



2019 NDARC Annual  
Research Symposium

Wednesday 16 October

John Niland Scientia Building  
UNSW Kensington

# Responding to clinical, community and family needs

2019 NDARC Annual Research Symposium

8:30 - 9:00am	<b>Registration</b>
9:00 - 9:10am	<b>Welcome to Country</b>
9:10 - 9:15am	<b>Welcome Address</b> <b>Professor Sean Emery</b> Senior Vice Dean, Research & Operations, UNSW Medicine
<b>Plenary One</b>	<b>Family and Communities</b> Chair: Mr David Laffan, Assistant Secretary, Alcohol Tobacco & Other Drugs, Department of Health
9:15 - 10:00am	<b>Keynote Address: Improving outcomes for children living in families with parental substance misuse: Practice and Policy imperatives</b> <b>Professor Sharon Dawe</b> Clinical Psychologist, Griffith University
10:00 - 10:20am	<b>Neonatal Abstinence Syndrome (NAS): not only neonatal and not only abstinence</b> <b>Professor Ju-Lee Oei</b> Neonatologist, Epidemiologist, Paediatrician, Royal Hospital for Women, UNSW Sydney
10:20 - 10:40am	<b>The lived experience of drug use and mental illness from a family perspective</b> <b>Dr Gabrielle Carey</b> H.C. Coombs Creative Arts Fellow, Australian National University
10:40 - 10:50am	<b>Two-minute Poster Presentations</b> Chair: <b>Dr Natasa Gisev</b> , NDARC, UNSW Sydney Poster Presenters: Nicola Black, Daisy Gibbs, Alexandra Aiken, Sonja Memedovic
10:50 - 11:10am	<b>MORNING TEA</b>
<b>Plenary Two</b>	<b>Emerging Drugs and Associated Risks</b> Chair: Professor Nadine Ezard Clinical Director, Alcohol and Drug Services, St Vincent's Hospital Sydney and Director of NCCRED, UNSW Sydney
11:10 - 11:50am	<b>Keynote Address: Bending the HIV epidemic by intervening with men who have sex with men who use amphetamine-type substances: targets for prevention and treatment</b> <b>Professor Frederick L. Altice, MD</b> Yale University
11:50 - 12:10pm	<b>Emerging trends in drug use, harms, and markets: Findings from Drug Trends 2019</b> <b>Dr Amy Peacock</b> Research Fellow, NDARC, UNSW Sydney
12:10 - 12:30pm	<b>Towards a prompt response network for Australia: rapid health communication about events related to emerging drugs of concern</b> <b>Dr Sandra Mitchell</b> Emerging Drugs Research Fellow, NCCRED, UNSW Sydney
12:30 - 12:45pm	<b>Two-minute Poster Presentations</b> Chair: <b>Dr Natasa Gisev</b> , NDARC, UNSW Sydney Poster Presenters: Janette Smith, Toni Karlsson, Julia Uporova, Lucy Tran, Wing See Yuen, Catherine Foley

12:45 - 1:45pm LUNCH AND POSTER VIEWING	
1:45 – 3:00pm Breakout Sessions	
<b>Drug Trends &amp; Emerging Drugs of Concern</b> Chair: Dr Michelle Cretikos, NSW Ministry of Health Room: Leighton Hall	<b>Family, Communities &amp; Vulnerable Populations</b> Chair: Ms Karen Price, Deputy CEO, ACON Room: Tyree Room
<b>Patterns and correlates of pregabalin use among a sample of people who inject drugs in Australia</b> <b>Dr Rachel Sutherland</b> Research Fellow, NDARC, UNSW Sydney	<b>Alcohol, tobacco and illicit drug use among lesbian, bisexual and queer women in Sydney: Insights from the SWASH periodic survey</b> <b>Dr Julie Mooney-Somers</b> Senior Lecturer, University of Sydney
<b>Illicit drug use in Australian prisons amongst people who regularly inject drugs</b> <b>Ms Daisy Gibbs</b> Research Officer, NDARC, UNSW Sydney	<b>“It’s hard for me to tell my story” - A qualitative study of male Aboriginal and Torres Strait Islander drug and alcohol rehabilitation clients’ experiences with attending primary health care</b> <b>Dr Sara Farnbach</b> Post-Doctoral Research Fellow, NDARC, UNSW Sydney
<b>Recent trends in illicit drugs available on darknet marketplaces: Findings from the Drugs and New Technologies (DNeT) project</b> <b>Mr Anant Mathur</b> Research Assistant, NDARC, UNSW Sydney	<b>Transition of substance-induced psychosis to schizophrenia: a systematic review and meta-analysis</b> <b>Dr Julia Lappin</b> Psychiatrist, St Vincent’s Hospital, UNSW Sydney
<b>New directions in the treatment of methamphetamine use disorder</b> <b>Professor Nadine Ezard</b> Clinical Director, Alcohol and Drug Services, St Vincent’s Hospital Sydney and Director of NCCRED, UNSW Sydney	<b>Dr Benjamin Murrie</b> Junior Medical Officer, NSW Health
<b>MDMA-related deaths in Australia</b> <b>Dr Amanda Roxburgh</b> Conjoint Research Fellow, NDARC, UNSW Sydney	<b>Sex, drugs and violence</b> <b>Associate Professor Lucinda Burns</b> NDARC, UNSW Sydney
<b>Opioid Use and Related Harms</b> Chair: Ms Jude Byrne, National Coordinator AIVL HCV Peer Education and Treatment Program Room: Gallery One	<b>Alcohol &amp; Tobacco</b> Chair: Professor Hayden McRobbie, NDARC, UNSW Sydney Room: Gallery Two
<b>The impact of opioid agonist treatment upon multiple mortality outcomes in people who inject drugs: an examination of varied OAT characteristics in three varied settings</b> <b>Professor Louisa Degenhardt</b> Deputy Director, NDARC, UNSW Sydney	<b>Overview of tobacco cessation in vulnerable populations</b> <b>Dr Ryan Courtney</b> Research Fellow, NDARC, UNSW Sydney
<b>Extended-release (depot) buprenorphine injections for opioid dependence: Understanding potential clients’ perceptions prior to implementation in Australia</b> <b>Professor Michael Farrell</b> Director, NDARC, UNSW Sydney	<b>Predicting alcohol dependence among early adolescent regular alcohol users: Findings from the World Health Organization World Mental Health surveys</b> <b>Miss Chrianna Bharat</b> Research Fellow, NDARC, UNSW Sydney
<b>Problematic opioid use in people prescribed opioids for chronic non-cancer pain over five years</b> <b>Dr Gabrielle Campbell</b> Research Fellow, NDARC, UNSW Sydney	<b>The overall effect of parental supply of alcohol across adolescence on alcohol-related harms in early adulthood</b> <b>Mr Philip Clare</b> Biostatistician, NDARC, UNSW Sydney
<b>Frequency of injecting among people who inject drugs: a systematic review and meta-analysis</b> <b>Miss Samantha Colledge</b> Research Assistant, NDARC, UNSW Sydney	<b>Community-based responses to alcohol harm: Do they work and where next?</b> <b>Professor Anthony Shakeshaft</b> Deputy Director, NDARC, UNSW Sydney
<b>Differences between urban and rural areas in changes in emergency department presentations associated with opioid agonist treatment</b> <b>Dr Sarah Larney</b> Senior Research Fellow, NDARC, UNSW Sydney	

3:00 – 3:20pm	<b>AFTERNOON TEA</b>
<b>Plenary Three</b>	<b>NDARC New Directions</b> Session Chair: Professor Michael Farrell Director, NDARC, UNSW Sydney
3:20 - 3:50pm	<b>The future of vaping and e-cigarettes</b> <b>Professor Hayden McRobbie</b> NDARC, UNSW Sydney
3:50 - 4:20pm	<b>Novel Interventions to Address Methamphetamine Use in Aboriginal and Torres Strait Islander Communities (NIMAC): the development and evaluation of a web-based therapeutic tool</b> <b>Associate Professor Rebecca McKetin</b> NDARC, UNSW Sydney
4:20 - 4:50pm	<b>Do Criminal Sanctions Deter ATS Users?</b> <b>Professor Don Weatherburn</b> NDARC, UNSW Sydney
4:50 - 5:00pm	<b>Thank you and close</b> <b>Professor Michael Farrell</b> Director, NDARC, UNSW Sydney
5:00 – 6:00pm	<b>POST SYMPOSIUM FUNCTION</b>



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# Keynote speaker biographies

## **Professor Frederick L. Altice, MD**

*Yale University*

Dr. Altice is a Professor of Medicine, Epidemiology and Public Health at Yale University where he serves as the Director of Clinical and Community Research, the Community Health Care Van and the HIV in Prisons Program. As a clinician, he is board-certified in both Infectious Diseases and Addiction Medicine. As a researcher, his interests are focused on the interface between infectious diseases, including HIV, tuberculosis, viral hepatitis, and substance use disorders. Specifically, he is interested in both prevention and treatment issues and has been at the forefront of both behavioural and biomedical intervention research activities. He is also interested in creation of novel prevention and treatment programs for the treatment of HIV, viral hepatitis, tuberculosis, and substance use disorders in vulnerable populations, including people who inject drugs, criminal justice populations, men who have sex with men and both female and transgender sex workers.

Dr. Altice has spent considerable time devoted to developing and studying integrated systems of care, including integrating medication-assisted therapies such as methadone, buprenorphine, and extended-release naltrexone into managing co-morbid conditions, including people living with or at risk for HIV, HCV, tuberculosis, and mental illness. In more recent years, given the many successful prevention and treatment interventions available, he has increasingly become involved in implementation science to find improved ways to disseminate research and evidence-based practices and ensure that they are implemented using best-practices. Dr. Altice is currently leading studies in Ukraine, Eastern Europe, Central Asia, Malaysia, Indonesia, Peru, and the United States.

## **Professor Sharon Dawe**

*Clinical Psychologist, Griffith University*

Sharon Dawe is a Professor in Clinical Psychology at Griffith University, Australia and an Adjunct Professor at the Australian Centre for Child Protection, University South Australia and a Visiting Fellow at Oxford University, UK. She has been working as a researcher and clinician in the field of substance misuse and mental health for over 20 years at the Institute of Psychiatry, University of London (UK), National Drug and Alcohol Research Centre, UNSW, and now Griffith University. She is the co-developer of the Parents Under Pressure (PuP) program working with high risk families engaged in the child protection system. PuP has been found to reduce child abuse potential with considerable cost savings across UK and Australian studies. Sharon is passionate about improving the outcomes for children living in adverse circumstances by supporting parents to manage difficult life situations.

# Guest speaker biographies

## **Dr Gabrielle Carey**

*H.C. Coombs Creative Arts Fellow, Australian National University*

Gabrielle Carey published her first co-written book, *Puberty Blues*, while still in her teens. She has since written biography, autobiography, memoir, essays and articles. Her book, *Moving Among Strangers* (UQP 2013), was the joint winner of the 2014 Prime Minister's Award for Non-Fiction and short-listed for the 2015 National Biography Award.

Gabrielle holds a Master of Arts (English) from the Australian Catholic University and a Doctorate of Creative Arts (Writing) from Western Sydney University. For the past twenty years Gabrielle has taught writing at various universities including the University of Canberra, the University of Western Sydney and the University of Sydney. She is currently the H.C. Coombs Creative Arts Fellow at the Australian National University.

## **Dr Ju-Lee Oei**

*Neonatologist, Epidemiologist, Paediatrician, Royal Hospital for Women, UNSW Sydney*

Ju Lee Oei is a Neonatologist at the Royal Hospital for Women, Conjoint Professor in Paediatrics at UNSW Sydney and Visiting Medical Officer in Addiction Medicine in the Murrumbidgee Local Health District. Her areas of research interest are in neonatal resuscitation and perinatal drug use.

She is a member of the Substance Use in Pregnancy and Parenting Working Group, NSW Ministry of Health and has co-authored NSW and National guidelines for Neonatal Abstinence Syndrome. She is also chair of the Perinatal Substance Use Group of the Perinatal Society of Australia and New Zealand

## **Dr Julie Mooney-Somers**

*Senior lecturer, Sydney Health Ethics, School of Public Health, University of Sydney*

Dr Julie Mooney-Somers' research seeks to understand and address avoidable health differences that put socially disadvantaged people and communities at further disadvantage. Julie has a track record in sexual and reproductive health research with Aboriginal and Torres Strait Islander people and young people; her substantive work is lesbian, gay, bisexual and trans (LGBT) health. Julie's current research focuses on tobacco, alcohol and illicit drug use among LGBT people, and the provision of health services for these issues. For the last ten years she has run (with Dr Rachel Deacon) SWASH – the longest running periodic health survey of lesbian, bisexual and queer women in the world. Across her career Julie has worked in partnership with communities, often using participatory methods, to conduct and translate meaningful and relevant research. Since 2012, Julie has served as director of ACON, Australia's largest LGBTQ health promotion organisation.

