within the community or do not feel that the research applies to them. There is evidence that bisexuals (Schrimshaw, Siegel, Downing, & Parsons, 2013), transgender people (Fabbre, 2017; Poteat, German, & Kerrigan, 2013) and people born overseas (Herrmann et al., 2012), have different experiences as a result of their identities and often face stigma or other barriers both in everyday living but in particular to accessing appropriate health and preventative care.

To outline the initial, drug use statistics; this study’s finding, that the most commonly used substances are alcohol, amyl nitrate and marijuana, are consistent with the most recent GCPS (Lee et al., 2017). The key differences between this study and the GCPS being that the GCPS asked about the previous 6 months while the current study asked by the prior 12 months. The GCPS also uses different recruitment strategies. The current study also specifically recruited drug users which we would expect to increase the participants reporting drug use. The GCPS reported approximately 30% (for each drug) of their sample used marijuana and amyl nitrate in the previous six months. The current study found approximately the same for

marijuana but approximately 43% of the sample using amyl nitrate. It is likely that the subset of the gay community that the current study sampled, is using more amyl nitrate than the community as a whole. Also of note is the high prevalence of alcohol use; though notable, not necessary excessive. The GCPS asked about harmful levels of drinking while the current study reports more general alcohol use meaning they are not comparable. However the ABS reported that statistics collected in 2015 suggest that approximately 85% of Australian men has reported consuming alcohol in the previous 12 months (Australian Bureau of Statistics, 2017), which is more than the 81% found in the present study. The ABS also reported that Australian men (in 2015) reported, on average, two or more standard drinks most days (Australian Bureau of Statistics, 2017). The present study found only 10% of the sample reporting drinking alcohol every day and 24% drinking alcohol '2-3 times per week'. These results would appear to indicate that the MSM in this sample are drinking less alcohol overall than the average for Australian men.

Heroin was the drug with the lowest level of reported use (1.8% of the total sample) which was consistent with the 2016 GCPS (Lee et al., 2017). Assumedly this prevalence rate is due to a lack of access to the drug in Australia (Horyniak et al., 2015), in addition to the much greater accessibility to drugs such as crystal methamphetamine (Usher, Clough, Woods, & Robertson, 2015). High levels of marijuana and amyl nitrate use are also noteworthy and cause for concern. The desired and perceived effects of amyl nitrate (Mullens, Young, Dunne, & Norton, 2011a) and marijuana (Mullens, Young, Dunne, & Norton, 2010) have been previously detailed. For both of these drugs, MSM reported increased sexual pleasure in a number of ways and noted that decision making was impaired with the use of both these drugs. The prevalence of these two drugs within the MSM

community means their use is normalised and, at least for the people using them, the perceived benefits are substantial (Mullens et al., 2009).

One of the main aims of the present study was to identify some of the differences between MSM who reported engaging in chemsex verses those who reported not engaging in chemsex. The fact that there were not significant differences in demographic factors between those who did and did not engage in chemsex, suggest that there are no fixed characteristics that the present study has identified, that have an impact on chemsex behaviour. All of the differences between the two groups relate to behaviour and HIV status and testing behaviour. This has implications for behaviour change, knowing that some of the factors involved in high risk behaviours are likely to be changeable.

In exploring the differences between those who reported engagement in chemsex verses those who did not engage in chemsex, there were significant differences between the two groups on a number of sexual health factors. People engaging in chemsex were more likely to be HIV positive. While causation cannot be established, the majority of the chemsex literature (Hegazi et al., 2017; Schmidt et al., 2016; Stuart, Nwokolo, McOwan, Bracchi, & Boffito, 2015) reports high numbers of HIV positive men engaging in the behaviour. The most likely explanation is that chemsex facilitates many of the risk factors for HIV acquisition in addition to the chemsex population having high rates of HIV, makes acquiring the virus much more likely. Further differences between those who did and did not engage in chemsex, people engaging in chemsex were more likely to have engaged in CAI in the last 12 months. This was true across PLWH who had an UVL, participants on PrEP and participants not on ARVs; and had a large effect size. This suggests that this is a key feature of chemsex regardless of how high or low the risk

of doing so may be. People having chemsex were also more likely to have acquired an STI in the last 12 months. STI outcomes was the most key outcome in this study and will be discussed further. Chemsex participants also had higher rates of overall drug use. However, chemsex participants were also more likely to have had a recent HIV test and more likely to be using PrEP. For HIV positive participants, there was no difference between detectable and undetectable viral load but the sample of people with a detectable viral load was so small that if an effect existed, a larger sample would be required in order to identify it. So overall, people engaging in chemsex are far more likely to have been exposed to sexual health and drug use risks however they are also engaging in high levels of harm minimisation strategies. These results are consistent with much of the qualitative data explored in other studies (Bourne et al., 2014; Knoop et al., 2015). Explanations provided for limited condom use in previous research such as reduced sensation or inconvenience may be applicable (Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2015). Given that frequent testing and the use of ARVs do not have an impact of the enjoyment and gains received from chemsex in the moment, it would appear that men are making informed and rational choices based on accurate information about health risks. That is, they are aware of the risks they are exposing themselves to, are making the choice to continue that engagement, but using harm reduction practices such as regular testing and the use of ARVs. It will be important to harness this feature of the behaviour for best application of harm reduction strategies.

After examining the general patterns within a sample, an analysis was conducted to consider how key chemsex drugs were effecting reports of CAI. It was found that the primary drug of interest was crystal methamphetamine with no significant effects from GHB or mephedrone. This shows that during chemsex,

crystal methamphetamine is the key drug associated with greater reports of CAI. As discussed in previous literature (Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2015; Mullens et al., 2009) disinhibition is one of the desired outcomes of substance use during sexual activity and the guilt or fear often associated with CAI may dissipate as a result of crystal methamphetamine. The fact that neither GHB or mephedrone contributed to CAI is likely an artifact of accessibility and the fact that these drugs are much less common in Australia than crystal methamphetamine (Degenhardt & Dunn, 2008; Degenhardt et al., 2017; Ness & Payne, 2011).

Results from Hypothesis 3, exploring the relationships between CAI and length of chemsex session showed that, increase in length of chemsex session, increased the likelihood of engaging in CAI. While the majority of participants in the current study were not having chemsex sessions for more than 9 hours, there were a few who reported sessions of up to 48 hours. Bourne et al. (2014) reported MSM having chemsex sessions of up to three or four days long. In the present study the focus was on CAI, however, there is also concern around how extended sessions may interfere with medication schedules for people on ARVs. Missing one or two doses of either PrEP or HIV treatment medications has the potential to result in a detectable (and therefore transmittable) viral load (Genberg et al., 2012) or sero-conversion in someone who was previously HIV negative (McCormack et al., 2016). While this risk is relatively small, it is an important consideration if ARVs are being used as a risk reduction strategy for participants. In addition to these risks, longer sexual sessions have significant physical health risks relating to tissue damage of sexual organs, which in turn increases the risks of HIV and STI transmission (Urbanus et al., 2009). As will be further detailed, CAI was shown to be a significant predictor of

STIs, so long sessions have both primary harms as well as secondary harms. Many of which may be reduced by engaging in shorter sessions. While MSM may be aware that longer sessions with substantial drug use have physical harms like tissue damage, more time needed to recover and fatigue, they may not be aware that longer sessions have an impact on their likelihood of engaging in CAI. These results suggest that while health promotion and education have been highly effective in some areas of sexual health for MSM, further and more specific messages may be needed. Education around the positives of having shorter sessions and use of lubricants may be beneficial. Additionally, targeting the messages around the efficacy of HIV prevention with PrEP and UVL to this population specifically. Some participants in the current study's sample may already be engaging in these strategies and they should be further encouraged, in addition to attempting to normalise short sessions and PrEP and lubricant use. These kind of positive messages are likely to be more effective than adding another message telling MSM that the kind of sex they are having is harmful or dangerous.

While ARVs have been shown to be effective at drastically reducing the transmission risks associated with HIV, CAI continues to be a source of other STI and BBV transmission. The next hypothesis explored some of the possible contributors to CAI. Based on the idea that PrEP is a new tool in the battle against HIV and recent research (Vernazza & Bernard, 2016) and in turn, recent public health campaigns (Prevention Access Campaign, 2016), have found that an undetectable viral load means the HIV infection is untransmittable; the focus has shifted slightly onto the secondary harms. These secondary harms explore the idea that people in the sample who were are lower risk for HIV acquisition or transmission (on PrEP or UVL) were putting themselves at the mercy of other risks

by having CAI (Kojima, Davey, & Klausner, 2016). In addition to this, the current study was interested in any effect that chemsex contributes to CAI. As was reported, all three of these variables make a significant contribution to the outcome of CAI. As such, the concerns around secondary harms are validated by this result.

ARVs decrease the likelihood of acquiring or transmitting HIV and while these risks are different, the protective mechanisms (the use of ARVs) are similar enough that it may result in similar behaviours. The present study has found that both PrEP and having an UVL contribute to the outcome of CAI. As previously discussed, ARVs mean that people now fear HIV less (Van de Ven et al., 2002) and evidence suggests that other risks associated with high risk sex are perceived as less severe (Bourne et al., 2014). This would appear to be an explanation for the also increased rates of STIs within the chemsex sample.

The final hypothesis explored the idea that participants using ARVs were more likely to be engaging in CAI and therefore likely to be acquiring more STIs. It was established with the testing of hypothesis 4 that people using ARVs and people having chemsex are having more CAI while drunk or high, the final hypothesis of this study showed that this is not translating directly into an increase in STIs. The results of the final hypothesis showed that the use of PrEP and having chemsex significantly contribute to the outcome of STIs but chemsex and UVL do not. However in hypothesis 4 the results concluded that chemsex, UVL and PrEP all contribute to CAI. The conclusion from these two results is that all of the effect of chemsex on STIs is being absorbed by the CAI variable. So chemsex has an effect on CAI which has an effect on STIs but chemsex does not have a direct effect on STIs. The implication of this result is that, chemsex, while a concern from a substance use perspective, is not as much of a concern from a sexual health perspective as the

behaviour of CAI specifically. McCormack et al. (2016) reported that in one of the major PrEP studies there was no increase in the number of STIs reported with the use of PrEP. While it is true that the people most at risk of HIV (and in turn, other STIs) are the ones most likely to be using PrEP, the current study would indicate that MSM who are using PrEP are getting STIs at an increased rate over those who are not on PrEP. This result should be interpreted with caution as it may be a reflection that the most at risk group is most likely to be using PrEP, rather than assuming that PrEP is causing more CAI. Interestingly, for people who were HIV positive with UVL, having an UVL is not a factor contributing to the acquisition of STIs. While in some ways these people are at a similar level of risk as people using PrEP, an HIV diagnosis clearly has an impact on their behaviours and therefore isn't translating into an increase level of STI reports. Much of the qualitative responses cited by Bourne et al. (2014) indicated that HIV positive men tended to be more careless with condom use however the present study would indicate otherwise.

### **Theoretical and Practical Implications**

The National Drug and Alcohol Strategy 2016-2025 report has highlighted the substantial need for intervention within the LGBTIQ population. They note that while best practice approaches are not well defined, strategies that engage the community through peer and community based programs, that are able to target specific LGBTIQ issues such as discrimination and bullying, are most likely to be successful. The report also notes that health staff who are well informed regarding the issues affecting the community are most likely to be effective in delivering effective drug and alcohol interventions (Intergovernmental Committee on Drugs, 2015; Mullens et al., 2017). In light of this, local LGBTIQ organisations, including, but not limited to QuAC could consider some targeted drug harm reduction work,



particularly in relation to crystal methamphetamine. Given the current study's results in regard to methamphetamine, the group most likely to benefit from such interventions would be people who are not currently taking ARVs, however the results show that anything increasing CAI (which crystal methamphetamine is associated with) is associated with more STIs, therefore anyone using crystal methamphetamine should be targeted for appropriate LGBTI intervention. In terms of drug use, GHB and mephedrone were found to be of little concern in the current study and as per the most recent GCPS, focussing on the high levels of marijuana and amyl nitrate use in the community at large, is likely to be the best use of resources.

