FLUX – Following Lives Undergoing Change

Drug using behaviours and beliefs, and associated harms, among gay and bisexual men

STUDY TEAM:

Chief Investigators: Associate Professor Garrett Prestage (Kirby Institute, UNSW/Australian Research Centre in Sex Health & Society, La Trobe University), Professor Louisa Degenhardt (National Drug & Alcohol Research Centre, UNSW), Dr. Fengyi Jin (Kirby Institute, UNSW), Professor Jeffrey Grierson (Anglia Ruskin University), Dr Toby Lea (Centre for Social Research in Health, UNSW).

Partner Investigators: Marcus Pastorelli (ACON), Colin Batrouney (VAC/GMHC), Nicky Bath (NUAA).

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Study Aims:
• A1. To identify contextual and individual factors associated with uptake and recreational use of drugs, particularly those identified as being associated with HIV risk behaviour and HIV infection, among gay and bisexual men (GBM), and associations with risk behaviours, over time.
• A2. To describe the relationship between social and community norms, and the shared understandings of risk and pleasure, and drug use behaviours and beliefs among GBM with differing social connections to other GBM.
• A3. To describe the role of particular gay community subcultures, sexual and social networks, in influencing attitudes and beliefs about drug use and in affecting drug-using behaviours.

Background: In the recent National Drug Strategy Household Survey, about one in seven adult Australian men report recent use of illicit drugs, compared with 33.8% of homosexual/bisexual respondents; recent meth/amphetamines use, specifically, was 7.1% among homosexual/bisexual respondents v. 1.9% among heterosexual respondents. These rates were higher than any other population group and are consistent with other data. Studies of harms associated with drug use among GBM have usually focused on sexual risk behaviour and subsequent HIV infection; dependence and overdose are explored less often, although, high rates of have nonetheless been reported. The Gay Community Periodic Surveys (GCPS), under the leadership of CI Prestage, are the basis of Australia’s behavioural surveillance among gay men: Over half of GCPS respondents report recent illicit drug use. GBM constitute about 2% of the adult male population but are over-represented in studies of drug-using populations.

Drug use trends among GBM: The GCPS shows differing trends in use of particular drugs over time. Among Sydney men between 2004 and 2010, use of many drugs increased: Cocaine (15.8% to 22.0%); gamma-hydroxybutyrate (9.8% to 13.1%); erectile dysfunction medications (EDM) (18.1% to 21.8%). Marijuana use declined (42.1% to 33.1%). About one in twenty men reported recent injecting drug use (IDU) and 2.1% reported at least monthly IDU. Among Queensland men, 27.2% reported use of more than two drug types in the previous six months during 2010. The Health in Men cohort study (2001-2007) led by CIs Prestage and Jin, showed that individual
GBM’s use of particular drugs changed over time but overall rates remained very high over time.\textsuperscript{16} The continuing high rates of drug use among Australian GBM is a major public health issue.\textsuperscript{16}

Associations between drug use and sexual risk behaviour among gay and bisexual men: Recent increases in unprotected anal intercourse with casual partners (UAIC) among GBM, have been linked to increasing HIV incidence.\textsuperscript{17-19} Drug use has been associated with UAIC and with HIV seroconversion,\textsuperscript{2,10,20-23} particularly when used to enhance sexual pleasure.\textsuperscript{9,23-25} CIs Prestage and Jin have demonstrated the significant role of drug use in HIV infection, and particularly, the role of methamphetamine and erectile dysfunction medication.\textsuperscript{26} Reasons for drug use among GBM have mainly focussed on individual psychological causes: Stigma, social isolation, and sexual abuse. Possible social and subcultural factors have rarely been explored, although high rates of drug use, specifically to enhance sexual pleasure, are associated with gay party subcultures and sexually adventurous networks.\textsuperscript{27-28} Participation in networks of sexually adventurous GBM is a key factor in sexual risk behaviour and HIV seroconversion.\textsuperscript{10,20,26,25-32} CI Prestage was among the first in Australia to identify the role of sexual adventurousness\textsuperscript{33} and has noted the specific connections between drug use and sexual risk behaviour in the concept of ‘intensive sex partying’.\textsuperscript{34} Drug use, particularly methamphetamine and EDM, has been described as causally associated with sexual risk behaviour and HIV infection among GBM.\textsuperscript{35-37} In two cohort studies of Australian GBM, despite a general association between use of drugs and UAIC in the preceding six months, we found no such association at the event-level.\textsuperscript{6,38} Men who took risks sexually were more likely to use drugs, but UAIC was also a strong predictor of subsequent drug use, suggesting that the use of drugs may be a method of enhancing and extending sexual experiences.\textsuperscript{5} This indicated a subcultural association rather than a direct causal relationship. Also, the strong social support provided by particular gay community sexual networks can mediate individuals’ drug use to prevent associated harms.\textsuperscript{39}