# Plenary One

## Improving outcomes for children living in families with parental substance misuse: Practice and Policy imperatives

Professor Sharon Dawe<sup>1</sup>

<sup>1</sup>School of Applied Psychology, Griffith University, Brisbane, Australia

**Introduction:** Improving family functioning and child outcome in families with complex problems including parental substance misuse, mental health problems, and often parental childhood adversity is challenging. Parenting practices are often compromised by difficulties in emotional regulation that result in insensitive parenting practices.

**Aims:** This presentation provides an overview of a theoretical model underpinning the Parents Under Pressure program. The utility of this model as a way of developing an individualised family support plan is discussed and recent findings from a randomised controlled trial of the Parents under Pressure (PuP) program will be presented.

**Methods:** The PuP program has been delivered by over 200 nongovernment and government agencies in Australia and the UK. The training and dissemination process was evaluated in a pragmatic randomised controlled trial where front line staff provided either the PuP program (n=52) or treatment as usual (n = 48). Parents in community-based treatment for a substance use disorder were randomly allocated to receive either PuP, a home-based parenting intervention that focuses on improving nurturance and caregiving in parents of young children and parental affect regulation compared to treatment as usual. PuP was delivered over 6 months and families were followed up at 12 months.

**Results:** The program was delivered by front line family practitioners with high fidelity. There was high retention across the study (84% at 6 months; 76% at 12 months). Parents receiving the PuP program showed improvements on a range of measures including child abuse potential, measures of emotional dysregulation. Predictors of change were identified.

**Implications:** Improving outcomes for children exposed to a range of adverse experiences in early childhood is critical for interrupting the intergenerational cycle of substance abuse and disadvantage. These findings suggest that such change is possible, but programs need to extend beyond a focus on parenting skills.



# Neonatal Abstinence Syndrome (NAS): Not only neonatal and not only abstinence

Professor Ju Lee Oei<sup>1,2</sup>

<sup>1</sup>UNSW Sydney, NSW, Australia; <sup>2</sup>Royal Hospital for Women, Randwick, NSW, Australia

**Introduction:** Neonatal Abstinence Syndrome (NAS) is a withdrawal syndrome occurring in more than 75% of opioid-dependent mothers. It is one of the fastest rising public health problems in the world. If diagnosed and treated appropriately, few infants will die of NAS. However, children with a history of NAS are at risk of pervasive and long-term problems that have the potential to impact adversely on not only the child, but also on the family and on society for generations.

**Aims:** To discuss the outcomes of children with a diagnosis of NAS and the possible pathophysiological mechanisms behind these findings

**Methods:** Data linkage methods, clinical cohort and trials and epigenetic data will be used

**Results:** Children with a history of NAS are at risk of poor outcomes from as early as 6 months of age to teenage years. They are three times more likely to die than other children, twice as likely to fail at school and twice as likely to be hospitalised for injury, assault, neglect and trauma. They are born with smaller brain volumes than other children and the impact of prenatal drug exposure and adverse childhood experiences may have the potential to cause negative epigenetic change that continue long after withdrawal has abated.

**Implications:** Children with a history of NAS must be considered a high-risk population, much like children with noticeable medical conditions such as prematurity. Support, education and intervention must be provided not only for the child but also for his/her family and/or carers after NAS has resolved. Ensuring the best early life outcomes for children with NAS may prevent the propagation of lifetime and intergenerational vulnerability and disadvantage for millions of children worldwide.

## **The lived experience of drug use and mental illness from a family perspective**

Dr Gabrielle Carey<sup>1</sup>

<sup>1</sup>Australian National University

Gabrielle Carey will speak about the family experience of mental illness and substance abuse, including the contentious area of communication between family members and hospital staff when a young person is suffering from psychosis. In particular, she will consider the difficulty of distinguishing between drug-induced psychosis and psychosis caused by a mental illness and whether the current fashion for 'avoiding labels' is helping or hindering outcomes for young people with mental illness and substance abuse issues.

Drawing on her experience as a caregiver, as well as her observations of the AA community, Gabrielle will talk about why it is more critical than ever to attend to how substance abuse and psychosis impacts whole families as crucial members of the care team.

# Plenary Two

## **Bending the HIV epidemic by intervening with men who have sex with men who use amphetamine-type substances: targets for prevention and treatment**

Professor Frederick L. Altice<sup>1</sup>

<sup>1</sup>Yale University

Men who have sex with men (MSM) are key populations that are disproportionately affected by HIV and continue to contribute to new HIV transmissions, especially those who use amphetamine-type substances (ATS). ATS involve a range of stimulants that when used either recreationally or as part of a substance use disorder, are associated with a number of adverse health consequences, including cerebrovascular accidents, impulsivity, neurocognitive impairment and increased HIV risk.

ATS may physiologically cause impotence in men, and role reversal and increased HIV risk. Because ATS can be consumed by ingestion, inhalation, per rectum (booty-bumping) and injection, it is associated with both sexual and injection-related risks. For MSM with HIV, ATS use is associated with poor engagement in HIV care. As such, ATS use may undermine both primary (i.e., condom negotiation and PrEP access/adherence) and secondary (i.e., treatment as prevention) HIV prevention strategies. Strategies to address treatment of ATS-use disorder and related HIV prevention in MSM will be discussed.

## **Emerging trends in drug use, harms, and markets: Findings from Drug Trends 2019**

Amy Peacock<sup>1</sup>, Antonia Karlsson<sup>1</sup>, Daisy Gibbs<sup>1</sup>, Julia Uporova<sup>1</sup>, Georgia Kelly<sup>1</sup>, Anant Mathur<sup>1</sup>, Agata Chrzanowska<sup>1</sup>, Raimondo Bruno<sup>1,2</sup>, Paul Dietze<sup>3,4</sup>, Simon Lenton<sup>5</sup>, Caroline Salom<sup>6</sup>, Timothy Dobbins<sup>1</sup>, Louisa Degenhardt<sup>1</sup>, Michael Farrell<sup>1</sup>

<sup>1</sup>National Drug and Alcohol Research Centre, UNSW Sydney, Australia; <sup>2</sup>School of Medicine, University of Tasmania, Hobart, Australia; <sup>3</sup>Centre for Population Health, Burnet Institute, Melbourne, Australia; <sup>4</sup>School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia; <sup>5</sup>National Drug Research Institute, Curtin University, Perth, Australia; <sup>6</sup>Institute for Social Science Research, University of Queensland, Brisbane, Australia

Findings from the 2019 Illicit Drug Reporting System interviews (a sentinel sample of people who inject drugs) and the 2019 Ecstasy and Related Drug Reporting System interviews (a sentinel sample of people who use stimulants) will be presented for this first time.

These two crucial drug trend monitoring systems have been running for approximately two decades across Australia. Historical trends, as well as highlights from 2019, will be discussed in the context of shaping responses to drug related harms in Australia. Given the dynamic nature of drug use and drug markets, understanding and mapping the evolving trends is vital.

## **Towards a prompt response network for Australia: rapid health communication about events related to emerging drugs of concern**

Sandi Mitchell<sup>1,2</sup>, Quoc Nguyen<sup>1,2</sup>, Amy Peacock<sup>2</sup>, Nadine Ezard<sup>1,2,3</sup> for the Prompt Response Network of Australia

<sup>1</sup>The National Centre for Clinical Research on Emerging Drugs (NCCRED), Sydney, Australia; <sup>2</sup>The National Drug and Alcohol Research Centre, UNSW, Sydney, Australia; <sup>3</sup>St Vincent's Hospital, Sydney, Australia

**Introduction:** The delay in detecting/responding to health problems related to emerging substances and uncoordinated responses, media misrepresentation and stigmatisation contribute to disparity in access to information in Australia. Responses to recent clusters of drug toxicity have highlighted this gap, making urgent the development of an information exchange mechanism which provides timely notification of events of potential clinical and public health relevance.

**Abstract:** The National Centre for Clinical Research on Emerging Drugs (NCCRED) is creating a collaborative network: the Prompt Response Network (PRN). Central to the PRN is an informative exchange mechanism that enables rapid, flexible and collaborative responses to emerging substances which carry public health risk. The PRN will draw on reports to the system and active monitoring of sources. Following a moderation process, these reports will translate to alerts about newly-identified harmful and potentially hazardous substances. The system will provide information back to consumers, clinicians and other stakeholders, allowing promotion of harm reduction messages, and enabling hospitals and other facilities to be alert and capable of identifying possible clinical presentations.

This presentation will cover: i) the framework of the PRN developed by key-stakeholders, and ii) possible information sources feeding into the PRN, including voluntary drug-checking and other testing technologies not yet implemented at scale in Australia.

**Results:** The system will allow open-access online notification and prompt dissemination of reliable information about acute events of clinical and public health concern. Outputs of the system can be used to inform policy/practice and for public health messaging to consumers.

# Breakout Sessions

## Breakout One: Drug Trends & Emerging Drugs of Concern

### Patterns and correlates of pregabalin use among a sample of people who inject drugs in Australia

Rachel Sutherland<sup>1</sup>, Paul Dietze<sup>2</sup>, Raimondo Bruno<sup>1,3</sup>, Sonja Memedovic<sup>1</sup>, Gabrielle Campbell<sup>1</sup>, Amy Peacock<sup>1,2</sup>

<sup>1</sup>National Drug and Alcohol Research Centre, UNSW Sydney; <sup>2</sup>Burnet Institute, Centre for Population Health, Melbourne; <sup>3</sup>School of Medicine (Psychology), Faculty of Health, University of Tasmania, Hobart

**Introduction:** Pregabalin is a gamma-aminobutyric acid analogue registered and listed under public subsidy in Australia for neuropathic pain and epilepsy. Despite pre-clinical evidence of low abuse potential, there have been increasing reports of extra-medical use, as well as poisoning and death involving pregabalin.

**Aims:** This study aimed to describe patterns of pregabalin use among an Australian sample of people who inject drugs (PWID), and identify sociodemographic, substance use, and mental/physical health correlates of prescribed and non-prescribed use. This study aimed to describe patterns of pregabalin use among an Australian sample of people who inject drugs (PWID), and identify sociodemographic, substance use, and mental/physical health correlates of prescribed and non-prescribed use.

**Methods:** Data was obtained from the 2018 Illicit Drug Reporting System, comprising a cross-sectional sample of 905 PWID. Multinomial logistic regression was used to identify factors associated with recent prescribed and non-prescribed pregabalin use.

**Results:** One-quarter (25%) of participants reported any past six-month pregabalin use, with 10% reporting prescribed use and 15% non-prescribed use (<1% both prescribed and non-prescribed use). Past-six month use of prescribed benzodiazepines and non-prescribed pharmaceutical opioids were associated with both prescribed and non-prescribed pregabalin use. Furthermore, pain/discomfort on the day of interview was significantly associated with prescribed pregabalin use, whilst recent use of non-prescribed benzodiazepines and illicit stimulants, as well as past year overdose, was significantly associated with non-prescribed pregabalin use (compared to no recent pregabalin use).

**Implications:** Pregabalin use was relatively common amongst our sample of PWID. Benzodiazepine and pharmaceutical opioid use were positively correlated with both prescribed and non-prescribed pregabalin use, suggesting that education campaigns regarding the risks associated with concomitant use of these substances may be warranted.

# Illicit drug use in Australian prisons amongst people who regularly inject drugs

Daisy Gibbs<sup>1</sup>, Sarah Larney<sup>1</sup>, Amy Kirwan<sup>2</sup>, Mark Stoove<sup>2</sup>, Ashleigh Stewart<sup>2</sup>, Antonia Karlsson<sup>1</sup>, Georgia Kelly<sup>1</sup>, Julia Uporova<sup>1</sup>, Rachel Sutherland<sup>1</sup>, Paul Dietze<sup>2</sup>, Raimondo Bruno<sup>3</sup>, Caroline Salom<sup>4</sup>, Simon Lenton<sup>5</sup>, and Amy Peacock<sup>1</sup>

<sup>1</sup>National Drug and Alcohol Research Centre, UNSW Sydney, Australia; <sup>2</sup>Burnet Institute, Melbourne, Australia; <sup>3</sup>University of Tasmania, Hobart Australia; <sup>4</sup>Institute for Social Science Research, The University of Queensland, Brisbane, Australia; <sup>5</sup>National Drug Research Institute, Curtin University, Perth, Australia

**Introduction:** While injecting drug use in prisons occurs at a reduced frequency compared to in the community, half of all people who inject drugs in prison are hepatitis C antibody positive. Due to limited supply of injecting equipment, as well as limited supply of known or preferred substances, it is known that people who may otherwise engage in harm reduction measures when injecting drugs in the community may engage in injecting-related risk-taking behaviour while in prison.