While not unexpected, the result that people using PrEP are more likely to be having CAI and more likely to have acquired an STI in significant cause for concern. Early research (McCormack et al., 2016) hoped that only people already at high risk (not using condoms anyways) would take up PrEP and be protected against HIV and other PrEP users would use PrEP in addition to their existing barrier methods. This may still be the case and the current study's results would indicate that it likely is. Given that overall reports of STIs were higher in the current study (approximately 18%) than in previous GCPS's, which have remained stable at around 12% for the last four years. People with an UVL, in the current study, were more likely to have CAI however this did not translate into increased risk of STIs. This may be because the variance was accounted for by some of the other variables, such as monogamy, or may be that there were not enough participants in this group to detect any effect. Regardless, one of the important factors when working with people who are HIV positive is not only the STI risks associated with CAI but the possibility of HIV co-infection or superinfection (Blackard, Cohen, & Mayer, 2002). This occurs when a

person acquires two differing strains of the HIV virus. This is of particular concern for people with a detectable viral load or people with sub-optimal ARV adherence (Redd et al., 2013). While it's important for health staff to be aware of all the possible risks of co-infection, as well as the risks associated with drug resistance, from the point of view of risk reduction it's probably not helpful for all MSM to be aware of *all* the risks. This is likely to become overwhelming and the risks may be interpreted as either smaller or greater than they actually are. These possible misinterpretations have the potential to cause more harm than encouraging a 'use condoms, if and when you can' message, particularly for this population, who are at higher risk than the population of MSM who engage in less extreme, less frequent CAI and drug use.

In thinking about the implications of these results for clinical practice, it is worth noting some of the areas in which interventions may be most effective. While the current study did not find any demographic factors associated with chemsex engagement, personality factors have previously been explored as a factor likely to influence high risk behaviours (Ersche, Turton, Pradhan, Bullmore, & Robbins, 2010; Zuckerman & Kuhlman, 2000). In addition, sexual activity has also been the subject of research on the personality trait of sensation seeking. In fact, this phenomenon has been studied within gay male populations looking to classify some of the relationships between gay male substance use and sexual activity (Dolezal, Meyer-Bahlburg, Remien, & Eva Petkova, 1997). While not practical to administer personality assessment for every one-on-one sexual health consultation, it is a factor that clinicians should be aware of on an individual level as well as on a group level. Personality traits may influence the interaction with social norms and an individual's influence on the group, it may also influence how a person interprets health

promotion messages. When considering the personal and personality factors potentiality contributing to chemsex, it is worth taking a brief look at the psychological interventions often used to encourage safer practices. Motivational interviewing, which is based on the Stages of Change Model, is often used to increase motivation to engage in health enhancing behaviours (Shernoff, 2006; Stuart, 2013). Motivational interviewing involves “directive, client centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence” (Rubak, Sandbæk, Lauritzen, & Christensen, 2005, p. 305, p.305). It has been used as a technique for increasing change behaviours in clients since its inception in 1983. Rubak et al. (2005) report a range of effectiveness from 46% to 80% depending on the behaviour under consideration and the patient population. While motivational interviewing has been used in this sector for a long time (Berg, Ross, & Tikkanen, 2011), it is worth considering how this kind of psychotherapy can be applied to chemsex behaviour specifically. While individual level intervention is helpful, targeting behaviour at a group level has a long history of success and is captured in a number of health behaviour models (Armitage & Conner, 2000; Merzel & D’Afflitti, 2003).

However there is a distinct difference between health promotion, which tends to be broader, and attempting to change social or group norms. Sometimes this change can be facilitated by peer educators/health promoters, which is a method that has experienced significant success within the LGBTIQ community. A number of previous LGBTIQ campaigns have focused on the message of ‘keep your mates safe’ and targeted the idea of health behaviours for the greater good, which is applicable to HIV and STI transmission particularly but is also applicable to substance use in a chemsex context. The approach of targeting all avenues with both individual

intervention as well as addressing some of the normative subculture of chemsex, are likely to garner the best results in terms of harm minimisation. As discussed, the current study and its health promotion recommendations are supported and informed by a number of theoretical models of health behaviour. Of particular relevance in targeting normative social behaviour's is social cognitive theory, which has a long history of theoretically supporting health promotion that targets change of group behavioural norms (Bandura, 2004).

### **Strengths, Limitations and Future Directions**

The current study had a number of strengths, the most significant of which was that the project was specifically requested by a grass roots community health organisation who wanted to better inform their practice. As a result, they had strong motivation to be heavily involved in the project. This resulted in strong community engagement and a sizable sample of over 650 participants surveyed in a three month period. This means health promotion staff are invested in the results and are committed to developing targeted health promotion interventions based on the results of this study. This research also contributes to an emerging body of literature on chemsex in Australia and the impacts of it on a marginalised group within our society. This aligns with one of the aims of the National Drug Strategy 2016-2015 to target and collaborate with the LGBTIQ community to improve rates and negative consequences of substance use within the LGBTIQ community (Intergovernmental Committee on Drugs, 2015). In addition to contributing to the body of research on chemsex specifically, the current study has further identified and specified the need for LGBTIQ specific substance use interventions. While Australian research has indicated that most substance use support services in Australia have positive and constructive attitudes to the LGBTI community (Mullens et al., 2017), Bourne et al.

(2014) specified that many chemsex participants had a strong preference for accessing substance use support services in the context of sexual health because there was more knowledge and less judgement around their same-sex sexual behaviours. The current study is one of the first to look at chemsex in Australia with a quantitative methodology. To the knowledge of the author, it is the first quantitative chemsex study in Australia. This bolsters the results and gives them additional credibility from a prevalence and objectivity perspective.

The main limitations of this study relate to the sampled population. Data was primarily collected by QuAC staff and volunteers at the QuAC office and at local venues. While online advertising was effective, overall the sample was heavily biased to the inner city centre of Brisbane, which has a very high population of gay and other MSM. So while this study provides good representation to this group, more marginalised, potentially disenfranchised, rural, and other underrepresented groups, are not necessarily represented in this study. In addition, other major centres in Queensland such as Cairns and Townsville were not heavily represented in this study either. Future research and intervention should aim to target these populations as they have a tendency to be under represented in research and underserved by community specific health care providers. Another limitation of note is that the current study did not collect any event level data. Event level data can be helpful in eliciting information about specific behaviours and can be more accurate than retrospective reporting (Stephoe, 2010). Future chemsex research using event level data may help understand some of the more specific aspects of chemsex behaviour. There are a number of additional areas that this study touched on but did not directly investigate. While PrEP is still in its trial phase throughout Australia, data on episodic use of PrEP and the relationship between PrEP use and STIs has not been

thoroughly investigated. There are still questions around PrEP's contribution to STI rates and if MSM who previously would have protected themselves against both HIV and other STIs are now only protecting themselves against HIV. This would be a valuable piece of information from a health promotion perspective, particularly for chemsex. Episodic use of PrEP is also emerging as an area for investigation. Big LGBTIQ events such as Mari Gras and Big Gay Day have always been associated with parties involving a lot of sexual activity. Investigations around the efficacy of short term PrEP use for these events is likely to shed light on additional ways MSM might be able to protect themselves from HIV (Elsesser et al., 2016). The current study did not address how engagement and connection to the LGBTIQ community impacts on participation in chemsex. Engagement with the community has been shown to have positive outcomes for mental health (Ramirez-Valles, 2002) and it may have an influence both on the behaviour of chemsex, in addition to levels of engagement in harm minimisation tools.

### **Summary and Conclusion**

The current study has explored chemsex in Australia using a quantitative design to shed much needed light on this emerging public health concern. MSM continue to be marginalised and represent the vast majority of new HIV infections in Australia. Research that helps to identify some of the determinates of these new infections as well as other harms associated of drug use and high risk sexual activity, are important in order to develop effective health promotion programs and interventions. The studies' findings included: that crystal methamphetamine use during chemsex is associated with an increase in CAI. That increase in chemsex sexual session length increases the association with CAI. That chemsex, PrEP use and UVL all have an association with an increase in CAI, and finally that CAI and

PrEP use are associated with more reports of STI diagnosis. It is hoped that this research is able to make a positive contribution both to public health outcomes for a marginalised group, both in terms of implementation and possibly funding of public health interventions. As well as contribute to the academic body of work on MSM and their health outcomes.

## References

- Ahmed, A., Weatherburn, P., Reid, D., Hickson, F., Torres-Rueda, S., Steinberg, P., & Bourne, A. (2016). Social norms related to combining drugs and sex ("chemsex") among gay men in South London. *International Journal of Drug Policy*, 38, 29-35. doi:10.1016/j.drugpo.2016.10.007
- Albarracín, D., Gillette, J., Earl, A., Glasman, L., Durantini, M., & Ho, M. (2005). A test of major assumptions about behavior change: a comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychology Bulletin*, 131(6), 856-897. doi:10.1037/0033-2909.131.6.856
- Amaro, R. (2016). Taking Chances for Love? Reflections on Love, Risk, and Harm Reduction in a Gay Slamming Subculture. *Contemporary Drug Problems*, 43(3), 216-227. doi:10.1177/0091450916658295
- Anderson, P., Glidden, D., Liu, A., Buchbinder, S., Lama, J., Guanira, J., . . . Grant, R. (2012). Emtricitabine-Tenofovir Concentrations and Pre-Exposure Prophylaxis Efficacy in Men Who Have Sex with Men. *Science Translational Medicine*, 4(151).
- Andrei, G., Lisco, A., Vanpouille, C., Introini, A., Balestra, E., van den Oord, J., . . . Balzarini, J. (2011). Topical tenofovir, a microbicide effective against HIV, inhibits herpes simplex virus-2 replication. *Cell Host Microbe*, 10(4), 379-389. doi:10.1016/j.chom.2011.08.015
- Armitage, C., & Conner, M. (2000). Social cognition models and health behaviour: A structured review. *Psychology & Health*, 15(2), 173-189. doi:10.1080/08870440008400299



- Attia, S., Egger, M., Muller, M., Zwahlen, M., & Low, N. (2009). Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. *AIDS*, 23(11), 1397-1404. doi:10.1097/QAD.0b013e32832b7dca
- Australian Bureau of Statistics. (2013). Australian Social Trends. Retrieved from <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features10July+2013>
- Australian Bureau of Statistics. (2017). Alcohol Consumption. Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4364.0.55.001~2014-15~Main%20Features~Alcohol%20consumption~25>
- Australian Federation of AIDS Organisations. (2017). HIV Prevention. Retrieved from <https://www.afao.org.au/about-hiv/hiv-prevention/prep/>
- Australian Institute of Health and Welfare. (2011). *2010 National Drug Strategy Household Survey report*. Drug Statistics Series.
- Australian Institute of Health and Welfare. (2016). Determinants of Health. Retrieved from <http://www.aihw.gov.au/australias-health/2016/determinants/>
- Ayala, G., Makofane, K., Santos, G. M., Beck, J., Do, T. D., Hebert, P., . . . Arreola, S. (2013). Access to Basic HIV-Related Services and PrEP Acceptability among Men Who Have sex with Men Worldwide: Barriers, Facilitators, and Implications for Combination Prevention. *Journal of Sexually Transmitted Diseases*, 2013, 1-11. doi:10.1155/2013/953123
- Baggaley, R., White, R., & Boily, M. (2010). HIV transmission risk through anal intercourse: systematic review, meta-analysis and implications for HIV prevention. *International Journal of Epidemiology*, 39(4), 1048-1063. doi:10.1093/ije/dyq057

- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology & Health, 13*(4), 623-649.  
doi:10.1080/08870449808407422
- Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior, 31*(2), 143-164. doi:10.1177/1090198104263660
- Berg, R., Ross, M., & Tikkanen, R. (2011). The effectiveness of MI4MSM: How useful is motivational interviewing as an HIV risk prevention program for men who have sex with men? A systematic review. *AIDS Education and Prevention, 23*(6), 533-549.
- Beyrer, C., Sherman, S., & Baral, S. (2009). Harm reduction, human rights and public health. In K. Mayer & H. Pizer (Eds.), *HIV Prevention* (pp. 499-523). London: Elsevier Science & Technology.
- Blackard, J., Cohen, D., & Mayer, K. (2002). Human Immunodeficiency Virus Superinfection and Recombination: Current State of Knowledge and Potential Clinical Consequences. *Clinical Infectious Diseases, 34*, 1108–1114.
- Blosnich, J., Lee, J., & Horn, K. (2013). A systematic review of the aetiology of tobacco disparities for sexual minorities. *Tobacco Control, 22*(2), 66-73.  
doi:10.1136/tobaccocontrol-2011-050181
- Bourne, A., Reid, D., Hickson, F., Torres-Rueda, S., Steinberg, P., & Weatherburn, P. (2015). "Chemsex" and harm reduction need among gay men in South London. *International Journal of Drug Policy, 26*(12), 1171-1176.  
doi:10.1016/j.drugpo.2015.07.013
- Bourne, A., Reid, D., Hickson, F., Torres-Rueda, S., & Weatherburn, P. (2014). *The Chemsex Study: drug use in sexual settings among gay and bisexual men in*

*Lambeth, Southwark & Lewisham*. Sigma Research: London School of Hygiene & Tropical Medicine.