Knowledge gaps: All jurisdictions have health promotion campaigns targeting drug use in general; ACON has specific programs targeting drug use among GBM;\textsuperscript{40} HIV-prevention campaigns targeting GBM usually also address drug use.\textsuperscript{40-41} Yet, drug use remains high within gay communities and rates of associated harms are largely unknown. Also, the specific role of drug use in HIV infection and sexual risk behaviour remains unclear. Little research has been conducted into the patterns and contexts of GBM’s drug use, and how this varies over time, or understandings of harm reduction. GBM’s sexual behaviours are influenced by shared understandings of HIV risk and gay community norms regarding ‘safe sex’.\textsuperscript{42} Similar arguments may apply to their drug-using behaviours and attitudes toward harm reduction, but little research has addressed these issues, other than their association with HIV infection and sexual risk behaviour. GBM’s shared understandings of risk and pleasure in relation to drug use and sexual behaviour are likely to be key factors in their own drug using behaviour. Little is known about gay community norms regarding drug-using behaviours and harm reduction or beliefs about associated harms or how these norms intersect with behavioural norms around sexual risk behaviour. Even less is understood about the role of specific gay community subcultures, and how engagement in particular sexual and social networks might influence the commencement of, contexts for, and changes in drug use over time. Broad attitudes toward drug use among GBM have been explored in the US\textsuperscript{43-45} but normative beliefs about drug use within Australian gay community networks have never been investigated.

Social theory: Social interaction theories view behaviours, whether risk-taking or pleasure-seeking, as resulting from dynamic social interaction rather than static individual phenomena, emphasising the importance of context, negotiation and the socially-constructed meanings that behaviour and risk may have in specific situations.\textsuperscript{46-50} These theories allow an understanding of the social meaning of drug-using and risk-taking behaviours at the community level.\textsuperscript{48-50} Social cognitive theory sees behaviours as jointly determined by individual and contextual factors.\textsuperscript{47} Theories of community level change view this interaction as critical to the impact of prevention interventions. Social norms and beliefs within a given group are often key determinants of behaviour change. This study will help to identify the social determinants of drug-using behaviours among GBM. We will
specifically investigate the role of particular gay community norms and shared understandings of risk and pleasure in GBM’s drug-using behaviours, and associated harms, over time.

Choice of the research methodology: Studies of drug-using and other risk-taking behaviours need to incorporate patterns of social and sexual interactions, and the connections between individuals and their social networks, communities and subcultures and the changes in such connections over time. Cohort studies can track individuals over time to examine risk factors for specific outcomes: Individuals are enrolled prior to a specified outcome. Such outcomes may include behaviours or related harms. We will enrol GBM into a cohort prior to their commencement of specified drug use patterns and monitor changes in their drug use (and non-use) patterns, and any associated harms, as well as their sexual risk behaviour and their engagement with gay community networks, over time. 

A cohort study offers a highly appropriate methodology for our research aims.
RESEARCH PROJECT:

Significance: The national drug strategies recognise that GBM have higher rates of drug use, including amphetamine-type stimulants (ATS), and have more limited access to treatment services. Pillar Two of the National Drugs Strategy (NDS) (Demand Reduction) prioritises the prevention and delay of the uptake of use of drugs and the reduction of the misuse of drugs, while Pillar Three (Harm reduction) prioritises the reduction of the drug-related harms. The NDS seeks to strengthen the evidence base. This will be the first longitudinal study to examine prevalence and incidence rates of drug use, associated harms, and risk factors for uptake and changes in drug use over time among GBM in Australia. The NDS notes that drug use affects families and communities, and that interventions must be sensitive to specific populations. Significantly, given the associations between drug use, risk behaviour and HIV infection, this study will also address the National HIV Strategy’s objective to reduce rates of HIV infection in the most affected population group in Australia. Information from this study will directly inform programs addressing drug use in this high risk population and will be a significant tool in targeting harm reduction messages.