**Aims:** This paper will examine (1) injecting drug use while in prison; (2) risk behaviour patterns amongst people who inject drugs while in prison; and (3) harm reduction measures people who inject drugs in prison report as being available to them.

**Methods:** A national sample (n=900) of people who had injected drugs at least monthly in the last six months recruited from capital cities in 2019 were interviewed about their law enforcement and prison experiences, as well as drug use and related behaviour, both in the community and in custody.

**Results:** Approximately half of the sample reported a lifetime history of incarceration. The majority had used drugs when last in prison, with a smaller proportion of these reporting injecting drugs in prison, mostly methamphetamine and opioid substitution therapies. Sharing injecting equipment was common amongst this group. There were reports of engaging in harm reduction behaviours (e.g., washing needles, using equipment after same person consistently).

**Implications:** This study provides further evidence for the continued use of use of illicit and non-prescribed drugs via injecting in prisons without access to any harm reduction measures, highlighting the need to expand prevention interventions into Australian prisons. Further research is needed to ensure that NSPs are implemented in Australian prisons in a manner that it is acceptable to both the intended consumers and prison employees.

Disclosure of Interest Statement: SLa has received untied educational grants from Indivior. AP has received untied educational grants from Seqirus and Mundipharma. No pharmaceutical grants were received for this study. RS has received untied educational grants from Seqirus. RB has received untied educational grants from Mundipharma and Indivior. PD has received investigator-driven funding from Gilead Sciences for work connected to hepatitis C treatment and an untied educational from Indivior for work unrelated to this study. He has served as an unpaid member of an Advisory Board for Mundipharma.

## **Recent trends in illicit drugs available on darknet marketplaces: Findings from the Drugs and New Technologies (DNeT) project**

Anant Mathur<sup>1</sup>

<sup>1</sup>National Drug and Alcohol Research Centre, UNSW Sydney, Australia

The Drugs and New Technologies (DNeT) project has been monitoring the online availability of illicit drugs on cryptomarkets for nearly 6 years. This presentation will provide historical trends of key illicit and emerging substances on these markets. Data will be presented from weekly snapshots of cryptomarkets, including currently active markets that have recently emerged in 2019. An overview of the broad changes across these markets, as well as the impact of major disruptions (including law enforcement operations and market exit scams) will be presented.



## **New directions in the treatment of methamphetamine use disorder**

Nadine Ezard<sup>1,2,3</sup>, Krista Siefried<sup>1,2,3</sup>, Liam Acheson<sup>3</sup>

<sup>1</sup>National Centre for Clinical Research on Emerging Drugs, Sydney; <sup>2</sup>National Drug and Alcohol Research Centre, UNSW Sydney; <sup>3</sup>Alcohol and Drug Service, St Vincent's Hospital, Sydney

**Introduction:** Methamphetamine use disorder is a growing global concern, with an expanding number of affected countries. Australia has one of the highest documented rates in the world. Yet the evidence-base for intervention is weak. The current standard of care for methamphetamine use disorder relies on psychosocial interventions (primarily Cognitive Behavioural Therapy (CBT)-based approaches) with modest effectiveness. There is as yet no approved medication for the treatment of methamphetamine use disorder. Nevertheless, there are a number of promising new directions for intervention.

**Aims:** This presentation will provide an update on current therapeutic directions for the treatment of methamphetamine use disorder.

**Methods:** A narrative review of the recent (since 2018) published literature and currently registered clinical trials.

**Results:** Findings from recently published literature will be presented, as well as selected incomplete trials. Pharmacotherapies include mirtazapine, lisdexamfetamine, methylphenidate, n-acetyl cysteine and topiramate. Other treatments include telephone and computer delivered interventions, repetitive transcranial magnetic stimulation (rTMS), and computer based cognitive training. Targeted research includes among gay and bisexual men and Aboriginal and Torres Strait Islander people.

**Implications:** New directions for clinical practice and policy will be highlighted, along with promising new directions of inquiry and important gaps in research.

## MDMA-related deaths in Australia

Amanda Roxburgh<sup>1</sup>, Shane Darke<sup>1</sup>, Julia Lappin<sup>1,2</sup>

<sup>1</sup>National Drug and Alcohol Research Centre, UNSW Sydney; <sup>2</sup>School of Psychiatry, UNSW Sydney

**Introduction:** There are an estimated 22 million users of 3,4-methylenedioxymethamphetamine (MDMA, 'ecstasy') worldwide. Increased manufacture, purity and prevalence of MDMA use in many regions internationally is of concern as the drug is associated with a range of harms. MDMA is typically used by young adults and generally considered to be a safe drug. Fatal effects, though rare, include hypertension, hyperthermia, cardiac arrest, and an elevated risk for traumatic injury and suicide. Many MDMA deaths involve concomitant use of other drugs.

**Aims:** This presentation provides evidence on:

1. MDMA-related death rates in Australia 2001 to 2016,
  2. The characteristics and circumstances of MDMA-related death, and
  3. The toxicology of MDMA-related deaths.
- This presentation provides evidence on:
1. MDMA-related death rates in Australia 2001 to 2016,
  2. The characteristics and circumstances of MDMA-related death, and
  3. The toxicology of MDMA-related deaths.

**Methods:** *Design:* Analysis of cases of MDMA-related deaths extracted from the National Coronial Information System.

*Setting:* Australia.

*Cases:* All cases where MDMA was considered by the coroner to be contributory to death.

*Measurements:* Information was collected on cause and circumstances of death, demographics and toxicology.

**Results:** 392 deaths were identified, with a median age of 26 years and 81% being male. Females were significantly younger than male cases (24 v 27 years). The underlying cause of death was attributed to: i) MDMA toxicity alone (n=55), ii) multiple drug toxicity (189), iii). Other causes (n=148: traumatic accident 115, suicide 23, disease 10). Death rates increased significantly between 2001-2007, declined between 2008-2010, and increased again between 2011-2016. The median MDMA concentration was 0.45mg/L, and was significantly higher amongst females than males (0.70 v 0.42mg/L). Deaths attributable to MDMA toxicity alone had a significantly higher blood MDMA concentration than multiple drug toxicity deaths (1.20 v 0.43mg/L). Drug toxicity cases had significantly higher blood MDMA concentrations than cases where death was due to other causes (0.59mg/L v 0.30mg/L). Other drugs detected in addition to MDMA included psychostimulants (54%), alcohol (43%), opioids (30%), cannabis (25%) and benzodiazepines (23%).

**Implications:** MDMA-related deaths occurred predominantly among males aged in their mid twenties, with females likely to be significantly younger. Three marked periods of trends in death rates (increases and declines) were observed, consistent with the international MDMA supply trends. While most deaths were due to multiple drug toxicity, a notable proportion were attributed solely to MDMA toxicity.

## Breakout Two: Families, Communities and Vulnerable Populations

### Alcohol, tobacco and illicit drug use among lesbian, bisexual and queer women in Sydney: Insights from the SWASH periodic survey

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**Introduction:** Lesbian, bisexual and queer (LBQ) women's health has often been considered to be synonymous with general women's health. Yet international evidence suggests distinct patterns of alcohol, tobacco and illicit drug use. A lack of local research has been a significant barrier to understanding, recognising and responding to LBQ women's health needs.

**Aims:** This presentation has three aims: to introduce the SWASH survey; to describe alcohol, tobacco and illicit drug use among LBQ women; and to encourage researchers to collect and report on sexuality and gender identity.

**Methods:** SWASH is a cross-sectional repeated survey of LGBTQI community-engaged lesbian, bisexual and queer women. Recruitment takes place during the Sydney Gay and lesbian Mardi Gras season, and data is collected using paper and online surveys.

**Results:** 1272 women and non-binary people completed the 2018 iteration of the survey. Data show 88% of respondents drank alcohol, 57% of whom drank at levels above NHMRC recommendations, and 20% reported binge drinking weekly or more often. One in five respondents were current smokers. 47% of respondents had used at least one illicit drug in the preceding 6 months, most commonly cannabis, cocaine and methamphetamines.

**Implications:** The inclusion of sexuality and gender identity questions in national data sets and large epidemiological surveys remains patchy. In this context, SWASH provides a unique and important source of evidence about substance use by Australian LBQ women and changes over time. It is clear that LBQ women's alcohol, tobacco and illicit drug use deserves further research and policy attention.

# **“It’s hard for me to tell my story” A qualitative study of male Aboriginal and Torres Strait Islander drug and alcohol rehabilitation clients’ experiences with attending primary health care**

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**Introduction:** There is limited evidence around the experiences and perceptions of Aboriginal and Torres Strait Islander (hereafter Aboriginal) men who use substances when accessing primary healthcare (PHC) services. An understanding of their experiences will assist with delivering accessible PHC and engaging with men, which will contribute to addressing the disproportionately high burden of substance-related harm in Aboriginal communities.

**Aims:** To explore the experiences of Aboriginal men who use substances about accessing PHC services.

**Method / Approach:** A qualitative grounded theory study including semi-structured interviews with twenty male clients who self-identified as Aboriginal and were receiving treatment for substance use at residential drug and alcohol rehabilitation centre in NSW. Interviews were completed by an Aboriginal researcher. Transcripts were deductively and inductively analysed.

**Results:** About half of participants reported having an ongoing general practitioner (GP) and six recalled visiting a PHC service in the last 12 months. Two major themes about accessing PHC were developed: 1) Asking for help for substance use or mental health problems linked with substance use 2) Developing a supportive and enabling environment to encourage ongoing engagement with PHC. About half the clients reported speaking to the GP about their substance use, usually one with whom they had an established relationship. Of these, many did not receive treatment or referral for their substance use after these discussions. Others were referred for treatment, however they wanted to be treated by the GP. Men reported it was important for them to have ongoing access to the same GP, access to an Aboriginal staff member to support them during appointments and to have a support person (family or friend), to support them to access PHC. Cultural ‘support groups’, provided via or linked with PHC were reported by many men as a potential mechanism to encourage their ongoing engagement with PHC and to support their recovery, while providing important cultural connections.

**Discussions and Conclusions:** This study shows that many Aboriginal men who use substances access PHC services around their substance use, indicating that there are opportunities to detect and manage substance use problems in PHC. PHC staff should be provided with training in culturally-appropriate substance use screening and assessment materials, and have access to a variety of referral and treatment options.

# Transition of substance-induced psychosis to schizophrenia: a systematic review and meta-analysis

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**Introduction:** Substance-induced psychoses are common conditions. People with substance-induced psychoses are often excluded from research studies and may receive little or no psychiatric care despite knowledge that some will later be considered to have schizophrenia. The extent to which substance type or possible moderator factors such as individual or healthcare characteristics predict transition to schizophrenia in people with substance-induced psychosis is unclear.

**Aims:** To compare the proportion of people with substance-induced and non-substance-induced psychosis who transition to schizophrenia, and to examine moderators of this proportion including the putative causal substance. To compare the proportion of people with substance-induced and non-substance-induced psychosis who transition to schizophrenia, and to examine moderators of this proportion including the putative causal substance.

**Methods:** A search of Medline, PSYCHINFO and Embase identified 50 eligible studies that provided 89 estimates of transition to a diagnosis of schizophrenia among 41,064 people, including 25 studies of substance-induced psychosis (34,244 people) and 25 studies of other psychosis (6,820 people).

**Results:** The pooled proportion of transition from substance-induced psychosis to schizophrenia was 25% (95% confidence interval (CI) 18% - 34%) while the pooled estimate transition from other brief and atypical psychoses to schizophrenia was non-significantly higher at 29% (CI 18% - 34%). Cannabis-induced psychosis had the highest rate of transition (6 studies, 34%, CI 24% - 46%), followed by amphetamine-induced induced (5 studies, 22%, CI 14% - 32%) and hallucinogen-induced induced psychoses (3 studies, 26%, CI 14% - 42%). Lower rates were reported for opioid (12%), alcohol (10%) and sedative (9%) -induced psychoses. Transition rates were not affected by rates of country of the study, study setting (hospital vs community, urban vs rural), diagnostic system or methods, cohort age or sex, or duration of follow-up.

**Implications:** A high proportion of those with substance-induced psychoses, particularly cannabis-induced, transition to schizophrenia. Substance-induced psychosis is not associated with a lower probability of transition to schizophrenia than other forms of acute psychosis and should be a focus for assertive and early psychiatric intervention.