- Bourne, A., Reid, D., Hickson, F., Torres-Rueda, S., & Weatherburn, P. (2015). Illicit drug use in sexual settings ('chemsex') and HIV/STI transmission risk behaviour among gay men in South London: findings from a qualitative study. *Sexually Transmitted Infections*, 91(8), 564-568. doi:10.1136/sextrans-2015-052052
- Bourne, A., & Weatherburn, P. (2017). Substance use among men who have sex with men: patterns, motivation, impacts and intervention development need. *Sexually Transmitted Infections*, 1-5.
- British HIV Association. (2008). UK National Guidelines for HIV Testing 2008. British Association of Sexual Health and HIV British Infection Society.
- Buchbinder, S., Vittinghoff, E., Heagerty, P., Celum, C., Seage, G., Judson, F., . . . Koblin, B. (2005). Sexual risk, nitrite inhalant use, and lack of circumcision associated with HIV seroconversion in men who have sex with men in the United States. *Journal of Acquired Immune Deficiency Syndromes*, 39(1), 82-89.
- Burnett, A. L., & Bivalacqua, T. J. (2007). Priapism: current principles and practice. *Urologic Clinics of North America*, 34(4), 631-642. doi:10.1016/j.ucl.2007.08.006
- Center for Disease Control and Prevention. (2014). *Preexposure Prophylaxis for the prevention of HIV Infection in the United States - 2014*.
- Chesney, M., Morin, M., & Sherr, L. (2000). Adherence to HIV combination therapy. *Social Science & Medicine*, 50, 1599-1605.

- Chow, E., Gamagedara, N., Bellhouse, C., & Fairley, C. (2015). HIV Notification “Rate”: A More Accurate and Useful Indicator to Measure the HIV Epidemic. *Journal of Acquired Immunodeficiency Syndrome*, 70(2).
- Cole, C., Jones, L., McVeigh, J., Kicman, A., Syed, Q., & Bellis, M. (2011). Adulterants in illicit drugs: a review of empirical evidence. *Drug Testing and Analysis*, 3(2), 89-96. doi:10.1002/dta.220
- Colfax, G., & Guzman, R. (2006). Club Drugs and HIV Infection: A Review. *HIV/AIDS*, 42, 1463-1469.
- Connor, J., Gullo, M., White, A., & Kelly, A. (2014). Polysubstance use: diagnostic challenges, patterns of use and health. *Current Opinion in Psychiatry*, 27(4), 269-275. doi:10.1097/YCO.0000000000000069
- Cowdery, N. (2017) *Drug Law Reform: An Interview with Former NSW DPP Nicholas Cowdery/Interviewer: P. Gregoire*. Sydney Criminal Lawyers, Australian Drug Law Reform Foundation.
- Crepaz, N., Hart, T., & Marks, G. (2004). Highly active antiretroviral therapy and sexual risk behavior: A meta-analytic review. *Journal of the American Medical Association*, 292(2), 224-236. doi:10.1001/jama.292.2.224
- Crosby, R., & Diclemente, R. J. (2004). Use of recreational Viagra among men having sex with men. *Sexually Transmitted Infections*, 80(6), 466-468. doi:10.1136/sti.2004.010496
- Cuthbert, J. A. (2001). Hepatitis A: old and new. *Clinical Microbiology Reviews*, 14(1), 38-58. doi:10.1128/CMR.14.1.38-58.2001
- Daskalopoulou, M., Rodger, A., Phillips, A., Sherr, L., Speakman, A., Collins, S., . . . Lampe, F. (2014). Recreational drug use, polydrug use, and sexual behaviour in HIV-diagnosed men who have sex with men in the UK: results

from the cross-sectional ASTRA study. *The Lancet HIV*, 1(1), e22-e31.

doi:10.1016/s2352-3018(14)70001-3

Deeks, S., Lewin, S., & Havlir, D. (2013). The end of AIDS: HIV infection as a chronic disease. *The Lancet*, 382(9903), 1525-1533. doi:10.1016/s0140-6736(13)61809-7

DeFilippis, J. (2016). "What About the Rest of Us?" An Overview of LGBT Poverty Issues and a Call to Action. *Journal of Progressive Human Services*, 27(3), 143-174. doi:10.1080/10428232.2016.1198673

Degenhardt, L., & Dunn, M. (2008). The epidemiology of GHB and ketamine use in an Australian household survey. *International Journal of Drug Policy*, 19(4), 311-316. doi:10.1016/j.drugpo.2007.08.007

Degenhardt, L., & Hall, W. (2012). Extent of illicit drug use and dependence, and their contribution to the global burden of disease. *The Lancet*, 379, 55-70. doi:10.1016/s0140-6736(11)61138-0

Degenhardt, L., Sara, G., McKetin, R., Roxburgh, A., Dobbins, T., Farrell, M., . . . Hall, W. (2017). Crystalline methamphetamine use and methamphetamine-related harms in Australia. *Drug and Alcohol Review*, 36(2), 160-170. doi:10.1111/dar.12426

Dentato, M., Halkitis, P., & Orwat, J. (2013). Minority Stress Theory: An Examination of Factors Surrounding Sexual Risk Behavior among Gay & Bisexual Men Who Use Club Drugs. *Journal of Gay and Lesbian Social Service*, 25(4). doi:10.1080/10538720.2013.829395

Dolezal, C., Meyer-Bahlburg, H., Remien, R., & Eva Petkova, E. (1997). Substance Use During Sex and Sensation Seeking as Predictors of Sexual Risk Behavior Among HIV+ and HIV- Gay Men. *AIDS and Behavior*, 1(1).

- Eholie, S., Badje, A., Kouame, G., N'Takpe, J., Moh, R., Danel, C., & Anglaret, X. (2016). Antiretroviral treatment regardless of CD4 count: the universal answer to a contextual question. *AIDS Research and Therapy*, *13*, 27. doi:10.1186/s12981-016-0111-1
- Ellis, R., Childers, M., Cherner, M., & The HIV Neurobehavioral Research Center Group. (2003). Increased Human Immunodeficiency Virus Loads in Active Methamphetamine Users Are Explained by Reduced Effectiveness of Antiretroviral Therapy. *The Journal of Infectious Diseases*, *188*(12).
- Elsesser, S., Oldenburg, C., Biello, K., Mimiaga, M., Safren, S., Egan, J., . . . Mayer, K. (2016). Seasons of Risk: Anticipated Behavior on Vacation and Interest in Episodic Antiretroviral Pre-exposure Prophylaxis (PrEP) Among a Large National Sample of U.S. Men Who have Sex with Men (MSM). *AIDS and Behavior*, *20*(7), 1400-1407. doi:10.1007/s10461-015-1238-0
- Engel, G. (1977). The Need for a New Medical Model: A Challenge for Biomedicine. *Science*, *196*(4286), 129-136.
- Engel, G. (1980). The clinical application of of the biopsychosocial model. *The American Journal of Psychiatry*, *137*(5), 535-544.
- Ersche, K., Turton, A., Pradhan, S., Bullmore, E., & Robbins, T. (2010). Drug addiction endophenotypes: impulsive versus sensation-seeking personality traits. *Biological Psychiatry*, *68*(8), 770-773. doi:10.1016/j.biopsych.2010.06.015
- Fabbre, V. (2017). Agency and Social Forces in the Life Course: The Case of Gender Transitions in Later Life. *The Journals of Gerontology: Social Sciences*, *72*(3), 479-487. doi:10.1093/geronb/gbw109

- Field, A. (2009). *Discovering Statistics Using SPSS* (Third ed.). London: SAGE Publications.
- Fish, J. (2008). Navigating queer street: Researching the intersections of lesbian, gay, bisexual and trans (LGBT) identities in health research. *Sociological research online, 13*(1).
- Friedman, H., & Silver, R. (2007). *Foundations of Health Psychology*. New York, New York: Oxford University Press.
- Friedman, M., Dodge, B., Schick, V., Herbenick, D., Hubach, R., Bowling, J., . . . Reece, M. (2014). From bias to bisexual health disparities: Attitudes toward bisexual men and women in the United States. *LGBT Health, 1*(4), 309–318.
- Garfein, R., Doherty, M., Monterroso, E., Thomas, D., Nelson, K., & Vlahov, D. (1998). Prevalence and Incidence of Hepatitis C virus infection among young adult injection drug users. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology, 18* (Suppl 1), s11-s19.
- Genberg, B., Wilson, I., Bangsberg, D., Arnsten, J., Goggin, K., Remien, R., . . . Investigators, M. (2012). Patterns of antiretroviral therapy adherence and impact on HIV RNA among patients in North America. *AIDS, 26*(11), 1415-1423. doi:10.1097/QAD.0b013e328354bed6
- Golub, S., Tomassilli, J., & Parsons, J. (2009). Partner serostatus and disclosure stigma: implications for physical and mental health outcomes among HIV-positive adults. *AIDS and Behaviour, 13*(6), 1233-1240. doi:10.1007/s10461-008-9466-1
- Green, E. (1999). *Indigenous theories of contagious disease*. Walnut Creek, CA: AltaMira Press.

- Green, K., & Feinstein, B. (2012). Substance use in lesbian, gay, and bisexual populations: an update on empirical research and implications for treatment. *Psychology of Addictive Behaviors, 26*(2), 265-278. doi:10.1037/a0025424
- Halkitis, P., Parsons, J., & Stirratt, M. (2001). A double epidemic: crystal methamphetamine drug use in relation to HIV transmission among gay men. *Journal of Homosexuality, 41*(2), 17-35. doi:10.1300/J082v41n02\_02
- Hardesty, M., Cao, D., Shin, H., Andrews, C., & Marsh, J. (2012). Social and Health Service Use and Treatment Outcomes for Sexual Minorities in a National Sample of Substance Abuse Treatment Programs. *Journal of Gay & Lesbian Social Services, 24*(2), 97-118. doi:10.1080/10538720.2012.669669
- Hegazi, A., Lee, M., Whittaker, W., Green, S., Simms, R., Cutts, R., . . . Pakianathan, M. (2017). Chemsex and the city: sexualised substance use in gay bisexual and other men who have sex with men attending sexual health clinics. *International Journal of STD and AIDS, 28*(4), 362-366. doi:10.1177/0956462416651229
- Heijman, T., Zuure, F., Stolte, I., & Davidovich, U. (2017). Motives and barriers to safer sex and regular STI testing among MSM soon after HIV diagnosis. *BMC Infectious Diseases, 17*(1), 194. doi:10.1186/s12879-017-2277-0
- Hepatitis Australia. (2015). FAQs about the new hepatitis C medicines and the March 2016 PBS listing. Retrieved from <http://www.hepatitisaustralia.com/newsarticles/faqs-about-the-new-hepatitis-c-medicines-and-the-pbs-listing/22/12/2015>
- Hepatitis Australia. (2017). Hepatitis B. Retrieved from <http://www.hepatitisaustralia.com/hepatitis-b/>



- Herek, G. M., & Garnets, L. D. (2007). Sexual orientation and mental health. *Annual Review of Clinical Psychology, 3*, 353-375.  
doi:10.1146/annurev.clinpsy.3.022806.091510
- Herrmann, S., Wardrop, J., John, M., Gaudieri, S., Lucas, M., Mallal, S., & Nolan, D. (2012). The impact of visa status and Medicare eligibility on people diagnosed with HIV in Western Australia: a qualitative report. *Sexual Health, 9*(5), 407-413. doi:10.1071/SH11181
- Hickson, F., Reid, D., Hammond, G., & Weatherburn, P. (2016). State of Play: findings from the England Gay Men's Sex Survey 2014. London: Sigma Research, London School of Hygiene & Tropical Medicine, .
- Hogg, R., Lima, V., Sterne, J., Grabar, S., Battegay, M., Bonarek, M., . . . May, M. (2008). Life expectancy of individuals on combination antiretroviral therapy in high-income countries: a collaborative analysis of 14 cohort studies. *The Lancet, 372*(9635), 293-299. doi:10.1016/s0140-6736(08)61113-7
- Holmes, K., Levine, R., & Weaver, M. (2004). Effectiveness of condoms in preventing sexually transmitted infections. *Bulletin of the World Health Organization, 82*(6), 454-461.
- Holt, M. (2017). Progress and Challenges in Ending HIV and AIDS in Australia. *AIDS Behaviours, 21*(2), 331-334. doi:10.1007/s10461-016-1642-0
- Holt, R., Court, P., Vedhara, K., Nott, K., Holmes, J., & Snow, M. (1998). The role of disclosure in coping with HIV infection. *AIDS CARE, 10*(1), 49-60.  
doi:10.1080/09540129850124578
- Hopwood, M., Lea, T., & Aggleton, P. (2015). Drug, sex and sociality: factors associated with the recent sharing of injecting equipment among gay and

bisexual men in Australia. *International Journal of Drug Policy*, 26(2), 210-213. doi:10.1016/j.drugpo.2014.10.013

Horyniak, D., Stoove, M., Degenhardt, L., Aitken, C., Kerr, T., & Dietze, P. (2015). How do drug market changes affect characteristics of injecting initiation and subsequent patterns of drug use? Findings from a cohort of regular heroin and methamphetamine injectors in Melbourne, Australia. *International Journal of Drug Policy*, 26(1), 43-50. doi:10.1016/j.drugpo.2014.09.002

Hughes, T., & Eliason, M. (2002a). Substance Use and Abuse in Lesbian, Gay, Bisexual and Transgender Populations. *The Journal of Primary Prevention*, 22(3).

