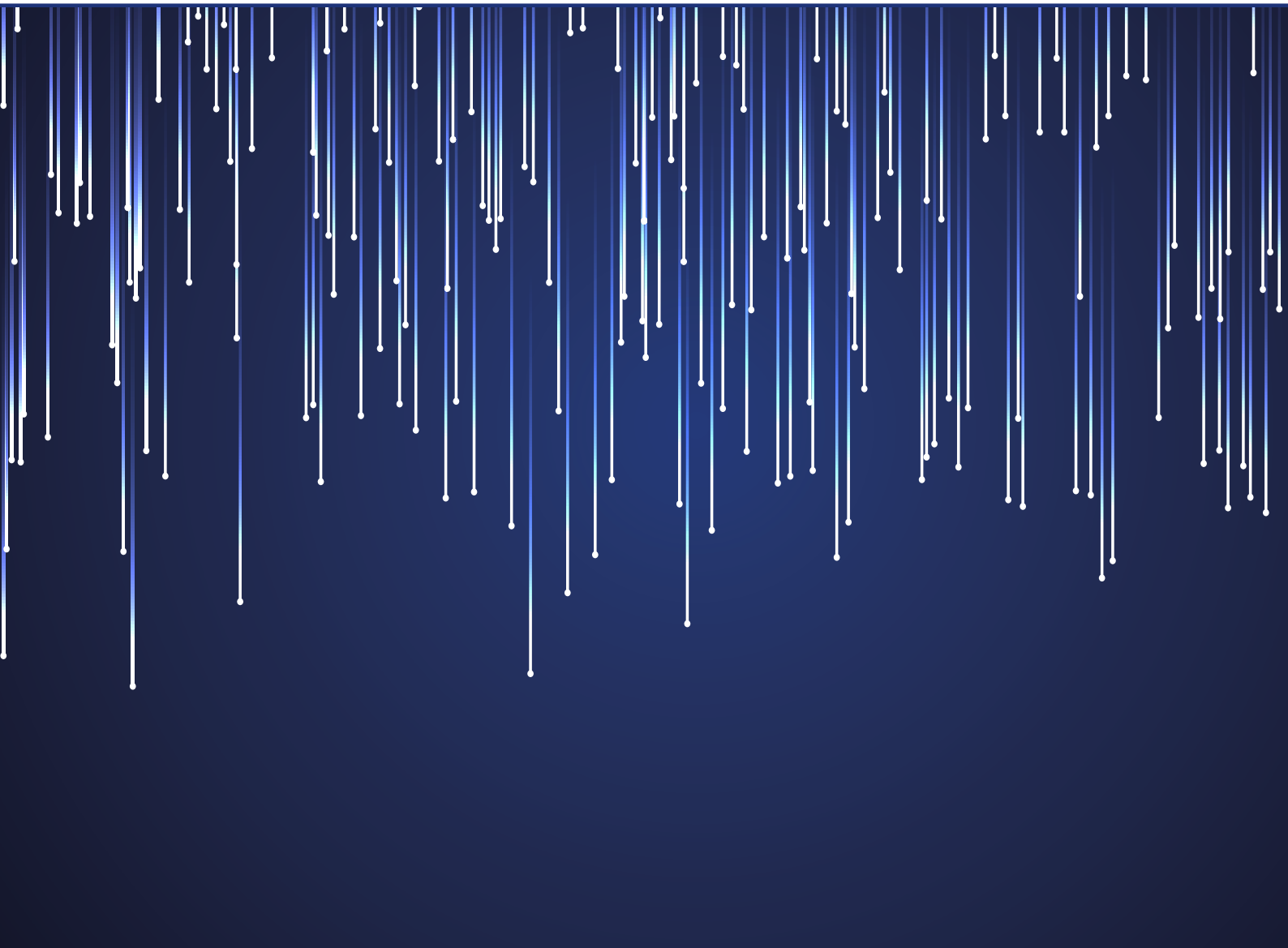
NSW Health

health.nsw.gov.au

Prescription, Recreational and Illicit Substance Evaluation (PRISE)

Summary Program Activity Report

July 2018 – December 2021



NSW Ministry of Health
1 Reserve Road
ST LEONARDS NSW 2065
Tel. (02) 9391 9000
Fax. (02) 9391 9101
TTY. (02) 9391 9900
www.health.nsw.gov.au

Produced by: NSW Ministry of Health

The NSW Ministry for Health acknowledges the traditional custodians of the lands across NSW. We acknowledge that we live and work on Aboriginal lands. We pay our respects to Elders past and present and to all Aboriginal people.

