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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

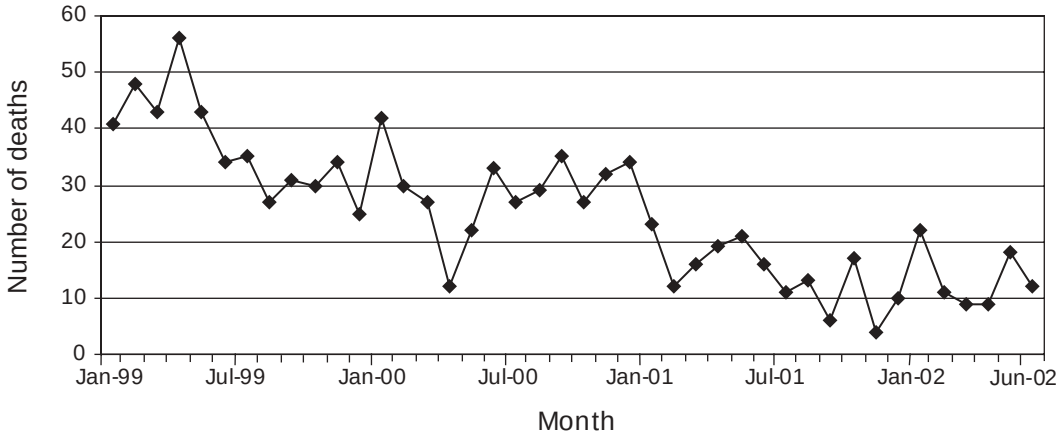
deaths in 2000–2001 (291 cases), and 60 per cent less than opiate detected deaths in 1999–2000 (348 cases).

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

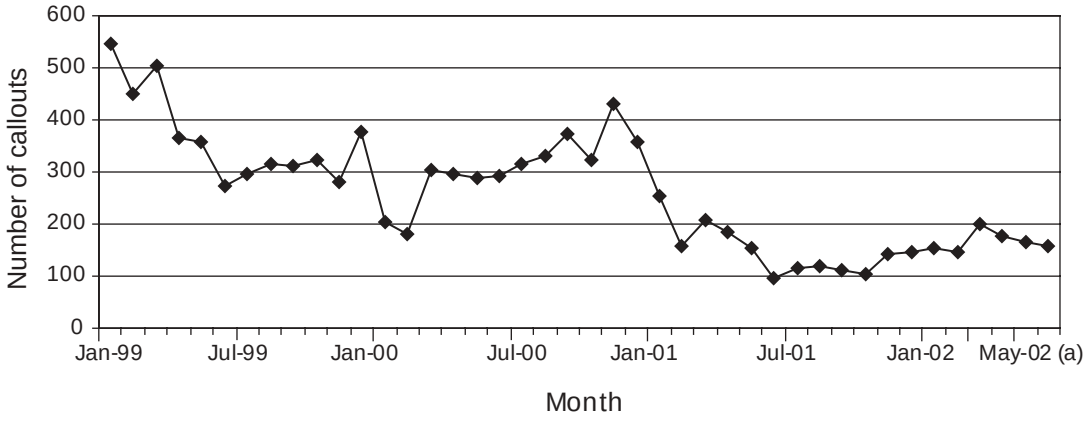
NUMBER OF SUSPECTED OVERDOSE DEATHS WHERE OPIATES WERE DETECTED BY MONTH, NSW, JANUARY 1999–JUNE 2002



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

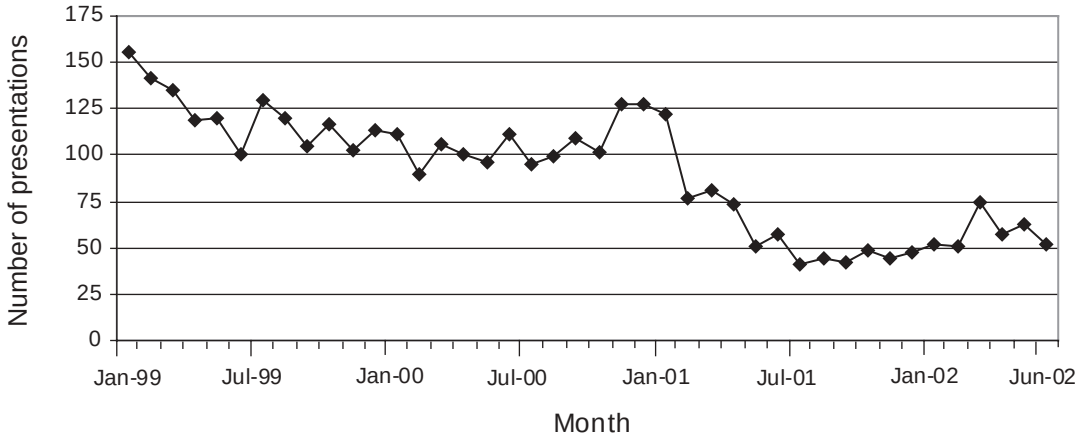


Source: Ambulance Service of New South Wales Case Sheet Database (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

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

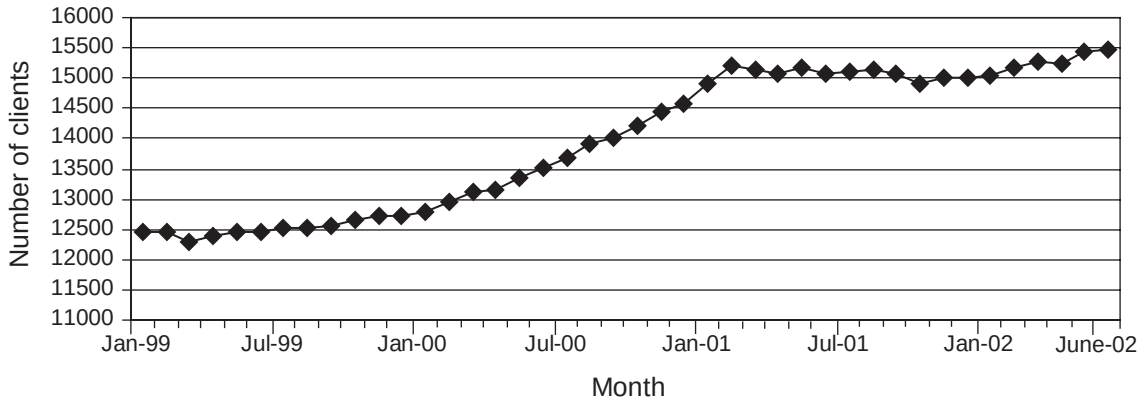
NUMBER OF OPIATE OVERDOSE PRESENTATIONS TO EMERGENCY DEPARTMENTS BY MONTH, NSW, JANUARY 1999 –JUNE 2002



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.

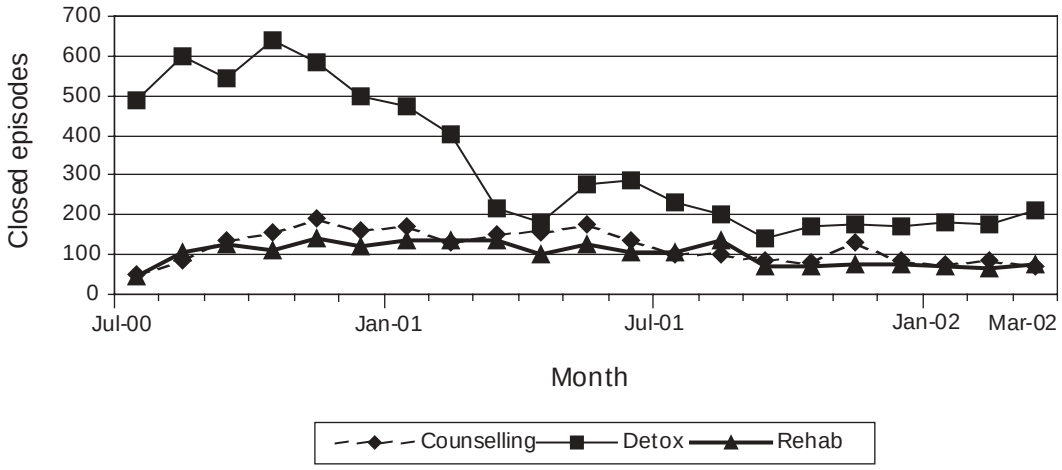
2000–2001 (1,121 presentations). The number of presentations in 1999–2000 was 1,302.

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 (χ^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; χ^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.

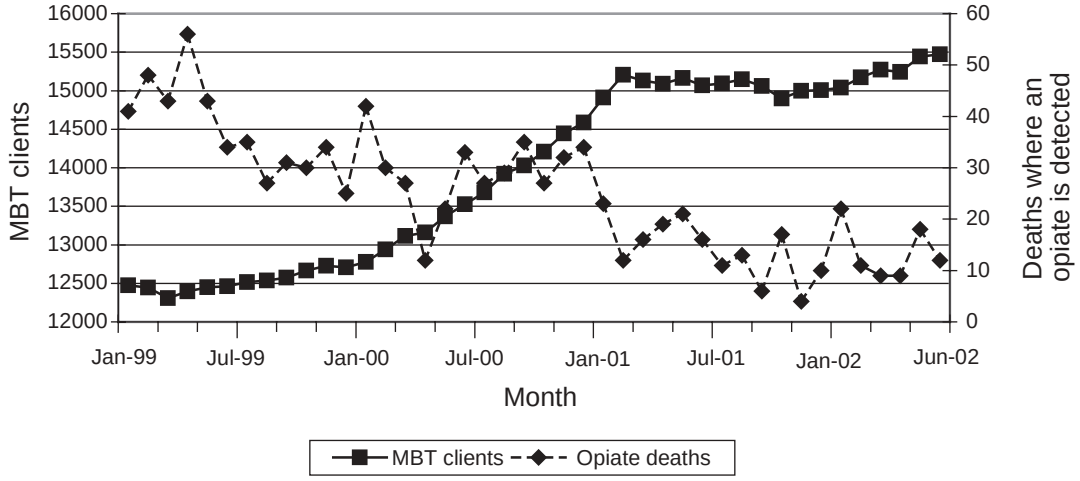
To gauge the impact of treatment on the opiate dependent population, the trend in deaths where an opiate is detected is mapped with the trend in the number of people on methadone and buprenorphine treatment (Figure 6). A decrease in opiate-related fatalities is linked to an increase in methadone and 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 buprenorphinetreatment 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

C are included, as it is estimated that over 90 per cent of all new infections in Australia are caused through shared injecting equipment.[4]

Reports are currently produced in DROPS on the following indicators within four major topic areas:

- *opiates*: deaths and ambulance attendance at overdose;
- *psychostimulants*: deaths and emergency department presentations;
- *benzodiazepines*: deaths and emergency department presentations;
- *hepatitis C*: notifications of diagnosis.