Hughes, T., & Eliason, M. (2002b). Substance Use and Abuse in Lesbian, Gay, Bisexual and Transgender Populations. *The Journal of Primary Prevention*, 22(3), 263-298.

Hurley, M., & Prestage, G. (2009). Intensive sex partying amongst gay men in Sydney. *Culture, Health and Sexuality*, 11(6), 597-610.  
doi:10.1080/13691050902721853

Immunise Australia Program. (2017). Human Papillomavirus (HPV). Retrieved from  
<http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/immunise-hpv>

Intergovernmental Committee on Drugs. (2015). National Drug Strategy 2016-2025  
*Draft: For public consultation.*

Joint United Nations Programme on HIV/AIDS, U. (2015). *Understanding FastTrack: Accelerating action to end the AIDS epidemic by 2030*. Geneva, Switzerland.

- King, M., Semlyen, J., Tai, S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry*, 8, 70. doi:10.1186/1471-244X-8-70
- Knoops, L., Bakker, I., Bodegom, R., & Zantkuijl, P. (2015). Tina and Slamming: SMS, Crystal Meth and Intravenous drug use in a sexual setting. Amsterdam, Mainline, Soa Aids Netherlands.
- Kojima, N., Davey, D., & Klausner, J. (2016). Pre-exposure prophylaxis for HIV infection and new sexually transmitted infections among men who have sex with men. *AIDS*, 30(14), 2251-2252. doi:10.1097/QAD.0000000000001185
- Kurtz, S. (2005). Post-circuit blues: motivations and consequences of crystal meth use among gay men in Miami. *AIDS Behaviours*, 9(1), 63-72. doi:10.1007/s10461-005-1682-3
- Kurtz, S., Buttram, M., Surratt, H., & Stall, R. (2012). Resilience, syndemic factors, and serosorting behaviors among HIV-positive and HIV-negative substance-using MSM. *AIDS Education and Prevention*, 24(3), 193-205.
- Lahra, M., Ryder, N., & Whiley, D. (2014). A New Multidrug-Resistant Strain of *Neisseria gonorrhoeae* in Australia. *New England Journal of Medicine*, 371(19), 1849-1850. doi:10.1056/NEJMc1410733
- Lea, T., Mao, L., Hopwood, M., Prestage, G., Zablotska, I., de Wit, J., & Holt, M. (2016). Methamphetamine use among gay and bisexual men in Australia: Trends in recent and regular use from the Gay Community Periodic Surveys. *International Journal of Drug Policy*, 29, 66-72. doi:10.1016/j.drugpo.2016.01.003

- Lee, E., Mao, L., Lea, T., Johns, L., Adair, A., Williams, G., & Holt, M. (2017). *Gay Community Periodic Survey: Queensland 2016*. Sydney, Australia.
- Lee, E., Mao, L., Lea, T., Williams, G., Scott, M., Watts, P., . . . Holt, M. (2016). *Gay Community Periodic Survey: Queensland 2015*. Sydney: Centre for Social Research in Health, UNSW Australia.
- Leonard, W., Lyons, A., & Bariola, E. (2015). *A Closer Look at Private Lives 2: Addressing the mental health and well-being of lesbian, gay, bisexual and transgender (LGBT) Australians*. Retrieved from La Trobe University: Melbourne:
- Lewin, S., & Wright, E. (2016). Weekly Dose: Truvada, the drug that can prevent HIV infection. *The Conversation*. Retrieved from <http://theconversation.com/weekly-dose-truvada-the-drug-that-can-prevent-hiv-infection-61525>
- Lim, S., Cheung, D., Guadamuz, T., Wei, C., Koe, S., & Altice, F. (2015). Latent class analysis of substance use among men who have sex with men in Malaysia: Findings from the Asian Internet MSM Sex Survey. *Drug and Alcohol Dependence, 151*, 31-37. doi:10.1016/j.drugalcdep.2015.02.040
- Lundahl, B., Moleni, T., Burke, B. L., Butters, R., Tollefson, D., Butler, C., & Rollnick, S. (2013). Motivational interviewing in medical care settings: a systematic review and meta-analysis of randomized controlled trials. *Patient Education and Counseling, 93*(2), 157-168. doi:10.1016/j.pec.2013.07.012
- Machalek, D., Poynten, M., Jin, F., Fairley, C., Farnsworth, A., Garland, S., . . . Grulich, A. (2012). Anal human papillomavirus infection and associated neoplastic lesions in men who have sex with men: a systematic review and

meta-analysis. *The Lancet Oncology*, 13(5), 487-500. doi:10.1016/s1470-2045(12)70080-3

Mail, P., & Safford, L. (2003). LGBT Disease Prevention and Health Promotion: Wellness for Gay, Lesbian, Bisexual, and Transgender Individuals and Communities. *Clinical Research and Regulatory Affairs*, 20(2), 183-204. doi:10.1081/crp-120021080

Mao, L., Kidd, M., Rogers, G., Andrews, G., Newman, C., Booth, A., . . . Kippax, S. (2009). Social factors associated with Major Depressive Disorder in homosexually active, gay men attending general practices in urban Australia. *Australian and New Zealand Journal of Public Health*, 33(1), 83-86. doi:10.1111/j.1753-6405.2009.00344.x

Marmot, M. (2005). Social determinants of health inequalities. *The Lancet*, 365, 1099–1104. doi:10.1016/S0140-6736(05)18095-7

Mascolini, M. (2014, May 19-21). *Estimated Time to Protection and Duration of Protection With Daily TDF/FTC PrEP*. Paper presented at the 15th International Workshop on Clinical Pharmacology of HIV and Hepatitis Therapy, Washington, DC.

Mattison, A., Ross, M., Wolfson, T., & Franklin, D. (2001). Circuit party attendance, club drug use, and unsafe sex in gay men. *Journal of Substance Abuse*, 13, 119-126.

McCormack, S., Dunn, D., Desai, M., Dolling, D., Gafos, M., Gilson, R., . . . Gill, O. (2016). Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): effectiveness results from the pilot phase of a pragmatic open-label randomised trial. *The Lancet*, 387, 53-60. doi:10.1016/s0140-6736(15)00056-2

- McCullough, M. (2011). Managing HIV in general practice. *Australian Prescriber*, 34(3), 67-72. doi:10.18773/austprescr.2011.043
- McFaul, K., Maghlaoui, A., Nzuruba, M., Farnworth, S., Foxton, M., Anderson, M., . . . Devitt, E. (2015). Acute hepatitis C infection in HIV-negative men who have sex with men. *Journal of Viral Hepatitis*, 22(6), 535-538. doi:10.1111/jvh.12366
- McKirnan, D., Ostrow, D., & Hope, B. (1996). Sex, drugs and escape: a psychological model of HIV-risk sexual behaviours. *AIDS CARE*, 8(6), 655-669. doi:10.1080/09540129650125371
- McKirnan, D., Ostrow, D., & Hope, B. (1996). Sex, drugs and escape: a psychological model of HIV-risk sexual behaviours. *AIDS CARE*, 8(6).
- Merzel, C., & D'Afflitti, J. (2003). Reconsidering Community-Based Health Promotion: Promise, Performance, and Potential. *American Journal of Public Health*, 93(4).
- Meyer, I. (2003). Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence. *Psychology Bulletin*, 129(5), 674-697.
- Miles, S. (2017). Sex in the digital city: location-based dating apps and queer urban life. *Gender, Place & Culture*, 1-16. doi:10.1080/0966369x.2017.1340874
- Mullens, A. (2011). *Substance-related expectancies among men who have sex with men: Development of psychometric tools to predict unprotected sexual activity*. (Doctorate of Philosophy), Queensland University of Technology.
- Mullens, A., Fischer, J., Stewart, M., Kenny, K., Garvey, S., & Debattista, J. (2017). Comparison of Government and Non-Government Alcohol and Other Drug (AOD) Treatment Service Delivery for the Lesbian, Gay, Bisexual, and

- Transgender (LGBT) Community. *Substance Use and Misuse*, 52(8), 1027-1038. doi:10.1080/10826084.2016.1271430
- Mullens, A., Young, R., Dunne, M., & Norton, G. (2010). The Cannabis Expectancy Questionnaire for Men who have Sex with Men (CEQ-MSM): A measure of substance-related beliefs. *Addictive Behaviours*, 35(6), 616-619. doi:10.1016/j.addbeh.2010.01.006
- Mullens, A., Young, R., Dunne, M., & Norton, G. (2011a). The Amyl Nitrite Expectancy Questionnaire for Men who have Sex with Men (AEQ-MSM): a measure of substance-related beliefs. *Substance Use and Misuse*, 46(13), 1642-1650. doi:10.3109/10826084.2011.599096
- Mullens, A., Young, R., Dunne, M., & Norton, G. (2011b). The Drinking Expectancy Questionnaire for Men who have Sex with Men (DEQ-MSM): a measure of substance-related beliefs. *Drug and Alcohol Review*, 30(4), 372-380. doi:10.1111/j.1465-3362.2010.00225.x
- Mullens, A., Young, R., Hamernik, E., & Dunne, M. (2009). The consequences of substance use among gay and bisexual men: A Consensual Qualitative Research analysis. *Sexual Health*, 6, 139–152.
- Myers, J., & Sepkowitz, K. (2013). A pill for HIV prevention: deja vu all over again? *Clinical Infectious Diseases*, 56(11), 1604-1612. doi:10.1093/cid/cit085
- Nachega, J., Parienti, J., Uthman, O., Gross, R., Dowdy, D., Sax, P., . . . Giordano, T. (2014). Lower Pill Burden and Once-Daily Antiretroviral Treatment Regimens for HIV Infection: A Meta-Analysis of Randomized Controlled Trials *Clinical Infectious Diseases*, 58(9), 1297-1307.
- Nakagawa, F., Lodwick, R., Smith, C., Smith, R., Cambiano, V., Lundgren, J., . . . Phillips, A. (2012). Projected life expectancy of people with HIV according

to timing of diagnosis. *AIDS*, 26(3), 335-343.

doi:10.1097/QAD.0b013e32834dcec9

Nakagawa, F., May, M., & Phillips, A. (2013). Life expectancy living with HIV: recent estimates and future implications. *Current Opinion in Infectious Diseases*, 26(1), 17-25. doi:10.1097/QCO.0b013e32835ba6b1

*National Immunisation Program Schedule*. (2016). Retrieved from [www.immunise.health.gov.au](http://www.immunise.health.gov.au).

National Rural Health Alliance. (2015). *Illicit Drug use in rural Australia*. Canberra, ACT.

Ness, A., & Payne, J. (2011). *Patterns of mephedrone, GHB, Ketamine and Rohypnol use among police detainees: Findings from the DUMA program*.

Retrieved from

[http://www.aic.gov.au/media\\_library/publications/rip/rip16/rip16.pdf](http://www.aic.gov.au/media_library/publications/rip/rip16/rip16.pdf).

NHS England. (2015). *Clinical Commissioning Policy Statement: Treatment of chronic Hepatitis C in patients with cirrhosis*.

<https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/06/hep-c-cirrhosis-policy-statmnt-0615.pdf>:

NHS England.

Page, E., & Nelson, M. (2016). Hepatitis C and sex. *Clinical Medicine*, 16(2), 189–192.

