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MEASLES EPIDEMIC IN WESTERN SYDNEY

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INTRODUCTION

Western Sydney experienced an epidemic of measles in the second half of 1993. From June 13 to December 31, 1993, the Western Sector Public Health Unit received 889 measles notifications. The overall attack rate for this period was 105/100,000 population. The epidemic began in June, peaked in September/October and began to decline in December. In 1994, 48 cases were reported up to May 29. Figure 1 shows the number of cases by week of onset.

NOTIFICATIONS

Notifications were received from doctors, hospitals, parents, schools and laboratories. All cases were confirmed, by telephone, with the diagnosing doctor. A clinical case definition for measles, as described in the NSW Health Department Infectious Disease Manual, was employed. Measles was defined as an illness characterised by all the following features:

- a generalised rash resembling measles;
- a fever; and
- cough or conjunctivitis or coryza or Koplik spots.

Laboratory notifications were accepted if measles-specific IgM antibody was demonstrated or measles virus was isolated from a nasopharyngeal aspirate. Fourteen per cent of notified cases were laboratory-confirmed. Data on the total number of cases tested were not available.

PROGRESS OF THE EPIDEMIC

Initially, more than 90 per cent of cases came from the Blacktown Local Government Area (LGA), but as the epidemic progressed cases were reported from the adjacent Penrith LGA and the remainder of the Western Sector. Blacktown LGA had the highest attack rate between June 13 and December 31, 1993 (255/100,000 population), followed by Penrith LGA (103/100,000 population).

At the beginning of the outbreak, most cases were from the 5-9 (primary school) age group, but then cases were reported in high school students, pre-school children, and babies under 12 months. Although the largest number of cases (263) occurred in the 0-14 year old age group, the highest attack rate (549/100,000 population) was in babies under 12 months.

HOSPITAL ADMISSIONS

There were 89 hospital admissions for measles between June 13 and December 31, 1993 (10 per cent of all notified cases). Twenty-seven per cent of cases under one year of age required hospital admission. Most admissions were for 1-3 days. Reasons for admission included dehydration, fever, otitis media, pneumonia and other respiratory complications. There was one case of encephalitis, in an unimmunised 14-year-old male.

IMMUNISATION STATUS OF CASES

Fifty-five per cent of cases were reported by their parents to have received prior measles immunisation, 10 per cent were of unknown immunisation status and 33 per cent had not been immunised against measles. Seventy-nine per cent of

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Measles epidemic in Western Sydney

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cases in the 5-9 age group were reported to have received measles immunisation. Parental recall of immunisation is believed to overestimate immunisation status by 16-20 per cent[1]. The PHU is conducting a case-control study to determine measles vaccine effectiveness in children aged 5-10 years. Preliminary results show only 14 per cent of parents of cases were able to produce documented evidence of measles immunisation.

PUBLIC HEALTH ACTION

Several measures were taken to contain the outbreak:

- Each case was followed up. Immunisation was advised for all unimmunised contacts. Children under nine months of age were advised immunoglobulin, if it could be given within six days of contact with a measles case.
- A general measles immunisation media campaign, throughout the Western Sector, was organised. This included media releases to local and Statewide television and radio stations.
- Letters advising of the outbreak and the need for immunisation of all unimmunised children were sent to all councils and community health centres in the Western Sector and to all GPs in the Blacktown and Penrith LGAs.
- Principals or directors of each affected school, preschool or day care centre were contacted and similar letters were sent to parents.
- The PHU, in conjunction with local councils and community health services, organised seven immunisation clinics at priority schools in the Blacktown/Mt Druitt area. A further four immunisation clinics were organised by community health services in Blacktown and Mt Druitt.
- In October, the recommended age of MMR vaccination was lowered from 12 months to 6 months for children living in the Blacktown and Penrith LGA. This advice was given until March 1, when the age for measles immunisation returned to 12 months for all children.