Further copies of this document can be downloaded from the NSW Health webpage www.health.nsw.gov.au

SHPN (CAOD) 230736
ISBN 978-1-76023-620-5

October 2023

Contents

SNAPSHOT

519 total cases reported
July 2018 – December 2021

82 reported cases from music festivals

390 cases had toxicology testing (tested cases)

11 public drug warnings released

8 clinician safety advisories released

Festival cases

MDMA was the most commonly detected drug in cases from music festivals – **58 out of 78** cases (**70.4%**)

NPS* were detected in **2 of the 78** tested cases (2.6%)

Non-festival cases

Methamphetamine was the most commonly detected drug – **99 out of 312** tested cases (31.7%)

NPS* were detected inn **56 of the 312** tested cases (17.9%).

Acetylfentanyl was the most commonly detected NPS.

* NPS = new psychoactive substance; includes fentanyl analogues, nitazenes, unregistered benzodiazepine groups, and other NPS.

Tested cases

1 **34.6%** **of tested cases**

Methamphetamine was the **most** commonly detected drug

2 **30.2%** **of tested cases**

MDMA was the **second most** commonly detected drug

Age of tested cases

28.6 years the median age of all tested cases

21.6 years the median age of tested cases from music festival exposures

32.0 years the median age of tested cases from non-music festival exposures

68.5% of tested cases were male

Key Points

The Prescription, Recreational and Illicit Substance Evaluation (PRISE) program provides an understanding of the specific drugs causing severe and unusual toxicity in NSW.

The PRISE program was initially limited to the music festival setting, but has expanded statewide to provide actionable intelligence for rapid public health responses.

Between July 2018 and December 2021, 519 cases were notified to PRISE. More than 66% (390) of these cases proceeded to testing of biological samples, with a small number also having testing of physical substances associated with the case. Of the 390 tested cases, the majority were male (68.5%). The median age of all tested cases was 28.6 years.

NSW Toxicology units (194, 37.4%) were the most common source of notifications, followed by surveillance of Emergency Department presentations (98, 18.9%) and the NSW Poisons Information Centre (97, 18.7%).

The most frequently detected drug in all cases was methamphetamine, found in 117 (34.6%) of 390 tested cases. MDMA was the most commonly detected drug in cases from music festivals.

New psychoactive substances (NPS) were detected in 15% of tested cases. Acetylfentanyl (a fentanyl analogue) was the most commonly detected NPS. Other NPS detections include:

- Other fentanyl analogues (carfentanil, fluoro furanyl fentanyl)
- Potent opioid – etodesnitazene
- Unregistered benzodiazepines in “street” Xanax and in other substances (eg flubromazolam, clonazolam, bromazolam and etizolam)
- Ketamine analogue – 2-FDCK
- Synthetic hallucinogen – 25C-NBOMe

Other key detections include heroin contaminated cocaine, and THC (tetrahydrocannabinol) containing edibles (lollies) being inadvertently consumed by children leading to hospital presentations

There were eleven public drug warnings and eight clinician safety advisories released in response to findings from PRISE over this period.

What is the PRISE program?

The Prescription, Recreational and Illicit Substance Evaluation (PRISE) program is a collaboration across multiple functional units of NSW Health including the Centre for Alcohol and Other Drugs, NSW Ministry of Health, the NSW Poisons Information Centre (NSW PIC), NSW hospital-based Clinical Toxicology services and NSW Health Pathology Forensic & Analytical Science Service (FASS). It provides access to extensive toxicology testing to NSW Health acute care services for cases of severe and unusual substance-related toxicity or clusters of overdoses, with rapid turnaround time.

The PRISE Program began in July 2018 following the public health response to deaths and severe toxicity of people who attended music festivals between 2017 and 2019. The program was further expanded to identify specific drugs causing severe toxicity in non-music festival settings. It is complemented by a range of intelligence inputs from surveillance of emergency department presentations, coronial toxicology results and police seizures.

The objectives of the PRISE program are:

1. To enhance clinical management of patients with severe drug-related toxicity.
2. To rapidly identify substances (primarily recreational and/or illicit substances) associated with severe drug-related toxicity which have potential for significant public health impact, and where risk may be improved by timely public health response.
3. To identify emerging trends on acute recreational and/or illicit substance poisonings and inform public health response.