For each of the above indicators the following information is provided at a state and area health service level using the most recently available data:

- yearly totals for the last five years;
- the age and sex of cases for the last complete calendar year;
- monthly totals for the most recent 24 months.

The data used in DROPS are read from a SAS-based data warehouse,[5] which was built and is maintained by the Centre for Epidemiology and Research. The data warehouse is known as the Health Outcomes Information and Statistical Toolkit (HOIST), and contains a comprehensive range of datasets relevant to population health. The main sources of data currently used to compile reports in DROPS are:

- Australian Bureau of Statistics: Mortality Collection;
- Ambulance Service of NSW Case Sheet Database;
- NSW Emergency Department Data Collection;
- NSW Notifiable Diseases Database;
- Australian Bureau of Statistics population estimates.

Data sources are updated regularly on HOIST, with the frequency dependent on the source data. For example, updates for emergency department data occur each day while mortality data is updated annually. The web pages in the DROPS system are created using SAS for Windows to analyse data available in HOIST.[5] The pages are updated automatically once a week, and include any new data that may have been added to HOIST during that week.

HOW TO USE DROPS

After logging onto the DROPS system, a user can 'click' their way through the various reports. Navigation is easy and intuitive. The four major topic areas are listed at the top of the page with the relevant indicator below. Once an indicator is chosen, a particular report can be chosen by another 'click', along with the choice of geographic area of interest for that report.

For example, under the topic area of opiates, a user may choose between the indicators of ambulance attendance at overdose or opiate-related deaths. Once the indicator has been chosen, the user may choose between reports of:

- yearly totals for the last five years;
- the age and sex of cases for the last calendar year;
- monthly totals for the last 24 months.

Each of these reports is available for the state and area health service populations.

There are currently over 350 reports in DROPS. Each report consists of a coloured bar graph to view any trend in the data; a table containing the numeric data that is displayed in the graph; and some standardised text that explains the source(s) of the data and provides guidance on how to interpret the data. Figures 1 and 2 show parts of two typical reports, which include a navigation section, a graph, and a data table with supporting text. Figure 1 shows opioid related deaths each year for the last five years, from the most recently available data. Figure 2 shows the number of notifications for hepatitis C each month for the last 24 months. Note that these figures do not show a few paragraphs of standard text associated with the report. It is likely that the data displayed for June and July 2004 in this report were not complete when this report was produced due to delays in reporting new cases.

ACCESS TO DROPS

Due to the sensitive nature of the data available in DROPS, it is only accessible on a secure server by staff of the NSW Department of Health and the area health services who have signed a confidentiality agreement. Users must abide by the NSW Health Privacy Manual (Version 1),[6] and agree to use the information in DROPS for official NSW Health purposes only. Further, users agree not to pass on any information contained in DROPS to non-authorised users. Once the confidentiality agreement is signed and submitted to the Centre for Drug and Alcohol, the person is assigned a username and password to enable them to access the DROPS system. As at June 2004, there were 70 registered users with DROPS, covering all area health services.

FUTURE DROPS EXPANSION

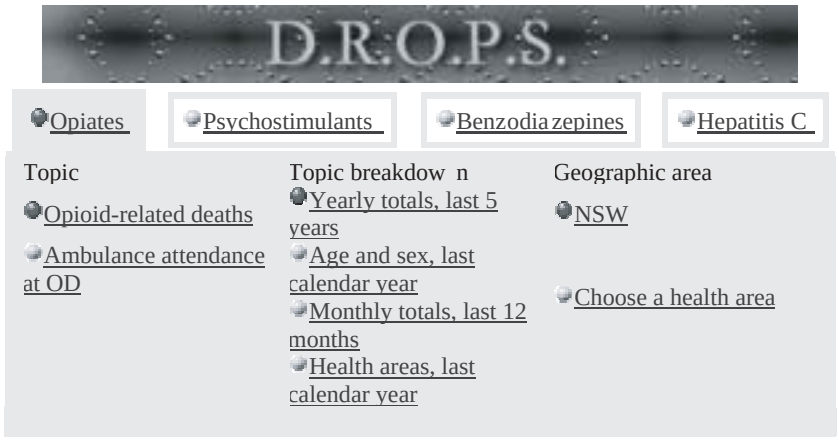
The popularity and utility of the DROPS system has created a demand for it to expand. Examples of additional data currently under investigation for inclusion include:

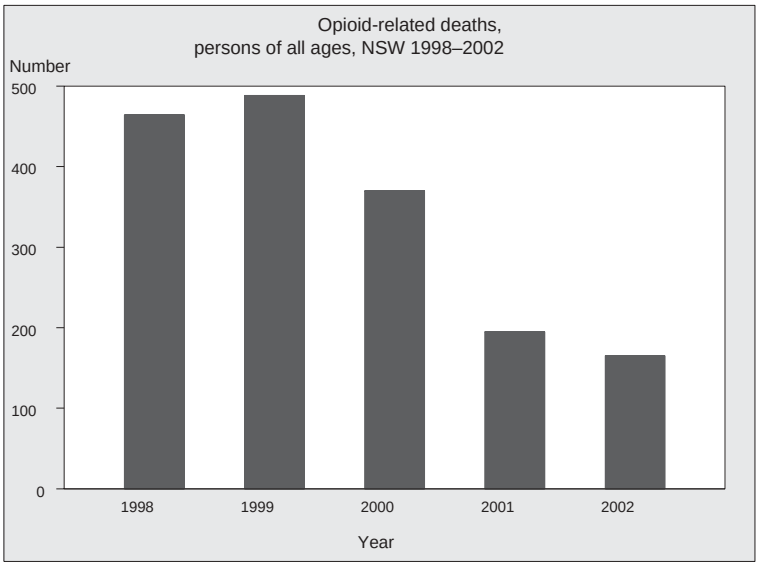
Specialist drug and alcohol treatment

- NSW Minimum Data Set for Drug and Alcohol Treatment Services (for example, principal drug of concern and main service provided);
- NSW Pharmacotherapy Treatment (for example, methadone and buprenorphine clients);
- Brief Treatment Outcome Measure for Pharmacotherapy clients (for example, key outcome measures such as reduced drug use and improved social functioning).

FIGURE 1

DRUG RELATED OUTCOMES: POPULATION SURVEILLANCE (DROPS), OPIOID-RELATED DEATHS, PERSONS OF ALL AGES, NSW, 1998–2002.





Opioid-related deaths, persons of all ages, NSW 1998-2002

	Year				
	1998	1999	2000	2001	2002
Number	464	488	370	195	165
Rate per million	73.3	76.3	57.3	29.9	25.1

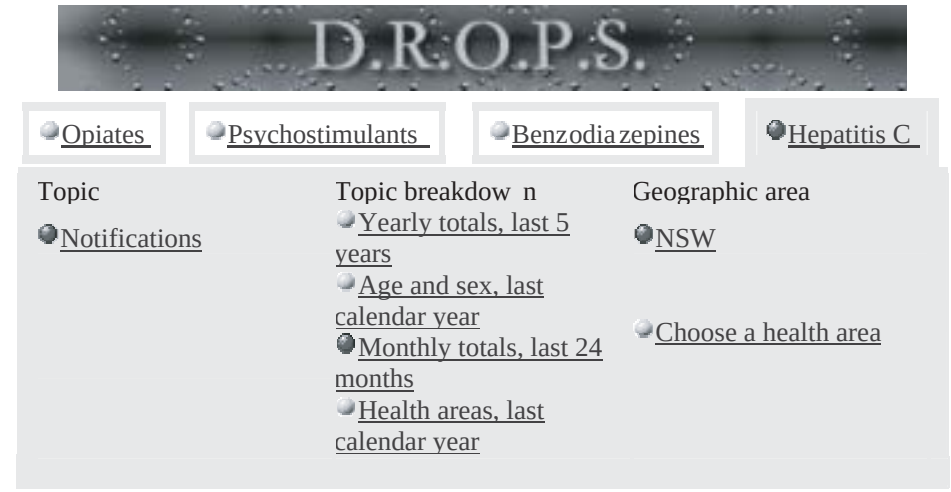
Note: Data are reported by year of registration of death and place of residence at time of death. Opiate related deaths include mental and behavioural disorders due to use of opioids, accidental opioid overdose, accidental polydrug overdose with opioid toxicity, mental and behavioural disorders due to polydrug use with opioid toxicity, and mental and behavioural disorders due to polydrug use with mental and behavioural disorder due to opioids. These were classified according to the ICD-10 codes: F11; X42, X44 in association with poison codes T40.0-T40.4, T40.6; F19 in association with poison codes T40.0-T40.4, T40.6; and F19 in association with F11. Deaths due to polydrug use where toxic levels of one or more drugs were found are reported in all relevant sections of DROPS. A death due to polydrug use may therefore be reported more than once in DROPS.

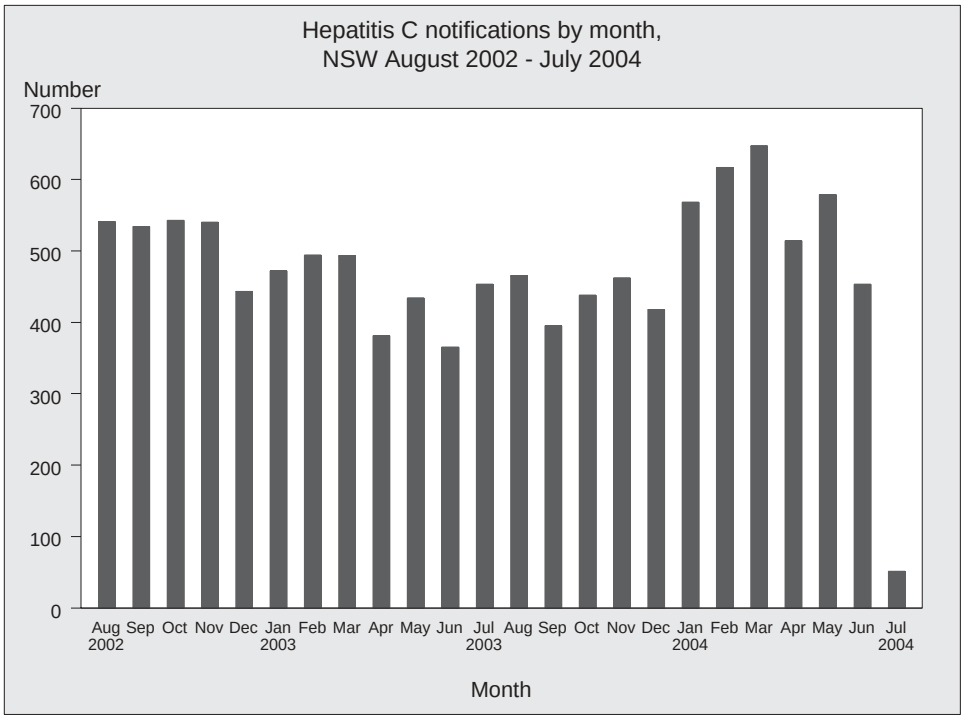
Source: ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Source: Drug Related Outcomes: Population Surveillance (DROPS); Health Outcomes Information and Statistical Toolkit (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

FIGURE 2

DRUG RELATED OUTCOMES: POPULATION SURVEILLANCE (DROPS), HEPATITIS C NOTIFICATIONS BY MONTH, NSW, AUGUST 2002 TO JULY 2004.





