

OPIATE OVERDOSE AND HEALTH TREATMENT OPTIONS FOR OPIATE USERS IN NEW SOUTH WALES, 1999–2002

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This article describes trends in, and basic demographics of, fatal and non-fatal opiate overdose in New South Wales between January 1999 and June 2002. Comparative trends in access to health treatment over this period are discussed, and the relationship of these trends to the enhancements provided through the NSW Drug Summit, and the heroin drought, are explored.

BACKGROUND

The harm arising from illicit drug use, particularly the use of opiates such as heroin, is of considerable concern in Australia. In 1997–1998, it was estimated that there were approximately 74,000 heroin-dependent people in Australia, with about 35,400 (48 per cent) of these residing in NSW.¹ Between 1989 and 1999, the annual number of deaths attributable to heroin and other opiates among those aged 15–44 years in NSW increased from 154 to 401.²

Since 1999, significant decreases in opiate-related deaths in NSW have been reported.² A significant reduction in the availability of heroin, which started in December 2000, has also been reported.³ This reduction can be partially attributed to increased drug law enforcement activities that have reduced the supply of heroin into Australia.⁴

In May 1999, just before the reduction in the availability of heroin occurred, the NSW Government called for a Drug Summit, which took a ‘whole of government’ approach to illicit drug problems. The NSW Drug Summit provided over \$176 million in additional funds to implement a four-year strategy of harm minimisation.⁵ A significant amount of these funds were provided to the NSW Department of Health, to expand the treatment options available and their accessibility for opiate-dependent people.

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There are a number of data sources that report the incidence of fatal and non-fatal opiate overdose in NSW. In late 2002, the most accurate and readily available sources were used to describe trends in fatal opiate overdose and non-fatal opiate overdose, and treatment for opiate users for the period January 1999 to June 2002.

METHODS

Fatal overdose

The Australian Bureau of Statistics (ABS) provides the most reliable source of opiate-related fatality data currently available in NSW. These data can be accessed via the Health Outcomes Information and Statistical Toolkit (HOIST), Centre for Epidemiology and Research, NSW Department of Health. The ABS data reports on opiate-related fatalities in a calendar year, but it takes nearly 12 months before the information is reported. Consequently, 2002 ABS deaths data was not available until the end of 2003 and was not used by this study.

While not as accurate as the ABS deaths data, a reasonable substitute for monitoring trends in opiate-related deaths is available from the Division of Analytical Laboratories (DAL), Institute of Clinical Pathology and Medical Research, Western Sydney Area Health Service. Drug-related fatalities reported by DAL include all suspected opiate-related deaths, and findings of deaths that inform coronial inquiries. The DAL relies on a description of the person, and the circumstances in which their body is discovered, to determine which cases should be referred for toxicological analysis. As such this data refers to deaths of suspected users of illicit drugs as defined by police, pathologists, or the coroner. The toxicological analysis can identify how many people had morphine (a derivative of heroin) in their blood when they died.

Non-fatal overdose

The Ambulance Service of NSW Case Sheet Database comprises information extracted from the case reports of ambulance officers for people treated for suspected opiate overdose. These data can be accessed via the Health Outcomes Information and Statistical Toolkit (HOIST). These data show where Ambulance Service Protocol 28 (drug overdose and poisoning) has been used and when a narcotic antagonist (such as Naloxone–Narcan) has been administered. These data are based on an ambulance officer's assessment of the patient at time of treatment and may include patients who have not overdosed on opiates. Not all ambulance officers are authorised to administer a narcotic antagonist, and so not all opiate overdose cases may have a narcotic antagonist administered. Also, not all people who overdose are attended by an ambulance officer. Despite these limitations, data that captures ambulance attendance at overdose are the best source of information describing non-fatal overdose currently available.

The NSW Emergency Department Data Collection (EDDC)—which can be accessed via the Health Outcomes

Information and Statistical Toolkit (HOIST)—uses the International Classification of Diseases, Ninth Revision (ICD-9) to code diagnoses. Presentations of non-fatal opiate overdose are defined in this case as 'Poisoning by opiates and related narcotics' (all codes commencing 965.0). About one-third of NSW emergency departments report to the EDDC, from which this analysis has been extracted. Of those emergency departments using the EDDC, some may use non-standard diagnosis classifications and so non-fatal opiate overdose presentations are under-reported.