Pascoe, E., & Richman, L. (2009). Perceived discrimination and health: a meta-analytic review. *Psychological Bulletin*, 135(4), 531-554.

doi:10.1037/a0016059

Peng, P., Su, S., Fairley, C., Chu, M., Jiang, S., Zhuang, X., & Zhang, L. (2017). A Global Estimate of the Acceptability of Pre-exposure Prophylaxis for HIV



- Among Men Who have Sex with Men: A Systematic Review and Meta-analysis. *AIDS and Behavior*. doi:10.1007/s10461-017-1675-z
- Pickett, J. (2017). #Transmit Love. *Engaging gay men in Chicago around PrEP*. Paper presented at the 9th IAS Conference on HIV Science, Paris, France.
- Piliero, P., & Faragon, J. (2002). Hepatitis B Virus and HIV Coinfection. *AIDS*, 12(10).
- Pincus, T., Burton, A., Vogel, S., & Field, A. (2002). A Systematic Review of Psychological Factors as Predictors of Chronicity/Disability in Prospective Cohorts of Low Back Pain. *Spine*, 27(5), E109–E120.
- Poteat, T., German, D., & Kerrigan, D. (2013). Managing uncertainty: a grounded theory of stigma in transgender health care encounters. *Social Science & Medicine*, 84, 22-29. doi:10.1016/j.socscimed.2013.02.019
- Potvin, L., & Jones, C. (2011). Twenty-five Years After the Ottawa Charter: The Critical Role of Health Promotion for Public Health. *Canadian Journal of Public Health*, 102(4), 244-248.
- Prevention Access Campaign. (2016). Undetectable=Untransmittable Primer Consensus Statement.
- Queensland AIDS Council 15/16 Annual Report. (2016). <http://www.qahc.org.au/publications>.
- Queensland AIDS Council. (2017). Come Preped. Retrieved from <http://www.comeprepd.info/>
- Race, K. (2015). 'Party and Play': Online hook-up devices and the emergence of PNP practices among gay men. *Sexualities*, 18(3), 253-275. doi:10.1177/1363460714550913

- Race, K., Lea, T., Murphy, D., & Pienaar, K. (2017). The future of drugs: recreational drug use and sexual health among gay and other men who have sex with men. *Sexual Health, 14*, 42–50. doi:10.1071/SH16080
- Ramirez-Valles, J. (2002). The protective effects of community involvement for HIV risk behavior: a conceptual framework *Health Education Research, 17*(4), 389-403.
- Reback, C. J., Larkins, S., & Shoptaw, S. (2003). Methamphetamine abuse as a barrier to HIV medication adherence among gay and bisexual men. *AIDS CARE, 15*(6), 775-785. doi:10.1080/09540120310001618621
- Redd, A., Quinn, T., & Tobian, A. (2013). Frequency and implications of HIV superinfection. *The Lancet Infectious Diseases, 13*(7), 622-628. doi:10.1016/s1473-3099(13)70066-5
- Rekart, M., Ndifon, W., Brunham, R., Dushoff, J., Park, S., Rawat, S., & Cameron, C. (2017). A double-edged sword: does highly active antiretroviral therapy contribute to syphilis incidence by impairing immunity to *Treponema pallidum*? *Sexually Transmitted Infections, 1-5*. doi:10.1136/sextrans-2016-052870
- Ritter, A., & Cameron, J. (2005). *Drug Policy Modelling Project Monograph 06: A Systematic Review of Harm Reduction*. Retrieved from Fitzroy:
- Ritter, A., & Cameron, J. (2006). A review of the efficacy and effectiveness of harm reduction strategies for alcohol, tobacco and illicit drugs. *Drug and Alcohol Review, 25*(6), 611-624. doi:10.1080/09595230600944529
- Roe, G. (2005). Harm reduction as paradigm: Is better than bad good enough? The origins of harm reduction. *Critical Public Health, 15*(3), 243-250. doi:10.1080/09581590500372188

- Rosario, M., Schrimshaw, E., & Hunter, J. (2006). A model of sexual risk behaviors among young gay and bisexual men: longitudinal associations of mental health, substance abuse, sexual abuse, and the coming-out process. *AIDS Education and Prevention, 18*(5), 444-460. doi:10.1521/aeap.2006.18.5.444
- Rosenberg, N., Pilcher, C., Busch, M., & Cohen, M. (2015). How can we better identify early HIV infections? *Current Opinion in HIV and AIDS, 10*(1), 61-68. doi:10.1097/COH.0000000000000121
- Rosenstock, I., Strecher, V., & Becker, M. (1988). Social Learning Theory and the Health Belief Model. *Health Education Quarterly, 15*(2), 175-183.
- Roxburgh, A., Lea, T., de Wit, J., & Degenhardt, L. (2016). Sexual identity and prevalence of alcohol and other drug use among Australians in the general population. *International Journal of Drug Policy, 28*, 76-82. doi:10.1016/j.drugpo.2015.11.005
- Rubak, S., Sandbæk, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: a systematic review and meta-analysis. *British Journal of General Practice, April*, 305-312.
- Russell, D. (2016). QPrEPd Participant Information and Consent Form.
- Russell, S., & Fish, J. (2016). Mental Health in Lesbian, Gay, Bisexual, and Transgender (LGBT) Youth. *Annual Review of Clinical Psychology, 12*, 465-487. doi:10.1146/annurev-clinpsy-021815-093153
- Sachs, J. (2016). The End of AIDS. *Project Syndicate*. Retrieved from
- Saleemi, S., Pennybaker, S. J., Wooldridge, M., & Johnson, M. W. (2017). Who is 'Molly'? MDMA adulterants by product name and the impact of harm-reduction services at raves. *Journal of Psychopharmacology, 31*(8), 1056-1060. doi:10.1177/0269881117715596

- Schmidt, A. J., Bourne, A., Weatherburn, P., Reid, D., Marcus, U., Hickson, F., & Network, E. (2016). Illicit drug use among gay and bisexual men in 44 cities: Findings from the European MSM Internet Survey (EMIS). *International Journal of Drug Policy*, *38*, 4-12. doi:10.1016/j.drugpo.2016.09.007
- Schrimshaw, E., Siegel, K., Downing, M., & Parsons, J. (2013). Disclosure and concealment of sexual orientation and the mental health of non-gay-identified, behaviorally bisexual men. *Journal of Consulting and Clinical Psychology*, *81*(1), 141-153. doi:10.1037/a0031272
- Scott, H., & Klausner, J. (2016). Sexually transmitted infections and pre-exposure prophylaxis: challenges and opportunities among men who have sex with men in the US. *AIDS Research and Therapy*, *13*, 5. doi:10.1186/s12981-016-0089-8
- Sewell, J., Miltz, A., Lampe, F., Cambiano, V., Speakman, A., Phillips, A., . . . Attitudes, t. U. o. R. o. A. o., H. I. V. Study Group. (2017). Poly drug use, chemsex drug use, and associations with sexual risk behaviour in HIV-negative men who have sex with men attending sexual health clinics. *International Journal of Drug Policy*, *43*, 33-43. doi:10.1016/j.drugpo.2017.01.001
- Shernoff, M. (2006). Condomless Sex: Gay Men, Barebacking, and Harm Reduction. *Social Work*, *51*(2), 106-113.
- Shoptaw, S., & Reback, C. (2007). Methamphetamine use and infectious disease-related behaviors in men who have sex with men: implications for interventions. *Addiction*, *102* (suppl 1), 130-135.
- Smit, P., Brady, M., Carter, M., Fernandes, R., Lamore, L., Meulbroek, M., . . . Thompson, M. (2012). HIV-related stigma within communities of gay men: a

literature review. *AIDS CARE*, 24(4), 405-412.

doi:10.1080/09540121.2011.613910

Spindler, H., Scheer, S., Chen, S. Y., Klausner, J., Katz, M., Valleroy, L., & Schwarcz, S. (2007). Viagra, methamphetamine, and HIV risk: results from a probability sample of MSM, San Francisco. *Sexually Transmitted Diseases*, 34(8), 586-591. doi:10.1097/01.olq.0000258339.17325.93

Steptoe, A. (2010). *Handbook of Behavioral Medicine: Methods and Applications*. London: Springer.

Stuart, D. (2013). Sexualised drug use by MSM: background, current status and response. *HIV Nursing, Spring 2013*, 6-10.

Stuart, D., Nwokolo, N., McOwan, A., Bracchi, M., & Boffito, M. (2015). *ChemSex: Data on Recreational Drug Use and Sexual Behaviour in Men Who Have Sex with Men (MSM) from a Busy Sexual Health Clinic in London, UK*. Paper presented at the 15th European AIDS Conference, Barcelona, Spain.

The EMIS Network. (2013). *EMIS 2010: The European Men-Who-Have-Sex-With-Men Internet Survey Findings from 38 countries*. Stockholm: European Centre for Disease Prevention and Control.

The HIV-CAUSAL Collaboration. (2011). When to Initiate Combined Antiretroviral Therapy to Reduce Mortality and AIDS-Defining Illness in HIV-Infected Persons in Developed Countries: An Observational Study. *Annals of Internal Medicine*, 154(8), 509-515. doi:10.7326/0003-4819-154-8-201104190-00001

The Kirby Institute. (2016). *HIV, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2016*. UNSW Sydney.

The Lancet, H. I. V. (2015). The end of AIDS? *The Lancet HIV*, 2(3), e71.

doi:10.1016/s2352-3018(15)00029-6

- Tziallas, E. (2015). Gamified Eroticism: Gay Male “Social Networking” Applications and Self-Pornography. *Sexuality & Culture, 19*(4), 759-775. doi:10.1007/s12119-015-9288-z
- Urbanus, A., van de Laar, T., Stolte, I., Schinkel, J., Heijman, T., Coutinho, R., & Prins, M. (2009). Hepatitis C virus infections among HIV-infected men who have sex with men: an expanding epidemic. *AIDS, 23*(12), F1-7. doi:10.1097/QAD.0b013e32832e5631
- US Department of Health and Human Services. (2014). Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents. In A. info (Ed.), *Limitations to Treatment Safety and Efficacy: Adherence to Antiretroviral Therapy*.
- US DHHS Guidelines with Australian commentary. (2016). Initiating Antiretroviral Therapy in Treatment-Naïve Patients.
- Usher, K., Clough, A., Woods, C., & Robertson, J. (2015). Is there an ice epidemic in Australia? *International Journal of Mental Health Nursing, 24*(4), 283-285. doi:10.1111/inm.12155
- Van de Ven, P., Rawstorne, P., Nakamura, T., Crawford, J., & Kippax, S. (2002). HIV treatments optimism is associated with unprotected anal intercourse with regular and with casual partners among Australian gay and homosexually active men. *International Journal of STD & AIDS, 13*, 181-183.
- Van Den Boom, W., Stolte, I., Witlox, R., Sandfort, T., Prins, M., & Davidovich, U. (2013). Undetectable Viral Load and the Decision to Engage in Unprotected Anal Intercourse Among HIV-Positive MSM. *AIDS and Behavior, 17*(6), 2136-2142. doi:10.1007/s10461-013-0453-9

- Varghese, B., Maher, J., Peterman, T., Branson, B., & Stekettee, R. (2002). Reducing the Risk of Sexual HIV Transmission: Quantifying the Per-Act Risk for HIV on the Basis of Choice of Partner, Sex Act, and Condom Use. *Sexually Transmitted Diseases, 29*(1).
- Vernazza, P., & Bernard, E. (2016). HIV is not transmitted under fully suppressive therapy: The Swiss Statement--eight years later. *Swiss Medical Weekly, 146*, w14246. doi:10.4414/smw.2016.14246
- Weatherburn, P., Hickson, F., Reid, D., Torres-Rueda, S., & Bourne, A. (2016). Motivations and values associated with combining sex and illicit drugs ('chemsex') among gay men in South London: findings from a qualitative study. *Sex Transm Infect.* doi:10.1136/sextrans-2016-052695
- World Health Organization. (1986). The Ottawa Charter for Health Promotion. Retrieved from <http://www.who.int/healthpromotion/conferences/previous/ottawa/en/index4.html>
- World Health Organization. (2004). Effectiveness of sterile needle and syringe programming in reducing HIV/AIDS among injecting drug users.
- World Health Organization. (2012). Guidance on Pre-Exposure prophylaxis (PrEP) for serodiscordant couples, men and transgender women who have sex with men at high risk of HIV: Recommendations for use in the context of demonstration projects. Geneva, Switzerland: World Health Organization.
- World Health Organization. (2016). Growing antibiotic resistance forces upsate to the recommended treatment for sexually transmitted infections. Retrieved from <http://www.who.int/mediacentre/news/releases/2016/antibiotics-sexual-infections/en/>

Wright, E., Grulich, A., Roy, K., Boyd, M., Cornelisse, V., Whittaker, B., . . .

Zablotska, I. (2017). Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine HIV pre-exposure prophylaxis: clinical guidelines. *Journal of Virus Eradication*, 3, 168–184.

Zajdow, G. (2016). What are we scared of? *Journal of Sociology*, 41(2), 185-199.

doi:10.1177/1440783305053237

Zuckerman, M., & Kuhlman, D. (2000). Personality and Risk-Taking: Common Biosocial Factors. *Journal of Personality*, 68(6), 999-1029.



## Appendix A

**OFFICE OF RESEARCH**  
 Human Research Ethics Committee  
 PHONE +61 7 4687 5703| FAX +61 7 4631 5555  
 EMAIL ethics@usq.edu.au



1 June 2016

Dr Amy Mullens

Dear Amy

The USQ Human Research Ethics Committee has recently reviewed your responses to the conditions placed upon the ethical approval for the project outlined below. Your proposal is now deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research (2007)* and full ethical approval has been granted.