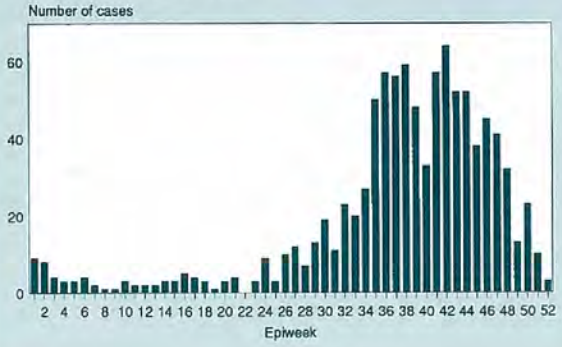
UNDER-ASCERTAINMENT OF CASES

A study in five primary schools in the Blacktown and Penrith LGAs suggested case numbers may have been even greater than those notified. Thirty-four classes, from kindergarten to grade 4, with at least one notified case of measles, were included in the study. Parents were asked if their child had suffered a febrile illness, with a rash, between June and November 1993. Details of associated symptoms and doctor visits were also obtained. A total of 883 questionnaires was distributed and 796 (90 per cent) were returned. Histories from 91 children met the above clinical case definition for measles and 37 (41 per cent) of these had been previously notified. Of the 54 cases who had not been notified, 46 (85 per cent) had been diagnosed with measles by a doctor. These results suggest a large proportion of doctors failed to notify and that the notification system may have detected less than half the cases. A similar estimate of reporting efficiency was found in a 1991 New York study[2] where only 45 per cent of hospital measles presentations were finally notified.

Notification data are rarely complete. It is important to recognise under-ascertainment, as assessment of the size of an outbreak can greatly influence resource allocation and implementation of control measures. Further strategies need to be devised to increase measles notification rates in NSW.

FIGURE 1

MEASLES CASES BY DATE OF ONSET
WESTERN SECTOR PUBLIC HEALTH UNIT
JANUARY - DECEMBER 1993



1. Hawe P, Wilson A, Fahey P, Cunningham T, Baker M, Leeder S. The validity of parental report of vaccination as a measure of child's measles immunisation status. *Med J Aust* 1991; 155:681-686.
2. Davis et al. Reporting efficiency during a measles outbreak in New York City, 1993. *Am J Public Health* 1993; 83:1011-1015.

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The Bulletin aims to provide its readers with population health data and information to motivate effective public health action. Articles, news and comments should be 1,000 words or less in length and include a summary of the key points to be made in the first paragraph. Please submit items in hard copy and on diskette, preferably using WordPerfect 5.1, to the editor, Public Health Bulletin, Locked Mail Bag 961, North Sydney 2059. Facsimile (02) 391 9232.

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INVESTIGATION OF AN OUTBREAK OF GASTROENTERITIS ON A CONTAINER SHIP RETURNING FROM ASIA

Leena Gupta and Bernie Towler,
Eastern Sydney Public Health Unit
Michael Frommer, Public Health Division,
NSW Health Department

This article describes action taken when the NSW Health Department responded to a notification by the Australian Quarantine Inspection Service (AQIS) that 13 crew members on an Australian container ship, due to dock at Port Botany, had been unwell with a diarrhoeal illness. The ship had travelled to Asia and the notification was received four days before it was due to berth in Sydney on its return trip. The ship's master was concerned that crew members had become ill after docking in Taiwan, 19 days before their arrival in Sydney.

Following contact with the shipping line, arrangements were made for staff from the Eastern Sydney Public Health Unit and the Epidemiology Branch to investigate the possibility of an outbreak of foodborne or waterborne illness, institute any public health or quarantine measures necessary to minimise further spread of infection and prevent recurrence of similar outbreaks on the ship.
The aims of the investigation were to:

- ascertain whether any affected crew members had a quarantinable illness requiring isolation or medical attention; and
- identify the source of infection and/or any shipboard practices that might have favoured its spread.

One member of the team (MF) had authority under the Commonwealth *Quarantine Act 1909* to conduct this investigation.

BACKGROUND

The ship's company and its itinerary

The ship was a cargo container vessel with a company of 20 Australian males. The ship had left Brisbane four weeks previously. The itinerary included the following ports (in order): Yokohama, Yokkaichi, Nagoya, Osaka, Keelung (Taiwan) and Hong Kong. All crew members had boarded the ship at Brisbane and remained as part of the company until arrival in Sydney. No additional crew were taken aboard at other ports.