Treatment for opiate users

A number of treatments exist for opiate users. Pharmacotherapies such as methadone and buprenorphine are popular treatment options; other modalities include detoxification, rehabilitation, and counselling.

Data on methadone and buprenorphine treatment is available from an administrative database, maintained by the Pharmaceutical Services Branch, NSW Department of Health, which monitors the extent of prescribing and dosing of both drugs across New South Wales. Due to the ongoing nature of methadone and buprenorphine treatment, numbers are extracted for the last day of each month to determine the population receiving treatment at a point in time.

Data on clients of other drug treatment services are collected by the NSW Minimum Data Set on Drug and Alcohol Treatment Services, which commenced in July 2000. This dataset is maintained by the Centre for Drug and Alcohol, NSW Department of Health. The unit of measurement is based on an episode of treatment, where a client is provided with treatment in one setting with no change to the main treatment type or drug of principal concern. Based on this definition, clients may be admitted to more than one treatment in a month. This data collection does not include methadone and buprenorphine treatment.

Statistical analysis

In the comparative analyses between years, chi-square statistics were used to examine significant differences between proportions for males and females. T-tests were employed to compare mean age between years and for different treatment types. Significance is based on $p < 0.05$. To measure the relationship between number of opiate-related fatalities and number of clients on methadone and buprenorphine treatment, the Pearson product moment correlation coefficient is used. The Pearson product moment correlation coefficient is an index that ranges between -1 and 1 and reflects the extent of a linear relationship between two sets of data.

RESULTS

Overdose

Figure 1 shows the number of deaths where an opiate was detected by DAL. There were 142 deaths recorded for 2001–2002, just less than half the number of opiate detected

deaths in 2000–2001 (291 cases), and 60 per cent less than opiate detected deaths in 1999–2000 (348 cases).

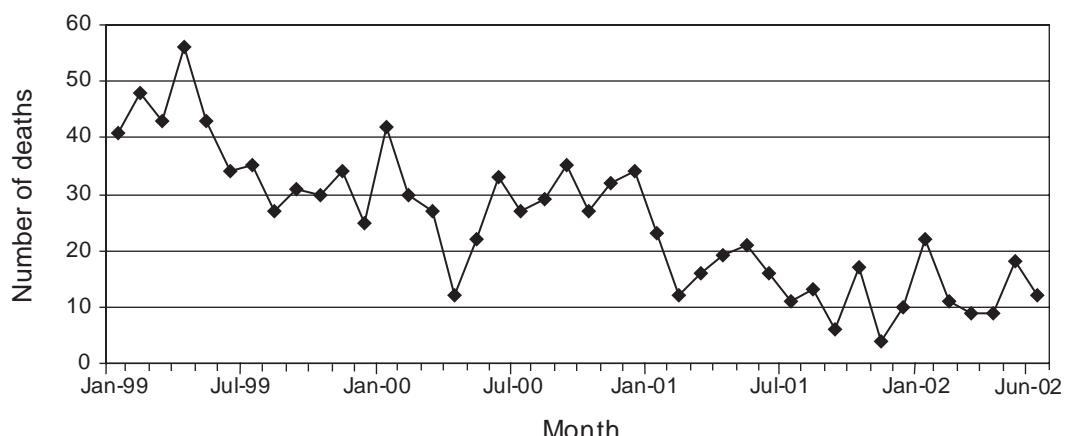
There were about 1,730 ambulance callouts to non-fatal overdoses in 2001–2002, an average of around 144 callouts per month. In 2000–2001 ambulance callouts to opiate overdose totalled 3,186 (an average of 266 per month), and in 1999–2000 there were 3,467 (an average of 289 per month). Figure 2 presents the number of callouts

by the NSW ambulance service to suspected opiate overdose between January 1999 and June 2002.

As Figure 3 shows, the trend in presentations of opiate overdose to NSW emergency departments is consistent with NSW ambulance callouts to non-fatal overdose. In 2001–2002 there were 618 presentations of opiate overdose to emergency departments, down 45 per cent on the number of emergency department presentations in