Hepatitis C notifications per month, NSW August 2002 - July 2004

	2002					2003						2003						2004						2004
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Number	541	534	543	540	443	472	494	493	381	434	365	453	465	395	438	462	418	568	617	647	514	579	453	51

Note: Notifications received as at 16 July 2004. Lower numbers at the end of the reporting period may be due to a lag period in receiving and processing notifications.

Source: Communicable Diseases Branch NSW Notifiable Diseases Database and ABS Population Estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Note: It is likely that the data displayed for June and July 2004 in this report were not complete when this report was produced due to delays in reporting new cases.

Source: Drug Related Outcomes: Population Surveillance (DROPS); Health Outcomes Information and Statistical Toolkit (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Alcohol statistics

- alcohol-related deaths;
- alcohol-related emergency department presentations;
- alcohol-related hospital inpatient admissions;
- alcohol-related motor vehicle accidents and deaths.

CONCLUSION

The response to the development of DROPS has been positive. Timely and accessible statistics on drug-related morbidity and mortality assist the planning of service delivery to improve the health of clients. These statistics can be used to monitor trends and could offer an early warning system around emerging issues as they provide supplementary evidence to that received by clinical and frontline services. Timely and accessible data can also assist evidence-based policy development and program management, and enable the equitable allocation of resources on the basis of need.

DROPS is a major advance in improved access and availability of drug related health statistics to the drug and alcohol workforce across the state.

ACKNOWLEDGEMENTS

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For more information about DROPS contact Devon Indig at the Centre for Drug and Alcohol, NSW Department of Health, by phone on (02) 9391 9220 or by email on **dindi@doh.health.nsw.gov.au**.

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SUPPORTING SOMEONE TO QUIT SMOKING

Quitting smoking is the best investment a smoker can make to improve their health. Making the decision to quit is a big one. If you're supporting someone to quit it is important to recognise that they have to want to do it for their own reasons, and not because of pressure from a friend or family member. Take your cue from the person who is quitting and be strategic in the support that you offer.

UNDERSTANDING WHY PEOPLE SMOKE

There are many reasons why people smoke. Nicotine is the source of addiction to tobacco, and cigarettes are as addictive as heroin or cocaine.[1] Some people associate the craving for a cigarette with a particular behaviour, such as consuming alcohol, food or coffee. Others crave a cigarette when certain feelings arise, such as boredom or anxiety. Some people smoke because it can be social, or they may like the taste or the actions of smoking a cigarette.

After inhaling tobacco smoke the nicotine reaches the brain in about 10 seconds.[2] Once the nicotine has attached itself to special sites in the brain, relaxing chemicals are released. But this effect only lasts for a short time and then the nicotine needs to be topped up. One of the reasons people continue to smoke is because they enjoy the temporary feeling of the relaxing chemicals. The fact sheet *Nicotine and other poisons* has more information.

UNDERSTANDING WHY PEOPLE WANT TO QUIT

There are many reasons why people want to quit smoking. For some people smoking starts to cost them too much money. It also affects their health and fitness. Other smokers say that they have been influenced by anti-smoking campaigns or that friends and family have asked them to quit. Whatever the reasons for quitting, the important thing is that the smoker has decided to quit for their own reasons. One of the most important factors in being successful in quitting is the smoker's motivation.

A REALITY CHECK

The benefits gained as a non-smoker outweigh the short-term difficulties of quitting. However, someone who is quitting smoking may appreciate your support during the first two weeks, as this is the time when they are most likely to return to smoking. Becoming a non-smoker is a process and takes time.

Many people make several quit attempts before they are successful. With each attempt they learn more about how their body reacts to going without the nicotine in cigarettes and adjusting to the social side of becoming a brand new non-smoker.

A QUIT PLAN

A quit plan is integral to the quitting process. You can assist a person trying to quit by discussing the elements of a quit plan with them:

- setting a date to quit smoking;
- thinking about nicotine replacement therapies (NRT);
- knowing the triggers and planning the strategies;
- a support network;
- smoke free zones;
- planning rewards;
- being supportive.

The fact sheet *Getting ready to quit* has more information.

MANAGING THE CHALLENGING TIMES

The first three days after quitting are the most difficult. This is because the person quitting smoking is going through nicotine withdrawal. Keep the messages positive. Some former smokers say that they thought about their experiences of nicotine withdrawal in a positive way by calling them 'recovery symptoms' and thinking about the improvements in their health.

A 'craving' for nicotine may last only a few minutes but a person who has just quit may feel more tired or anxious than usual. This is an important time to listen carefully and provide realistic messages, such as taking it one craving at a time, one day at a time. The fact sheet *Nicotine dependence and withdrawal* has more information.

LIMITING ALCOHOL

For people quitting smoking it's a good idea to avoid alcohol during the first two weeks.[2] First, alcohol tends to lower one's inhibitions, making it more difficult to maintain the determination not to smoke. Another reason is that it is a common habit to combine a drink and a smoke, so having a drink with friends who smoke may trigger cravings. Instead of meeting for drinks you could suggest an alternative such as the cinema or an outing to another smoke-free place such as a restaurant, a theatre, a bowling alley, etc.

NSW HEALTH Working as a Team

KNOWING THE NICOTINE AND CAFFEINE LINK

As the body removes nicotine it absorbs more caffeine. It's a good idea to reduce the amount of tea, coffee and cola drinks by half.[2] An increase in caffeine levels for someone who has just quit smoking may add to feelings of restlessness or insomnia.

A FINAL NOTE

Coping with nicotine withdrawal is a challenge, especially in the first few days. The long-term benefits of quitting will definitely outweigh the short-term difficulties. Stay positive and be kind to yourself while you're experiencing 'recovery symptoms'.

If you would like to quit smoking contact the *Quitline* on 131 848, speak with your doctor or pharmacist, or visit the website **www.quitnow.info.au**.

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This fact sheet is one of a series on tobacco and health related issues produced by the Tobacco and Health Branch of the NSW Department of Health. The fact sheets respond to frequently asked questions and are designed to be used by both consumers and health professionals to help people to quit smoking.

The fact sheets can be accessed through the NSW Department of Health's website at **www.health.nsw.gov.au/public-health/health-promotion/tobacco/facts/index.html**.

EPIREVIEW

TUBERCULOSIS IN NEW SOUTH WALES, 1991–2002

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BACKGROUND

Tuberculosis continues to be a disease of global public health significance. In 2001, 183 countries notified a total of 3.8 million cases of tuberculosis to the World Health Organization Global Surveillance Program.[1] Countries that surround Australia in the Western Pacific Region account for one quarter of these notifications. In contrast, Australia continues to have one of the lowest rates of tuberculosis in the world. Despite these low rates of disease, tuberculosis is an important public health challenge for Australia, and requires the continued commitment of multidisciplinary services and ongoing surveillance to monitor trends in presentation of the disease, its treatment, and the clinical outcomes for people identified with tuberculosis.

Tuberculosis is caused by infection with the bacteria *Mycobacterium tuberculosis*. The bacteria are spread when a person with pulmonary or laryngeal tuberculosis produces airborne droplets that carry the bacteria, which are expelled into the air and breathed in by another person. People with inactive tuberculosis, and people with tuberculosis disease in sites other than the lung or larynx, are generally not infectious to other people.

Of the people who become infected, most never develop active disease. Approximately 5–10 per cent go on to develop active disease over their lifetime,[2] half of these within the first two years following infection. Young children and immunosupressed people are at risk, as are those who have chronic renal failure, cancer, silicosis, or diabetes. Other causes for immunosuppression such as some medication, poor nutrition, HIV infection, or substance abuse, can also predispose to active disease. Tuberculosis disease can affect any organ, although the lung is most commonly involved. The standard treatment for tuberculosis involves a six-month course of multiple antibiotics. Preventive treatment for people who are infected but do not have active disease can significantly reduce the risk of progression to active disease.[3]

This article describes the epidemiological characteristics of patients reported with tuberculosis in New South Wales in 2001 and 2002, and updates a previous review of tuberculosis in New South Wales for the period of 1991–2000.[4]

METHODS

Tuberculosis is a notifiable disease in New South Wales under the *NSW Public Health Act 1991*; laboratories, doctors, and hospitals must notify cases of tuberculosis to their local public health unit. The details of tuberculosis cases are then entered onto the Notifiable Diseases Database, which is maintained by the Communicable Diseases Branch of the NSW Department of Health. The characteristics of cases of tuberculosis notified to public health units during 2001 and 2002 were analysed and compared with cases notified from the preceding 10-year period 1991–2000. Incidence rates for 2001 and 2002 were calculated using the Australian Bureau of Statistics estimated mid-year population for the relevant year. Rates for 1991–2000 were based on the mid-point population estimate for 1995.

RESULTS

Case notifications 2001–2002

In 2002, 447 cases of tuberculosis were notified in New South Wales (6.8 cases per 100,000); and in 2001, 415 cases were notified (6.4 cases per 100,000) (Table 1). For 1991 to 2000, 4,180 cases of tuberculosis were notified in New South Wales, an average of 418 cases per year (6.8 per 100,000).

TABLE 1

TOTAL NUMBERS OF NOTIFICATIONS OF TUBERCULOSIS, INCIDENCE RATE AND DEATHS, PER ANNUM, NSW, 1991–2002

Year	Notified cases *N*	Rate/ 100,000	Notified deaths *N*	% of cases
1991	430	7.3	9	2
1992	394	6.6	20	5
1993	389	6.5	28	7
1994	393	6.5	24	6
1995	443	7.2	22	5
1996	410	6.6	16	4
1997	419	6.7	16	4
1998	378	6.0	27	7
1999	481	7.5	25	5
2000	443	6.9	39	9
2001	415	6.4	33	8
2002	447	6.8	39	9

Source: Notifiable Diseases Database, Communicable Disease Branch, NSW Department of Health.