Approval No.	<b>H16REA116</b>
Project Title	Substance use and sexual health among Gay and Transgender men
Approval date	1 June 2016
Expiry date	1 June 2019
HREC Decision	<b>Approved</b>

The standard conditions of this approval are:

- (a) conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC
- (b) advise (email: ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project
- (c) make submission for approval of amendments to the approved project before implementing such changes
- (d) provide a 'progress report' for every year of approval
- (e) provide a 'final report' when the project is complete
- (f) advise in writing if the project has been discontinued, using a 'final report'

For (c) to (f) forms are available on the USQ ethics website:  
<http://www.usq.edu.au/research/support-development/research-services/research-integrity-ethics/human/forms>

Please note that failure to comply with the conditions of approval and the *National Statement (2007)* may result in withdrawal of approval for the project.

You may now commence your project. I wish you all the best for the conduct of the project.



**Samantha Davis**  
Ethics Officer

Copies to: amy.mullens@usq.edu.au

**To complete this form**

- This form should be completed electronically.
- Do not remove or alter formatting – please include your response to each question in the allocated space.
- Answers should be provided in plain, everyday language. This means that you should avoid using discipline-specific jargon, or acronyms throughout this application. If you must use discipline-specific terms, please ensure that you include a definition so that a person outside of the University could read and understand what your research is about, and what you propose to do.
- Please read each question carefully and ensure that you provide the requested information.
- Left-click the check boxes to select appropriate answers and complete text boxes by typing your answers in the space provided underneath each question. The frame will expand to accommodate the text.
- If your research design is utilising a range of methods, ensure that you address all approaches and stages of the research project for each question asked.

**Submission**

- Please forward the finalised application including supporting documentation via email to [ethics@usq.edu.au](mailto:ethics@usq.edu.au). You do not need to forward a hard copy.
- Ensure all nominated investigators (i.e. Chief Investigator, Supervisor (if a student research project) and Additional Investigators) sign the signatures page and forward electronically to [ethics@usq.edu.au](mailto:ethics@usq.edu.au) (scan and email). Please note that your application will not be approved until all signatures have been received by the Ethics Office.

**Project Duration**

The commencement date of the project will be the approval date of the application by the USQ Human Research Ethics Committee.

Ethical approval will be granted for a period of three (3) years (maximum). Ethical approval will cease at either (a) the expiry date nominated in the approval notice, or (b) upon receipt of a final report (if submitted prior to the nominated expiry date).

**Please note that in accordance with the Australian Code for the Responsible Conduct of Research, the National Statement on Ethical Conduct in Human Research, 2007, and USQ's Code of Conduct in Research Policy and Procedure, research must not commence until ethical approval has been granted by the University of Southern Queensland (USQ) Human Research Ethics Committee (HREC).**

Address for Correspondence (please include a postal address, rather than your School or Faculty)			
City	Ipswich	State	Qld
Postcode	4305	Country	Australia
Email			
Telephone			

**1.3 Additional investigator/s**

USQ Staff / Student ID	Full Name (First/Last, e.g. Dr)	Email	Telephone
NA	Robert Muscolino (Queensland AIDS Council, QUAC)	RMuscolino@quac.org.au	3017 1777
NA	Gary Williams (QUAC)	GWilliams@quac.org.au	3017 1777
NA	Shane Garvey (Lives Lived Well)	Shane.Garvey@liveslivedwell.org.au	3834 0227

**2. Student project details**

Note: If the proposed research is for the purpose of staff research only, go to Section 3.

**2.1 Please check the box (choose one only) for the degree which this research will contribute to NA**

- |   |   |
|---|---|
| <input type="checkbox"/> Doctor of Philosophy (DPHD)                | <input type="checkbox"/> Doctor of Business Administration (DBAR) |
| <input type="checkbox"/> Doctor of Education (DEDU)                 | <input type="checkbox"/> Engineering Doctorate                    |
| <input type="checkbox"/> Doctor of Professional Studies (DPST)      | <input type="checkbox"/> Doctor of Psychology (Clinical) (DPCL)   |
| <input type="checkbox"/> Masters of Business Research (MBSR)        | <input type="checkbox"/> Masters of Engineering Research (MENR)   |
| <input type="checkbox"/> Masters of Spatial Science Research (MSSR) | <input type="checkbox"/> Masters of Science Research (MSCR)       |
| <input type="checkbox"/> Masters of Psychology (Clinical) (MPCL)    | <input type="checkbox"/> Master of Education (MED1)               |
| <input type="checkbox"/> Bachelor of Science (Honours) (BSCI)       | <input type="checkbox"/> Bachelor of Arts (Honours) (BARH)        |
| <input type="checkbox"/> Bachelor of Education (Honours) (BEDH)     |   |
| <input type="checkbox"/> Other: please specify _____                |   |

**2.2 Have you successfully obtained confirmation of your candidature?**

- Yes  No

**1. Investigator details**

**1.1 Chief investigator** (This is the person who will primarily be conducting the research and with whom we will correspond about this application.)

USQ staff/student ID (10 digits)	8000722		
Title (e.g. Prof, A/Prof, Dr, Mr)	Dr		
First Name	Amy		
Other Names (e.g. middle names)			
Family Name	Mullens		
School	Psychology and Counselling		
Faculty or Centre	HES		
Campus	Ipswich		
	11 Salisbury Rd, USQ Campus, Room B349		
	City	State	Qld
	Postcode	Country	Australia
Email	amy.mullens@usq.edu.au		
Telephone (define business hours)	38126153		
Mobile			

**1.2 Supervisor** (This is the Principal Supervisor of a student project and the person who will be providing guidance to a student researcher.)  
*Leave blank if not applicable*

USQ Staff ID (10 digits)			
Title (e.g. Dr, Mr, Mrs, Ms)			
First Name			
Other Names (e.g. middle names)			
Family Name			
School			
Faculty or Centre			
Campus			

**Note:** Student research projects will not be reviewed by the Human Research Ethics Committee until evidence has been received that the student is a) a confirmed candidate in a USQ research project, or b) written notification has been received from either the Head of School, or the Director of the research centre in which the student is enrolled, confirming that the enrolling school/centre has undertaken a thorough review of the proposed research project methodology, and that they deem it is acceptable to proceed with the research.

- Copy of confirmation of candidature statement (not covering letter) attached; OR  
 Copy of notification from the Head of School/Director, Research Centre attached

**2.3 Will your research be conducted outside of Australia?**

- Yes  No

If Yes, please refer to Chapter 4.8 People in other countries of the National Statement on Ethical Conduct in Human Research, 2007; and:

- outline what arrangements you have made with your supervisor whilst outside of Australia to ensure that participants are duly respected and protected. This includes, but is not limited to an individual participant or group of participant's beliefs, customs, and cultural heritage
- provide detail of any ethical approval processes in the country that you need to obtain, and whether these are mandatory or voluntary
- provide detail of any local academic or institutional affiliations you have established to assist you

**Note:** It is your responsibility, as the research, to ensure that the research you plan to undertake is lawful in that country. Please ensure that you review this aspect of your research thoroughly, and discuss with your supervisor.

N/A

**3. Project details**

**3.1 Project title**

Substance Use and Sexual Health among Gay and Transgender Men

**Note:** Ensure that the title is appropriate for this research and would make it easy to identify the project. This is the title that will be used for correspondence about this application and the resulting clearance, and would normally be the title you would use in recruitment and informed consent materials. If the title is very long or difficult to understand for the lay person, a lay version can be used in informed consent documents. A title such as 'Master of Education project' is inappropriate as it does not provide sufficient information about what this research is about. However, the title should not create the impression that the scope or likely impact of the research is broader than it actually is - for example, a project that describes experiences of teachers in Brisbane with a new science curriculum should not be described as 'Australian educational programs'.

volunteers assisting the research are subject to strict confidentiality and privacy policies of their organisations.

**Note:** Pre-existing relationships may include teachers and students; course leaders and students; employer and employees, etc.

#### 4.3 Expected age (s) of participant(s)

Please check one or more of the following:

- Children (under 14)
- Young People (14-18)
- Adults (>18)
- For Research in Australia:** All investigators working with Children and Young People must provide evidence of either a Blue Card or Blue Card Exemption Transition notice with the application.

Copy of Blue Card

OR

Copy of Blue Card Positive Exemption notice

Researchers are encouraged to contact Blue Card directly (free call 1800 113 613) for an assessment of their individual situation.

#### 4.4 Expected Number of Participant(s)

If the research has several stages and/ or groups of participants, please provide the total number of participants expected as well as the number and participant group involved in each stage

It is expected 300 participants will complete the survey. This research has one stage of data collection, an anonymous, non-identifiable survey.

#### 4.5 How will potential participant(s) in your research be recruited?

Please outline:

- How participants will be invited to participate in the research project (e.g. personal approach, email, through an organisation, advertisement, mail out)
- How participant contact details (for invitation purposes) will be obtained
- Who will be involved in the invitation and recruitment of participants (For example, will approval or permission from a person representing an organisation grant permission for the investigators to access potential participants under their authority?)

**Note:** Ensure written evidence of permissions granted are submitted with this application

Participants will be recruited by QuAC and volunteers at GBTI friendly venues. The partner organisation web pages will also have links to the survey. The survey will also be promoted through the QuAC and Lives Lived Well Organisation.

This is a non-identifiable survey, there will be no mail out or email sent to specific potential participants (although the survey may be mentioned, with a link, in QuAC or Lives Lived Well newsletters); and relevant online community apps/forums (e.g., Marikunt, Grindr).

See attached letters of support.

### 5. RISKS AND BENEFITS

#### 5.1 Please indicate any potential risk/s to a participant, researcher, or others connected with the proposed project.

Risk is a potential form of harm, discomfort or inconvenience, and involves both the likelihood that a harm (or discomfort or inconvenience) will occur, and the severity of the harm, including its consequences.

Please refer to [Chapter 2.1 Risk and benefit of the National Statement on Ethical Conduct in Human Research, 2007](#).

Researchers are encouraged to reflect on what they will be "doing" to a participant at each stage of the research project, as well as what they will be "leaving" with a participant. Ethical conduct of research is about more than just "taking" the information that you wish to use for your research project.

- Physical risk**  
*This refers to injury, significant pain, infection, disease, death and other deleterious impacts on the physical wellbeing of individuals - most typically participants, but include the researcher and others. This is the category of risk most people think of when asked about risks in research, but is not the only category of risk and obviously is unlikely to be a relevant consideration for many research designs.*
- Psychological risk**  
*A psychological risk refers to harms that include anguish, significant emotional upset, anxiety or stress. In some cases (e.g. with a high level of suicide ideation or clinical depression) this can include debilitating personal harm.*
- Social risk**  
*Research can have deleterious impacts on personal relations (e.g. within a familial unit) or peer relations (e.g. the standing of an individual within their peer or work group). These risks can frequently be an issue for research in broad social sciences, where research can often debate, and impact upon, personal relationships. Pre-existing or dual relationships between the investigator/s and participant/s are also encompassed within this potential risk.*
- Time imposition**  
*A time imposition risk is one where a participant would need to commit a reasonable amount of time to participate in the research. Whether participation would be a time imposition will be dependent on the expected duration of participation, together with the context in which the participation occurs (e.g. the expectation that a busy mother of young children would participate in a 4-hour focus group would be considered a time imposition, whereas completion of a 20 minute anonymous survey would be unlikely to cause an imposition).*
- Economic risk**  
*Economic risks are those relating to loss of income, loss of job or career prospects, loss of benefits or entitlements, diminished market share or brand reputation, or other factors that might have deleterious financial implications.*

#### 4.6 Who will be involved in the recruitment of the participant(s)?

Workers and volunteers from Queensland AIDS Council and Lives Lived Well will recruit participants.

#### 4.7 List all of the geographical location(s) where the data will be collected

GBTI venues and events across Brisbane, Ipswich, Toowoomba, Logan and Gold Coast

#### 4.8 Does this research involve USQ staff, students or data?

- Yes  No

If indicated YES:

- Please list the relevant courses, schools or faculties you propose to recruit from
- Please specify whether you have obtained written permission to recruit USQ students and provide documentary evidence of the approval granted.

N/A

**Note:** Approval to recruit USQ staff and students must be obtained from the appropriate delegate of the University.

Scope of recruitment	Appropriate Delegate
Students with a course/courses within one discipline	Head of School
Students within one Faculty area	Executive Dean
Students across the University and/or across University campuses	Deputy Vice-Chancellor (Students & Communities)
Staff (any)	Senior Deputy Vice-Chancellor

#### 4.9 Does this research involve recruitment through an organisation other than USQ?

- Yes  No

If indicated YES:

- Please list the organizations
- Please specify whether you have obtained written permission from the organisation to recruit the participants and provide documentary evidence of the approval granted

Staff and volunteers from Queensland AIDS Council (QuAC) and Lives Lived Well will assist in recruiting participants. They have been involved in survey design.