## Sex, drugs and violence

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**Introduction:** In contemporary Australia domestic violence and resultant homicide remain a national shame. There is also a clear relationship between alcohol use and domestic violence; the violence results in more severe injuries and more chronic cases of violence. The association between violence and other drugs is less clear.

**Aims:** This study examines the association between substance use assault; for both women and men. This study examines the association between substance use assault; for both women and men.

**Methods:** Hospital admissions were linked from 2003 to 2014. Admissions were categorised as to whether a diagnosis of assault and/or substance use was present. 432,794 episodes of assault-related admissions were selected. Of these 58% were males and 42% females.

**Results:** Overall males were 84% (RR 1.84, 95% CI 1.79, 1.90) more likely than females to have an additional alcohol related diagnosis and females were more likely to have an additional sedative (RR 3.64, 95% CI 3.01, 4.89). or opioid related diagnosis (RR 1.30; 95% CI 1.18, 1.44).

**Implications:** At present the policy framework for domestic violence and substance use are conflicting; the current policy approach to reduce substance use is limited in situations when the crimes are serious and involve arrest and incarceration, often the case for domestic violence. However, these policy approaches at the population, community, and individual-level may provide the best opportunity for effective intervention

## Breakout Three: Opioid Use and Related Harms

### The impact of opioid agonist treatment upon multiple mortality outcomes in people who inject drugs: an examination of varied OAT characteristics in three varied settings

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**Introduction:** Opioid agonist treatment (OAT) can reduce many of the harms associated with extra-medical opioid use. We used mathematical modelling to evaluate the overall health benefits of OAT among people who inject drugs (PWID) in and Kentucky (USA), Kyiv (Ukraine), and Tehran (Iran), considering different aspects of OAT treatment: increasing OAT coverage, increasing retention in treatment and providing treatment in prison as well as the community.

**Methods:** We developed a dynamic model of HIV and HCV transmission, incarceration, and mortality through overdose, injury, suicide, disease-related or other causes. Modelled OAT reduced risk of mortality from overdose/suicide/injury/other causes, HIV and HCV transmission, incarceration rates and improved HIV treatment access and outcomes. The model was calibrated to site-specific data using Bayesian methods. Analyses evaluated 'preventable deaths' (HIV/HCV/overdose/suicide/injury) averted over 2020-2040, compared to a scenario without OAT, of: existing OAT coverage (community: 4-11%; prison: 0-40%); scaling-up OAT coverage to 40% in the community (WHO/UNAIDS recommendations); additionally, increasing average OAT duration from 4-7 months to 2 years; additionally, scaling-up prison-based OAT.

**Results:** The varied harms associated with drug use contributed differentially to mortality across settings; with overdose contributing 27-47% of preventable deaths over 2020-2040, suicide 6-17%, injury 3-17%, HIV 48-5% (excluding Kentucky) and HCV 2-18%. Existing OAT coverages are projected to have significant impact on mortality in Tehran, averting 13% of preventable deaths, but currently would have low impact in Kyiv and Kentucky, averting <2% of preventable deaths. Scaling-up OAT coverage in the community could avert 12-24% preventable deaths, including 13-19% of overdose deaths and 22-51% of HIV deaths. Improving OAT retention and providing prison-based OAT would have significant additional impact, averting 27-48% preventable deaths.

**Implications:** OAT can significantly reduce drug-related harms. Maximising these impacts requires not only higher coverage, but longer retention and provision of OAT in prison as well as the community.

## Extended-release (depot) buprenorphine injections for opioid dependence: Understanding potential clients' perceptions prior to implementation in Australia

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**Introduction:** Extended-release (XR) buprenorphine formulations for opioid dependence are being marketed internationally, including weekly and monthly XR-buprenorphine injections. This study examines potential clients' perceptions of XR-buprenorphine and their concerns.

**Methods:** Cross-sectional survey of 402 people who regularly use opioids conducted prior to implementation of XR-buprenorphine in Australia (interviewed December 2017- March 2018). Primary outcome measures included: proportion of participants who believed XR-buprenorphine would be a good treatment option for them and perceived advantages/disadvantages of XR-buprenorphine. Independent variables included: demographic characteristics and features of current opioid agonist treatment (OAT; medication-type, dose, prescriber/dosing setting, unsupervised doses, out-of-pocket expenses and travel distance).

**Results:** Sixty-seven percent believed XR-buprenorphine was a good treatment option for them. These participants were more likely to report: being younger (26-35 years vs. >55 years); being female; fewer years of education; and past month heroin and methamphetamine use. Among OAT recipients (n=255), believing XR-buprenorphine was a good treatment option was associated with: shorter treatment episodes; fewer takeaway doses; and longer travel distance. 69% reported 'no problems or concerns' with potential differences in availability, flexibility and location of XR-buprenorphine. 68% were willing to change doctor, and 58% were willing to travel >30mins for XR-buprenorphine.

**Implications:** The potential convenience of XR-buprenorphine is viewed positively, but individual preferences will be important considerations in choosing OAT medications. Proactive communication involving peers may help mitigate potential clients' concerns regarding changing buprenorphine formulations.

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## **Problematic opioid use in people prescribed opioids for CNCP over five years: A prospective cohort study**

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**Introduction:** The increase in long-term prescribing of opioids for chronic non-cancer pain (CNCP) overseas and in Australia has been accompanied by increases in problematic opioid use and harms including overdose and dependence. There have been limited long-term studies (>12 months).

**Aims:** The aim of the current study is to examine the association between pharmaceutical opioid dose in people living with CNCP and associations with problematic use over four years.

**Methods:** The Pain and Opioids IN Treatment study is a large, national prospective cohort of 1,500 people prescribed pharmaceutical opioids for CNCP. We utilised data from five annual waves. Over 80% of the baseline cohort completed each wave.

**Results:** Current opioid dose varied widely: at baseline, 8.8% were taking <20mg OME per day, 52.1% were taking 21-90mg OME, 24.3% were taking 91-199mg OME and 14.8% were taking  $\geq$ 200mg OME. At the 5-year follow-up 20% of the baseline sample had discontinued their opioid use; 20% were consuming 91-199mg OME per day and 11% were consuming doses  $\geq$ 200mg OME per day. Over the five waves, proportion meeting criteria for ICD-10 dependence ranged from 8.8% to 12.0%, harmful use ranged from 14.3% to 16.5%, engagement in aberrant behaviours ranges from 31.1% to 38.5%. Approximately 2% reported an overdose each year of the study. Higher doses were associated with more problematic behaviours.

**Implications:** Consumption of higher opioid doses is associated with increased risk of problematic behaviours over 5 years and is more likely among people with a complex profile of physical and mental health problems.

## Frequency of injecting among people who inject drugs: a systematic review and meta-analysis

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**Introduction:** People who inject drugs (PWID) do so at varying frequencies. More frequent injecting is associated with injecting risk behaviours and harms, such as skin and soft tissue infection, blood borne virus prevalence, and overdose. Documenting injecting frequency is important for informing harm reduction services that distribute injecting equipment such as needle and syringe programs.

**Aims:** The aim of this review was to determine the frequency at which PWID were injecting, and characteristics and harms associated with daily or more injecting.

**Methods:** We conducted a systematic review of the peer-reviewed and grey literature from 2008 to 2018. We created country-, region-, and global-level estimates of daily or more (i.e. frequent) injecting. We also ran meta-regression analyses to determine associations between frequent injecting and socio-demographic characteristics, injecting risk behaviour, non-fatal overdose, injection site skin infection and blood borne virus prevalence

**Results:** Our search resulted in 61,077 sources, from which 198 studies were eligible for inclusion in this review. Based on studies from 74 countries, we estimated that over two thirds of PWID inject daily or more frequently, with much regional variation. Among samples with shorter injecting careers, more male participants and higher reporting of opioids as their main drug injected, there was also a higher percentage of daily or more injecting. Daily or more injecting was also associated with samples reporting a higher prevalence of HIV and hepatitis C antibody, self-report non-fatal overdose and receptive needle sharing in the previous month.

**Implications:** This review holds important implications for informing needle-syringe distribution targets and highlights the variation in injecting patterns between and within regions. We also provide evidence for the association between daily or more injecting and negative health consequences such as overdose, HIV and hepatitis C.

## Differences between urban and rural areas in changes in emergency department presentations associated with opioid agonist treatment

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**Introduction:** People with opioid use disorder have high rates of emergency department (ED) presentation. Common reasons for presentation include overdose and soft tissue infections. Several studies have demonstrated an association between receipt of opioid agonist treatment (OAT) for opioid use disorder and reductions in ED presentations.

**Aims:** We aimed to determine if the association between OAT and ED presentations exists across low-acuity and urgent ED presentations, and in regional/remote as well as urban areas.

**Methods:** This was a retrospective cohort study using state-wide linked administrative health data. The cohort included 24,875 people receiving OAT in New South Wales between 2012 and 2014. Incidence of low-acuity and urgent ED presentations were calculated for periods in and out of OAT. GEE models estimated the adjusted incidence rate ratio (IRR) for ED presentations.

**Results:** Urgent ED presentations were less frequent during periods of OAT compared to out of OAT, regardless of urbanicity (IRR 0.65; 95% CI 0.61, 0.69). Low-acuity ED presentations were reduced during OAT in urban areas (IRR 0.82; 95% CI 0.70, 0.96), but in regional/remote areas, low acuity ED presentations increased during OAT (IRR 2.65; 95% CI 1.66, 4.21). Review of the reasons for ED presentation during OAT in regional/remote areas suggested that OAT dispensing was occurring at the ED. When these presentations were removed from the analysis, the frequency of ED presentations in regional/remote areas was similar whether in or out of OAT.

**Implications:** OAT was associated with reductions in urgent ED presentations among people with OUD, and with reductions in low-acuity ED presentations in urban areas. Lack of reductions in low-acuity ED presentations in regional/remote areas appears to be due in part to patients accessing ED for OAT dispensing. These findings highlight the need to increase access to OAT in community health and primary care settings in regional/remote areas of NSW.

## **Breakout Four: Alcohol and Tobacco**

### **Overview of tobacco cessation in vulnerable populations**

Ryan Courtney<sup>1</sup>

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Health inequality is a global research priority with vulnerable and low-socioeconomic status (low-SES) smokers a priority population in Australia's National Tobacco Strategy (NTS). Australia did not make its NTS target of a 10% smoking rate by 2018. For the first time, there was no significant decrease in Australia's adult population level smoking rate from 2013 to 2016; an unexpected standstill. The social gradient in tobacco use for vulnerable and low-SES groups persists.

Recent Australian estimates suggest that smoking rates for persons from the lowest SES group is close to three times higher than those from the highest SES group. Innovative cost-effective cessation methods with high reach are needed to improve health and reduce healthcare costs for vulnerable and low-SES groups. This presentation will provide: i) an overview of the challenges and barriers to cessation for vulnerable and low-SES groups; and ii) examine the potential for new and alternative targeted strategies to improve cessation for socially disadvantaged population groups.

Whilst many aspects of smoking cessation guidelines remain just as relevant today as they did a decade ago there is a need to review and refresh current approaches to help people stop smoking. As the inequalities trend persists throughout Australia and other countries, across varying SES indicators we need to re-evaluate best-practice in smoking cessation treatment. Some interventions are having a positive equity impact and stronger focus must be placed on these moving forward. Existing technology-based interventions have high acceptability, and future improvements in upscaling and adaptations is a priority for vulnerable and low-SES smokers. Their implementation may be the catalyst required to eb the tide in smoking inequalities.

## **Predicting alcohol dependence among early adolescent regular alcohol users: Findings from the World Health Organization World Mental Health surveys**

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**Introduction:** Early onset of alcohol use is known to be associated with increased risk of developing an alcohol use disorder later in life. Being able to quantify that risk would support the delivery of early targeted interventions. Although studies have been conducted examining predictors of different levels of alcohol involvement among adolescent alcohol users, most either had short follow-up time periods or tested specific hypotheses.

**Aim:** To develop a risk algorithm using machine learning methods to predict alcohol dependence among early adolescent regular alcohol users.

**Methods:** Data come from 15 high-income countries participating in the WHO's World Mental Health Survey Initiative. Retrospective reports identified 2,871 respondents with an onset of regular alcohol use between the ages of 10 and 14 years. A library of machine learning methods was used to develop an ensemble ALD risk model from risk factors defined as of the year of onset of regular use, including information about socio-demographics, substance use involvement, mental disorders, childhood adversities and traumatic experiences.

**Results:** Research is in progress. Preliminary results indicate the ensemble machine learning model has better cross-validated performance than any single algorithm used in its development. ALD occurred in 32.2%, 15.7% and 11.6% of individuals in the first, second and third top ventiles of the predicted risk distribution.