When the ship entered Port Botany, it was flying the yellow quarantine flag, signalling illness on board. Crew disembarkation and unloading of cargo could not begin until the ship had been cleared by the investigation team. There was considerable pressure to complete the investigation as soon as possible because of the commercial imperative to unload cargo, and because many crew members were due to leave the ship after completing a tour of duty of several weeks' duration.

Facilities

Food sources and preparation
A set menu was prepared on the ship daily by the same two crew members. Crew members could eat whatever they wished from the food stores at any time. All packaged foods and most fresh food had been bought in Australia. Some perishables were obtained, from each of the overseas ports, as required. Fresh vegetables and fruit were obtained on this trip at Keelung, Taiwan. When on shore, the men generally ate main meals prepared on the ship.

Water supply
Only desalinated water was used on the ship for drinking and washing. Desalination was the only treatment for the drinking water. Ice was made in a machine using stored desalinated water.

Living quarters
Each crew member had separate living quarters with individual toilet facilities.

Ballast water
Before docking, the Water Board was asked about the appropriate procedure for discharge of ballast water, because of the potential for transporting contaminated ballast water from other waters to Sydney Harbour. The Water Board advised that ballast water was routinely discharged into Sydney's sewerage system and treated. As ballast water did not pose a health threat, it was discharged into Sydney's sewerage system before docking.

INVESTIGATION METHODS

Brief details such as number of cases, approximate onset dates, itinerary and condition of cases were obtained from the ship, through the shipping agent, in the three days before docking. Upon docking, investigators administered a verbal questionnaire to each crew member. Based on the histories, a case definition was defined as the presence of diarrhoea (loose or frequent stools). As the peak onset of illness was found to be two weeks before interview, no accurate food history could be obtained. As all cases were asymptomatic at the time of interview, detailed questioning about each meal was also considered unnecessary.

An immediate decision was made by the interviewers about whether each crew member had a quarantinable illness or required immediate medical attention. Stool specimens were obtained from three of four cases whose diarrhoea had ceased in the 48 hours before interview. These were sent to the Institute of Clinical Pathology and Medical Research, Westmead Hospital, which deals with all quarantine specimens.

Menus, food preparation and storage facilities, living quarters and water desalination facilities were inspected. The chef was interviewed about food preparation and hygiene in the galley. Specimens of vegetables and milk were sent to the Division of Analytical Laboratories for culture. The general level of hygiene on the ship was assessed and specimens of stored water were taken.

RESULTS

Results of the questionnaire were analysed using Epi-Info version 5. The 20 crew members were all males, with an age range of 19-63 years and an average age of 40 years. All crew members were well at the time of boarding.

There were 16 cases of diarrhoea, all cases lasting at least 24 hours. The case attack rate was 80 per cent. Two other crew members had other gastrointestinal symptoms during the trip which were likely to be unrelated to the diarrhoeal

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TABLE 1

FREQUENCY OF REPORTED SYMPTOMS

Symptom	Number of cases	% of company affected
Diarrhoea	16	80
Abdominal cramps	10	50
Nausea	8	40
Fever	7	35
Headache	6	30
Vomiting	5	20
Abdominal pain	1	5
Sore throat	1	5

outbreak, as the symptoms were non-specific and/or of short duration (for example, one episode of vomiting, slight change in bowel habits). The frequency of reported symptoms for the 16 cases is outlined in Table 1.

The onset of the first case occurred 24 hours after the ship had left Taiwan. The peak incidence of cases occurred two days after the ship left Taiwan (Figure 2). At the time of interview, all men said they had fully recovered. However, one crew member had had diarrhoea until the previous day. On inspection of the facilities, it was considered that the standard of hygiene, particularly in food preparation, was adequate. All cultures of stool, food and water were negative.

DISCUSSION

The history given by the company suggested that an outbreak of a foodborne or waterborne illness had occurred on the ship. After preliminary investigation, we decided that crew members were unlikely to be infectious at the time of docking, as the illness appeared to have been self-limiting. The history given in all cases was not suggestive of cholera nor of any other quarantinable illness.