FIGURE 1

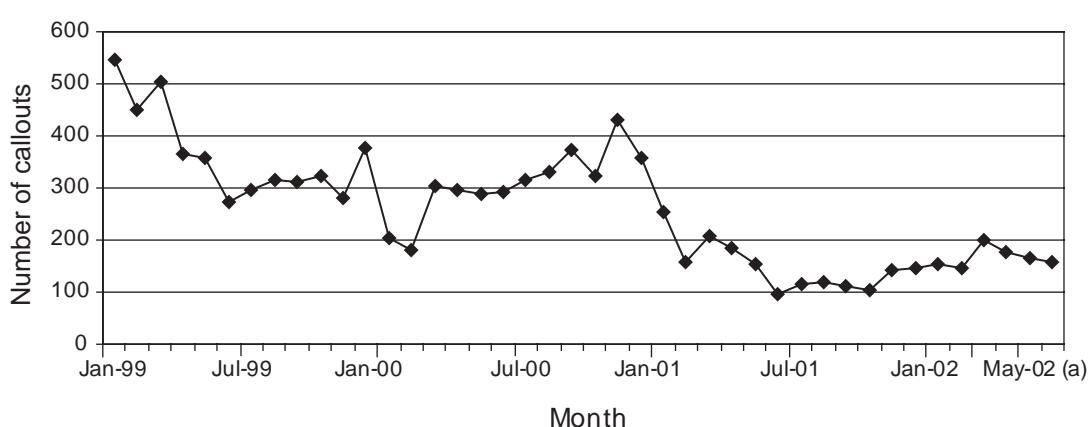
NUMBER OF SUSPECTED OVERDOSE DEATHS WHERE OPIATES WERE DETECTED BY MONTH, NSW, JANUARY 1999–JUNE 2002



Source: Forensic Toxicology Laboratory Database, Division of Analytical Laboratories, Institute of Clinical Pathology and Medical Research, Western Sydney Area Health Service.

FIGURE 2

NUMBER OF AMBULANCE CALLOUTS TO OPIATE OVERDOSES BY MONTH, NSW, JANUARY 1999–JUNE 2002

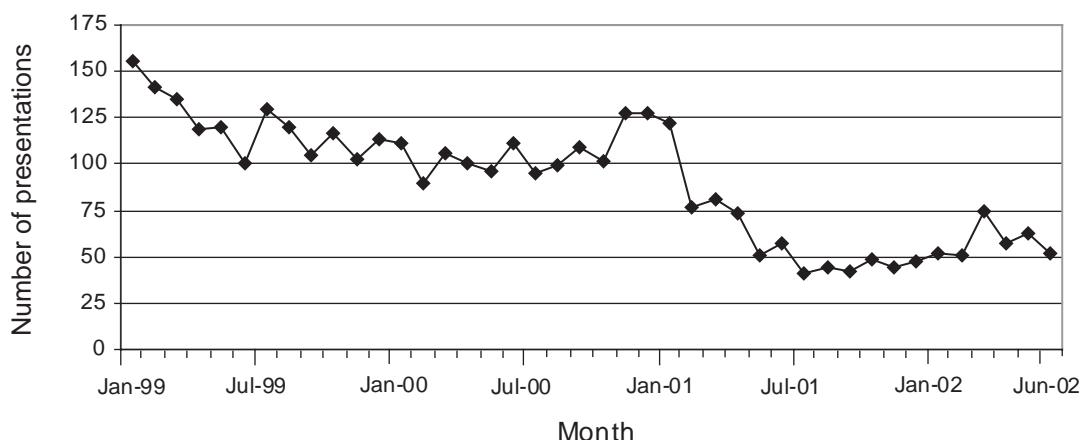


Source: Ambulance Service of New South Wales Case Sheet Database (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Note: There may be a break in time series from July 2001 due to changes in data collection.
(a) Preliminary figures only for April, May and June 2002.

FIGURE 3

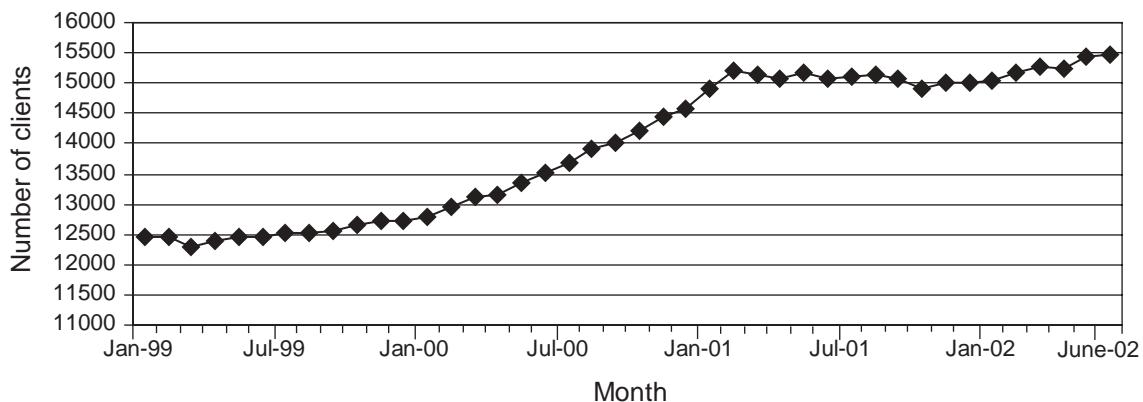
NUMBER OF OPIATE OVERDOSE PRESENTATIONS TO EMERGENCY DEPARTMENTS BY MONTH, NSW, JANUARY 1999 – JUNE 2002