- We will collect quantitative and qualitative data not previously collected in Australia. We will recruit through networks of GBM at high risk for drug use and its associated harms. The study will provide important insights into how to better target local harm reduction programs.
- We will advance Australia’s strong reputation in HIV prevention and research, and in harm reduction approaches to drug use by addressing some of the most significant predictors of HIV infection and the contextual factors associated with drug use.

Outcomes: Outcomes of the proposed study will include:

- New knowledge of the incidence of drug-using behaviours and associated harms among GBM;
- Better knowledge of how social norms, particularly those regarding shared understandings of risk and pleasure, explain drug-using and other risk behaviours of GBM;
- Research-based evidence on the differences between distinct networks of GBM in Australia;
- Practical recommendations for health promotion, alcohol and other drugs (AOD) and HIV/Hepatitis C virus (HCV)-prevention agencies and policy makers to improve the targeting of prevention messages to local gay communities, and to promote sustainable behaviour change;
- Newly generated data to further advance social research concerning the interconnections between drug use and sexual behaviour, sexual mixing, and modelling HIV/HCV epidemics in Australia;
- Publications in relevant peer-reviewed academic journals;
- Presentations of findings at relevant peer-reviewed national and international conferences;
- Tailored dissemination outputs for relevant AOD and HIV/HCV sector organisations.

Research Plan: This cohort study will employ a mixed-method approach using both quantitative and qualitative data collection, to identify individual trajectories of behaviour and beliefs, and differences that emerge through engagement in local gay community subcultures and networks.

Rationale: Most currently available epidemiological data concerning drug use among GBM is cross-sectional. Little is known about the changing patterns of drug use over time within individual men and their networks, or associated harms in this population. Also, little is known about the predominant beliefs within Australian gay community networks regarding drug use, or, particularly, how individual men’s perspectives on these issues help shape their drug-using behaviours. Elsewhere, subjective beliefs about what peers think and descriptive beliefs about the prevalence of behaviours have been positively associated with some regulation of potentially harmful drug-using
behaviours among gay and bisexual men. Most currently available data focus on the role of drugs in the cause of risk behaviours among GBM as a simple one-way and directly causal association. Far less is known about the role of other social and interpersonal factors in predicting drug use. Drug use and harm reduction programs specifically targeting GBM have commenced in recent years; however, it is not clear whether there are differences in GBM’s drug-using and harm reduction behaviours depending on the nature of their personal and subcultural connections. Further insights into their behaviours and social networks may identify barriers to the adoption of harm reduction messages and help to better target drug use programs within these same networks.

**Strategy:** We will systematically interview and follow-up individual GBM every six months over four years to collect information about drug-using behaviours and associated harms and other risk behaviours, gay community engagement, and relevant personal characteristics. We will obtain consent for linkage to hospital admission records to identify drug-related incidents and to the national HIV registry to identify subsequent HIV infections. We will collect information about attitudes and beliefs regarding drug use. We will investigate individual level understandings of social norms and behaviours by participants and the agreement of perceived norms between participants and the networks in which they participate, compared with the degree of gay community connection. In-depth interviews will detail perceived norms and the motivations underlying specific behaviours. The movement into and out of specific social, sexual and drug-using networks will be tracked over time to compare prevailing behavioural norms and drug-using and harm reduction behaviours. Comparisons of the prevalence of knowledge about harm reduction, and barriers to information communication will also be conducted.