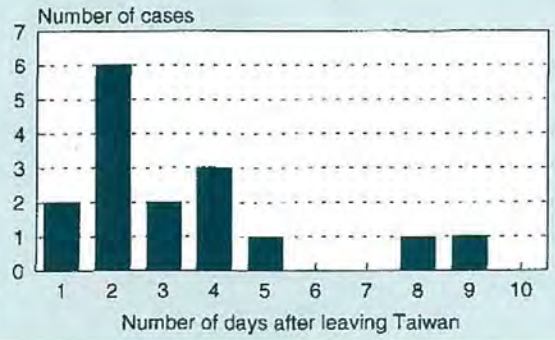
As a detailed food history was not taken, no point source of foodborne or waterborne illness was identified. The ship's master considered the source was vegetables bought in Taiwan, as the outbreak occurred within 24 hours of docking at Keelung. Specific questioning was therefore directed to procedures for washing fruit and vegetables, and utensils used in preparation of vegetables. These procedures were considered adequate. The potential for transmission of waterborne infection from the ice machine was considered, but could not be confirmed.

PUBLIC HEALTH ACTION

The attending AQIS officer was informed that crew members did not have a quarantinable illness, and the investigation team authorised crew members to disembark or begin unloading cargo. The yellow quarantine flag was lowered.

FIGURE 2

EPIDEMIC CURVE
OUTBREAK OF DIARRHOEAL ILLNESS
ON A CONTAINER SHIP



The investigation team requested that all provisions obtained overseas (comprising fresh vegetables and fruit) be placed into quarantine bins for destruction, and that water tanks be emptied. An information sheet was provided to the company with contact numbers, should they become ill. Advice about avoidance of foodborne and waterborne illness was given, such as preventing transmission by ice-making facilities or inadequately washed uncooked vegetables or fruit.

CONCLUSION

While the investigation of an outbreak of diarrhoeal illness on a container ship arriving from overseas was an unusual occurrence, the potential for further occurrences exists. The extent to which outbreaks of gastroenteritis or other illness occurs on ships such as these, and are not notified to quarantine authorities, is unknown.

We could not positively identify a causative organism from stool, food or water samples, and the most likely diagnosis was that of a viral food or waterborne illness. However, because of the potential for the transmission of a quarantinable illness, a thorough investigation was considered necessary, despite the subsequent negative microbiological findings.

Because of the need to detain all crew members aboard a ship until a preliminary investigation is complete, rapid investigation and clinical decision-making is required in outbreak investigations on ships or aircraft. Guidelines prepared by the US Centers for Disease Control, in addition to the methods and questionnaires used in this investigation, may assist in investigations of this nature in the future.

ACKNOWLEDGMENT

The authors acknowledge the assistance of Trudi Coutts, Paul Paraskevopoulos, Greg Thomas and Kerry Chant in this investigation.

MONITORING TRAUMA OUTCOMES IN NSW

This article, by the NSW Trauma System Advisory Committee, outlines the rationale, objectives and development of the NSW Trauma System since its inception in 1988 and reports on methods devised to monitor the health outcomes of the system.

BACKGROUND

In November 1988, on the basis of strong professional support and clear evidence for what worked, the NSW Health Department endorsed the establishment of a network of regional trauma services that would improve patient care and outcomes[1]. The design of the system was based on the findings of clinical research indicating that an effective trauma system is based on:

- accurate pre-hospital triage;
- rapid transport of seriously injured patients to hospital; and
- a systematic response in hospitals to the reception and treatment of trauma.

In 1991 the Policy for Trauma Service was revised[2] to take account of earlier structural changes in NSW Health introduced in 1988. These changes involved reorganising the health care system into ten Health Areas and six rural Regions[3]. In 1993 the plan was updated to take account of the rural restructuring into Health Districts[4].

On March 29, 1992 the pre-hospital component of the NSW State Trauma Plan was activated in Sydney. To ensure the right patient is taken to the right hospital, ambulance officers use a set of assessment guidelines (trauma triage guidelines) to sort patients according to the presence or risk of serious injury. Patients with serious injury are transported directly to a major trauma service hospital, even if this means bypassing a local hospital. The following year (1993) an early trauma notification system was introduced in some localities of rural NSW.