- Legal risk**  
*Some research can raise legal risks, such as civil or criminal proceedings, fines or some other forms of regulatory response. While research can usually be intended to be lawful and appropriate, however, such research typically requires a higher level of ethical review.*

- Other risks** (Please provide details)

#### 5.2 Please indicate your assessment of the overall level of risk to a participant

- Extreme Risk
- High Risk
- Some Risk
- Low Risk
- No foreseeable risk associated with this project

*Note: If you have indicated a potential risk in Section 5.1, then you must indicate at least 'low risk' in this section*

#### 5.3 Identify the initial risks that you considered were important to address in your research design

Issues of gender identity and sexual preference can still draw a lot of social stigma in Australian society. Naturally people are sensitive to disclosing their gender identity or sexual preference and often fear others knowing about it, which can be a source of deep anxiety.

Likewise issues around sexual health, particularly in relation to safe sex and STIs, in particular HIV, may evoke anxiety, embarrassment, distress or other negative feelings in some people.

#### 5.4 Explain the strategies used to negate or minimise those initial risks occurring

**Social Risk**  
Potential participants will be approached in LGBTI friendly venues and events, where their sexual/gender identity is accepted. This should minimise the risk of people being identified as gay or transgender, when they do not wish to be openly identified as such. This will reduce the risk of social stigma. Additionally, the survey is non-identifiable; it will not be possible to trace responses to the survey back to any specific person or location, which will protect participant's privacy.

**Psychological Risk**

**3.2 Using 'everyday language', provide a summary of the project (300 words max) outlining the projects broad aims, participant group(s), and possible outcomes**

The objective of this project is to conduct an anonymous and non-identifiable cross-sectional survey among gay and transgender men, to investigate prevalence rates and relationships between current alcohol and other drug (AOD) patterns and sexual health/behaviours. The survey will comprise a current health promotion project, developed by the partner partner organisations: Queensland AIDS Council (QUAC) and Lives Lived Well.

Alcohol and others drugs are often linked to unsafe sex and subsequent diagnosis of sexually transmitted infections (STI and HIV). It is unknown the prevalence rates and links between current drug use trends and sexual activity, associated with HIV and STI transmission.

Participants will be recruited from gay, bisexual, transgender and intersex (GBTI) friendly venues, services that provide support to that community, and email networks/websites associated with the partner organisations.

Data gathered will be used to further the understanding of the role drugs and alcohol play in sexual activity and the transmission of STIs/HIV in this region amongst the target groups (gay and transgender men). The survey results will inform development and construction of sexual health promotion resources, relevant to drug and alcohol use. Long term it is hoped the strategies developed with help reduce the spread and impact of HIV/STIs.

Note: The response to this question must provide in clear lay terms, the objectives of the research, research questions, hypotheses and /or problems. This may need to include a review of the literature or otherwise to establish the need for the research. Next there should be a discussion of the selected research design and how this will enable the research objectives to be achieved. Once again, it may be important to review the literature to explain why this research design was selected and why the researchers believe the selected design will be successful. Section 1.1(b) and (c) of the National Statement (2007) establishes that these matters are an important ethical consideration for proposed research. Lastly, the response to this question should outline what participants will actually experience. It is important to remember that the audience for the application includes people with community and lay perspectives, so copying text from a grant proposal, PhD proposal, etc is not appropriate for this purpose. The length of the response to this question must be at least 100 words and no longer than 300 words. The length of the response should be reflective of the complexity and sensitivity of the research.

**3.3 Is this project supported by an external competitive grant/s?**

Yes  No

If Yes,

- please state the name of the funding organisation
- include the \$/€ as it appears on the grant application
- include the status of the funding application.

To complete the survey either online (or by completing a paper and pencil version, if preferred).

The survey design is based on the format and language used in the Gay Community Periodic Survey (Lee et al., 2014). Questions relating to drugs in use, are consistent with those utilised in other health promotion work/research within the gay and transgender community. The survey has been revised by members of the target group for acceptability and cultural appropriateness. The survey has approximately 30 multi-choice questions and includes non-identifying demographic information including: sexual preference/identity, age, cultural background and whether they live in a city, regional or rural location. The survey is expected to take about 15-20 minutes to complete.

Data collected will be undergo quantitative analysis. Descriptive analysis will be used to understand the characteristics of the population captured on the survey. Correlation analysis will look at the relationship between alcohol/drugs, sexual practices/health and subsequent STI/HIV. Correlations, independent samples t-tests and ANOVAs will be used to investigate comparisons regarding demographic features, and among different types of alcohol and drugs impacting upon sexual practices (e.g., 'chemsex'-a term used in the community to describe use of alcohol and other recreational drugs during sex parties, which is associated with heightened risk of HIV/STI transmission).

The information gained from this research will help partner agencies to understand how AOD impacts on sexual health. It is anticipated the results will inform better targeted health promotion around the needs of gay and transgender men and sexual health, and harm minimisation associated with substance use.

The online survey will be administered through an online survey development cloud based software 'Survey Monkey'. Passwords and access to the data will be only provided to Queensland AIDS Council staff Robert Macdonald, State Orery (Lives Lived Well), and Amy McAtee (University of Southern Queensland). All data will be secure/identifiable.

The completed paper survey are initially collected by the participating medical centre's venue managers and then collected by QUAC staff (either Robert Macdonald or Orey Williams). If participants do not wish to leave survey with participating staff, they will be provided with pre-paid self-addressed envelope to post directly to the investigator.

The collection boxes will be held at the reception area, supervised by venue staff, consistent with other medical, survey methodology (e.g. Gay Community Periodic Survey).

Free, pre-paid envelope will be supplied.

**4. Participants and Recruitment Methods**

The National Statement on Ethical Conduct in Human Research, 2007 has identified particular groups of research participants which require special ethical consideration. These groups include:

- Pregnant women and the foetus (Chapter 4.1)
- Children and young people (Chapter 4.2)\*
- People in dependent or unequal relationships (Chapter 4.3)\*
- People highly dependent on medical care (Chapter 4.4)
- People with cognitive impairment, intellectual disability, or mental illness (Chapter 4.5)

Funding organisation	Title of project (as it appears on the grant application)	Status (e.g. pending, approved)
N/A		

**3.4 Research Categories**

Please check as many categories that are relevant to this research.

- Anonymous questionnaire/ survey (Participants are not personally identified and cannot be re-identified from collected data)
- Coded (potentially identifiable) questionnaire/ survey
- Identified questionnaire/ survey
- Examination of student work, educational instructional techniques etc.
- Examination of medical, education, personnel or other confidential records
- Observation (Covert without participant's knowledge)
- Observation (Covert with participant's knowledge)
- Focus Groups
- Interviews (Structure or unstructured)
- Telephone interviews
- Recordings (video)
- Recordings (audio)
- Procedures involving physical experiments (e.g. exercise)
- Procedures involving administration of substances (e.g. drugs, alcohol, food)
- Physical examination of participants (e.g. blood glucose, blood pressure and temperature monitoring)
- Surgical Procedures
- Other (please provide details)

N/A

**3.5 Research Design**

Outline the proposed research design (300 words), including:

- data collection technique/s and instrument
- task/s participants will be asked to complete
- estimated time commitment required of participants per technique
- the procedure associated with the project
- how data will be analysed.

Note: If you are using more than one data collection technique (identified in Section 3.4.) and/or participant group, please provide specific details for all techniques/groups.

Participants will be recruited by staff and volunteers from Queensland AIDS Council (QUAC) and Lives Lived Well and through community and online networks and GBTI friendly locations. Approximately 300 participants will be recruited, each will be asked

- People who may be involved in illegal activities (Chapter 4.6)
- Aboriginal and Torres Strait Islander peoples (Chapter 4.7)

See also NHMRC Values and Ethics Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research, and Guidelines for Ethical Research in Australian Indigenous Studies (GFAIS)

Note: If you are planning to undertake health and/or wellbeing research involving Aboriginal people in New South Wales, they are must also submit your proposal to the Aboriginal Health and Medical Research Council (AHMRC) Ethics Committee for review prior to commencing your research.

- People in other countries (Chapter 4.8)\*
- Other cultural and ethnic groups

Researchers are obliged to ensure that they protect the interests of these groups if they are in any way involved in a project, and are therefore advised to investigate thoroughly how these special groups may or may not be involved in, or represented in, the project and to consider if there might be an adverse effect on members of these groups if they are involved in or represented in the project.

If participation of any of the above listed groups is a focus of your research, your ethics application is unlikely to qualify for review through the Expedited Review process. Participant groups marked with an asterisk (\*) may qualify for Expedited Review in some cases, this will depend on the assessed level of risk associated with your research.

**4.1 Participants**

Please provide detail on the group and source of potential participant(s).

It is anticipated 300 gay and transgender men (18 years and older), residing in South east Queensland will complete the non-identifiable survey.

Participants will be recruited through GBTI friendly venues (community health clinics, counselling services, medical centres). The survey will also be available online through links on community health websites such as Queensland AIDS Council and Lives Lived Well, and relevant online community apps/forums (e.g., ManHunt, Grindr). The survey will also be promoted to clients through these organisations.

**4.2 Are there any pre-existing or dual relationships between any of the nominated investigators and the participants?**

Yes  No

If indicated YES,

- Outline the nature of the pre-existing or dual relationship
- Identify the investigator-participants that may be affected by the pre-existing or dual relationship

It is possible some participants will have a past, current or future relationship with one of the organisations involved, a worker or volunteer assisting with the survey. However this overlap is expected to be minimal.

The completed surveys will be held in a locked bag until they are passed on to the principal investigator and all other surveys will be answered online. If a dual relationship existed, there would be little opportunity for a breach of confidentiality/trust/protocol around survey responses, as the principal investigator has access to reviewing the completed surveys. Community health workers and

Experienced QUAC staff and volunteers will be present at the venues and events. They will be able to answer any immediate concerns for participants and direct them to service providers. Additionally, an Information Sheet will be provided to all participants which will detail LGBTI health service providers and general counselling services.

Any information spontaneously shared by participants in this process will be treated in a sensitive and confidential manner by the workers and volunteers involved.

**5.5 Identify any remaining risks that are still present in your research design, despite your attempts to minimise risks**

None identified

**5.6 Describe your strategies to manage the harms if the remaining risks occur**

N/A

**5.7 Explain the degree to which the anticipated benefits of the research justify any remaining risks and/or the inconvenience of participating in the research**

N/A

**6. Informed Consent Process**

Please refer to Chapter 2.2 General requirements for consent and Chapter 2.3 Qualifying or waiving conditions for consent of the *National Statement on Ethical Conduct in Human Research, 2007*.

**6.1 How will consent from a participant be obtained?**

For each of the research techniques you have identified, please indicate how consent will be obtained. Please choose as many as required (e.g. for interviews and focus groups, consent may be obtained in writing, however, for completion of an anonymous survey, consent may be tacit). Add more rows if required.

Any other vulnerable group of participants

If Yes, please provide details of:

- The group of participants
- How the research participants' rights will be protected
- How you will be sensitive to cultural backgrounds (if applicable)

Some participants responding to this survey will self-identify as illicit drug users. As this survey is non-identifiable, there is no risk to the participant in terms of repercussions for admitting use of illegal substances.

**6.4 How does the consent process ensure that informed consent is freely obtained from a participant?**

**Note:** Please detail how participants will provide consent to participate in the project

All participants will be provided with a Participant Information Sheet. This will provide clear information advising participants they can choose to participate, not participate, or discontinue the survey at any time, without any consequence what so ever. The information sheet will also tell participants that completion of the survey and submitting it (either online or in a sealed envelope) will indicate informed consent. Participants will also be advised, once the survey is submitted, it will be impossible to delete their information as the data and surveys are non-identifiable

**6.5 How does the project address a participant's freedom to discontinue participation?**

The Information Sheet will provide clear information advising participants they can choose to participate, not participate, or discontinue the survey at any time, without any consequence what so ever. This information will be reiterated by QUAC and Lives Lived Well participants when recruiting potential participants. Participants will also be advised, once the survey is submitted, it will be impossible to delete their information as the data and surveys are non-identifiable.

**6.6 Will there be any adverse effects on a participant if they withdraw their consent?**

Yes  No

If Yes,

Research Technique	Method informed consent will be obtained
Anonymous survey	The Information Sheet provided to all participants clearly states completion of survey is deemed consent. This will also be reiterated at the beginning of the online survey.
N/A	N/A
N/A	N/A

**6.2 Is it anticipated that all participants will have the capacity or authority to consent to their participation in the research?**

Yes  No

If No,

- explain why not (e.g. children and young people, people highly dependent on medical care, people with a cognitive impairment, an intellectual disability or a mental illness, etc.)
- explain how proxy or substitute consent will be obtained from the person with legal authority to consent on behalf of the participant.