**Discussion:** The findings from this study will demonstrate whether data collected from early adolescents using alcohol regularly can be used to predict future onset of alcohol dependence. Targeting those at highest risk could reduce the prevalence of alcohol use disorders as well as associated harms and risk.

**Implications:** This algorithm could be used by national and international government organisations to inform the allocation and delivery of resources for strengthening the prevention and treatment of ALD.

\* The WHO World Mental Health Survey collaborators are Sergio Aguilar-Gaxiola, MD, PhD, Ali Al-Hamzawi, MD, Mohammed Salih Al-Kaisy, MD, Jordi Alonso, MD, PhD, Laura Helena Andrade, MD, PhD, Corina Benjet, PhD, Guilherme Borges, ScD, Evelyn J. Bromet, PhD, Ronny Bruffaerts, PhD, Brendan Bunting, PhD, Jose Miguel Caldas de Almeida, MD, PhD, Graça Cardoso, MD, PhD, Somnath Chatterji, MD, Alfredo H. Cia, MD, Louisa Degenhardt, PhD, Koen Demyttenaere, MD, PhD, Silvia Florescu, MD, PhD, Giovanni de Girolamo, MD, Oye Gureje, MD, DSc, FRCPsych, Josep Maria Haro, MD, PhD, Hristo Hinkov, MD, PhD, Chi-yi Hu, MD, PhD, Peter de Jonge, PhD, Aimee Nasser Karam, PhD, Elie G. Karam, MD, Norito Kawakami, MD, DMSc, Ronald C. Kessler, PhD, Andrzej Kiejna, MD, PhD, Viviane Kovess-Masfety, MD, PhD, Sing Lee, MB, BS, Jean-Pierre Lepine, MD, Daphna Levinson, PhD, John McGrath, MD, PhD, Maria Elena Medina-Mora, PhD, Zeina Mneimneh, PhD, Jacek Moskalewicz, PhD, Fernando Navarro-Mateu, MD, PhD, Marina Piazza, MPH, ScD, Jose Posada-Villa, MD, Kate M. Scott, PhD, Tim Slade, PhD, Juan Carlos Stagnaro, MD, PhD, Dan J. Stein, FRCPC, PhD, Margreet ten Have, PhD, Yolanda Torres, MPH, Dra.HC, Maria Carmen Viana, MD, PhD, Harvey Whiteford, MBBS, PhD, David R. Williams, MPH, PhD, Bogdan Wojtyniak, ScD.

## The overall effect of parental supply of alcohol across adolescence on alcohol-related harms in early adulthood

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**Introduction:** Recent research suggests parental supply of alcohol is associated with higher odds of risky drinking and alcohol-related harm among adolescents. However, the overall effect of parental supply in adolescence remains unclear because parental supply of alcohol varies over adolescence. Due to the complexity of longitudinal data, analysis of such overall effects using standard analytic methods can be biased. This study examined the effect of parental supply of alcohol on alcohol-related outcomes in early adulthood using robust methods to minimise risk of bias.

**Aims:** Using data from the Australian Parental Supply of Alcohol Longitudinal Study (APSALS; n=1906), we examined the effect of five years of parental supply of alcohol across adolescence on binge drinking, alcohol-related harms and symptoms of alcohol use disorder in the following two years. To reduce risk of bias, analyses used targeted maximum likelihood estimation estimated using machine learning. Using data from the Australian Parental Supply of Alcohol Longitudinal Study (APSALS; n=1906), we examined the effect of five years of parental supply of alcohol across adolescence on binge drinking, alcohol-related harms and symptoms of alcohol use disorder in the following two years. To reduce risk of bias, analyses used targeted maximum likelihood estimation estimated using machine learning.

**Methods:** Evidence suggested parental supply of alcohol across adolescence led to greater odds of binge drinking (OR:3.83; 95% CI:1.52-9.64) and alcohol-related harms (OR:3.59; 95% CI:1.37-9.40), but not symptoms of alcohol use disorders, in the year following the exposure period. However, these effects did not persist, with little evidence of any effects remaining two years after exposure.

**Results:** This study provides further evidence that parental supply of alcohol in adolescence increases the risk of alcohol-related harm, but that these effects do not persist into adulthood. The study also demonstrates the utility and value of recent developments in causal inference and machine learning in conducting robust analysis of complex data.

**Implications:** Parental supply of alcohol in adolescence is associated with increased risk of alcohol-related harm, and should not be recommended.

## **Community-based responses to alcohol harm: Do they work and where next?**

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The concept of community-action as a response to alcohol harms largely took hold as a reaction to the previous focus on individual responsibility and dependence as the root-cause of alcohol-related harm. Given the central tenet of community-action is that the extent of alcohol harms is at least partly determined by environmental circumstances, systems models have emerged as the predominant basis of community-action. These models seek to interrupt the structures that promote unsafe drinking, as a complement to the more traditional focus on direct intervention with individual problem drinkers.

This presentation will summarise the research methods that have been used to estimate the impact, and explore the nuances, of community-action, and describe the level of evidence generated to date: namely, small population effects primarily for less serious alcohol problems. Finally, it will consider how legislative controls, community-action and individually-focused responses might be optimally combined, and how that optimal balance might be both approximated and sustained through the application of novel research methods.

Note: While the content of this presentation is entirely the responsibility of Professor Shakeshaft, he would like to acknowledge the contribution to the thinking about community-based responses from Professor Richard Midford, Perth Psychological Services

# Plenary Three

## The future of vaping and e-cigarettes

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**Introduction:** For people who smoke, quitting is associated with numerous benefits for current and future health. There are a range of effective stop smoking medicines that can increase long-term abstinence rates, compared with unassisted quitting. However, these rates remain low (e.g. < 25%), with most people relapsing within 3-6 months. Over the past decade vaporised nicotine products (VNPs), more commonly known as e-cigarettes, have become increasingly popular among smokers, and in some countries are now the most commonly used smoking cessation aid.

**Aims:** To summarise the evidence of effectiveness of VNPs for smoking cessation, and provide an overview of possible health risks, to enable health professionals to better advise their patients who ask about using VNPs.

**Methods:** A narrative review of the current literature on the benefits and risks of using VNPs.

**Results:** Until recently the evidence for the effectiveness of VNPs in helping people stop smoking has been limited, with only two published randomised controlled trials (RCTs). There are now five published RCTs all with biochemically verified outcomes. The results from three RCTs found superiority of nicotine containing VNPs, compared to those without nicotine, in helping smokers quit for at least six months. While a further RCT found vaping to be associated with higher 12-month quit rates compared to nicotine replacement therapy (NRT; 18% vs. 10%; RR=1.83; 95% CI: 1.30-2.58). The final RCT found VNPs to be more effective than standard care (brief advice and offer of support to quit) when measuring 6-month quit rates. Overall, the difference in quit rates may have been due to VNPs providing greater withdrawal relief, providing better subjective effects, and smokers being able to self-titrate their nicotine intake. Among 12-month ex-smokers, rates of ongoing VNP use were significantly higher than ongoing NRT use (80% vs. 9%, respectively). This could raise concern if long-term ENDS use is associated with health risk. Alternatively, this could be beneficial if it prevents relapse and further risk-benefit analysis is required to reach this potential endpoint.

Current data suggest that health risks associated with VNP use are substantially less, overall, than risks associated with smoking tobacco. However, the health risks associated with long-term ENDS use remain unknown, and long-term cohort studies, especially regarding lung health in VNP users, are needed.

**Implications:** There is strengthening evidence that VNPs are an effective tool to help people stop smoking. Whilst less harmful than smoking, there may be some health risk associated with long-term use. To mitigate concern over unknown health risks associated with long-term vaping ex-smokers can be advised to stop VNP use as soon as they feel they are safe from relapse to smoking.



## **Novel Interventions to Address Methamphetamine Use in Aboriginal and Torres Strait Islander Communities (NIMAC): the development and evaluation of a web-based therapeutic tool**

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**Introduction:** With Australia having one of the highest prevalence rates of Methamphetamine (MA) use in the world, there is growing concern about the spreading use of MA in Aboriginal and Torres Strait Islander (hereafter Aboriginal) communities. However, major gaps exist in our knowledge regarding patterns of MA use and effective responses in Aboriginal communities.

**Aims:** Novel Interventions to Address Methamphetamine Use in Aboriginal and Torres Strait Islander Communities (NIMAC) is a program of research designed to address gaps in the evidence and support Aboriginal communities in their development of responses to methamphetamine use ([www.nimac.org.au](http://www.nimac.org.au)). This program includes a randomised controlled trial to test the feasibility and acceptability of a web-based therapeutic tool for methamphetamine dependence.

**Methods:** NIMAC is being conducted in partnership with 10 Aboriginal Community Controlled Health Services (ACCHS) and affiliates. A web-based program was developed based on a previous online intervention ([www.breakingtheice.org](http://www.breakingtheice.org)) which was designed to increase help-seeking. The content of the intervention was modified and extended with input from clinical staff working at ACCHS sites and consumers. A trial protocol has been developed to evaluate this web-based tool in collaboration with participating sites.

**Results:** The web-based therapeutic tool consists of modules designed to enhance motivation to seek help for methamphetamine use, tools to assist people to reducing their use (e.g., understanding and coping with cravings and triggers), values-driven goal setting and mindfulness activities. The modules have been developed with narratives provided by Aboriginal actors depicting stories of real people collected via interviews. This self-administered web-based intervention includes a portal to link to local ACCHS through which clinical support can be provided. The evaluation of the tool will be via a wait-list randomised-controlled trial, with outcomes evaluated monthly for three months post-enrolment, these including days of methamphetamine use, motivation to reduce methamphetamine use, help-seeking behaviour and the useability and acceptability of the intervention.

**Implications:** We have developed a web-based therapeutic tool for Aboriginal people to help address methamphetamine use in Aboriginal communities. The trial to evaluate the tool, scheduled to begin in late 2019, will provide valuable information on the feasibility and acceptability of this approach.

## Do Criminal Sanctions Deter ATS Users?

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**Introduction:** Despite the rapid growth in arrests for use and/or possession of amphetamine type substances (ATS) and the associated increase in ATS-related harms, no research has been conducted into the deterrent effectiveness of sanctions imposed on persons convicted of using or possessing ATS.

**Aims:** The three most commonly imposed sanctions are a fine, a supervised bond and an unsupervised bond. Our first aim is to examine the effect of correctional supervision on the risk of conviction for a further drug offence. Our second aim is to examine the effect of fine amount on the risk of conviction for a further drug offence.

**Methods:** Augmented doubly robust estimation and two-stage least squares using judicial sentencing severity as the instrument

**Results:** We find no evidence that correctional supervision reduces the risk of a further drug offence in the four years following conviction but some evidence that fines exert a slight effect on risk of another drug offence.

**Implications:** Consideration should be given to extending the cannabis cautioning scheme to other offences for people detained for possessing small amounts of illicit drugs

# Posters

## **The associations between traumatic experiences and substance use and substance use disorders: Findings from the World Health Organization World Mental Health surveys**

Chrianna Bharat<sup>1</sup>, Evelyn Bromet<sup>2</sup>, Meyer Glantz<sup>3</sup>, Nancy Sampson<sup>4</sup>, Ronald Kessler<sup>5</sup>, and Louisa Degenhardt<sup>1</sup> on behalf of WHO World Mental Health Survey Collaborators

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**Introduction:** Exposure to traumatic events (TEs) is known to be associated with substance use disorders (SUDs). However, most studies focus on a single trauma type, without considering exposure to and accumulation of other TEs. In addition, data is often limited to high-income countries.

**Aims:** This study uses cross-national data to investigate the impact of a broad range of TEs, and the cumulative loading of multiple types, on subsequent: commencement of substance use, transition to SUD, and remission from disorder.

**Methods:** Data come from the World Health Organisation's World Mental Health Survey Initiative. A total of 67,225 respondents across 23 countries were assessed for exposure to 29 TEs as well as lifetime use, SUDs and remission from disorder for both alcohol and illicit drugs. Discrete-time survival analyses were used to examine associations of the type and number of TE categories with transitioning substance use involvement controlling for sociodemographics and comorbidities.

**Results:** Most TE categories were associated with increased odds of commencing alcohol use [odds ratio range (ORR): 1.15-1.91] and drug use [ORR: 1.30-1.91]. Persons exposed to childhood sexual and interpersonal violence were more likely to develop drug abuse [ORR: 1.83-1.91], alcohol abuse [ORR: 1.50-1.91], and alcohol dependence [ORR: 1.33-1.51], and less likely to remit from SUDs [ORR: 0.83-0.84]. Exposure to organised violence (e.g. kidnapping, civilian/relief worker in war zone) was associated with increased odds of drug use disorders [ORR: 1.32-1.45]. The incremental association of each additional TE reduced in magnitude as the number of TEs increased only for commencing drug use, alcohol use and regular alcohol use.