How does the PRISE program operate?

Routine urine drug screens available in Australian hospitals for patients presenting with suspected drug overdose allows for the detection of a limited range of drug classes (such as some opiates, cannabis, amphetamines, benzodiazepines and cocaine). These screens do not identify the individual substance involved or their concentration. In cases of severe and unusual toxicity or clusters of presentations, a detailed knowledge of the specific drugs involved in the episode is required to aid clinical management and public health responses.

Case notification and active case finding

Patients presenting to hospital with severe and unusual suspected drug-related toxicity are notified to the PRISE team, within the Centre for Alcohol and Other Drugs, NSW Ministry of Health. Common sources of passive notifications include acute care settings such as the clinical toxicology service, NSW PIC and ongoing care settings such as alcohol and other drugs clinics.

Active case finding is performed by the PRISE team from a range of sources including:

- weekly keyword searches of emergency department triage notes through the NSW Public Health Rapid, Emergency, Disease and Syndromic Surveillance (PHREDSS) System,
- daily active case review of clinical toxicologist consults to the NSW PIC,
- reports from different media platforms.

Comprehensive toxicology analysis

Following case notification, the decision to proceed with further specialised testing and interpretation is made by a clinical toxicologist and/or a public health professional.

The PRISE Program offers timely access and logistic support for comprehensive toxicology testing performed at FASS with rapid turnaround time triaged based on clinical and public health urgency.

Analytical techniques employed at FASS are constantly evolving to meet the needs of toxicology testing. These techniques are able to rapidly identify approximately 500 different drugs, including new psychoactive drugs (NPS) such as fentanyl analogues, unregistered benzodiazepines, synthetic cannabinoids and synthetic cathinones, as well as having the ability to identify “unknown” drugs. In some cases, physical samples brought in with the patient or seized by NSW Police are tested to facilitate drug identification.

Review of findings and response

Public health staff consider the patient's exposure history and the similarity with other cases across NSW (and interstate) during their investigations. Advice may be sought from the Standing Panel on Toxicity Risk, which includes representation from a range of experts in clinical toxicology, addiction medicine, emergency medicine, public health and community groups.

Characteristics of cases notified to PRISE

Between July 2018 and December 2021, 519 cases were notified to PRISE. More than 75% (390) of these cases proceeded to testing of biological samples, with a small number also having testing of physical substances associated with the case **(Figure 1)**. There was a notable decrease in all case notifications in early to mid-2020, as a result of the public health restrictions put in place at the beginning of the COVID-19 pandemic. Over the spring and summer months of 2018/19 and 2019/20, there were a high number of cases related to music festivals. In December 2021 further cases from music festivals were seen as music festivals re-started, following the relaxing of public health restrictions on public gatherings.

The median age of all tested cases was 28.6 years (IQR=16.8; range 1-71 years). The median age of 78 tested cases who were from music festivals was 21.6 years (IQR=5.4; range 16-41 years), and the median age of tested cases who were from non-music festival settings was 32.0 years (IQR=18.2; range 1-71 years). The highest proportion of tested cases were in the age groups 15-24 years (127, 32.6%) and 25-34 years (105, 26.9%). More tested cases were male (267, 68.5%), which can be observed in all age groups and regardless of festival exposure status **(Figure 2)**.

Figure 1. Number of cases notified to PRISE and testing status by month and year of notification, July 2018 – December 2021