N/A

**6.3 Does the research specifically target the following groups of participants?**

- Minors (under 18 years)
- Aboriginal and Torres Strait Islander peoples
- People from non-English speaking backgrounds
- People with an intellectual impairment or a mental illness
- Prisoners
- People who may be involved in illegal activities
- People in dependent relationships with the researcher, institution or funding body (i.e. researcher's clinical clients or students, employees of the institution, recipients of service provided by the funding body)

- explain what adverse effects are anticipated

N/A

**6.7 Will a participant be able to withdraw data concerning themselves if they withdraw their consent to participate?**

Yes  No

If No,

- explain under what circumstances an individual participant's data would not be withdrawn
- ensure information pertaining to both a participant's ability to withdraw from the project, and withdraw data about themselves is clearly set out in the Participant Information Sheet

No. Data is non-identifiable. Participants will be advised in the Information Sheet once the survey has been submitted, it cannot be deleted as their data is not distinguishable from other participants.

**6.8 Does the project involve withholding relevant information from participants or deceiving them about some aspects of the research?**

Yes  No

If indicated YES please justify

N/A

**6.9 Will participants be offered reimbursements, payments or incentives to participate in the research?**

Yes  No

If indicated YES,

- outline the amount/ benefit
- explain the justification for this

*Note: Audio and video recordings form part of original data collected, and must be retained for the minimum retention period. Therefore, recordings **must not** be destroyed or wiped after they have been transcribed.*

If Yes,

- what purpose will this recording be used for?

N/A

### 9. Privacy

**9.1 Does this project involve obtaining identifiable information (e.g. data) from a third party without prior consent from the participant(s) or their legal guardian(s)?**

Yes  No

If Yes,

- Outline the details of the information
- Include the details of the third party

N/A

**9.2 Will the research involve access to identifiable personal information (e.g. contact lists) held by another agency/body subject to the Privacy Act 1988 (Cth) or Public Health Act 2005 (QLD)?**

Yes  No

If Yes,

- outline the measures to obtain prior consent from the identified individuals
- outline procedures to address the regulatory privacy considerations
- If an exemption under 59B/59DA of the Privacy Act is to be sought, please contact the Manager, Research Integrity and Ethics.

N/A

### SIGNATURES PAGE

<b>Project Title</b>	Substance Use and Sexual Behaviour in Gay and Transgender Men
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#### Declaration

I/we the undersigned confirm that the information contained in this application is accurate; conduct will not commence until ethical certification has been granted; and all members of the research team will conduct this project in accordance with the principles contained in the National Statement on Ethical Conduct in Human Research (2007), and will comply with any other conditions laid down by the University of Southern Queensland Human Research Ethics Committee.

#### Chief Investigator

Name (please print)	Signature	Date
Dr. Amy Mullens		11/04/16

#### Supervisor (if applicable)

Name (please print)	Signature	Date

#### Other Investigator/s

Name (please print)	Signature	Date
Gary Williams		11/04/16

### 10. CHECKLIST

Anonymous survey	<input checked="" type="checkbox"/> Survey <input checked="" type="checkbox"/> Participant Information Sheet (PIS)
Identified survey	<input type="checkbox"/> Survey <input type="checkbox"/> Participant Information Sheet (PIS) <input type="checkbox"/> Consent Form
Interview/ focus groups	<input type="checkbox"/> Sample Questions <input type="checkbox"/> Participant Information Sheet (PIS) <input type="checkbox"/> Consent Form
Other method (where applicable)	<input type="checkbox"/> Instrument <input type="checkbox"/> Participant Information Sheet (PIS) <input type="checkbox"/> Consent Form
Advertisements/letters of invitation (where applicable)	<input checked="" type="checkbox"/> Yes (Sample of previous advertising which will be altered for this survey) <input type="checkbox"/> N/A
Evidence of permission from external organisation to conduct research and/or recruit participants (e.g. School or Hospital)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Currently being sought <input type="checkbox"/> N/A
Evidence of permission to recruit USQ Staff/Students	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Currently being sought <input type="checkbox"/> N/A
Copy of Blue Card or Blue Card Positive Exemption notice for all investigators working with children and young people. Other, please describe	<input type="checkbox"/> Yes

Shane Carvey		11/04/16
Robert Muscolino		11/04/16





## Appendix B



University of Southern Queensland

### Participant Information for USQ Research Project Questionnaire

#### Project Details

Title of Project: Substance Use and Sexual Health in Gay and Transgender Men  
Human Research Ethics Approval Number: **H16REA116**

#### Research Team Contact Details

##### Principal Investigator Details

Dr Amy Mullens  
Email: [Amy.Mullens@usq.edu.au](mailto:Amy.Mullens@usq.edu.au)  
Telephone: (07) 3812 6153

#### Description

This project is being undertaken in conjunction with Queensland AIDS Council (QuAC), Lives Lived Well and The University of Southern Queensland.

The survey seeks to understand current use of alcohol and other drugs (AOD) and sexual activity among men who identify as gay, transgender, or other men who have sex with men. The information collected will be used to better understand current health behaviours and substance use treatment, to inform future health promotion programs to reduce harms associated with both substance use and sexual activity within the gay community.

The research team seeks your assistance because current, accurate information from men who have sex with men about alcohol and other drug use (AOD) use and sexual activity, will help guide development of future health promotion initiatives.

#### Participation

Your participation in this project will involve answering a survey which consists of approximately 30 questions. This questionnaire is expected to take about 15-20 minutes to complete. You will not be asked your name or any other questions which will identify you personally. However, you will be asked questions about your country of birth, age, gender identity and sexual orientation. You will also be asked questions about alcohol and drug use, sexual activity, and substance use in the context of sexual activity.

Your participation in this project is entirely voluntary. If you do not wish to take part you are not obliged to do so. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. Please note, that if you wish to withdraw from the project after you have submitted your responses, the Research Team are unable to remove your data from the project.

Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland, QuAC or Lives Lived Well.

#### **Expected Benefits**

It is expected that this project will not directly benefit you. However, it may benefit members of the gay and transgender communities living in Australia by helping to identify areas of heightened health risks and help to inform the development of health promotion projects regarding substance use and sexual activity..

#### **Risks**

It is possible some topics in the questionnaire may evoke uncomfortable or distressing feelings. If you become distressed and need to talk to someone immediately, please call Lifeline on 13 11 14. Your General Practitioner (GP) can also provide support, if you are concerned. Additional support and referrals are also available through Queensland AIDS Council 1800 177 434 and, Brisbane Sexual Health Clinic (07) 3837 5611 and Toowoomba Sexual Health Clinic (07) 4616 6446.

#### **Privacy and Confidentiality**

All comments and responses will be treated confidentially.

The names of individual persons are not required in any of the responses. If there are any identifiable survey responses, this information would be removed from data analysis.

Any data collected as a part of this project will be stored securely as per University of Southern Queensland's Research Data Management policy.

You can request a general summary of results (non-identifiable) by contacting Dr Amy Mullens: [amy.mullens@usq.edu.au](mailto:amy.mullens@usq.edu.au)

The data may be used in future research, to compare this group with information collected from other regions or collected during other periods of time. The data would remain non-identifiable.

#### **Consent to Participate**

Completion and submission of the survey by selecting the "SEND" button on the online survey, will be accepted as your informed consent to participate in the project. (for paper-pencil surveys; Completion and submission of the survey by providing the completed survey in a sealed envelope at an identified venue collection box point will be accepted as your informed consent to participate in the project.)

#### **Questions or Further Information about the Project**

Please refer to the Research Team Contact Details at the top of the form to have any questions answered or to request further information about this project.

#### **Concerns or Complaints Regarding the Conduct of the Project**

If you have any concerns or complaints about the ethical conduct of the project you may contact the University of Southern Queensland Ethics Coordinator on (07) 4631 2690 or email [ethics@usq.edu.au](mailto:ethics@usq.edu.au). The Ethics Coordinator is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

**Thank you for taking the time to help with this research project. Please keep this sheet for your information.**

## Appendix C



*We are seeking male members of the gay and transgender communities living in Southeast Queensland to participate in an important health survey, in partnership with the University of Southern Queensland.*

*We are seeking participants complete a questionnaire asking about sexual health and activity, and recreational alcohol and other drug use.*

*This project is being undertaken in conjunction with Queensland AIDS Council and Lives Lived Well.*

*The research team requests your assistance because information about current trends and relationships regarding sexual activity and substance use, can help to guide future health promotion efforts regarding HIV/STIs and substance use among gay and transgender men.*

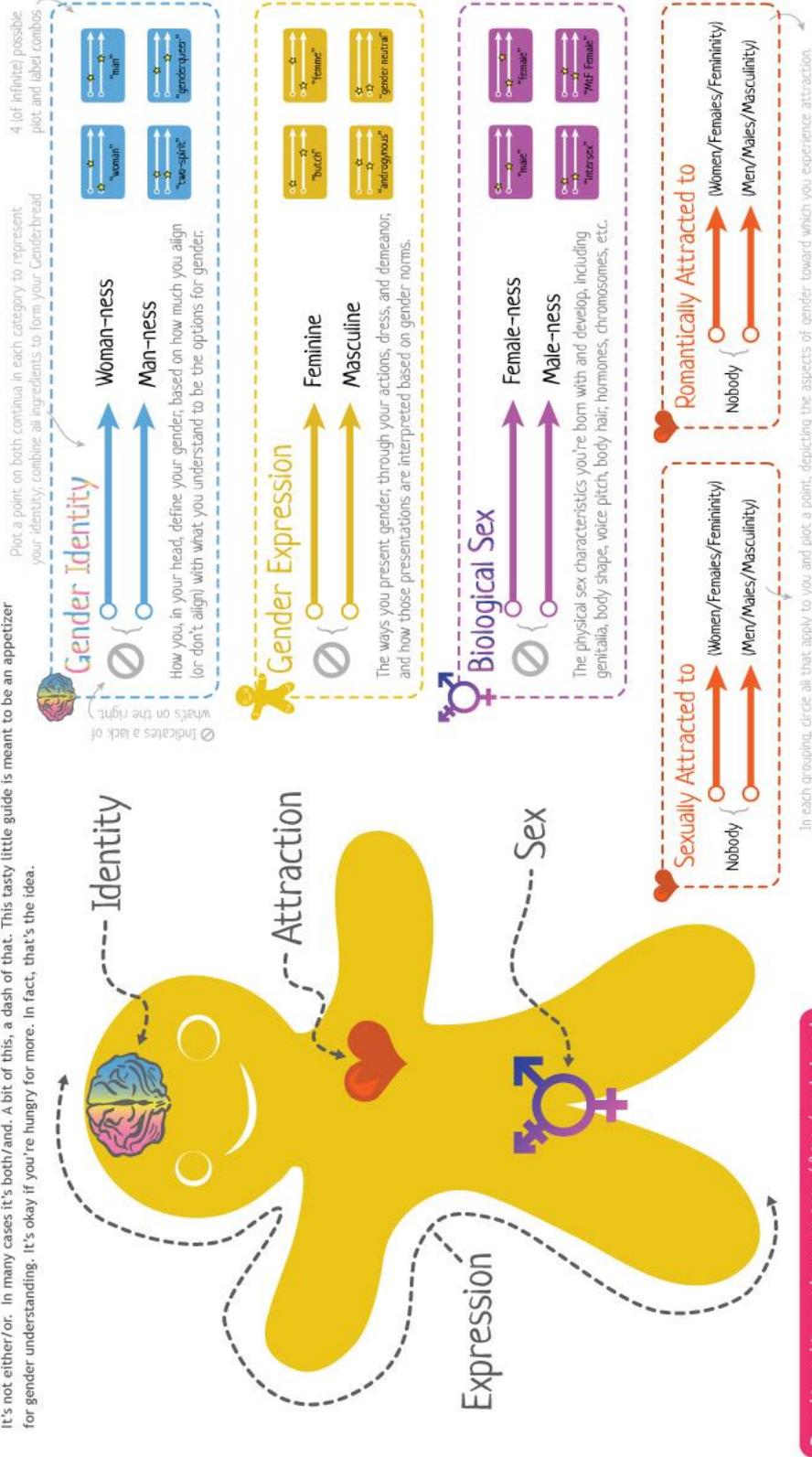
*Your participation would involve completion of a questionnaire that will take approximately 15-20 minutes of your time, and you could complete the questionnaire online or in paper-pencil format.*

*If you are interested in completing this survey: please contact \*\* (insert name/role) at Queensland AIDS Council (on insert number); OR click on the following weblink (insert \*SurveyMonkey website for participant information sheet/survey).*

# The Genderbread Person v3.3

Gender is one of those things everyone thinks they understand, but most people don't. Like *Inception*, Gender isn't binary. It's not either/or. In many cases it's both/and. A bit of this, a dash of that. This tasty little guide is meant to be an appetizer for gender understanding. It's okay if you're hungry for more. In fact, that's the idea.

by it's pronounced **METROsexual**.com



For a bigger bite, read more at <http://bit.ly/genderbread>