Source: NSW Emergency Department Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

FIGURE 4

NUMBER OF METHADONE AND BUPRENORPHINE PROGRAM CLIENTS AS AT THE END OF THE MONTH, NSW, JANUARY 1999–JUNE 2002



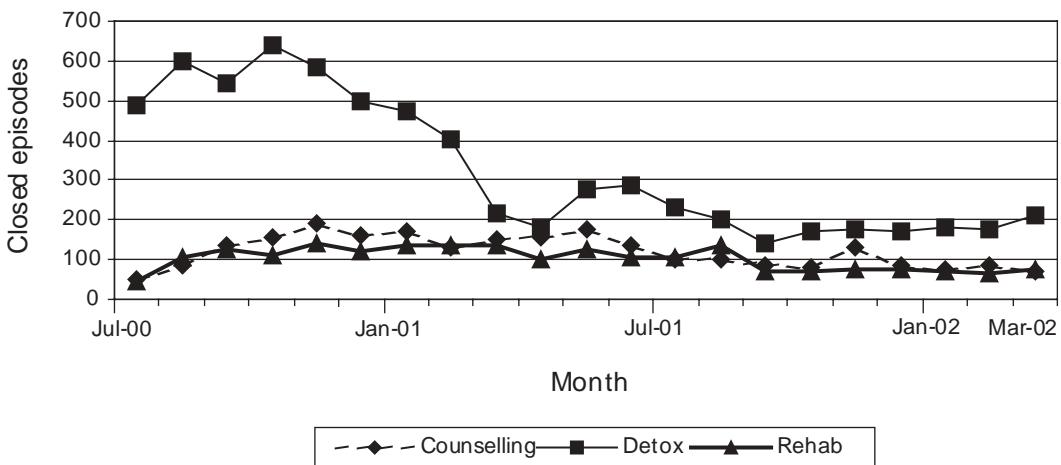
Source: Pharmaceutical Services Branch database, NSW Department of Health.

2000–2001 (1,121 presentations). The number of presentations in 1999–2000 was 1,302.

The proportion of males who present with an opiate overdose to emergency departments has decreased between 1999–2000 and 2001–2002. In 1999–2000, 69 per cent of all presentations were males (900 presentations), while in 2001–2002 the proportion had fallen significantly

($\chi^2=11.5$, $df=1$, $p<0.05$) to 61 per cent (377 presentations). Figures from the DAL show that in 2001–2002, 85 per cent of deaths where an opiate was detected were in males (122 cases), and 79 per cent (not significant; $\chi^2=2.9$, $df=1$, $p=0.09$) in 1999–2000 (276 cases).

The average age of death where an opiate was detected has remained around 33.0 years between 1999–2000 and

FIGURE 5
NUMBER OF CLOSED EPISODES OF TREATMENT (EXCLUDING METHADONE AND BUPRENORPHINE) FOR OPIATE USERS EACH MONTH IN NSW FOR THREE TYPES OF TREATMENT, JULY 2000–MARCH 2002^A


Source: NSW Minimum Data Set for Drug and Alcohol Treatment Services, Centre for Drug and Alcohol, NSW Department of Health.

Note: Methadone and buprenorphine treatment data is not collected in this data collection.

(a) A closed episode is a period in which a client has completed a treatment for their principal drug of concern.

2001–2002. The average age of non-fatal opiate overdose presentations to NSW emergency departments was 34.5 years in 2001–2002, significantly higher ($t=-4.1$, $df=986$, $p<0.05$) than the average age in 1999–2000 (31.2 years).