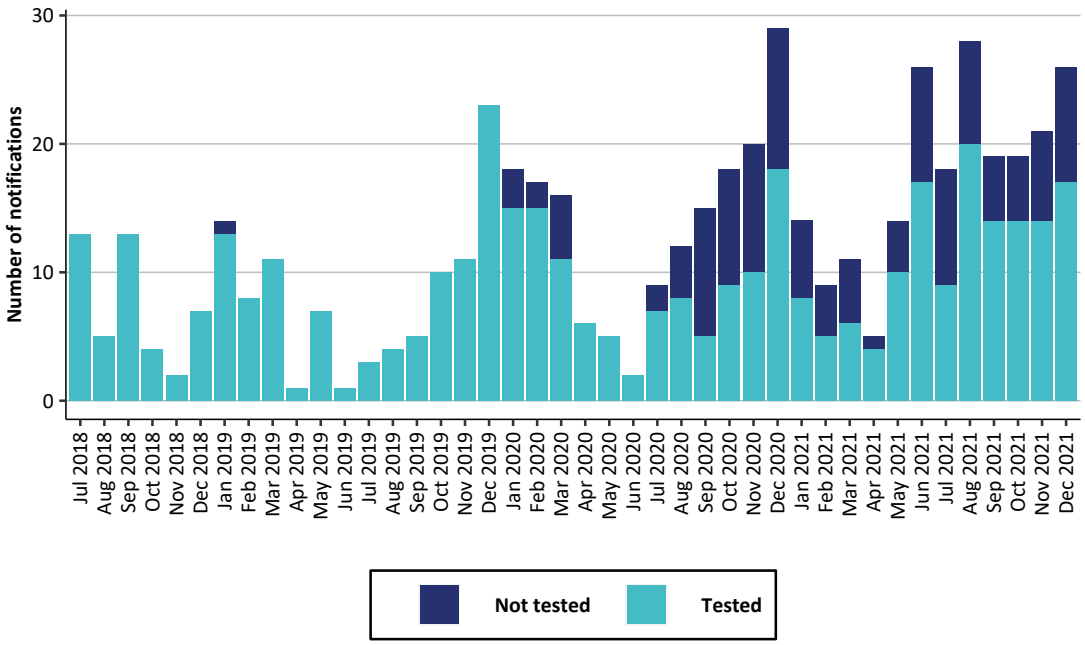
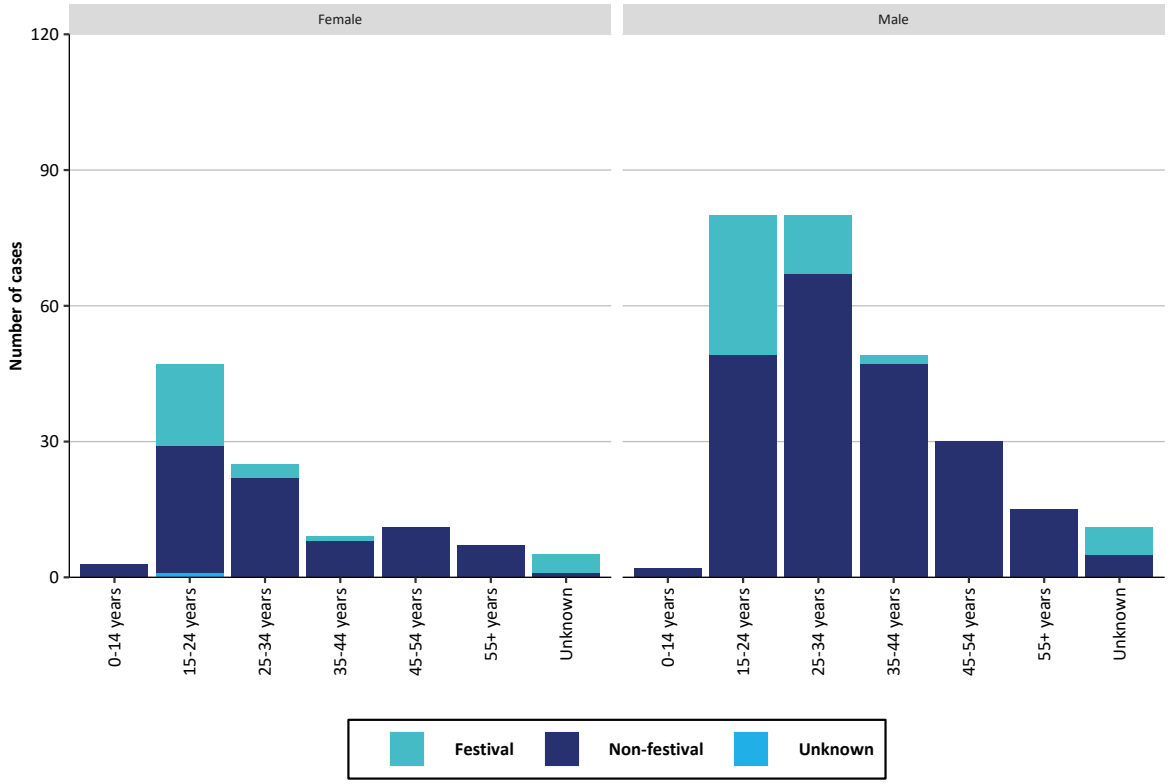


Figure 2. Number of tested cases, by age group, sex and music festival attendance, July 2018 – December 2021



Death was the reported outcome for 62 tested cases (16.1%). Information on the final outcomes was unavailable in 107 cases (27.9%). It is assumed that these cases were not deceased, as these would typically be identified through FASS laboratory processes as samples of deceased individuals are subject to a coronial investigation.