**Implications:** This study demonstrates the types of TEs associated with transitioning substance use involvement varies both by the stage of use and the type of substance. These findings highlight the potential for the presence and accumulation of TEs as risk factors for SUDs.

## Parental supply of sips of alcohol is not protective: Prospective cohort study

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**Introduction:** Parents are one of the main suppliers of alcohol to adolescents, however there is a developing body of evidence refuting the idea that parental supply of alcohol is protective, instead demonstrating an association with increased alcohol consumption and harms. Existing studies have typically measured alcohol supply dichotomously (Yes or No supply) however, much of parental supply is in the form of sips of alcohol.

**Aims:** We investigated associations between the quantity of parental and other supply (sips compared with full serves or more) and subsequent drinking outcomes over a seven-year period of adolescence and early adulthood, adjusting for a range of children, parent, family and peer variables.

**Methods:** Participants (n=1927) were recruited in 2010-11 and surveyed annually over seven years (mean age 12.9 to 18.8 years). Quantity of parental and other supply of alcohol in one year was examined against five outcomes in the next year: binge drinking (>4 standard drinks on a drinking occasion); alcohol-related harms; DSM-IV symptoms of abuse, dependence, and DSM-5 alcohol use disorder (AUD).

**Results:** Parental and other sources of supply were dominated by supply of sips in early waves, with supply of full serves increasing with time. Among those not receiving alcohol from other sources, parental supply of sips increased the odds of subsequent binge drinking (OR: 1.80; 99.5% CI: 1.18-2.74) and alcohol related harms (OR: 1.87; 99.5% CI: 1.30-2.67), compared with those not receiving parental supply. Parental supply of sips did not significantly increase the odds of symptoms of abuse, dependence or AUD. Those supplied full serves by parents had higher odds of binge drinking, alcohol-related harms, and symptoms of dependence and AUD. Supply of sips from other sources was associated increased odds of binge drinking and alcohol-related harms (to a similar extent as receiving parental sips), while those reporting receiving full serves from other sources showed the greatest odds of each of the five outcomes.

**Implications:** Parental supply of alcohol to adolescents does not have a protective effect. This study extends on our previous findings by examining the quantity of supply and shows that even the provision of sips by parents is associated with increased harms. The results indicate a dose-response relationship, with greater quantities of alcohol supplied associated with an increasing risk of harmful outcomes.

# Diagnostic utility of symptom screening scales for detecting anxiety disorders: Systematic review and meta-analysis protocol

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**Introduction:** Anxiety disorders are highly prevalent and debilitating conditions. They often co-occur with other physical and mental health disorders—including substance-use disorders—resulting in greater clinical complexity and healthcare burden. Identifying efficient methods of detecting anxiety disorders is the first step towards linking patients with appropriate treatments.

**Aims:** To identify the symptom screening scales that most accurately diagnose anxiety disorders.

**Methods:** Design. Systematic review and meta-analysis of studies comparing cut-points on symptom screening scales with diagnoses of anxiety disorders made using clinical interviews (PROSPERO: CRD42017065594). Included disorders will be generalised anxiety disorder, panic disorder, phobic disorders (agoraphobia, social phobia, specific phobias), obsessive-compulsive disorder, post-traumatic stress disorder, and acute stress disorder. Study identification. We will search PsycINFO, EMBASE, and Medline for terms pertaining to (1) anxiety disorders, (2) administration of a reference standard (i.e., diagnostic interviews), (3) diagnostic system used (i.e., DSM or ICD), and (4) disorder identification (e.g., “identify”, “detect”, “cut-point”). Following acceptable (>80%) agreement during independent double screening, references will be single screened to determine eligibility. Data extraction. We will collect data on outcomes (sensitivity, specificity, positive and negative predictive values), study characteristics, and risk of bias. Analyses. Bivariate meta-analyses of sensitivity and specificity; production of summary receiver operating curves. Heterogeneity explained by study characteristics will be explored through meta-regression analyses.

**Results:** Title and abstract screening of 12985 identified records is complete. Full text screening of the remaining 2016 potentially eligible records is underway.

**Implications:** Results will identify the most effective screening scales for identifying anxiety disorders across populations and settings. Considering time and costs associated with administering each scale, recommendations for the use/non-use of each scale will be made.

# Development of a core outcome set for treatment of substance use and addictive behaviour disorders: A multi-disciplinary, mixed-methods approach

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**Introduction:** Value in healthcare is defined as the outcomes of the full cycle of care relative to its costs. To maximise value for patients, it is first necessary that the outcomes that matter most to patients are routinely measured in clinical practice in a standardised manner.

**Aims:** To develop a standardised minimum set of outcome measures that (1) can be implemented globally across intervention settings for substance use and addictive behaviour disorders, and (2) assess those outcomes that are most important to those who access these treatments.

**Methods:** Structured teleconference calls are conducted with an international, multidisciplinary Working Group of 25 leading experts in the substance use and addictive behaviour field—including healthcare professionals, researchers, outcome measurement experts, and service-user representatives—who were assembled by the International Consortium for Health Outcome Measurement (ICHOM). Calls follow a progression of planned themes designed to achieve consensus on the scope of the Standard Set and the outcome domains, outcome measures, and relevant case-mix variables to be included in the Standard Set. To support the calls, we generated evidence through a systematic review of outcome domains, measures, and case-mix variables, a scoping review of related grey literature and existing measurement initiatives, and advisory groups with service-user representatives and experts. Agreement on the content of the Standard Set is reached through a modified Delphi approach with the Working Group.

**Results:** The Working Group have defined the scope of the work to include disorders of smoking, alcohol, drugs, gambling, and gaming, amongst people aged 12 years and older. By the time of the NDARC symposium, the outcome domains, measures, and case-mix variables to be included in the Standard Set will be finalised.

**Implications:** Implementation of the Standard Set will facilitate shared decision-making, quality improvement, and cost reductions. Patients will have increased transparency to guide their choices, providers will be able to benchmark their performance compared to that of others nationally and internationally, and funders will be able to support the treatments or combinations of treatments that increase value over the full cycle of care.

## Getting over the blues from the rush on poppers

Jared Brown<sup>1,2</sup>, Reece Cossar<sup>3</sup>, Therese Ryan<sup>4</sup>, Amy Peacock<sup>5</sup>, Rachel Sutherland<sup>5</sup>, Ann-Maree Lynch<sup>6</sup>, Jeff Robinson<sup>7</sup>, Carol Wylie<sup>8</sup>, Paul Dietze<sup>3</sup>, Rose Cairns<sup>1,9</sup>

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**Introduction:** Alkyl nitrite inhalants (eg amyl) have become commonly used recreational drugs, particularly among LGBTIQ+ communities to facilitate receptive anal intercourse (26-46% of gay men ). It is also used more generally as a 'party drug', but not as a drug of choice.

**Aims:** To evaluate rates of use and harms from alkyl nitrite inhalants, and investigate risk factors for adverse events.

**Methods:** Harms will be evaluated from Australian Poisons Information Centre (PIC) alkyl nitrite case consultations 2009-18 and the NSW Public Health Rapid, Emergency, Disease and Syndromic Surveillance system 2011-18. Patterns of use will be evaluated through Australian drug use surveys such as Ecstasy and Related Drug Reporting System and Big Day Out Study.

**Results:** Usage appears to have remained relatively constant but significant increases in adverse events were noted with cases to PICs increasing from 28 to 78 over the past decade. Almost all cases were in adults, with an increasing trend in females, who now represent one-third. The majority of cases related to accidental ingestion of liquid followed by spilling of liquid into nostrils. Three-quarters were hospitalised but were rapidly discharged. ACT, NSW and Victoria had the highest population-adjusted rates of calls to PICs.

**Implications:** We hypothesise products available more recently are more: pure, toxic nitrites, poorly packaged/labelled; or the users (eg women, 'legal high') are inexperienced and at higher risk of toxicity due to incorrect use. A vigorous debate has been stimulated by this data, led by the Therapeutic Goods Administration considering education, rescheduling, changes in packaging and labelling.

## **A comparison of the use buprenorphine and methadone in pregnancy on clinical and service outcomes**

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**Introduction:** Historically methadone has been the pharmacological treatment of choice for pregnant women who are opioid dependent. Evidence has now accumulated from several RCTs and cohort studies to show that buprenorphine is a viable alternative.

**Aims:** The aim of this study was to compare key outcomes of neonates exposed in utero to either buprenorphine or methadone from a complete treatment population.

**Methods:** The first population-based record linkage cohort study of 1886 live births to all women on either buprenorphine (n=130) or methadone (n=1756) throughout pregnancy in New South Wales Australia from 2000-2012.

**Results:** Neonates exposed to methadone throughout the pregnancy were more likely to be admitted to Special Care Nursery (AOR 2.58, 95%CI 1.10, 6.06) and the mothers to have smoked during pregnancy (AOR 1.57, 95%CI 1.13, 2.20). There was no significant difference in the proportion of neonates in either group diagnosed with Neonatal Abstinence Syndrome (NAS) within 28 days of birth (buprenorphine 38.6% n=49, methadone 42.2% n=708) although neonates exposed to methadone had a longer hospital stay (13 days in the methadone group and 9 days in the buprenorphine group).

**Implications:** Buprenorphine in pregnancy was associated with shorter time in hospital post birth for the neonates and therefore may present a cost-effective treatment alternative.



## Personal correlates of support for medical cannabis legalisation in Australia

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**Introduction:** In Australia, there was a surge in support for medical cannabis legalisation in 2016, after support had remained relatively stable for a decade (68.5% - 69% between 2004 and 2013). In Australia, despite growing public support (3), little is known about profile of those who supported/ did not support medical cannabis legalisation in Australia.

**Aims:** This paper used data from the 2016 National Drugs Strategy Household Survey (NDSHS) to examine correlates of support for medical cannabis legalisation.

**Methods:** Descriptive statistics estimated the weighted proportion of sample reporting support, neutral, or oppose for medical cannabis legalisation by individual characteristics. Rao-Scott chi-squared tests were used to determine bi-variate association between support for medical cannabis legalisation and each of the independent variable. The relationships between respondent characteristics and support for medical cannabis legalisation (with oppose as the reference) were examined using multinomial logistic regression analysis.

**Results:** Seventy-nine percent of respondents supported medical legalisation in 2016. In contrast, 17% neither supported nor opposed the policy and only 3.7% opposed it. Females (OR=1.72, 95% CI: 1.71-1.74), older age (50+ years old: OR= 2.66, 95% CI: 2.62-2.69), and higher income were more likely to support medical cannabis legalisation. Self-reported chronic pain (OR= 2.25, 95% CI: 2.20-2.30) and psychological distress (high level: OR=1.25, 95% CI: 1.23-1.27) but not cancer, increased support for legalisation. High-risk drinking and any use of cannabis were associated with support for legalisation, with past-year cannabis use (OR = 18.96, 95% CI: 18.26-19.70) more strongly associated with support than all sociodemographic characteristics combined.

**Implications:** Most Australians support medical cannabis legalisation and individuals' personal experience with cannabis showed robust association with the supportive attitudes. Some sociodemographic and health characteristics associated with medical cannabis legalisation support maybe related to underlying beliefs about its medical benefits.

## Characterising people attending Australian emergency departments and hospital for an alcohol-related problem: The Data-linkage Alcohol Cohort Study (DACS)

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**Introduction:** A significant proportion of people who experience alcohol-related problems will experience substantial morbidity and mortality, and place significant burden on healthcare and law enforcement services. There has been no recent attempt at the population level in Australia to longitudinally track people with alcohol-related problems.

**Aims:** The aims of this study were to describe: i) sociodemographic and clinical profile of individuals on first presenting to emergency department or hospital with an alcohol-related diagnosis, and ii) comorbidity, offending, and incarceration in the 12 months prior to their index alcohol-related emergency department attendance or hospital separation.

**Methods:** We assembled a retrospective cohort of people presenting to public emergency departments and public and private hospitals between January 1st, 2005 and December 31st, 2014 in NSW with an alcohol-related diagnosis. Through linkage to various administrative data-sets, we also quantified pre-existing health comorbidities, offending and incarceration in the 12 months prior to their first presentation ('index event').