TABLE 2

CHARACTERISTICS OF PATIENTS NOTIFIED WITH TUBERCULOSIS, NSW, 1991–2000, 2001 AND 2002

Case characteristics	Cases in 1991–2000 *N*	% Total	Rate/ 100,000	Cases in 2001 *N*	% Total	Rate/ 100,000	Cases in 2002 *N*	% Total	Rate/ 100,000
Residence *			#						
Sydney Metropolitan	3472	83	10.5	370	89	10.4	384	86	10.7
Outer Sydney	430	10	3.1	26	6	1.7	42	9	2.8
Other NSW	264	6	1.9	19	5	1.3	20	4	1.4
Sex									
Male	2196	53	7.2	221	53	6.8	225	50	6.9
Female	1972	47	6.4	194	47	5.9	221	49	6.7
Age Group (years)									
0–4	144	3	3.3	8	2	1.9	6	1	1.4
5–9	57	1	1.3	2	0	0.4	3	1	0.7
10–14	46	1	1.1	2	0	0.4	2	0	0.4
15–19	118	3	2.7	19	5	4.3	14	3	3.1
20–24	337	8	7.3	46	11	10.3	42	9	9.3
25–34	896	21	9.3	95	23	9.8	96	21	9.9
35–44	699	17	7.5	65	16	6.5	83	19	8.3
45–54	440	11	5.8	47	11	5.3	61	14	6.8
55–64	411	10	7.6	30	7	4.8	38	9	5.8
65–74	508	12	11.3	44	11	9.6	38	9	8.3
75–84	411	10	16.4	36	9	12.2	47	11	15.5
85+	113	3	16.4	21	5	23.5	16	4	17.4
Aboriginal or Torres Strait Islander	34	<1	3.1	1	<1	0.8	2	<1	1.6
Total	**4180**	**100**	**6.8**	**415**	**100**	**6.4**	**447**	**100**	**6.8**

* Residence by Area Health Service

\# Rates are calculated on 1995 population mid-year estimates.

Sydney Metropolitan = Central Sydney, Northern Sydney, South Eastern Sydney, Western Sydney, and South Western Sydney.
Outer Sydney = Wentworth, Illawarra, Central Coast, and Hunter.
Other NSW = Mid North Coast, Northern Rivers, Macquarie, Mid Western, Southern, Greater Murray, Far West, and Corrections Health.

Source: Notifiable Diseases Database, Communicable Disease Branch, NSW Department of Health.

TABLE 3

REGION OF BIRTH FOR PATIENTS NOTIFIED WITH TUBERCULOSIS, NSW, 1995–2000, 2001 AND 2002

Case characteristics	Cases in 1995–2000 *N*	% Total	Rate/ 100,000	Cases in 2001 *N*	% Total	Rate/ 100,000	Cases in 2002 *N*	% Total	Rate/ 100,000
			§						
Africa	61	2	19.0	10	2	12.9	20	4	25.8
Americas	31	1	8.5	8	2	13.1	7	2	11.5
Asia									
Southern and Central Asia	302	12	92.3	75	18	83.8	69	15	77.1
North East Asia	445	17	56.4	63	15	34.5	64	14	35.0
South East Asia	809	31	80.3	127	31	57.9	152	34	69.2
Total for Asia	1556	60	73.3	265	64	53.9	285	64	58.0
Australia	453	18	1.9	68	16	1.4	62	14	1.3
Europe	264	10	8.3	31	7	5.0	40	9	6.3
Middle East	47	2	9.0	11	3	9.8	12	3	10.7
Other Oceania	107	4	14.7	19	5	10.6	20	4	11.1
Not reported	55	2		3	1		1	0	
Total	**2574**	**100**		**415**	**100**		**447**	**100**	

§ Rates are calculated on 1997 population mid-year estimates.

Source: Notifiable Diseases Database, Communicable Disease Branch, NSW Department of Health.

TABLE 4

MAIN SITE OF INFECTION, CASE CLASSIFICATION AND MEANS OF LABORATORY CONFIRMATION OF PATIENTS NOTIFIED WITH TUBERCULOSIS, NSW, 1991–2002, 2001 AND 2002

Case characteristics	Cases 1991–2000 *N*	%Total	Cases in 2001 *N*	% Total	Cases in 2002 *N*	% Total
Main site of infection						
Lung	2113	63	235	57	268	60
Lymphatics	548	16	97	23	94	21
Pleura	161	5	31	7	30	7
Bone–Joint	107	3	14	3	13	3
Kidney–genitourinary	117	4	8	2	14	3
Miliary	§		8	2	2	0
Brain–Central Nervous System	42	1	5	1	10	2
Gastrointestinal	47	1	5	1	6	1
Other	192	6	9	2	10	2
Unknown–Not reported	853		3	1	0	0
Case Classification						
New Active	3152	75	394	95	440	98
Reactivated	232	6	19	5	7	2
Unknown–Not reported	796	19	2	0	0	0
Laboratory confirmed (total)#	2969	71	307	74	325	73
Culture	2043	49	285	69	310	69
Polymerase Chain Reaction	29	1	19	5	15	3
Clinical	1196	29	111	27	122	27
Unknown–Not reported	912	22	0	0	0	0
Pulmonary cases only*	2164	52	241	58	268	61
Direct smear results						
Direct smear positive	711	33	98	41	114	43
Direct smear negative	730	34	127	53	143	53
Direct smear not reported	723	33	16	7	11	4
Culture results						
Culture positive	1004	46	178	74	204	75
Culture negative	437	20	47	20	56	21
Culture not reported	723	33	16	7	11	4
Total number of cases	**4180**	**100**	**415**	**100**	**447**	**100**

* Pulmonary cases refer to the number of cases where the primary site of disease is lung.

§ Included in other

\# Some infections confirmed by more than one method.

Source: Notifiable Diseases Database, Communicable Disease Branch, NSW Department of Health.

Demographic characteristics of cases

In the two years 2001 and 2002, the incidence of tuberculosis was much higher among people living in the Sydney area than in other parts of NSW (Table 2). This pattern is consistent with that for the period 1991–2000.

The incidence of tuberculosis was similar for males and females but varied with age. It was highest among people aged 75 years and older and lowest among children and adolescents. Children aged under five years had a higher rate than older children aged 5–14 years.

The rate of disease was lowest in people born in Australia and highest among people born in southern and central Asia. Eighty-three per cent of cases were born overseas and 64 per cent in Asia. A similar pattern was seen for the decade 1991–2000. The proportion of patients with tuberculosis who were born in Australia declined slightly in the last eight years, from 18 per cent between 1995–2000 to 14 per cent in 2002. The rate of tuberculosis among people born in Australia declined from 1.9/100,000 in 1991–2000, to 1.3/100,000 in 2002 (Table 3).

In 2001 and 2002, Aboriginal and Torres Strait Islander people accounted for less than one per cent of cases in New South Wales.

Site of infection

In 2001 and 2002, the major reported site of disease was lung (60 per cent), followed by lymphatic system (21 per cent) and pleura (seven per cent) (Table 4).

TABLE 5

CLINICAL OUTCOME OF TUBERCULOSIS CASES, NSW, 1991–2000, 2001 AND 2002

Case outcomes	Cases 1991–2000		Cases in 2001		Cases in 2002	
	Number	%	Number	%	Number	%
Completed	1703	41	334	80	314	70
Cured	210	5	8	2	10	2
Defaulted	38	1	9	2	6	1
Died (total)	165	4	32	8	39	9
Died with TB	not reported		26	6	31	7
Died from TB	not reported		6	1	8	2
Failure	12	0	0	0	0	0
Incomplete	547	13	4	1	58	13
Transferred overseas	114	3	27	7	20	4
Unknown–Not reported	1391	33	1	0	0	0

Source: Notifiable Diseases Database, Communicable Disease Branch, NSW Department of Health.

Case classification

In 2002, 98 per cent of cases were notified as episodes of new disease and two per cent as reactivated–relapsed episodes of disease. This is a similar pattern to that seen in 2001; however, it is an increase compared with the proportion of new active cases reported in 1991–2000. This is explained by better reporting of tuberculosis disease classification in recent years.

Laboratory confirmation

Nearly three-quarters of the cases in 2002 (73 per cent) were confirmed by a laboratory (Table 4), a similar proportion as in the preceding 11 years.

Of the 268 cases reported to have pulmonary disease in 2002, sputum microscopy and culture results were reported for 96 per cent (260 cases). Of these 260 cases, 43 per cent had acid-fast bacilli identified on direct sputum smears, and 75 per cent were reported to have *Mycobacterium tuberculosis* cultured in the sputum. The percentage of cases without smear or culture results has fallen from 33 per cent in the period 1995–2000 to four per cent in 2002. This may reflect improved reporting of test results (Table 4).

Clinical outcomes for patients

Reporting the clinical outcomes of cases of tuberculosis has improved over the last two years. Seventy per cent of patients diagnosed in 2002 had completed treatment at the time of reporting, compared with 80 per cent of these diagnosed in 2001. Delays in reporting outcomes are due to the length of time required (sometimes over 18 months) to complete curative therapy (Table 5).

TABLE 6

RISK FACTORS FOR PATIENTS NOTIFIED AS HAVING TUBERCULOSIS,NSW, 2001 AND 2002

Risk factor	Cases in 2001 (*N* = 415)		Cases in 2002 (*N* = 447)	
	Number	%	Number	%
Residence in high risk country	312	75	360	81
Born in high risk country	217	52	247	55
Immunosuppressive health status–therapy *	81	20	99	22
Contact of another notified case	30	7	35	8
Previously diagnosed with tuberculosis	24	6	23	5
Born in Australia, parent born in high risk country	15	4	15	3
Health care setting	12	3	14	3
HIV test completed	19	5	12	3
HIV test positive	9	2	7	2
Other	9	2	10	2
Institutional care #	12	3	7	2
Homelessness	1	0	2	0

* Immunosuppressive health status–therapy = diabetes, silicosis, chronic renal failure, gastrectomy, other immunosuppressive illness, alcoholism, injecting drug use, and immunosuppressive drugs.

\# Institutional care = residence in long-term care including aged care and residence in prison.

Source: Notifiable Diseases Database, Communicable Disease Branch, NSW Department of Health.

TABLE 7

NATIONAL PERFORMANCE INDICATORS FOR THE CONTROL OF TUBERCULOSIS, DATA FOR NSW AND AUSTRALIA FOR 2001 AND 2002

National TB Performance Indicator	Performance Criteria	2001		2002	
		Australia	NSW	Australia	NSW
Annual Incidence of TB (per 100,000 population)					
Crude incidence		5.1	6.4	5.1	6.8
Indigenous Australians	<1	9.8	0.8	8.5	1.6
Non-indigenous Australian-born	<1	1.0	1.4	1.1	1.2
Overseas-born persons*	**	10.2	17.4	11.5	19.2
Relapse cases initially treated in Australia	<2% of total treated cases	NA	<1%	NA	<1%
Incidence in children <15 years, by risk group					
Indigenous Australian children	<0.1	2.4	0.0	4.3	0.0
Non-indigenous Australian-born children	<0.1	0.5	0.7	0.5	0.7
Overseas-born children*	**	1.0	5.7	0.1	4.3
All cases					
Collection of HIV status in TB cases (% of cases)	100% over next 3 years	4.2	2.7	27.3	4.6
Treatment outcome measures (%)					
Cases evaluated for outcomes#	100	76.9	99.8	78.0***	100.0
Cases that have treatment completed and are cured	>90	83.6	82	80.0	71.0
Cases recorded as treatment failures#	<2	0.9	0.0	0.1	0.0

* The performance criteria for overseas born patients are applied to people who have been living in Australia for more than five years.
The denominator for this rate is the total overseas born population living in Australia in 2002.