An additional 6-month enhanced monitoring program commenced in July 2020 to monitor the emerging threat of counterfeit “alprazolam”. NSW Health clinicians were requested to notify and submit tablet samples from patients for analysis by the Therapeutic Goods Administration. Between July and December 2020, 91 notifications of suspected counterfeit benzodiazepines were received, and 46 confirmed as counterfeit from across NSW based on the label/tablet appearance or analytical testing. Of the samples analysed, 72% were from males with a median age of 21.5 years (IQR: 17.5-29.5; range: 13-62). The source where provided was ‘street’ (n=13), internet/social media (n=6), and friends (n=2). All suspected counterfeit samples submitted to TGA were confirmed as counterfeit.

Toxicology results from tested cases

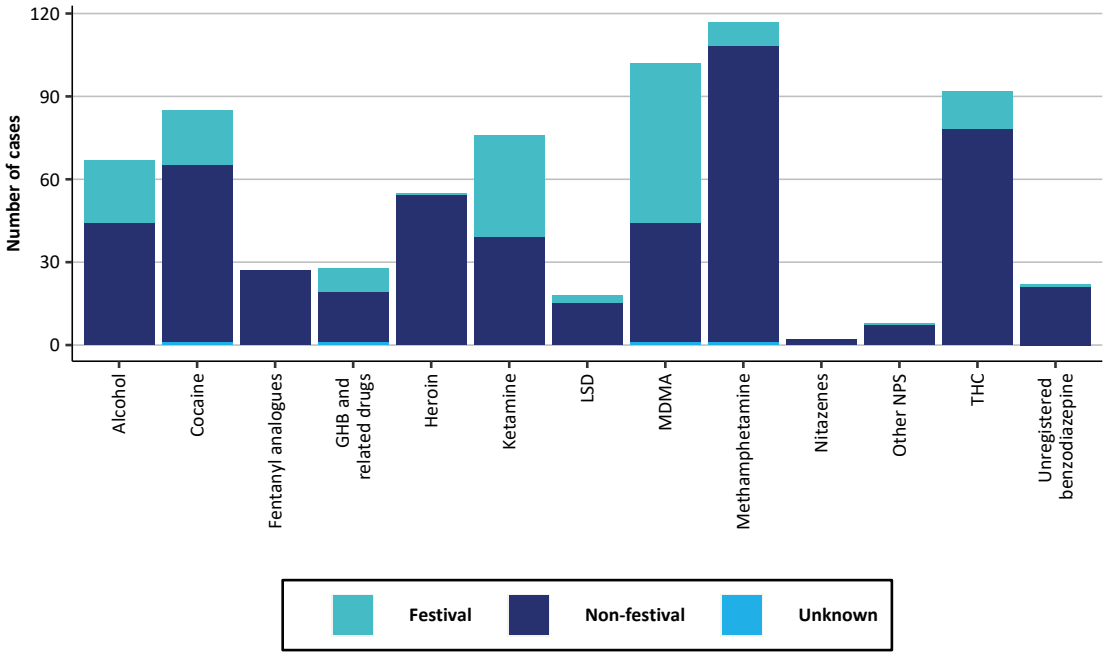
Toxicology results were available for 339 tested cases. The median number of substances detected in patients was 9 (IQR=7, range 1 to 29 substances). This comprises all substances tested, including metabolites, where heroin use, for example, commonly results in multiple substance detections which are all metabolites of the primary substance used.

The number of cases by specific drug class and drugs of interest were reviewed **(Figure 3)**. Methamphetamine was the most commonly detected drug (117 cases, 34.6%), followed by MDMA (102 cases, 30.2%). Most methamphetamine detections were in cases not associated with music festivals, whereas the majority of MDMA detections were in cases from music festivals. MDMA was detected in 58 (70.4%) tested cases from music festivals.

The most common drug combination detected in festival cases was MDMA + ketamine (15 cases, 19.2%). It should be noted that although ketamine is commonly used recreationally, it may also have been administered as part of on-location medical treatment. As case information is not always complete or accessible to the PRISE Team, the source of the ketamine cannot always be confirmed **(Figure 4)**.