**Results:** We identified 195,371 people with an alcohol-related emergency department presentation or hospital separation. Those with a hospital separation as the index event were predominantly male (69%), with a median age of 44, and most required urgent medical attention (83%) and stayed in the hospital overnight (58%). Those first presenting to ED were younger (median age 31), with around two-thirds being male (56%), and one in ten being admitted to hospital. One-in-twenty had presented to hospital in the preceding 12 months (mainly for mental health conditions) and one-in-ten had been charged in the preceding 12 months (over one-third for an alcohol-related offence).

**Implications:** People first presenting to emergency departments or hospitals for an alcohol-related problem often have complex pre-existing health and offending profiles, supporting need for screening and clinical intervention which spans health and criminal justice settings.

## Drug related hospitalisations in Australia

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**Introduction:** Alcohol and other illicit drug use have a substantial impact on health which includes different conditions, diseases, pregnancy complications, injuries, accidental and intentional poisoning. People with drug and alcohol problems present at hospital more frequently which is a heavy burden to the health system and healthcare budget

**Aims:** The aim of this study was to present the prevalence of opioid, amphetamine, cocaine, and cannabis-related hospitalisation in Australia, including disaggregation by key sociodemographic features.

**Methods:** Data comprised public and private hospital separations from all jurisdictions in Australia. Analyses were undertaken of those hospital separations where opioids, cocaine, amphetamines or cannabis were determined to be the principal reason for the hospital episode.

**Results:** Analyses are underway and will be finalised well in advance of the Symposium. Results will include rates per 100,000 of principal drug-related hospital separations in Australia for opioids, amphetamines, cocaine, and cannabis, including information on rates by gender, age, remoteness, and jurisdiction.

**Implications:** These data provide critical information on trends in harms related to use of various substances, identifying potential emerging trends of concern, and providing a greater evidence base for the development of policy responses and interventions in relation to these harms.

**“The driving force here is that it’s better for our clients.” Co-designing a model of care for people with co-occurring mental health and substance use conditions.**

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**Introduction:** Provision of integrated care across mental health (MH) and drug and alcohol (DA) services is increasingly recognised as best-practice but the application of integrated models in these diverse clinical settings has proven to be challenging.

**Aims:** The aim of this study was to bring together researchers, clinicians, managers and consumers from separate MH and DA services in regional Australia to determine if, and how, coordinated care for consumers with co-occurring conditions could be co-designed

**Methods:** A mixed-methods study was implemented using Participatory Action Research. Forty-four MH and DA staff, eight external researchers, and ninety-one residents of a MH rehabilitation unit participated in meetings, surveys or focus groups.

**Results:** A collaborative model was designed and implemented, along with a framework for guiding uptake of the model. Rather than enforcing practice change, clinicians and consumers were motivated to embrace change freely because they were involved as drivers from the planning phase onward; their creative interests were drawn upon; regular working groups were held where staff and consumers congregated daily; and time to build genuine professional relationships was prioritised.

**Implications:** Combining the expertise of service-providers and consumers with the best available research evidence offers one solution to the challenge of implementing coordinated care. It shows how historical and systemic differences can be traversed to enable development of evidence-based practices that are acceptable to consumers and feasible for staff to implement.

# Hepatitis C virus cascade of care among people who inject drugs: A cross-sectional study of characteristics associated with HCV testing and treatment in Australia

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**Introduction:** People who inject drugs (PWID) are at high risk of hepatitis C virus (HCV) infection. Direct acting antiviral treatment can reduce HCV incidence and associated health burden, although large scale uptake of these treatments and high coverage of harm reduction interventions is necessary to achieve those reductions. Access to HCV testing, treatment, and retention in care among PWID remain low in many settings. Adapted from the framework used to monitor HIV care, the HCV cascade has improved our understanding of the continuum of HCV care from diagnosis, to linkage to care, and completion of treatment.

**Aims:** This study will: i) establish the cascade of HCV care (from diagnosis to completion of treatment) among a sample of PWID in Australia, and ii) describe the sociodemographic, drug use, and clinical profile of those engaged at each stage of the cascade of care.

**Methods:** People who had injected drugs at least monthly in the last six months were recruited from each Australian capital city in 2018. In a face-to-face interview, participants self-reported history of HCV antibody and RNA testing, HCV treatment engagement, and completion, as well as their socio-demographics and past six-month drug use and health service utilisation. Logistic regression was used to identify factors associated with antibody testing, RNA testing, treatment uptake and completion, and testing for reinfection.

**Results:** Eighty-eight per cent of participants reported testing for HCV antibody and 64% for active infection (i.e. RNA testing); 88% of those testing RNA-positive started treatment with 76% of those completing treatment; and 96% of those who completed treatment had a test for reinfection. Current opioid substitution therapy (OST), history of incarceration, and past month access to a general practitioner (GP) or counselling for alcohol/drug problems were positively associated with antibody and RNA testing. These factors, excluding incarceration, were also positively associated with treatment engagement. Participants reporting methamphetamine as their drug of choice were significantly less likely to receive antibody or RNA testing; those reporting past month receptive needle sharing were less likely to engage in HCV treatment.

**Implications:** Efforts are needed to increase engagement across the HCV cascade of care amongst PWID. Our findings suggest that interventions to increase access to testing and treatment through GPs and drug counselling could be useful, particularly targeting those not engaged in OST. Further research is needed to ensure that harm reduction messaging and intervention engages PWID who are not currently accessing HCV testing and care in a manner which is acceptable to consumers and feasible for service providers.

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## Crystal methamphetamine use, routes of administration and use of commercial ball pipes in Australia

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**Introduction:** People who use methamphetamine may consider smoking a safer route of administration than injecting, yet smoking still carries health risks.

**Aims:** The aim of this study was to describe methamphetamine use, including forms of use, routes of administration, and smoking equipment used, amongst two samples of people who regularly use drugs in Australia.

**Methods:** Data were obtained from the Ecstasy and related Drugs Reporting System (EDRS; 2003-2019) and the Illicit Drug Reporting System (IDRS; 2000-2019). The EDRS is an annual survey of people who consume stimulants (primarily ecstasy) recruited from capital cities, whilst the IDRS consists of an annual survey of people who inject drugs.

**Results:** Recent (past six month) methamphetamine use amongst the EDRS sample has declined since monitoring began (84% in 2003 vs 32% in 2018). In contrast, recent use has increased amongst the IDRS sample (63% in 2000 to 77% in 2018). Crystal methamphetamine use has also declined in the EDRS sample whilst increasing in the IDRS sample. The percentage of EDRS participants reporting recent use of crystal methamphetamine via smoking as the only route of administration has increased, with the majority now reporting smoking only. In contrast, less than one-tenth of IDRS participants reported smoking crystal only, and one-third reported smoking and injecting. IDRS participants had used commercial and homemade pipes to smoke crystal methamphetamine, with a number using a homemade pipe or injecting due to difficulties accessing commercial pipes.

**Implications:** Appropriately tailored interventions are needed to help reduce the harms associated with smoking methamphetamine. This includes implementing strategies on how best to direct consumers to contact harm reduction services.

Drug Trends (including IDRS and EDRS) and the National Drug and Alcohol Research Centre are funded by the Australian Government Department of Health under the Drug and Alcohol Program.

## Trends in calls to Australian poisons information centres for intentional poisonings involving pharmaceutical opioids

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**Introduction:** Intentional poisonings involving drugs or medications typically occur in the context of 'extra-medical' use (sometimes referred to as 'misuse', 'abuse' or 'recreational use') or reflect attempts at deliberate self-harm. Despite the well-documented increase in the availability and use of pharmaceutical opioids, limited attention has been paid to trends in intentional poisonings involving their use, particularly with regards to specific opioids involved.

**Aims:** To examine trends in the rate of intentional poisonings involving pharmaceutical opioids in Australia, over the period 2011-2017.

**Methods:** Data from calls made to three Australian Poisons Information Centres (PICs), which cover five of eight Australian jurisdictions (~80% of Australian poisoning calls), were analysed. Intentional poisonings were disaggregated by opioid type and by whether they arose from substance 'abuse'/ 'misuse' or deliberate self-harm, as coded by the PICs. Rates were reported per 100,000 people using the estimated population for these five jurisdictions for the June quarter each year. Trend analyses were conducted to examine change in rates over time.

**Results:** There were a total of 16, 593 calls related to intentional poisonings involving pharmaceutical opioids between 2011-2017, the majority (70.3%) of which were cases of deliberate self-harm. The most commonly involved opioids in both substance abuse/misuse and deliberate self-harm cases were codeine (43.6% and 56.1% of calls, respectively) and oxycodone (28.7% and 29.2% of calls, respectively). The rate (per 100, 000 people) of intentional poisoning calls related to the abuse/misuse of codeine increased from 0.44 in 2011 to 1.39 in 2017, an increase of 0.16 calls per 100,000 people per year (95% CI: 0.14 to 0.19), while the rate of calls related to the abuse/misuse of oxycodone increased from 0.23 to 0.91 (with a trend of 0.10: 95% CI: 0.09 to 0.12) over the same period. Among deliberate self-harm cases, the rate of calls for codeine and oxycodone increased from 2.33 to 6.34 (trend: 0.61, 95%CI: 0.43 to 0.80), and from 0.78 to 3.77 (trend: 0.49, 95%CI: 0.41 to 0.58), respectively.

**Implications:** The majority of intentional poisonings involving pharmaceutical opioids reported to Australian PICs involved deliberate self-harm attempts. Increases in the rate of calls involving codeine and oxycodone between 2011-2017 were observed. The overwhelming proportion of cases involving deliberate self-harm indicates a need for continued monitoring and mental health screening in the context of opioid prescribing (noting that it is not possible to tell from this data whether people were using opioids prescribed to them). Contact with PICs presents an opportunity for referral to mental health services.

## Correlates of aberrant behaviour in a cohort of people prescribed opioids for chronic non-cancer pain using the ORBIT Scale

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**Introduction:** Risks of opioid medication non-adherence and misuse include development of opioid use disorders, medication diversion and mortality. The Opioid-Related Behaviours In Treatment (ORBIT) scale is a brief and reliable scale that measures recent aberrant behaviour in people prescribed opioids.

**Aims:** The aims of the study were to examine the socio-demographic and clinical characteristics associated with aberrant behaviour in people prescribed opioids for CNCP.

**Methods:** The POINT (Pain and Opioids in Treatment) study, is a cohort of 1,514 people prescribed opioids for CNCP in Australia. The current study utilised data collected at the 24-month interview from participants who were on opioids 3 months prior to the survey (n=1,132). Participants that reported a score of one or more were considered to have reported aberrant behaviour.

**Results:** Of the 1,132 participants, 35.1% (n=397) of the POINT cohort reported at least one type of aberrant behaviour in the 3 months prior to the survey. The most commonly reported aberrant behaviours were asking doctors for an increase in prescribed opioid dose (n=201; 17.8%) and early renewal of opioid prescriptions (n=115; 10.2%). In a multivariate model, factors associated with aberrant behaviour measured by the ORBIT scale were being younger (AOR=0.98; 95%CI=0.97–0.99), male (AOR=1.50; 95%CI=1.12–2.01), diagnosis of lifetime pharmaceutical opioid dependence (AOR=1.44; 95%CI=1.01–2.03), previous lifetime overdose (AOR=1.55; 95%CI=1.11–2.15), being dissatisfied with one's health (AOR=1.38; 95%CI=1.02–1.87), and depression (AOR=1.50; 95%CI=1.06–2.11).

**Implications:** One-third scored one or more on the ORBIT suggesting some aberrant behaviour. Aberrant behaviours were associated with being younger, male, a substance use history and poor mental health.



## Demonstration of sex differences in inhibitory dysfunction among heavy drinkers: Does it depend on the task?

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**Introduction:** The ability to exert control over inappropriate actions is central to everyday life and is given increasing importance in new models of the development, maintenance, and relapse to substance use. Some previous evidence has suggested female heavy drinkers show greater deficits in inhibitory control, while male heavy drinkers are relatively spared, although not all studies report this effect.

**Aims:** Here, we investigate inhibitory capacity using two different paradigms, which tap related but separate aspects of inhibitory control.

**Methods:** Heavy drinkers (24 female, 19 male) and light drinkers (28 female, 25 male) completed a stop-signal task, which assesses the urgent inhibition of a response that is already underway, and a cued-Go/NoGo task, which assesses response preparation, execution and inhibition.

**Results:** No group or sex differences were observed in the cued-Go/NoGo task, but in the stop-signal task, a sex x group interaction was observed. However, follow-up analyses revealed that female light and heavy drinkers showed similar inhibitory capacity, while male light drinkers were actually worse than male heavy drinkers.

**Implications:** The surprising results suggest little impairment among heavy drinkers, especially females, and that further questions arising from a purported deficit (e.g., do deficits predict treatment outcomes? Can inhibitory training help to reduce use?) should be investigated with reference only to people who are dependent.