Treatment with methadone and buprenorphine

Since the Drug Summit in May 1999, the number of clients on methadone and buprenorphine treatment has increased by about 3,020 to a total of 15,471 as at 30 June 2002. Figure 4 illustrates how the majority of the growth occurred between May 1999 and February 2001, with the number remaining steady between March 2001 and January 2002 and slightly increasing thereafter.

Much of this increase is due to users who were previously on the methadone and buprenorphine treatment program and who returned to the program in the first six months of 2002. The average number of clients per month returning to the program between January and June 2002 was 407, compared with an average of 318 per month for 2001.

The average age of clients on the program has changed very little over time; as at 30 June 2002 the average was 35.5 years. The gender mix has also remained relatively stable over time, with males comprising 64 per cent of all clients receiving methadone and buprenorphine as at 30 June 2002.

Methadone and buprenorphine remains a popular treatment option for opiate users, although detoxification, rehabilitation, and counselling are among the other treatments also chosen by users. Between July 2000 and

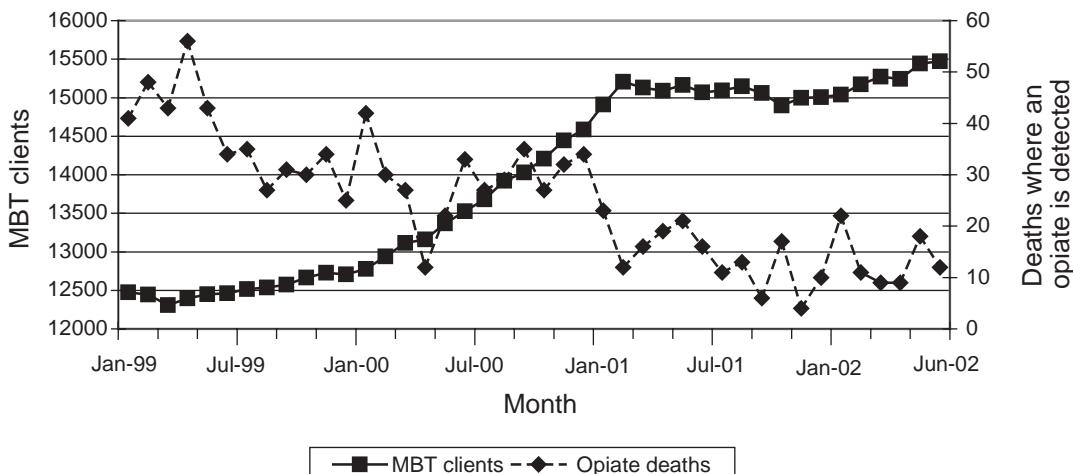
March 2002, 11,760 opiate users were admitted to treatments other than methadone and buprenorphine. Figure 5 shows the number of closed episodes for opiate users by treatment type. Of note is the decline in episodes for detoxification treatment, which began in late 2000.

There exists a different preference for treatment across different age groups. The average age of opiate users admitted to rehabilitation between July 2000 and March 2002 was 27.4 years. This is significantly lower than the average age of 29.3 years ($t=5.8$, $df=1453$, $p<0.05$) for detoxification clients and 30.7 years ($t=7.3$, $df=2132$, $p<0.05$) for counselling clients. Two-thirds of opiate users seeking treatment other than methadone and buprenorphine between July 2000 and March 2002 were males.

To gauge the impact of treatment on the opiate dependent population, the trend in deaths where an opiate is detected is mapped with the trend in the number of people on methadone and buprenorphine treatment (Figure 6). A decrease in opiate-related fatalities is linked to an increase in methadone and buprenorphine treatment. A value of $r=-0.79$ would suggest that there was a strong negative relationship between the two trends.

DISCUSSION

According to the three different sources used to measure fatal and non-fatal opiate overdose, the number of overdoses steadily decreased between the beginning of 1999 through

FIGURE 6**NUMBER OF SUSPECTED OPIATE OVERDOSE DEATHS AND NUMBER OF METHADONE AND BUPRENORPHINE TREATMENT CLIENTS, NSW, JANUARY 1999–JUNE 2002**

Source: Opiate Deaths—Forensic Toxicology Laboratory Database, Division of Analytical Laboratories, Institute of Clinical Pathology and Medical Research, Western Sydney Area Health Service. MBT clients—Pharmaceutical Services Branch database, NSW Department of Health.

to mid-2002.² A complementary increase in the number of people on the methadone and buprenorphine treatment program took place between May 1999 and February 2001. The decrease in opiate dependent people seeking detoxification treatment, and the plateauing of the growth of the methadone and buprenorphine treatment program, fits with the documented timing of the heroin shortage. One explanation for this is that the heroin shortage may have encouraged heroin-dependent persons to leave the drug market entirely or switch to new drugs such as amphetamines.