**Sample size and power:** Sample size calculations were based on data from our previous studies. In the Health in Men (HIM) study, the incidence of commencing use of any of amyl nitrite, erectile dysfunction medication or methamphetamine in the 25% of the sample who did not report a history of using these drugs at baseline was 12.82 per 100 person-years (10.82 in those who did not report unprotected anal intercourse (UAIC) in the previous six months and 23.33 in those who reported UAIC, HR=2.22, 95% CI 1.48-3.32). We assumed an incidence of commencing drug use of 10 per 100 person-years in those who do not report UAIC, and 25% of men will report UAIC (24.4% in the 2009 Gay Community Periodic Survey (GCPS) in Sydney and 30.0% in HIM at baseline). Rates of drug use overall and for these specific drugs have changed little in more recent GCPS. We examined plausible scenarios (Table) where the study would have at least 80% power to detect an increase in incident drug use in men who report UAIC. Using an event-driven approach, we will require 67 incident drug use cases to detect a significant difference (HR=2.0) in drug use incidence between men who report and men who do not report UAIC. This will require 540 person-years of follow-up. Therefore, we propose to recruit a minimum of 360 men who did not report use of these drugs at baseline within a total sample of 1440 men, with an average follow-up of 1.5 years. However, in doing so, we will need to account for the peculiarities of online recruitment. We

<table>
<thead>
<tr>
<th>Power</th>
<th>Incidence among men reporting no UAIC (per 100 person-years)</th>
<th>Risk of incident drug use in men reporting UAIC</th>
<th>Total person-years of follow-up</th>
<th>Events</th>
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<td>2.25</td>
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anticipate that about one third of participants will complete the baseline questionnaire but not enrol into the study itself, thereby not being available for follow-up. We therefore aim to recruit a minimum of 2300 men to achieve a sample of 1500 men enrolled formally into Flux and available for follow-up.

Study structure: While the primary aim is to measure incidence of the uptake of drug use, Flux will also measure incidence of the cessation of drug use, and the changes in drug use patterns. We will therefore seek to follow up all participants regardless of their drug use patterns at baseline. We will recruit 2300+ GBM to complete the baseline questionnaire, of whom at least 1500 will be enrolled for follow-up in the Flux study. Data collected from the 800 men who do not enrol into the study proper will be available for cross sectional analyses of the baseline data. We will ask enrolled participants to complete 6-monthly follow-up questionnaires. Enrolled participants will also be asked to consent to data linkage to specified health databases (HIV registry and hospital admissions); we anticipate about 900 men will consent to this request. To ensure minimum follow-up time (1.5 years), we will need to have enrolled all 1500 participants by end of June 2015. This will require the following to occur:

2014: 1000 men completed baseline questionnaire, including 650 enrolled into Flux.
2015: 1300 men completed baseline questionnaire, including 850 enrolled into Flux by June 30th.

<table>
<thead>
<tr>
<th></th>
<th>Baseline survey</th>
<th>Enrolment</th>
<th>Data Linkage</th>
<th>Follow-up survey</th>
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<td>400</td>
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This plan provides the basis for multi-level participation: 2300 men will participate in the cross-sectional baseline survey to permit simple analysis of associations between drug using behaviour and other factors; 1350 men will provide some follow-up data to permit analyses of predictors of changes in drug use behaviours (uptake of use, cessation of use, switch of drug types); and 910 men will provide consent to data linkage to permit analysis of clinical outcomes (HIV and HCV infection, and hospital admissions).
In addition to incident cases of commencement and discontinuation of drug use, this structure will provide the capacity to track changes in use of specific drugs, attitudes toward drug use, associated risk factors, and any harmful outcomes or other consequences.

**Recruitment** will be national and conducted online.

**Recruitment and retention methodology:** Eligibility will include: age 18 years or older; live in Australia or be an Australian resident; have had sex with another man in the preceding 12 months or self-identify as homosexual. They will be identified through organisations, locations, and websites where GBM socialise and interact, as we have successfully done in the past.5-6,11,33,54 Men will be referred to the study website and will be asked to enrol in a longitudinal study, involving semi-annual, repeated interviews. They will also be encouraged to refer other men into the study using a pre-coded, de-identified referral number technique, to enable associations between networks of individuals to be recorded. Responses on key drug use indicators will be monitored to ensure we enrol sufficient men who had and who had not been using the key drugs prior to baseline, on a regular basis. Participants will be offered a separate, linked, voluntary qualitative interview at the end of the enrolment session, after the interviewer explains the confidentiality safeguards. As we have done in the past,18 study retention will be maximised through ongoing engagement with study participants, providing personal contact and feedback, through study newsletters, communications and interactive components on the study website. In the HIM cohort we achieved a retention rate at one year of 87% and 81% after two years.