# Mortality in people who use opioids: Systematic review and meta-analysis

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**Introduction:** It has been estimated that the number of people aged 15-64 who use opioids is 34 million in 2016. The use of opioids, illicit or pharmaceutical, can pose an increased risk of mortality even when using pharmaceutical opioids as prescribed.

**Aims:** Though a previous review examined all-cause and cause-specific mortality rates for illicit opioid users, we have updated the previous review with the addition of examining excess mortality associated with illicit problematic or dependent opioid use. We have also conducted the first systematic review into the crude mortality rates (CMRs) and standardised mortality rates (SMRs) associated with being prescribed pharmaceutical opioids.

**Methods:** We searched Medline, Embase and PsycINFO for cohort studies reporting CMR and SMR among people using or prescribed opioids, published from 2009 to February 2018. Studies from the previous review were also included. The illicit opioid use review included cohorts of people who use/inject heroin or other illicit opioids, including extra-medical use of pharmaceutical opioids. The pharmaceutical opioid use review included people prescribed pharmaceutical opioids for chronic non-cancer pain. Pooled CMRs (/100PY) and SMRs were estimated using STATA.

**Results:** Overall, 102 studies (1,170,871 people with 5,109,108 person-years (PY) of follow up) and 7 studies (409,341 people with 504,865 PY of follow-up) were included for analysis within the reviews of people using illicit opioids and people prescribed opioids, respectively. Studies of people using illicit opioids review were identified from 28 countries, compared to only 2 countries for studies of people prescribed pharmaceutical opioids (all but one study being from the US). People who use illicit opioids had an all-cause mortality rate that was 9.94 times higher than their age- and sex-matched peers. In people using illicit opioids, the highest excess mortality rates were for drug-related deaths and AIDS-related deaths. There was similar excess mortality risk for suicide, accidental injury, violence and liver-related deaths for people who use illicit opioids. People who are prescribed opioids are estimated to have an all-cause CMR of 2.38. Due to the small number of studies, CMR estimates were limited to accidental injury and drug-related deaths for people prescribed opioids. No studies reported excess mortality among people prescribed pharmaceutical opioids.

**Implications:** These estimates highlight that there is a crucial need for interventions to reduce these mortality risks, such as overdose prevention (e.g., naloxone and opioid agonist treatment), to be made available and provided to scale. For people who have problematic or dependent use of opioids, there needs to be a broader understanding of their health needs and potential to improve health across a range of domains, not just drug-related (e.g., smoking cessation, managing chronic disease and improving nutrition). Given the lack of data on excess mortality risk for people prescribed opioids, there is an urgent need for studies that quantify this to better inform prescribing strategies and ensure that all patients have the necessary information to make informed decisions relating to their treatment.

# Cannabis and cannabinoids for the treatment of mental disorders and symptoms: A systematic review and meta-analysis

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**Introduction:** Increasing numbers of individuals are using cannabinoids for medicinal purposes, particularly for mental health problems. Previous reviews on the effectiveness of cannabinoids have reached conflicting conclusions and have been limited in their coverage of mental health conditions and trial designs other than randomised controlled trials (RCTs).

**Aims:** To examine the evidence, both RCTs and non-RCT study designs, for cannabinoids in the treatment of depression, anxiety, ADHD, Tic/Tourette's disorder, PTSD and psychosis.

**Methods:** Medline, Embase, PsycINFO, Cochrane Central Register of Controlled Clinical Trials (CENTRAL) Cochrane Database of Systematic Reviews, and previous reviews were searched for experimental and observational studies published from 1980 that looked at the effect of cannabis or cannabinoids on depression-, anxiety-, ADHD-, Tic disorder-, PTSD-, and psychosis-related outcomes. Standardised mean differences (SMD) and odds ratio (OR) from parallel and cross-over RCTs were pooled via random-effects meta-analyses in Revman v5.3.

**Results:** Overall, 80 studies were included, of which 37 were RCTs (23 depression, 17 anxiety, 1 ADHD, 2 Tic disorder, 1 PTSD, and 6 psychosis). There was only 1 study where depression was the primary outcome and only 4 out of 17 RCTs on anxiety had anxiety as a primary outcome. There was no significant difference within the RCTs in any of the depression (k=13, n=1700), ADHD (k=1, n=30), Tics/Tourette's syndrome (k=2, n=41) outcomes. Cannabinoids were associated with a significantly greater reduction in anxiety symptoms compared to control (SMD: -0.37, 95%CI: -0.63 - -0.11; k=10, n=348). For PTSD (k=1, n=19), cannabinoids improved global functioning (SMD: -1.13, 95%CI: -0.48 - -0.77) and decreased nightmare frequency (SMD: -1.11, 95%CI: -1.46 - -0.76), with no difference in sleep quality compared to control. For psychosis, there were no changes in total, positive, or negative symptoms, or emotional or cognitive functioning, but there was improvement in global functioning (SMD: -0.62, 95%CI: -1.14 - -0.09; k=1, n=86) after cannabinoids versus control. There were more adverse events (OR: 1.80, 95%CI: 1.18-2.77), withdrawals (OR: 1.53, 95%CI: 1.06-2.21), and withdrawals due to adverse events (OR: 2.06, 95%CI: 1.12-3.77) after cannabinoids compared to control. There were no significant differences between groups for serious (OR: 1.27, 95%CI: 0.93-1.75) and treatment-related (OR: 1.26, 95%CI: 0.80-1.99) adverse events.

**Implications:** Though the use of cannabinoids is increasing for medical purposes, there is a lack of studies that indicate their beneficial effect for mental health conditions. The current low quality of available evidence for benefit should be considered in conjunction with the evidence for harm when patients and clinicians are considering cannabinoids as a treatment option. More research on their effectiveness is needed, particularly amongst those with depression and anxiety.

## Mortality in people who use stimulants: Systematic review and meta-analysis

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**Introduction:** The number of people aged 15-64 globally who use stimulants such as amphetamines (including prescription stimulants) and cocaine has been estimated to be 34 million and 18 million in 2016, respectively. A wide range of physical and psychological consequences are associated with illicit stimulant use, but there are potentially also fatal harms associated with their use. These fatal harms may be especially pronounced within people with problematic or dependent use.

**Aims:** Previous reviews reported all-cause and cause-specific mortality but did not conduct an overall estimate for these measures or excess mortality. We updated the previous reviews to calculate estimates of all-cause and cause-specific mortality rates and excess mortality associated with problematic or harmful illicit amphetamine and cocaine use.

**Methods:** We searched Medline, Embase and PsycINFO for cohort studies reporting crude mortality rates (CMRs) and standardised mortality rates (SMRs) among people who have regular or problematic use of amphetamines or cocaine, published from 2008 to present. Studies identified from the previous reviews were also included. Pooled CMRs (/100 person-years (PY)) and SMRs were estimated using STATA.

**Results:** Overall, 23 studies (115,223 people with 653,013 PY of follow-up) and 17 studies (70,192 people with 522,013 PY of follow-up) were included for analysis within the amphetamine and cocaine use review, respectively. All-cause mortality CMR was similar across the people who use amphetamines and cocaine with estimates of 1.11 (95%CI: 0.90-1.37) and 1.30 (95%CI: 0.91-1.85), respectively. People who use amphetamine and cocaine were 6.83 times (95%CI: 5.27-8.84) and 6.10 times (95%CI: 4.19-8.88) more likely to die than their age- and sex-matched peers. Significant excess mortality was seen in drug poisoning (CMR: 0.14 (95%CI: 0.06-0.34); SMR: 24.70 (95%CI: 16.67-36.58)), suicide (CMR: 0.20 (95%CI: 0.07-0.55); SMR: 12.20 (95%CI: 4.89-30.47)), and homicide (CMR: 0.03 (95%CI: 0.02-0.06); SMR: 11.90 (95%CI: 7.82-18.12)) within people who use amphetamines. People who use cocaine also saw significantly excess mortality risk within accidental injuries (CMR: 0.09 (95%CI: 0.04-0.22); SMR: 6.36 (95%CI: 4.18-9.68)), suicide (CMR: 0.07 (95%CI: 0.04-0.10); SMR: 6.26 (95%CI: 2.84-13.80)), and homicide (CMR: 0.09 (95%CI: 0.01-0.54); SMR: 9.38 (95%CI: 3.45-25.48)). Drug poisonings within cocaine users also saw a significant excess mortality risk (SMR: 48.79 (95%CI: 20.14-118.25) but this estimate was derived from only two studies.

**Implications:** These meta-analyses highlight the significant risk that people using illicit amphetamines and cocaine have regarding premature deaths, especially trauma-related deaths. There needs to be an increased push for overdose interventions within this population as drug poisonings have the highest excess mortality risk for both amphetamines and cocaine.

## **Driving after using alcohol and drugs, roadside testing, and risk perception among people who use drugs in Australia.**

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**Introduction:** One of the most serious road safety concerns is driving under the influence (DUI) of alcohol and/or illicit drugs.

**Aims:** The aim of this study was to describe trends in driving after using alcohol and illicit drugs, exposure to roadside breath testing (RBT) and roadside drug testing (RDT), and perceptions of accident risk and risk of police apprehension among people who regularly use drugs.

**Methods:** Data were obtained from face-to-face interviews from the Ecstasy and related Drugs Reporting System (EDRS) and the Illicit Drug Reporting System (IDRS) between 2007 and 2019 (excluding 2014). The EDRS comprises a sample of people who use ecstasy and other stimulant drugs, whilst the IDRS consists of a sample of people who inject drugs.

**Results:** Self-reported drug-driving has been consistently higher than drink driving for both the EDRS (53% for drug-driving and 29% for drink-driving in 2018) and IDRS (74% for drug-driving and 5% for drink-driving in 2018) samples. The most commonly used drug before driving among the EDRS sample was consistently cannabis, and heroin for the IDRS sample. Among those that reported to have driven a vehicle in the past six months, nearly half (49%) of EDRS participants reported exposure to RBT for alcohol and 14% RDT in 2018. Among recent drivers in the IDRS sample, 45% reported exposure to RBT and 22% RDT in 2018. Alcohol was perceived by the EDRS sample to have the greatest accident and legal risk. Ecstasy was perceived to have the greatest accident risk among the IDRS sample, however, the perception of apprehension risk was similar between alcohol, methamphetamine and cannabis.

**Implications:** Drug-driving is more common than drink-driving among both populations, with high rates of exposure to RBT and RDT, and differences in perception of accident and legal risk between the samples.

## Trajectories of adolescent alcohol consumption: A prospective cohort study

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**Introduction:** Adolescents often display different trajectories of initiation to, and progression of, alcohol involvement. Transition through these stages of consumption may be an important predictor of later harms, including alcohol use disorder (AUD). Previous attempts to conceptualise these trajectories have lacked granularity in measuring levels of adolescent alcohol involvement. This study modelled dynamic changes in alcohol consumption with repeated assessment throughout adolescence.

**Aims:** This study aimed to identify common trajectories of adolescent alcohol involvement, to investigate their prospective predictors from a range of baseline sociodemographic factors, and to assess whether trajectories of consumption predict alcohol abuse, alcohol dependence, and AUD.

**Methods:** Data from the Australian Parental Supply of Alcohol Longitudinal Study were used to model trajectories of self-reported adolescent alcohol consumption, specifically typical quantity and frequency of use, over five waves of annual follow-up. Baseline sociodemographic data in Wave 1 (Grade 7) were used to create profiles of trajectory membership. Regression models were used to determine whether consumption trajectories predicted AUD symptoms in Wave 7 (Grade 12) after controlling for known covariates.

**Results:** Latent class analysis showed that a four-class solution provided the best fit to the data. The four classes were: late-onset moderate drinkers; early-onset moderate drinkers; abstainers; and early-onset heavy drinkers. With late onset moderate drinkers as a reference group, baseline factors associated with lower risk of becoming an early-onset heavy drinker were: stricter parental monitoring, more alcohol-specific household rules, and fewer substance-using peers. Early-onset heavy drinkers had increased odds of reporting symptoms of alcohol dependence, alcohol abuse, and AUD in Grade 12.

**Implications:** This study provides evidence that early initiation and rapid escalation of alcohol use is associated with increased risk of alcohol-related harm compared to recommended levels of consumption (late onset, moderate drinking). Notably, parenting factors such as alcohol-specific household rules are associated with reduced risk of early-onset heavy drinking. Adolescents should delay initiation and drink within the recommended Australian guidelines to reduce risk of harm. Parents are advised to implement alcohol-specific rules and to monitor their children's exposure to alcohol throughout adolescence.