While methamphetamine alone was the most common drug detected in non-festival cases (24 cases, 7.7%), methamphetamine was detected in 99 of all non-festival cases (31.7%), often detected along with another substance or substances **(Figure 5)**.

Figure 3. Number of cases with toxicology results, by selected drug or drug class detected and festival status, July 2018 – December 2021



NOTE: NPS = new psychoactive substances; Fentanyl analogues were primarily acetylfentanyl (n = 26)

Figure 4. Number of cases with toxicology results associated with music festivals, by selected combination of drug or drug classes detected

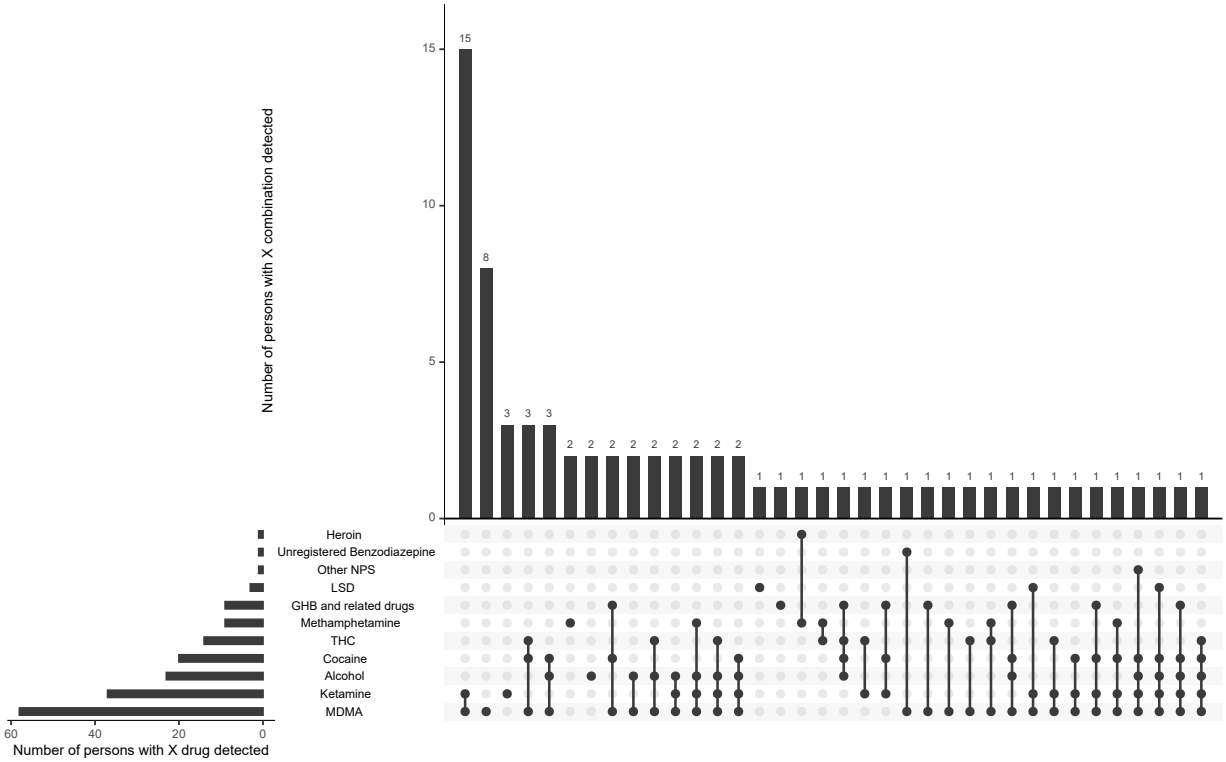
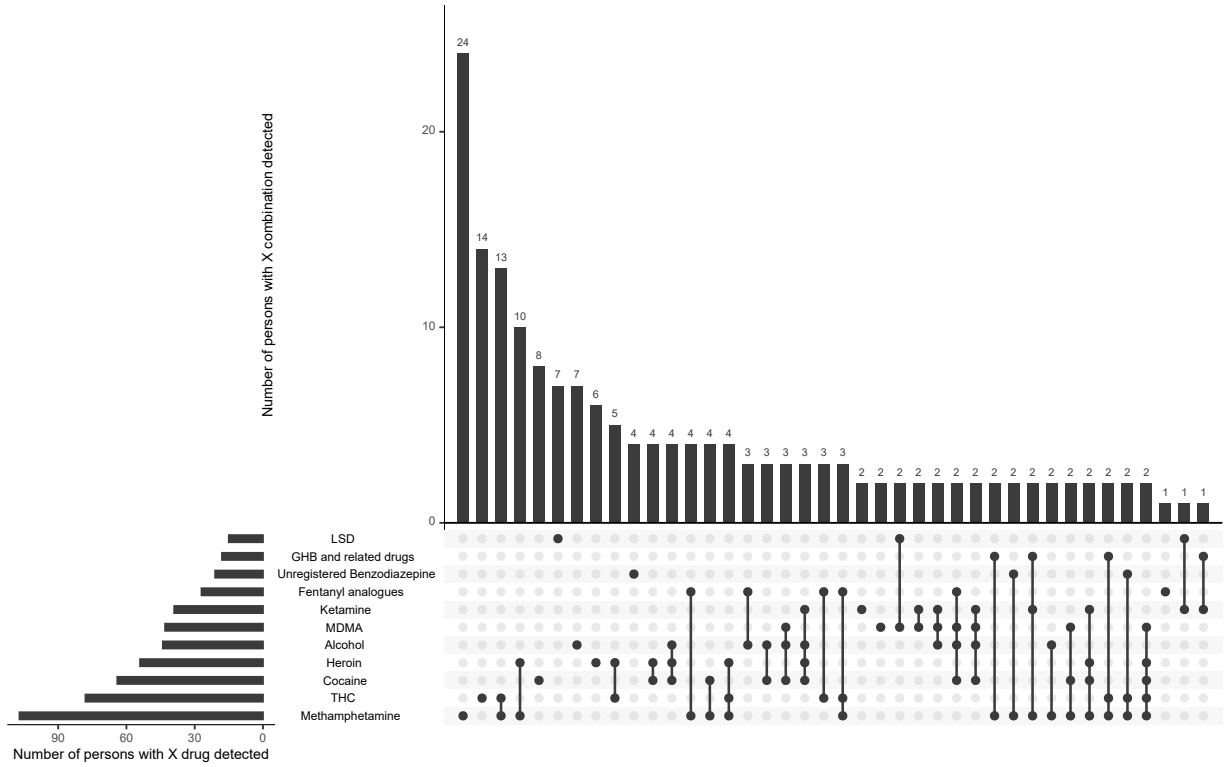