** Performance criterion currently under review.

*** Evaluated September 2003.

NA = not available (data incomplete).

Denominator used for both 2001 and 2002 was the number of cases evaluated for treatment outcome.

Source: National Strategic Plan for Tuberculosis Control in Australia Beyond 2000. Communicable Diseases Network Australia.[5]

During 2002, 39 patients (nine per cent) were reported to have died, and two-thirds of these deaths occurred in people aged 70 years of age or older. The majority of these people died of a cause other than tuberculosis (31 cases) and eight died as a result of tuberculosis. This is a similar pattern to 2001. For the decade 1991–2000, five per cent of all cases were reported to have died but details on the underlying cause of death was not available (Table 5).

HIV co-infection

HIV co-infection was reported in seven patients in 2002 and in nine patients in 2001. For the period 1991–2000, HIV co-infection was reported in 64 patients (an average of just over six cases per year). There is a potential for rates of tuberculosis and HIV co-infection to increase over time as survival for people with HIV infection continues to improve and this population grows.

Multi-drug resistance

Multi-drug resistant tuberculosis is defined as resistance to at least isoniazid and rifampicin, two antibiotics commonly used to treat tuberculosis. There has been a total of 25 cases of multi-drug resistant tuberculosis reported in New South Wales from 1999 to 2002, including four cases reported during 2002.

Patients with multi-drug resistant tuberculosis ranged in age from 14 to 73 years and half were male. Nineteen were born in Asia (southeast Asia and India), three in the Pacific Islands, two in Australia, and one in the United Kingdom.

The majority of these cases had no previous treatment for tuberculosis and were therefore thought to have been newly infected with a strain that was multi-drug resistant (18 cases) compared with seven cases who developed or acquired resistance following a history of previous treatment, either full or partial. Four people were resistant to isoniazid and rifampicin alone, six were resistant to isoniazid, rifampicin and rifabutin, and 15 were resistant to these and other drugs (that is, to between 4–6 drugs). The clinical and public health management of all multi-drug resistant cases was reviewed by the New South Wales Multi-Drug Resistant Tuberculosis Advisory Committee.

Risk factors

Information on risk factors was only available for cases reported in 2001 and 2002. More than one risk factor can be reported for each case. For cases reported in 2002, being born in (55 per cent) or residing in (81 per cent) a high risk country for tuberculosis was the most frequently recorded risk factor for tuberculosis. Twenty-two per cent had an

immunosuppressive disease or had been treated with immunosuppressive therapies (Table 6). The recorded risk factors were similar for cases of tuberculosis reported in 2001.

Performance indicators

In 2002, the National Tuberculosis Advisory Committee developed national performance indicators for tuberculosis.[5] Table 7 compares New South Wales and Australian data for each indicator over the last two years. New South Wales has higher rates of tuberculosis than those observed nationally, and higher rates in most subgroups of the population. For example, the annual incidence rate of tuberculosis in the overseas-born population in New South Wales (17.4/100 000) is higher than the overseas born population across Australia (10.2/100 000), perhaps reflecting the differing places of origin (and associated prevalence of tuberculosis) and length of time in Australia of migrants living in different parts of the country. New South Wales reports lower rates of tuberculosis in indigenous Australians compared to the national rate (Table 7).

DISCUSSION

Tuberculosis in New South Wales mostly affects people who were born in countries with high prevalence of tuberculosis. The elderly population have the highest rates of disease, followed by a secondary peak in those aged 20–35 years. Most patients with tuberculosis in New South Wales reside in the Sydney region, largely reflecting population density and migration settlement patterns.

The incidence of tuberculosis in New South Wales has remained steady over the past decade. The steady decline in overall tuberculosis rates seen before the 1970s subsequently plateaued due to a change in the New South Wales population base to include relatively more people who are at risk of tuberculosis because they have lived in high-prevalence countries. Rates among people born in Australia have continued to decline. There are a number of potential explanations for this. The decline in rates of tuberculosis among Australian-born people may reflect the decreasing risk of exposure to tuberculosis and subsequent infection in this population, and the decreasing risks of progression to active disease once infected, thanks to contact tracing programs and preventive therapy, and improvements in the general health of that population.

Globally, tuberculosis presents an enormous challenge to public health. Although New South Wales experiences some of the lowest incidence rates of tuberculosis in the world, vigilance is still required in the areas that threaten tuberculosis worldwide, particularly in areas with increasing rates of multi-drug resistance and HIV infection.

There are some limitations to the data, particularly in reporting the site of disease, specimen results, clinical outcome, HIV co-infection, and other risk factors. NSW Health continues to work towards improving the flow of data describing tuberculosis and to improve the completeness and quality of the data. Specifically, proposed changes to the reporting process will allow better determination of principal and other sites of disease. There will also be more emphasis on reducing the delay in the reporting of outcome data once treatment lengths have been taken into consideration.

The collection of HIV status of cases of tuberculosis is one area that requires significant improvement at both the state and national levels. As this study was the first formal description of risk factor information for tuberculosis in NSW, we believe the definitions and categories used for risk factor information should be considered in future. Changes to the Notifiable Diseases Database will include these changes in data collection.

For the NSW Tuberculosis Program to continue to co-ordinate the surveillance, treatment, and prevention of tuberculosis, it requires effective collaboration among general practitioners and specialist doctors, laboratories, the staff of chest clinics, public health units, and NSW Health, and partnerships with populations at increased risk.

ACKNOWLEDGEMENTS

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For updated information, visit the website **www.health.nsw.gov.au** and click on the link to Infectious Diseases.

TRENDS

Tables 7 and 8 and Figure 2 show reports of communicable diseases received for May and June 2004 in New South Wales (NSW).

This month we include, for the first time, a regular graph of notifications of **outbreaks of gastroenteritis in institutions** in Figure 2 (see report below). Reports of **arbovirus** infections declined after a peak in April associated with increased activity of infective mosquitoes. Notifications of **cryptosporidiosis** continued to decline, following the summer peak that was most likely associated with person-to-person spread and possibly with swimming in contaminated swimming pools. Reports of **Legionnaires' disease** also declined after peaking in April, although no common source of infection was identified in that month. Reports of **meningococcal disease** have begun to increase in line with the expected winter–spring peak in incidence (see report below). Reports of **pertussis** declined further in May and June. After a large peak in autumn, reports of **salmonellosis** are finally beginning to fall (see report below). No cases of **measles** were reported in June. The Mid North Coast Public Health Unit investigated a large outbreak of ***Salmonella* Typhimurium 135** in June. The outbreak occurred in a rehabilitation centre and affected 43 residents and staff.

GASTROENTERITIS OUTBREAKS IN INSTITUTIONS

In May 2004, 58 gastroenteritis outbreaks in institutional settings, affecting over 1,200 people, were reported in NSW. Outbreaks occurring in institutions are more common in the winter months and are usually caused by norovirus. Of these 58 outbreaks, 76 per cent were reported from aged-care facilities, 19 per cent from hospitals, two per cent from childcare centres, and two per cent from hostels. In 19 per cent of these outbreaks, norovirus was identified from stool samples. The epidemiological features of the other outbreaks were largely consistent with norovirus (symptoms of vomiting and diarrhoea lasting 24–48 hours, associated with spread to others). Because aged-care facilities and hospitals are regulated by health authorities, reporting from these institutions is likely to be more complete than from other institutions. In addition, reports of outbreaks of gastroenteritis from these institutions after January 2004 are likely to be more complete than in previous years, after the NSW Department of Health alerted managers of the importance of notification.

The rapid control of such outbreaks is vital. Measures include:

- careful review of infection control measures, including reinforcing the importance of hand washing among staff, patients, and visitors;
- sick health care and food service workers should avoid work that includes patient care or food handling for at least 48 hours after symptoms cease;
- reporting all outbreaks to the local public health units, where staff can provide expert advice on their management.

For more information see the Gastroenteritis (viral) fact sheet on the infectious diseases web page at **www.health.nsw.gov.au/living/infect.html**.

SALMONELLOSIS OUTBREAK

Salmonellosis is an infection of the gut that results in diarrhoea, vomiting, and fever. Many different types (or serovars) of *Salmonella* bacteria can cause salmonellosis. There were 1,157 cases of salmonellosis reported in NSW with onset from January to May 2004, of which 173 were caused by infection with *Salmonella* Typhimurium phage type 170 (STM170) (this number is likely to increase as further information on untyped cases is received). By comparison, there were 1,060 cases reported for the same period in 2003, of which 127 were due to STM170. Much of the increase in NSW occurred since January 2004; however, cases were not unusually clustered by place of residence, age, or sex.

Four separate outbreaks of STM170, where a likely common source of infection has been identified, have occurred to date in 2004. These include:

- 12 cases among a group of 14 people who shared a barbequed chicken and rice meal at a catered lunch in South Western Sydney in February;
- four cases who ate barbeque chicken from a takeaway shop in New England in April;
- 17 cases who ate chicken dishes from a restaurant in New England in April. STM170 was isolated from cooked chicken;
- 15 cases who ate chicken wraps from a cafe in Northern Sydney in April.

While the source of infection for most STM170 cases remains obscure, eating meats (including chicken) that have been incompletely cooked, or eating other foods that have been contaminated by raw meats (including chicken) is a likely source for many. Salmonellosis can be avoided by the thorough cooking of meats known to be at risk of contamination, including hamburgers and poultry. These should not be eaten if the meat remains

pink. The cooking of other meats, such as steak and chops, on the outside is probably sufficient to reduce the risk of infection. Avoid allowing raw meat to come into contact with partially-cooked foods that are not cooked further before eating. Do not allow fluids from meats to drip onto other foods in the refrigerator, and do not use the same cutting board and knife to prepare salads or other ready to eat foods without careful washing of the cutting board, knife, and hands.

For more information see the Salmonellosis fact sheet on the infectious diseases web page at **www.health.nsw.gov.au/living/infect.html**.