Study enrolment will be by self-referral and will be conducted online. Confidentiality procedures will include: (1) delinked data collection; (2) identical web-based questionnaires to eliminate the
need for paper copies and data entry; (4) encrypted data storage on secure computers, and (4)
adequate training of all project personnel. Six-monthly follow-up questionnaires will be completed
online by the men themselves when reminded to do so. We have approval from the ethics
committees of UNSW, La Trobe University, ACON, and VAC, to ensure compliance with ethics
procedures and the quality of research. The questionnaire will use an established online platform
with appropriate data encryption and privacy protections. Our previous use of web-based surveys
has been well received by GBM. Data collection will include two linked parts: a standard
structured questionnaire, approximately thirty minutes in length, and a voluntary in-depth interview,
approximately ninety minutes in length.

Measures: We will use key variables that have been validated across several of our previous studies
of GBM over the past two decades to measure sexual risk behaviour and engagement in gay
community networks and subcultures. The measures of gay community engagement include two
different kinds of measures: Scales measuring extent of engagement; and indicator variables for
types of engagement. We will use existing scales that measure beliefs about the relative risk of
HIV transmission, and optimism regarding HIV in general. We will rely on variables used
previously in Australian studies by CI Degenhardt to measure drug use, as well as certain
additional items adapted specifically for use among GBM. We will also include internationally
validated and well-recognised measures self-esteem, sensation-seeking, and depression.

HIV and HCV status will be both self-reported and obtained through data linkage. While
verification of serostatus is important, we will mainly rely on self-reported serostatus because: 1)
This study is focused on behaviours, which are largely determined by individuals’ knowledge or
belief about their serostatus; 2) our previous work shows a high prevalence and frequency of sexual
health testing and a high correlation between self-reported and actual serostatus among Australian
gay men, at least with respect to HIV. Few men in this study will have undiagnosed infection,
so the high cost of testing and referral for the total sample would not be justified. Using data linkage
(see below) we will match with the National HIV Registry and with HCV notifications in state
health departments to determine both prevalent and incident infections. As this study is concerned
with relationships between beliefs and behaviours, any discrepancies between self-report and
matched data will not detract from the primary aims, and will also highlight differences between
behaviours and beliefs in the context of presumed knowledge and verified knowledge.

Community-level information: Subjective and descriptive norms and beliefs about drug use, sexual
pleasure and HIV/HCV risk; perceptions of the knowledge about and attitudes towards drug use and
HIV/HCV prevention methods in their respective personal networks and communities; personal and
peer- or community-level barriers to safe practices and avoidance of drug use.

In-depth interviews: Qualitative interviews will be conducted by trained interviewers to provide
insights into key issues related to the motivations for the use (and non-use) of specific drugs and
how this affects men’s decisions and preferences regarding other risk-taking behaviour. Men will be
asked about their motivations and rationales for using and not using particular drugs, and for other
risk-taking behaviours. The interviews will be approximately ninety minutes in length. At least
thirty in-depth interviews will be conducted annually. The final number of in-depth interviews in
each year will be determined by saturation, after assessing the interview material itself to ensure
that substantive issues have been fully explored and saturation has been achieved. At baseline, some
men who did not use any of the drugs of interest and some men who reported regular use of those
drugs, will be asked to discuss in detail their attitudes and beliefs about drug use. At follow-up
some men whose drug-using behaviour has altered, by commencing, increasing substantially or
ceasing, will be asked about the reasons for these changes in their drug-using behaviour.

Data linkage: We will seek consent from participants to link their responses with two available
databases: the National HIV Registry and hospital admissions. We will also match for HCV
notifications with state health departments. This will be an additional optional consent and not a
requirement for participation, but in our previous cohort studies of GBM we have routinely received
over 90% consent to link data. We are also currently in the process of linking data collected for the HIM cohort study with hospital admissions data. Linkage to the HIV registry allows us to identify baseline and incident HIV infections within the cohort and link them with relevant risk behaviours, including drug use. A similar process can be achieved for HCV infections through HCV notifications to state health departments. Linkage with hospital admissions will allow us to identify significant adverse events related to drug use within the cohort and to link these with changes in drug using behaviour and other risk indicators. As we have previously done, we will negotiate appropriate protocols with the respective relevant authorities to ensure that we have established the correct procedures to enable data linkage to occur smoothly at the end of the data collection period. There is a long history of accessing those data for research purposes and members of our team are familiar with CHeReL so we envisage no problems accessing those data. Hospital admissions data are available in all the study sites and are quite complete, including health outcomes related to drug use. The success of such linkage relies on the quality of the identifiers being used. We will collect identifying details appropriate to this purpose, as we have successfully done in our previous studies. Data linkages will be completed at the end of the study period.