Figure 5. Number of tested cases not associated with music festivals, by selected combination of drug or drug classes detected



Outputs from the PRISE program

PRISE contributes to the care of many critically ill patients and provides important information to a wide range of clinicians including those from emergency, critical care, clinical toxicology, alcohol and other drugs, ambulance, mental health and pharmacy. PRISE directly informs public health programs and services to improve the health and wellbeing of people at risk or experiencing harms from alcohol and other drug use. Rapid impacts are achieved through issuing targeted warnings when high risk substances are detected.

Outputs from the PRISE Program include:

- enhanced interdisciplinary collaboration
- extended toxicology testing availability
- database of severe and unusual cases and clusters of toxicity
- clinician safety advisories
- public drug warnings
- media releases
- de-identified case reports in scientific literature
- regular updates to key stakeholders on findings/ trends and subsequent actions.

During the period of this report, results from PRISE have led to the development and release of 11 public drug warnings and 8 clinical safety alerts (see appendix for full list of these outputs).

Outcomes of the PRISE program

The PRISE Program has enhanced clinical risk assessment, management and prognostication in patients with acute and severe toxicity. Knowing the type of drugs and their respective concentrations is valuable for clinicians in evaluating causal relationships between the clinical presentation and drug-detection. This knowledge may also provide critical information regarding expected duration of toxicity and potential specific treatments in some cases.

Death and drug-related harms at music festivals have become a public health focus since 2018. The PRISE Program has been the essential pathway to identify drug types in patients who became critically unwell or died after attending music festivals in NSW.

The PRISE Program has provided rapid identification of substances associated with severe toxicity, which have the potential for significant public health impact, and where risk may be improved by timely public health responses. One such example was seen in the identification of stimulant adulteration with acetylfentanyl which resulted in one death, and three patients with severe toxicity were confirmed by PRISE Program. The detection led to timely public health interventions, including site inspection, provision of take-home naloxone at the premises, prompt education to staff and early dissemination of information to clinicians.

PRISE has identified emerging trends and informed appropriate public health responses to recreational and/or illicit substance poisonings, including 25C-NBOMe, etodesnitazene, 2,4-dinitrophenol (DNP), etizolam and carfentanil.