MENINGOCOCCAL DISEASE

Between 180 and 250 cases of meningococcal disease are reported annually in NSW. The incidence increases in winter and early spring. To the end of May, 56 cases were reported in NSW for 2004, the same number as for this period last year. Of the 56 cases in 2004, 43 per cent (24 cases) were due to infection with meningococcus serogroup B, 16 per cent (9 cases) with serogroup C, and for 41 per cent (23 cases) the serogroup is pending or unknown. For the same period last year, 46 per cent were due to serogroup B, 18 per cent to serogroup C, 5 per cent to serogroup Y, 2 per cent to serogroup W135, and 29 per cent to an unknown serogroup. Two deaths have been reported for 2004. For the same period last year one death was reported, although there were a total of 14 deaths reported for all of 2003.

While meningococcal bacteria are transferred from person-to-person through secretions from the nasopharynx of an infected person, recent evidence indicates that contact with saliva is not an important risk.[1] Activities such as kissing, and sharing of food, drinks and cigarettes with a case are unlikely to lead to transmission of disease.

Meningococcal C vaccine is now routinely recommended to all children at 12 months of age. In addition, all children 1–5 years of age are eligible for free vaccine through their local general practitioner. Since August 2003, more than 550,000 children in NSW have been immunised through NSW Health's school-based immunisation program.

Suspected cases should be immediately treated with intramuscular or intravenous antibiotics, although the intravenous route is preferable. The collection of diagnostic samples (including blood, cerebrospinal fluid, and skin rash aspirates) are important in confirming the diagnosis, through microscopy, culture, polymerase chain reaction testing, and serology. Guidelines for the early clinical and public health management of meningococcal disease in Australia can be found at **www.cda.gov.au/pubs/other/mening.htm**.

For more information see the Meningococcal disease fact sheet on the infectious diseases web page at **www.health.nsw.gov.au/living/infect.html**.

Reference

1. Orr HJ, Gray SJ, MacDonald M, Stuart JM. Saliva and meningococcal transmission. *Emerg Infect Dis* 2003; 9: 1314–1315.

HEPATITIS A CLUSTER IN A SCHOOL

South Western Sydney Public Health Unit reported a cluster of five cases of hepatitis A among children attending a primary school in Sydney in June. Hepatitis A is caused by the hepatitis A virus, which is easily spread by the faecal–oral route, either directly from person-to-person or indirectly via contaminated food or water. After an incubation period of about a month, symptoms begin that can include fever, malaise, nausea, abdominal discomfort, and sometimes vomiting and diarrhoea. A few days later jaundice may occur. Patients are generally unwell for several days to several weeks but many people who are infected can have mild or no obvious symptoms. The likelihood of having symptoms increases with age. Symptoms may be atypical in young children. Cases are infectious for about two weeks before the onset of jaundice until about one week after jaundice appears. Infection is confirmed by the detection of IgM antibodies in the patient's blood.

The first case (Case A) was a child who most likely acquired the infection while travelling. Case A developed jaundice in mid-May and returned to school three days later. Thirteen days after Case A returned to school, Case B developed jaundice, and Cases C and D developed jaundice over the subsequent 11 days. Apart from attending the same class, no other links among the cases could be identified. Within the classroom, there were no common specific risk factors (such as common foods or social gatherings) that could be identified among the cases. However, the class teacher reported that the class has a common lolly-jar from which all children in the class could choose lollies.

It was hypothesized that lollies from the lolly-jar may have been inadvertently contaminated by a person with hepatitis A (who may have been asymptomatic at the time) and that the jar could have been a source of infection for Cases B, C and D. As all but one of the children in the class were regular users of the lolly-jar, and therefore at potential risk of infection, the entire class (apart from the recognised cases) was offered normal human immunoglobulin in an attempt to reduce further illness.

Subsequently, a fifth student at the school (Case E) was diagnosed with hepatitis A. Case E attended a different class but was a sibling of an asymptomatic classmate of Cases A, B, C and D who had received Normal human immunoglobulin. Case E first became unwell 17 days after case B first developed symptoms. South Western Sydney Public Health Unit staff counselled and tested the family of Case E for hepatitis A. Case E's sibling, as well as Cases A, B, C, D, and E, all tested positive for hepatitis A IgM.

The source of infection for this cluster remains obscure, although contamination of the lolly-jar by an infectious person remains the most likely explanation. The lack of contact among cases during Case A's infectious period and the subsequent cases' incubation periods suggests that Case A was unlikely to be the source of infection for Cases B, C, D, or E. Because a large proportion of hepatitis A infections in children remain asymptomatic, it is possible that the lolly-jar, or some other identified food or environmental source, was contaminated by a person in the class with unrecognised—yet infectious—hepatitis A infection. Case E was most likely infected through contact with their sibling.

This cluster highlights several important public health issues. First, although hepatitis A outbreaks in school settings are very unusual, the diagnosis (and confirmatory testing) should be considered in children with consistent symptoms. Second, transmission from unrecognised cases may play an important role in clusters, and should be considered in such investigations. Third, care should be taken to ensure that foods to be shared (such as lollies, snacks, or nibbles) are offered in such a way as to avoid contamination by people's hands.

QUARTERLY REPORT: AUSTRALIAN CHILDHOOD IMMUNISATION REGISTER

Table 1 details the percentage of fully immunised children aged 12 months to less than 15 months in each area health service, reported by all service providers.

These data refer to five different cohorts of children whose age has been calculated 90 days before data extraction. The information contained in each of the reports has been extracted from the Australian Childhood Immunisation Register (ACIR) and may be underestimated by approximately three per cent due to children being

TABLE 1

PERCENTAGE OF FULLY IMMUNISED CHILDREN FOR FIVE SEPARATE COHORTS OF CHILDREN AGED 12 MONTHS TO LESS THAN 15 MONTHS BY AREA HEALTH SERVICE

Area health service	30 June 03 %	30 Sept 03 %	31 Dec 03 %	30 March 04 %	30 June 04 %
Central Coast	92	93	95	92	91
Central Sydney	90	90	89	89	90
Hunter	95	93	94	95	93
Illawarra	93	92	93	93	90
Northern Sydney	91	91	90	91	89
South Eastern Sydney	91	92	90	91	90
South Western Sydney	90	91	90	91	91
Wentworth	91	92	91	91	92
Western Sydney	90	91	91	90	90
Far West	88	91	93	88	89
Greater Murray	94	93	93	93	94
Macquarie	94	93	93	93	92
Mid North Coast	89	90	91	89	90
Mid Western	93	94	91	94	93
New England	92	95	95	93	91
Northern Rivers	84	85	84	85	85
Southern	91	92	89	91	90
NSW	**91**	**91**	**91**	**91**	**91**
Australia	**91**	**92**	**91**	**91**	**91**

Source: Australian Childhood Immunisation Register.

TABLE 2

PERCENTAGE OF FULLY IMMUNISED CHILDREN IDENTIFIED AS ABORIGINAL OR TORRES STRAIT ISLANDER, FOR FIVE SEPARATE COHORTS OF CHILDREN AGED 12 MONTHS TO LESS THAN 15 MONTHS

	30 June 03 %	30 Sept 03 %	31 Dec 03 %	31 March 04 %	30 June 04 %
NSW	**84**	**88**	**85**	**83**	**85**
Australia	**84**	**87**	**82**	**83**	**84**

Source: Australian Childhood Immunisation Register.

vaccinated late or to service providers failing to forward information to the ACIR.[1] Table 2 details the percentage of fully immunised children identified as Aboriginal or Torres Strait Islander in New South Wales for the same cohort, reported by all service providers.

Reference

1. Hull B, Lawrence G, MacIntyre C, McIntyre P. Immunisation coverage in Australia corrected for under-reporting to the Australian Childhood Immunisation Register. *Aust N Z J Public Health* 2003; 27(5): 533–38.

INTRODUCTION OF SCHOOL-BASED VACCINATION PROGRAMS IN NSW

Melanie Boomer and Sue Campbell-Lloyd

In August 2003, NSW Health implemented the National Meningococcal C Vaccination Program, to provide free meningococcal C vaccine to all 6–19 year olds through school-based clinics by December 2004.

In May 2004, school-based vaccinations services were expanded, with the introduction of the NSW Adolescent Vaccination Program. This program provides a course of hepatitis B vaccine to Year 7 students, and a new diphtheria–tetanus–pertussis (dTpa) vaccine for adolescents to all high school students.

School-based vaccination services are being implemented by the NSW Health Immunisation Unit and the Immunisation Coordinators in each area health service. Information regarding the number of students vaccinated with each vaccine is provided to the Immunisation Unit daily and a cumulative summary is published weekly on the NSW Department of Health internet site.

Tables 3–5 provide a summary of the number of students vaccinated during the school clinics to date in each of these programs.

MONITORING OF ADVERSE EVENTS FOLLOWING IMMUNISATION FOR THE SCHOOL-BASED NATIONAL MENINGOCOCCAL C VACCINATION PROGRAM IN NSW

Melanie Boomer and Sue Campbell-Lloyd

An integral component of the National Meningococcal C Vaccination Program is the surveillance of Adverse Events Following Immunisation (AEFIs).

AEFIs relating to vaccinations that are undertaken in schools are monitored using two surveillance methods:

- AEFIs that occur after the Program nursing staff have left the school on the clinic day are reported by providers such as general practitioners to public health

TABLE 3

NATIONAL MENINGOCOCCAL C VACCINATION PROGRAM FOR ALL 6–19 YEAR OLDS, SCHOOL-BASED VACCINATIONS, NSW, RESULTS FOR PERIOD 4 AUGUST 2003 TO 2 JULY 2004

Area health service	Total number of students aged 6–19 years vaccinated
Central Coast	29749
Central Sydney	31208
Far West	5658
Greater Murray	35616
Hunter	76455
Illawarra	33747
Macquarie	15865
Mid North Coast	38435
Mid Western	25684
New England	24487
Northern Rivers	34693
Northern Sydney	54510
South Eastern Sydney	47178
South Western Sydney	73266
Southern	22628
Wentworth	26715
Western Sydney	55855
Total	**631749**

This report reflects data processed by the NSW Immunisation Unit up until 4.00 p.m. Friday 2 July 2004. Data are provisional and subject to ongoing revision and review.

TABLE 4

NSW ADOLESCENT VACCINATION PROGRAM FOR ALL HIGH SCHOOL STUDENTS, SCHOOL-BASED DIPHTHERIA–TETANUS–PERTUSSIS VACCINATIONS, NSW, RESULTS FOR THE PERIOD 3 MAY 2004 TO 2 JULY 2004

Area health service	Total number of high school students vaccinated
Central Coast	4512
Central Sydney	3190
Far West	539
Greater Murray	4158
Hunter	9152
Illawarra	4780
Macquarie	3041
Mid North Coast	11676
Mid Western	6524
New England	1305
Northern Rivers	6945
Northern Sydney	4692
South Eastern Sydney	4754
South Western Sydney	9517
Southern	3100
Wentworth	1213
Western Sydney	4597
Total	**83695**

This report reflects data processed by the NSW Immunisation Unit up until 4.00 p.m. Friday 2 July 2004. Data are provisional and subject to ongoing revision and review.