Data analysis: Data analysis will be conducted by trained research officers, under the leadership of the Chief Investigators. Analyses of the quantitative data will be conducted using SPSS, Stata, and other statistical packages to explore changes in individuals over time and their connections within specific sexual and social networks and subcultures, their shared understanding of norms and behaviours, and how these shared understandings are translated into reported practices.

(1) Individual-level indicators of drug use and its related harms, and HIV/HCV risk behaviours. This has not previously been done with respect to drug-using behaviours and their associated harms among GBM, or to sexual risk behaviour specifically in the context of drug use.

(2) Group-level indicators of drug use and its related harms, HIV/STI risk and risk-reduction practices. We will examine the characteristics and extent of men’s specific network connections (attachment to subcultural aspects of gay community and personal friendship networks) to provide information about the men’s perception of behavioural norms. Logistic regression will be used to identify risk factors associated with prevalent drug use, and Cox regression will be used to identify risk factors for incident drug use. Crude and adjusted analyses will be performed to identify factors associated with both prevalent and incident drug use. Multivariate logistic regression and Cox regression models will be developed to determine independent risk factors.

Analysis of in-depth interview data will be conducted using NVivo and will involve close discourse analysis\(^62-63\) to identify and interpret discursive constructions of meanings, perceptions and understandings. In the context of theoretical concerns about the place of sexual and social networks in influencing behavioural norms, the connections between community subcultures and individuals, behaviours and beliefs will be addressed. Through the discourses mobilised in recounts of events and their contexts, we will identify broader emotional, cultural and interpersonal dimensions of the role of drug-using behaviours, both individual and within group contexts.
### Timeframe:

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2014: Ethics application; Recruit staff; SAC established; 1st investigator meeting; Prepare equipment, software and research instrument; Negotiate data linkage protocols; Prepare cohort recruitment, retention and management procedures; Pre-test interview tool; Recruitment commences; Data collection starts.

2015: Submit progress report; 2nd investigator meeting; Monitor and revise cohort recruitment, retention and management procedures; Complete recruitment; Data collection continues, including follow-up data collection; Data cleaning/management; Preliminary analysis to monitor cohort; Data analysis and reporting plan commenced.

2016: Submit progress report; 3rd investigator meeting; Monitor cohort retention and management procedures; Complete data collection; Complete data cleaning/management; Arrange data linkages to hospital admissions and HIV registry; Data analysis for feedback and publications (continue into 2018); Draft manuscripts (continue into 2018); Presentations to stakeholders and conferences.

### RESEARCH ENVIRONMENT:

**Research team and study management:** This project will be administered by the Kirby Institute at UNSW, where most of the research will be conducted. The research team has strong methodological backgrounds and experience in leading national HIV behavioural or drug use surveillance, strong records in HIV epidemiological and social research, drug and alcohol research, and health promotion and has established relationships with relevant organisations and communities. CI Prestage has extensive experience in the management of cohort studies of GBM and is the most highly qualified Australian researcher in this field; he has also played a significant role in Australia’s internationally regarded HIV response. CI Degenhardt has extensive expertise in Australian and international drugs research and is highly regarded nationally and internationally for the breadth and quality of her work on the epidemiology of drug use, comorbid mental health problems, and illicit drug surveillance. CI Jin is a highly regarded statistician and has worked extensively on cohort studies of GBM. CI Grierson is highly regarded for his particular expertise in GBM’s community networks analysis. CI Lea has extensive expertise in Australian drugs research among GBM. A Project Coordinator will manage data collection and data analysis. A Research Officer will manage study enrolments and retention.