PRISE has also been effective in increasing engagement and capacity building of staff at FASS.

Future directions for PRISE

The PRISE Program end-to-end process from case notification to public health response is multidisciplinary, labour intensive, and requires the engagement of treating clinicians. The streamlining of this process has commenced through building a PRISE test request function into the electronic medical record (eMR). The PRISE eOrder build was piloted at Western Sydney Local Health District, and later implemented in South Western Sydney Local Health District and Sydney Local Health District. The goal is for this to be expanded state-wide, to achieve PRISE eOrdering integration of sample transport into the eMR system.

Incorporation of the PRISE Program dataset with the NSW PIC database is currently in development, with plans to move to the new database system by early 2024. This forms part of the national harmonisation of Poison Information Centre (PIC) databases, to improve toxicosurveillance in NSW and across Australia.

Further enhancements of early warning systems with sharing of information and the required public health response will be achieved through expansion of networks and collaboration with national groups, including the Prompt Response Network (PRN) and the Emerging Drugs Network of Australia (EDNA). Routine quarterly reporting for key stakeholders is planned.

Other future directions of the PRISE Program include the streamlining of processes as well as the expansion of capacity for identification, testing and detection of substances implicated in unusual and severe toxicity, and their trends.

Acknowledgements

The PRISE Program exists as a result of the collaborative efforts from many groups, which are listed below (in alphabetical order):

- Australian Industrial Chemicals Introduction Scheme
- Centre for Alcohol and Other Drugs, NSW Ministry of Health
- Centre for Epidemiology and Evidence, NSW Ministry of Health
- Clinical Toxicologists, Nepean Hospital
- Clinical Toxicology, Pharmacology and Addiction Medicine, St Vincent's Hospital,
- Clinicians from across NSW Health
- Department of Drug Health, Sydney Local Health District
- Department of Toxicology, South Western Sydney Local Health District
- Department of Toxicology, Western Sydney Local Health District
- Drug & Alcohol Clinical Services, Hunter New England Local Health District
- Emergency Care Institute, Agency for Clinical Innovation
- Emerging Drugs Network of Australia
- Forensic & Analytical Science Service, NSW Health Pathology
- Health Protection NSW
- Hunter Area Toxicology Service, Calvary Mater Hospital
- Medically Supervised Injecting Centre
- NSW Ambulance
- NSW Coroners Court
- NSW Poisons Information Centre
- NSW Police Force
- NSW Public Health Units
- NSW Users and AIDS Association
- Prompt Response Network, National Centre for Clinical Research on Emerging Drugs
- South Eastern Area Toxicology Service, South Eastern Sydney Local Health District
- Specimen Reception and Sendaways staff at NSW Health Pathology
- Therapeutic Goods Administration

Appendix

Public Drug Warnings released in response to detections through PRISE program

Title	Date of publication
Counterfeit alprazolam	December 2019
Dangerous Drug Alert Acetyl-Fentanyl-and-Illicit Fentanyl	February 2020
Counterfeit alprazolam	July 2020
Cocaine or ketamine may contain dangerous opioids fentanyl and acetylfentanyl	October 2020
Cocaine may contain the dangerous opioids fentanyl and acetylfentanyl	November 2020
Heroin may contain the dangerous opioids fentanyl and acetylfentanyl	November 2020
Heroin may contain fentanyl, a dangerous opioid	January 2021
Cocaine found to contain strong opioids	May 2021
Increases in severe overdoses from cocaine found to contain opioids	June 2021
'MDMA (ecstasy)' powder found to contain: 25C-NBOMe (a hallucinogen) and 4-fluoroamphetamine	July 2021
Cocaine found to contain other dangerous substances – heroin and large amounts of lidocaine	August 2021

Clinician safety advisories released in response to detections through PRISE program

Title	Date of publication
Carfentanil Safety Alert	December 2019
Acetylfentanyl Clinical Alert	February 2020
Illicit supply of counterfeit alprazolam	July 2020
Acetylfentanyl and fentanyl in non-opioid illicit drugs	October 2020
Heroin and cocaine containing fentanyl and acetylfentanyl	November 2020
Illicit cocaine containing strong opioids	May 2020
25C-NBOMe toxicity in patients who used powder thought to be MDMA	July 2021
Illicit cocaine containing high levels of lidocaine (lignocaine)	August 2021

NSW Health

NSW GOVERNMENT