It is commonly believed that many overdose deaths occur among young, relatively inexperienced opiate users. However, studies have shown that the average age of overdose deaths ranges from 29.4 years to 31 years, having increased from 24.2 years in 1979.⁶ This study found the average age of death was older again at 33 years, the average age of presentation to an emergency department was 34.5 years, and the average age of methadone and buprenorphine treatment clients was 35.5 years. This may reflect an ageing of the opiate dependent population.

The literature suggests that males and females are equally likely to experience a non-fatal overdose; however, males are more likely to die from an opiate overdose.⁶ In this study, males represented over 85 per cent of overdose deaths in 2001–2002, while males represented 61 per cent of overdose presentations to emergency departments and 64 per cent of the population receiving treatment with methadone and buprenorphine.

The NSW Drug Summit resulted in increased availability and access to drug treatment, particularly to the NSW methadone and buprenorphine treatment program.⁵ Entry into the methadone and buprenorphine treatment program is a common, if not primary, means by which heroin users seek to leave the heroin market or limit their use of heroin. Entry into treatment usually results in improvement in health and social functioning.⁷

This article has documented trends in fatal and non-fatal opiate overdose and treatment for opiate users in NSW and explored the implications of these trends in the context of the NSW Drug Summit enhancements and the heroin drought. This discussion has not attempted to attach causality to why certain trends in heroin overdose have decreased, as a myriad of factors may be responsible. Examples of some of these factors include the expansion of the treatment and law enforcement programs, enhanced state investment in drug programs, and the heroin shortage.

Regardless of the reason, it is essential that the achievements of fewer fatal and non-fatal overdoses, and increased treatment for opiate users, be maintained if heroin availability increases. It is important to continue monitoring these trends to enable a swift policy response to future emerging issues.

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DROPS: AN AUTOMATED WEB-BASED SYSTEM FOR THE REPORTING OF DRUG RELATED HEALTH STATISTICS IN NSW

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The Centre for Drug and Alcohol and the Centre for Epidemiology and Research at the NSW Department of Health have developed a web-based interface that allows access to reports on drug related morbidity and mortality in NSW. This article introduces this system, the Drugs Related Outcomes: Population Surveillance (DROPS), describing its development and how it can be used to access drug-related health statistics for the NSW population.

BACKGROUND

A range of health data related to the use of illicit and injecting drugs is routinely collected for the NSW population; however, until recently there was no system to analyse and regularly report on these data. Also, published information on this topic has tended to be presented at the state level, rather than the area health service level.

The regular reviewing and reporting of drug and alcohol data is useful in a variety of ways, to a range of key stakeholders interested in the prevention of drug-related harm and the provision of drug and alcohol services in NSW. This information can be used for: informing strategic

management and policy development; monitoring trends and assisting with response planning; and providing feedback for improved service delivery.

The Centre for Drug and Alcohol and the Centre for Epidemiology and Research perceived a need for an automated system to report on routinely collected data in the drug and alcohol field, which would assist with the preparation of responses to requests for data and also provide regular reports for use in surveillance and planning. Consequently, the Centres collaborated in the development of a web-based interface that contains automatically-updated reports on drug related morbidity and mortality in NSW. The system is called Drug Related Outcomes: Population Surveillance (DROPS). A pilot version was tested within the Centre for Drug and Alcohol in mid-2003. After feedback and revision, DROPS was released in early 2004 to a restricted audience of nominated staff in the area health services working in the drug and alcohol field, and staff within the Centre for Drug and Alcohol.

DATA USED IN DROPS

Deaths from opiate overdose is perhaps the most widely used indicator of harm caused by illicit drugs. However, not all injected drugs are illicit and not all illicit drugs are injected. Consequently, DROPS includes data on other drugs and on certain communicable diseases that also indicate levels of harm in the community related to injected and illicit drug use.

Statistics related to psychostimulants (cocaine and amphetamines) and benzodiazepines have been included because these drugs have a high potential for harm in the injecting population.^{1–3} Data on notifications of hepatitis