**Groundwork research:** The leading role of the Kirby Institute is recognised worldwide and its HIV behavioural, epidemiological and social research has made a significant contribution to international HIV research. Studies conducted by the Kirby Institute, many directed by CI Prestage, have systematically and reliably collected data on GBM’s risk behaviour. Our work has emphasised the importance of the social basis for risk behaviour and of (gay) community engagement and has
described the association of sexual and drug-using behaviours with HIV.\textsuperscript{6,26,38} We also monitor trends in the prevalence of drug-using and sexual risk behaviours in six Australian jurisdictions and CI Lea has recently taken the lead on much of this work.\textsuperscript{11,14-15} We have explored the contexts of drug-using and sexual risk behaviour, and the specific contexts of the pursuit of pleasure and assessment of risk, among Australian GBM.\textsuperscript{25,54-56,65} The Kirby Institute has also conducted significant work on drug use in relation to HCV infection and HCV sexual transmission.\textsuperscript{66} Separately, work by CI Grierson found an association between GBM’s sexual behaviours and the structure and composition of their social networks.\textsuperscript{67} CI Degenhardt has a strong national and international reputation for her research into the use of drugs,\textsuperscript{68} particularly through her role at the National Drug and Alcohol Research Centre, and has been responsible for groundbreaking work on the rates and consequences of drug use among GBM in Australia.\textsuperscript{69}

**Research partnerships:** As in all of our previous research, and in the spirit of partnership encouraged by the National Drug and HIV Strategies, we will continue collaboration between social researchers, other research partners, and community-based organisations to develop model approaches. We will establish a Study Advisory Committee (SAC) including study investigators and representatives from key stakeholders (including state-based AIDS Councils) to enable community consultations. Partner Investigators Pastorelli, Batrouney and Bath have responsibility for programs addressing gay men’s drug use within the relevant community organisations and provide additional expertise and guidance for recruitment. Early communication and partnership will ensure research quality and value for education and intervention purposes.

**ROLE OF PERSONNEL:**

All CIs will assist with the study design, and interpretation of study results, and contribute to the production of co-authored publications and other study outcomes. Associate Professor Garrett Prestage will have direct oversight of all significant processes. He will work with the research team, providing ongoing conceptual and theoretical expertise in developing the study protocols and instruments and overseeing data analysis and interpretation, working closely with project staff in the planning and execution of the study. Professor Louisa Degenhardt will provide ongoing conceptual and theoretical expertise to specifically guide the development of the survey instruments, data analysis and interpretation. Dr. Fengyi Jin will advise on the process of data collection and management and will oversee statistical analysis aspects of the study. Professor Jeffrey Grierson will contribute to qualitative data analysis of participant interviews, and will contribute specific expertise in the structural aspects of gay men’s peer relationships that may mediate the effects under investigation. Dr Toby Lea will provide ongoing conceptual and theoretical expertise to specifically guide the development of the survey instruments, data analysis and interpretation.

All Partner Investigators will ensure that their respective organisation’s resources and relationship to the local gay community will assist with recruitment and reporting the findings to that community – and to other relevant community organisations and health services.

Mr Marcus Pastorelli works at ACON, Australia's largest community-based GLBT Health organisation, on issues concerning Alcohol and other Drugs among gay men.

Mr Colin Batrouney is Manager of the Health Promotion Program at the Victorian AIDS Council / Gay Men’s Health Centre (VAC/GMHC), and has more than twenty years’ experience working with gay men and HIV. He has been involved with most major prevention initiatives targeting gay men in Victoria and his campaign work has been implemented in every state and territory. He is a member of the Australian Union of Health Promotion and Education.
Ms Nicky Bath is Executive Director of NSW Users and AIDS Association (NUAA). She has over 20 years experience in this sector, including health promotion work with GBM around drug use based on a harm reduction framework and ongoing partnerships with drug user bodies.

Mr Mo Hammoud, Project Coordinator, will manage the study, implementation of study procedures, undertake data matching, and some data analysis and preparation of reports and scientific manuscripts.

Mr Jack Bradley, Research Officer, will facilitate recruitment, enrolment and retention of, and assist with ongoing communications, and day-to-day interactions with local study participants. He will also manage local in-depth interviews with study participants and also assist with data management.

Mr Chris Gianacas, Web/Graphic Design Specialist, will develop promotional material, and the online interactive platform for confidential participant recruitment and enrolment, questionnaires, and day-to-day interactions with study participants throughout the study period.
References including members of research team are highlighted in **bold**.