NSW TRAUMA SYSTEM

The NSW Trauma System aims to improve the outcomes of trauma patients continuously through better integration and efficient use of pre-hospital and hospital resources across the State, the adoption of more effective approaches to trauma management, and the use of nationally and internationally accepted best practice guidelines.

This is being achieved through the:

- organisation and delivery of effective pre-hospital and hospital services, including efficient management of the linkages between and within these services;
- planning and provision of educational and skills maintenance programs for all staff involved in trauma care;
- monitoring and evaluating the core components of the system – ambulance services, hospital trauma services, local networks and the linkages between metropolitan and rural networks – and providing feedback continuously to improve the performance of the system;
- review of aspects of related services that have an impact on the care and outcomes of trauma patients, such as medical retrieval services;
- reporting on recent advances and emerging standards in trauma care;
- identification of issues for, and participation in, injury prevention programs;
- ongoing formulation of policy regarding trauma services in NSW; and
- evaluation of health outcomes.

The NSW Trauma System now operates within Local Area Networks bounded by existing Health Areas and Rural Networks that cover several Health Districts. Hospitals within each network provide trauma services appropriate to their designated role. A System Advisory Committee co-ordinates the system-wide organisation of trauma services and reviews the performance of the system.

MONITORING HEALTH OUTCOMES

Consistent with recommendations of the National Road Trauma Advisory Committee Report on Trauma Systems, a program is being implemented to monitor the performance of core components of the NSW Trauma System[5]. This program builds on the work done on the initial evaluation of the metropolitan component of the NSW State Trauma Plan and draws on developments in system-wide quality assurance put forward by the American College of Surgeons and San Diego County trauma system[6].

Monitoring involves two separate but concurrent review processes:

- Clinical audit – a confidential process that clinicians undertake at hospital, network and system levels and involves the detailed review of cases according to certain criteria.
- Statistical review – reporting on aggregate data to evaluate the process of trauma care from the pre-hospital phase to discharge from hospital or rehabilitation.

Major issues addressed by the monitoring program will include[7] assessing the appropriateness of care (comparing the process of care against an evidence-based 'gold standard'), assessing performance of the trauma system (concentrating on issues of efficiency), and assessing the outcomes of trauma care (examining mortality and quality of life after injury). The monitoring program will involve both the urban and rural components of the system and take account of statutory provisions for confidentiality of the Local Area, Rural Network, and State-wide quality assurance processes.

TRAUMA INDICATORS

National and international standards and performance criteria for trauma systems underpin the proposed trauma indicators. Specific reference has been made to the American College of Surgeons' guidelines for trauma systems, Royal Australasian College of Surgeons' guidelines and the National Trauma Systems Guidelines of the National Road Trauma Advisory Council (NRTAC) released in October 1993. Consideration has also been given to other indicators recommended by the Australian Council of Healthcare Standards and by the professional colleges.

Monitoring the outcomes of trauma care will occur at each level of the system from hospital to Local Area Network and State-wide (system-wide).

The indicators outlined here focus on system-wide monitoring in Health Areas and are designed to answer a series of questions about the quality and outcomes of