TABLE 5

NSW ADOLESCENT VACCINATION PROGRAM FOR YEAR 7 STUDENTS, SCHOOL-BASED HEPATITIS B VACCINATIONS, RESULTS FOR THE PERIOD 3 MAY 2004 TO 2 JULY 2004

Area health service	Total number of Year 7 students vaccinated
Central Coast	1828
Central Sydney	2415
Far West	141
Greater Murray	1545
Hunter	3099
Illawarra	2082
Macquarie	662
Mid North Coast	2195
Mid Western	768
New England	917
Northern Rivers	1884
Northern Sydney	4664
South Eastern Sydney	3913
South Western Sydney	4189
Southern	1259
Wentworth	2135
Western Sydney	4919
Total	**38615**

This report reflects data processed by the NSW Immunisation Unit up until 4.00 p.m. Friday 2 July 2004. Data are provisional and subject to ongoing revision and review.

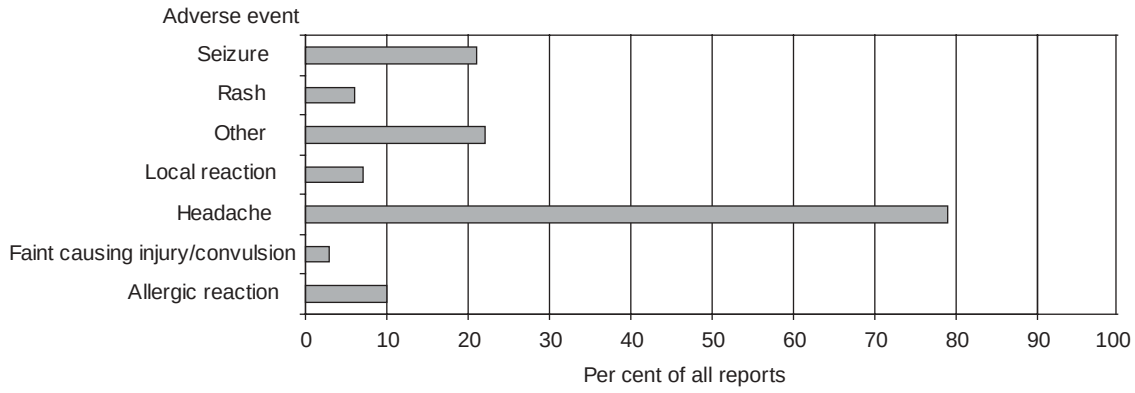
units, and are entered onto the Notifiable Diseases Database maintained by the Communicable Diseases Branch of the NSW Department of Health. These notifications are transferred to the Adverse Drug Reactions Advisory Committee—a subcommittee of independent medical experts that advises the Therapeutic Goods Administration on the safety of medicines—for review and assignment of a causality rating before being returned to the NSW Department of Health;

- AEFIs (classified as anaphylaxis, seizure, severe allergic reaction, severe headache, severe local reaction, or 'other') that occur during the school clinic are reported by the Program nursing staff directly to the NSW Department of Health each day. Severe AEFIs (that is, anaphylaxis) are notified by phone immediately to the Department. These notifications are reviewed by an expert panel and forwarded to Adverse Drug Reactions Advisory Committee for assignment of a causality rating. This notification system allows surveillance of any immediate reactions and also ensures that events that are specific to the environment of the school clinic are reported and investigated in a timely manner.

Figure 1 provides information regarding the AEFIs that occurred at the school-based vaccination clinics between August 2003 and June 2004 in NSW. During this period,

FIGURE 1

DISTRIBUTION OF ADVERSE EVENTS FOLLOWING IMMUNISATION, MOST SERIOUS REACTION REPORTED AT SCHOOL-BASED CLINICS, NATIONAL MENINGOCOCCAL C VACCINATION PROGRAM, NSW, AUGUST 2003 TO JUNE 2004 (*N*=148)



Source: Adverse Events Following Immunisation in School-based Vaccination Programs Database, NSW Department of Health

631,749 children were vaccinated, with a total of 148 adverse events reported through the school-based surveillance system (a rate of 23 per 100,000 vaccinations). Headaches were reported most frequently, which is similar to the AEFI profile reported for the program in the United Kingdom.[1] Also similar to the United Kingdom findings, the provision of meningococcal C conjugate vaccine to children and adolescents in a school setting is a safe and effective means to achieve high coverage in these age groups.[1]

Reference

1. Miller E, Salisbury D, Ramsay M. Planning, registration, and implementation of an immunisation campaign against meningococcal C disease in the UK: A success story. *Vaccine* 2002; 20: s8–s67.

HIV INFECTIONS AND AIDS

In the first three months of 2004, there were 112 people notified with newly-diagnosed HIV infection, 25 notified with AIDS, and four people who died following AIDS diagnosis in NSW (Table 6). Data on new HIV infections are being monitored closely to see whether the increases in notifications seen in NSW in 2002 and 2003 will be sustained in 2004. The proportions of the people notified with new HIV diagnoses in 2004 who were female (19 per cent) and who reported heterosexual sex as their most likely means of infection (22 per cent) are both slightly higher than in 2003.

TABLE 6

CHARACTERISTICS OF NSW RESIDENTS REPORTED WITH HIV INFECTION, AIDS, OR WHO HAVE DIED FROM AIDS, FOR THE PERIODS 1981 TO MARCH 2004, 2003, AND JANUARY TO MARCH 2004

Characteristics	All cases 1981–March 2004						Cases for 2003						January–March 2004					
	HIV		AIDS		AIDS deaths		HIV		AIDS		AIDS deaths		HIV		AIDS		AIDS deaths	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
Gender																		
Female	732	5.5	218	4.1	121	3.4	32	7.7	1	0.9	2	6.1	21	18.8	1	4.0	0	0.0
Male	12941	97.1	5132	95.6	3414	96.3	372	89.9	114	97.4	31	93.9	90	80.4	24	96.0	4	100.0
Transgender	26	0.2	14	0.3	8	0.2	0	0.0	2	1.7	0	0.0	0	0.0	0	0.0	0	0.0
Not stated	264	2.0	6	0.1	1	0.0	10	2.4	0	0.0	0	0.0	1	0.9	0	0.0	0	0.0
Age (Years)																		
0–2	27	0.2	7	0.1	3	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3–12	38	0.3	12	0.2	8	0.2	2	0.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
13–19	209	1.6	13	0.2	9	0.3	3	0.7	0	0.0	0	0.0	2	1.8	0	0.0	0	0.0
20–29	4167	31.3	775	14.4	542	15.3	95	22.9	6	5.1	3	9.1	31	27.7	2	8.0	0	0.0
30–39	5128	38.5	2211	41.2	1449	40.9	165	39.9	39	33.3	11	33.3	34	30.4	10	40.0	1	25.0
40–49	2541	19.1	1575	29.3	1041	29.4	88	21.3	31	26.5	14	42.4	34	30.4	9	36.0	0	0.0
50–59	838	6.3	586	10.9	357	10.1	46	11.1	34	29.1	3	9.1	8	7.1	3	12.0	3	75.0
60 +	293	2.2	190	3.5	135	3.8	15	3.6	7	6.0	2	6.1	3	2.7	2	8.0	0	0.0
Not stated	96	0.7	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Exposure																		
Male homosexual–bisexual	7991	60.0	4314	80.3	2930	82.7	283	68.4	82	70.1	21	63.6	65	58.0	16	64.0	4	100.0
Male homosexual–bisexual and IDU	337	2.5	226	4.2	148	4.2	9	2.2	7	6.0	4	12.1	2	1.8	2	8.0	0	0.0
Injecting drug use	436	3.3	112	2.1	54	1.5	12	2.9	7	6.0	2	6.1	4	3.6	1	4.0	0	0.0
Heterosexual	995	7.5	344	6.4	156	4.4	63	15.2	15	12.8	5	15.2	25	22.3	4	16.0	0	0.0
Haemophilia–Coagulation disorders	112	0.8	51	0.9	45	1.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Blood-Tissue recipient–NSI *	122	0.9	102	1.9	90	2.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Vertical	39	0.3	15	0.3	7	0.2	2	0.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Undetermined	3247	24.4	54	1.0	25	0.7	42	10.1	5	4.3	1	3.0	14	12.5	1	4.0	0	0.0
Not stated	47	0.4	150	2.8	89	2.5	3	0.7	1	0.9	0	0.0	2	1.8	0	0.0	0	0.0
Residence																		
Greater Sydney**	7517	56.4	4438	82.6	2967	83.7	319	77.1	81	69.2	23	69.7	82	73.2	17	68.0	3	75.0
Rest of New South Wales	924	6.9	727	13.5	438	12.4	63	15.2	23	19.7	10	30.3	15	13.4	4	16.0	1	25.0
Unknown	4887	36.7	205	3.8	139	3.9	32	7.7	13	11.1	0	0.0	15	13.4	4	16.0	0	0.0
Total	13328	100	5370	100	3545	99.971	414	100	117	100	33	100	112	100	25	100	4	100

Source: NSW HIV–AIDS database, Communicable Diseases Branch, NSW Department of Health. Recent HIV data may contain duplicates.

* Needle-stick injury.

** Greater Sydney area health services include Central Sydney, North Sydney, Western Sydney, Wentworth, South Western Sydney, and South Eastern Sydney.

FIGURE 1

REPORTS OF SELECTED COMMUNICABLE DISEASES, NSW, JAN 1999 TO JUNE 2004, BY MONTH OF ONSET

Preliminary data: case counts in recent months may increase because of reporting delays.

Laboratory-confirmed cases only, except for measles, meningococcal disease and pertussis

BFV = Barmah Forest virus infections, RRV = Ross River virus infections

lab+ = laboratory confirmed

Men Gp C and Gp B = meningococcal disease due to serogroup C and serogroup B infection, other/unk = other or unknown serogroups.

NB: multiple series in graphs are stacked, except gastroenteritis outbreaks.

NB. Outbreaks are more likely to be reported by nursing homes & hospitals than from other institutions

NSW population	
Male	50%
<5	7%
5–24	28%
25–64	52%
65+	13%
Rural*	42%

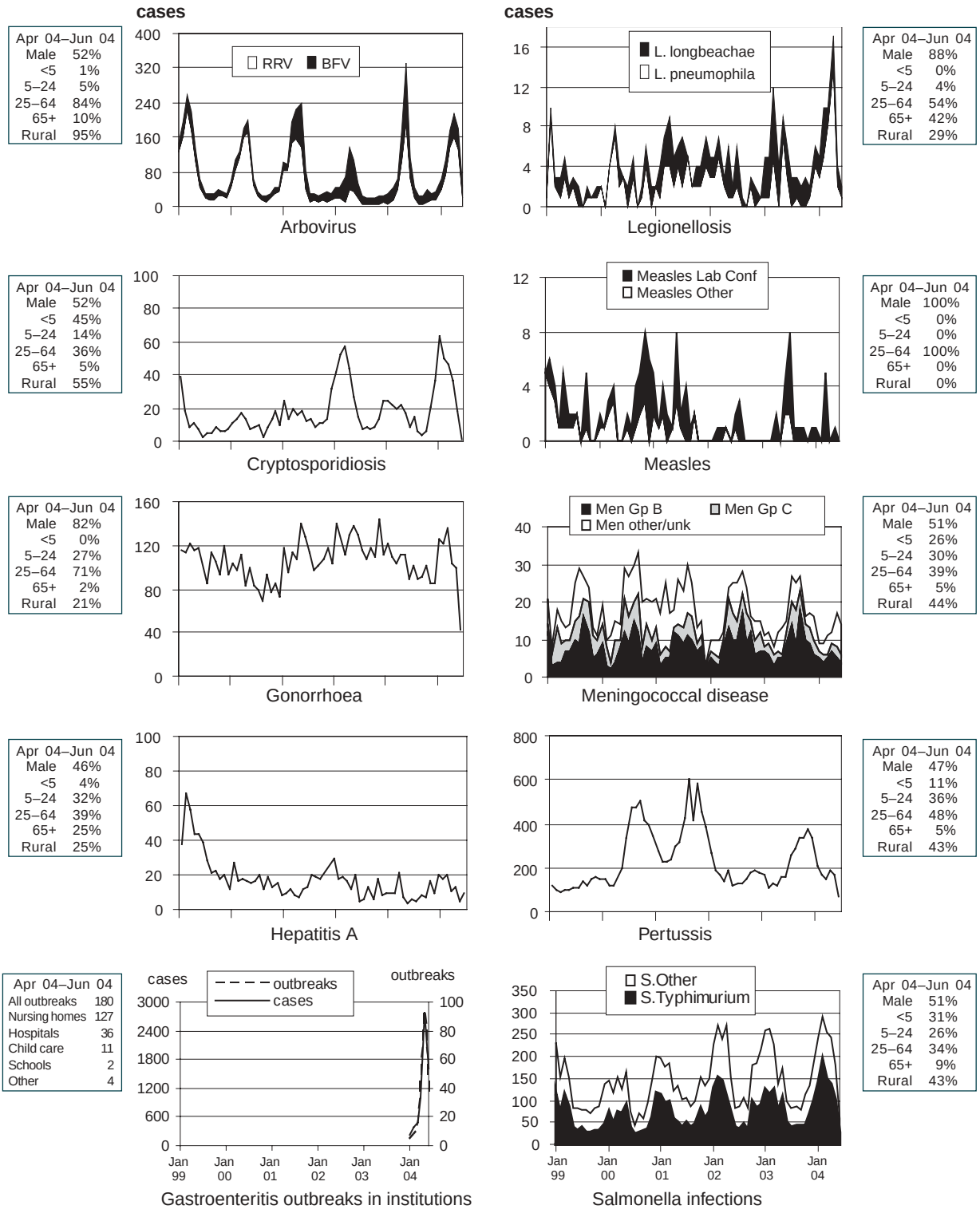


TABLE 7 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN MAY 2004 BY AREA HEALTH SERVICES

Condition	Area Health Service																		Total	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	CHS	for May†	To date†
Blood-borne and sexually transmitted																				
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlamydia (genital)*	72	85	61	18	45	28	88	41	140	30	27	38	11	26	2	32	12	-	768	4,037
Gonorrhoea*	34	10	4	-	5	-	4	2	34	6	4	1	1	2	-	-	1	-	109	586
Hepatitis B - acute viral*	-	-	-	-	3	-	-	-	2	1	-	-	-	-	-	-	-	-	6	25
Hepatitis B - other*	77	25	43	4	57	11	12	4	76	3	-	1	1	3	-	4	2	-	326	1,352
Hepatitis C - acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	11
Hepatitis C - other*	37	38	43	10	51	29	41	38	66	21	29	9	4	10	-	12	15	-	463	2,668
Hepatitis D - unspecified*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Syphilis	27	9	8	1	16	-	-	1	30	3	-	-	-	2	-	1	-	-	99	514
Vector-borne																				
Barmah Forest virus*	-	1	-	-	-	-	5	-	-	13	44	3	-	-	-	1	-	-	67	200
Ross River virus*	1	2	-	1	1	8	31	1	4	58	48	11	-	1	-	2	-	-	169	504
Arboviral infection (Other)*	-	1	1	1	1	-	1	-	-	-	-	-	-	-	-	-	1	-	6	21
Malaria*	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	4	29
Zoonoses																				
Anthrax*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis*	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3
Leptospirosis*	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	11
Lyssavirus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psittacosis*	-	-	-	-	-	-	2	-	-	-	1	1	-	1	-	-	-	-	5	24
Q fever*	-	-	-	-	2	-	1	3	1	3	2	5	6	1	-	1	-	-	25	93
Respiratory and other																				
Blood lead level*	1	1	-	-	6	1	3	5	-	-	-	1	1	-	-	-	1	-	20	104
Influenza*	-	3	4	-	7	-	1	-	6	-	-	-	-	-	-	-	-	-	22	85
Invasive pneumococcal infection*	7	6	6	1	11	10	9	4	6	2	6	-	1	2	-	1	2	-	75	246
Legionella longbeachae infection*	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	13
Legionella pneumophila infection*	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	3	31
Legionnaires' disease (Other)*	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Meningococcal infection (invasive)*	1	1	1	-	2	-	2	2	2	1	-	1	1	1	-	-	-	-	15	58
Tuberculosis	6	1	6	1	-	-	-	-	8	-	-	-	-	1	-	-	-	-	23	140
Vaccine-preventable																				
Adverse event after immunisation***	-	1	2	1	-	2	-	-	4	-	-	-	-	2	-	3	2	-	17	78
H. *Influenzae b* infection (invasive)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Measles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Mumps*	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	21
Pertussis	12	11	20	1	17	5	32	11	31	7	4	4	6	4	-	3	4	-	172	1,043
Rubella*	1	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	3	8
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enteric																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis*	7	1	-	-	2	-	1	3	5	7	4	-	-	-	-	-	-	-	30	225
Giardiasis*	5	17	14	7	8	4	13	4	22	-	3	11	1	6	-	3	1	-	120	592
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Hepatitis A*	-	1	2	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	6	81
Hepatitis E*	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	6
Listeriosis*	-	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	3	14
Salmonellosis*	-	29	23	12	18	13	10	6	30	10	3	5	3	2	-	10	7	-	182	1,221
Shigellosis*	1	2	2	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	7	41
Typhoid and paratyphoid*	-	-	-	-	4	-	-	-	2	-	-	-	-	-	-	-	-	-	6	30
Verotoxin producing *E. coli**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2

* lab-confirmed cases only + includes cases with unknown postcode ** HIV and AIDS data are reported separately in the *NSW Public Health Bulletin* each quarter

*** AEFIs notified by the school vaccination teams during the National Meningococcal C Program are not included in these figures. These notifications are reviewed regularly by a panel of experts and the results will be published quarterly in the *NSW Public Health Bulletin* in 2004

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SA = Southern Area
CHS = Corrections Health Service

TABLE 8 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN JUNE 2004 BY AREA HEALTH SERVICES

Condition	Area Health Service																		Total	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	CHS	for June†	To date†
Blood-borne and sexually transmitted																				
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlamydia (genital)*	57	45	58	22	63	12	67	32	132	28	34	18	19	12	26	50	12	-	697	4,771
Gonorrhoea*	10	7	6	1	13	-	2	1	23	8	1	1	1	-	2	2	-	-	79	672
Hepatitis B - acute viral*	1	-	-	-	2	-	1	1	-	1	-	-	-	-	-	-	-	-	6	34
Hepatitis B - other*	8	21	41	7	51	1	3	1	36	3	2	2	2	1	5	3	-	-	188	1,787
Hepatitis C - acute viral*	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	2	13
Hepatitis C - other*	52	29	26	25	59	11	31	20	30	34	30	10	9	21	7	19	8	11	437	3,269
Hepatitis D - unspecified*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Syphilis	10	5	8	1	17	-	3	1	25	4	-	-	-	3	1	-	1	-	79	586
Vector-borne																				
Barmah Forest virus*	-	-	-	-	-	-	3	-	-	5	26	1	-	-	-	-	1	-	36	236
Ross River virus*	1	1	1	-	-	1	9	2	1	12	27	-	1	1	4	1	2	-	64	570
Arboviral infection (Other)*	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	3	22
Malaria*	1	1	4	1	-	-	1	-	-	-	-	-	-	-	-	1	-	-	9	38
Zoonoses																				
Anthrax*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis*	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4
Leptospirosis*	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	12
Lyssavirus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psittacosis*	-	-	-	-	-	-	4	-	-	-	-	1	-	-	-	-	1	-	6	30
Q fever*	-	-	-	-	-	-	1	3	-	-	-	3	5	-	3	1	-	-	16	109
Respiratory and other																				
Blood lead level*	-	1	-	-	3	1	6	-	-	-	1	-	1	-	14	-	-	-	27	131
Influenza*	-	3	4	-	7	-	-	-	15	2	2	-	-	-	-	-	-	-	33	118
Invasive pneumococcal infection*	7	7	11	8	7	1	7	7	12	2	7	1	-	1	-	-	1	-	79	325
Legionella longbeachae infection*	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	16
Legionella pneumophila infection*	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	3	33
Legionnaires' disease (Other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Meningococcal infection (invasive)*	4	-	2	1	1	-	2	2	1	-	-	-	-	1	-	1	1	-	16	74
Tuberculosis	-	-	5	1	-	1	1	-	5	-	1	-	-	-	1	-	-	-	15	156
Vaccine-preventable																				
Adverse event after immunisation***	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	6	1	-	10	94
H. *Influenzae b* infection (invasive)*	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	2
Measles	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	8
Mumps*	-	1	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	4	25
Pertussis	7	12	16	4	25	1	28	9	31	19	2	3	16	2	2	2	6	-	185	1,252
Rubella*	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	11
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enteric																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis*	1	-	2	-	-	-	1	-	-	-	-	-	1	-	-	3	-	-	5	236
Giardiasis*	5	16	12	3	9	-	6	4	12	2	2	7	-	3	-	1	1	-	83	679
Haemolytic uraemic syndrome	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4
Hepatitis A*	-	4	1	-	4	-	-	-	1	-	-	1	-	-	-	-	-	-	11	92
Hepatitis E*	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	5
Listeriosis*	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	17
Salmonellosis*	5	9	22	7	11	-	8	4	13	9	23	4	2	2	2	9	2	-	132	1,370
Shigellosis*	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	5	46
Typhoid and paratyphoid*	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	31
Verotoxin producing *E. coli**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2

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