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TABLE 2

INITIAL LIST OF SYSTEM-WIDE TRAUMA INDICATORS FOR IMPLEMENTATION IN THE SYDNEY HEALTH AREAS 1994

Phase of care	Data items	Data sources	Trauma indicators
1 **Pre-hospital phase**			
1.1 How many trauma patients are triaged to attend a major trauma service hospital?	ambulance triage category	Ambulance Service	*Bypass caseload* number and percentage of trauma cases triaged 'serious-bypass', and 'serious-major trauma service nearest hospital'
1.2 How many trauma patients are triaged as 'dying' and transported to the nearest hospital?	ambulance triage category	Ambulance Service	*Dying caseload* number of trauma cases triaged 'dying' transported to urban trauma service hospitals and major trauma service hospitals.
1.3 How accurate are ambulance officers' triage decisions?	ambulance triage category Injury Severity Score (ISS)	Ambulance Service Trauma Registry ISS mapping of Inpatient Statistics Collection (ISC)	*Over-triage rate* percentage of patients triaged 'serious' or 'dying' whose ISS <15 *Sensitivity of guidelines* percentage of patients with ISS >15 who were triaged 'serious' or 'dying'
1.4 Do trauma patients selected to bypass urban trauma service hospitals reach hospital promptly?	pre-hospital treatment and transport times	Ambulance Service	*Scene time – bypass cases* percentage of patients spending less than 20 minutes at scene of accident *Transport time – bypass cases* percentage of bypass patients arriving at hospital within 30 minutes of leaving the scene of accident *Pre-hospital treatment time – bypass cases* percentage of bypass patients arriving at hospital within 60 minutes
1.5 Do all ambulance transports for trauma reach hospital promptly?	pre-hospital treatment and transport times	Ambulance Service	*Response time* percentage of ambulance arriving at scene of accident within 10 minutes of the call for assistance *Scene time* percentage of patients spending less than 20 minutes at scene of accident *Pre-hospital treatment time* percentage of patients arriving at hospital within 60 minutes
2 **Major trauma service hospital Emergency Department**			
2.1 What is the source of referral for major trauma victims?	source of referral ISS	Trauma Registry	*Major trauma caseload* number of trauma patients ISS >15 treated at major trauma service hospitals by source of referral
2.2 How accurate are triage decisions that initiate a trauma response?	nurse triage decision ISS	Trauma Registry	*Appropriateness of trauma response* percentage of trauma patients with ISS >15 assessed by organised trauma response
2.3 How prompt is the trauma response?	time of arrival at ED time trauma call made	Trauma Registry	*Speed of trauma response* percentage of trauma calls initiated within 5 minutes of patient arriving at ED
3 **Major trauma service hospital Definitive care**			
3.1 Is definitive care organised promptly for trauma patients?	clinical diagnosis time of injury time taken to operative suite	Trauma Registry	*Time to definitive care for patients with:* **Head injury requiring craniotomy** percentage taken to operative suite within two hours of injury **Abdominal bleeding requiring surgical correction** percentage taken to operative suite within four hours of injury **Open fractures requiring debridement** percentage taken to operative suite within six hours of injury
4 **Patient outcomes**			
4.1 Are trauma deaths concentrated in major trauma service hospitals?	vital status locality of death	Area Network trauma death register	*Site of trauma death* percentage of inhospital deaths occurring in major trauma service hospitals
4.2 What is the potentially avoidable death rate?	West's preventability criteria[8]	Statistical summary of Clinical Audit	*Potentially avoidable death rate* percentage of deaths from intra-thoracic and abdominal injury operated on within six hours of arrival at hospital
4.3 What percentage of severely injured patients who were salvageable and survived?	vital status ISS/AIS (Wesson's criteria)[9]	Trauma Registry ISS mapping of ISC	*Trauma salvageable rate* percentage of patients with severe but salvageable injuries who survive

ISS/AIS = Injury Severity Score/Abbreviated Injury Scale: clinical scoring systems that assess the severity of physical injuries.
Prepared by: NSW Trauma System Advisory Committee, June 1994

PUBLIC HEALTH ABSTRACTS

Professor James S. Lawson, Professor and Head of the School of Health Service Management at the University of NSW, has prepared the following public health items from the literature.

IS DIAGNOSTIC ULTRASOUND SAFE?

Diagnostic ultrasound is being used in an increasing number of ways. It is particularly useful in the practice of obstetrics, and it is pleasing to report that the use of ultrasound is safe from the point of view of overheating the unborn foetus in particular. Exposures to ultrasound resulting in temperatures less than 38.5 degrees Centigrade can be used without reservation.

Barnett SB, Kossoff G and E, Marshall J. *Med J of Aust* 1994; 160:33-37.

GOING BLIND IN AUSTRALIA

Going blind in Australia is overwhelmingly a problem of older people, with 85 per cent of those who are legally blind being 50 years of age and over. There are three main issues:

- most visually impaired people retire with relatively normal eyesight and with no more than presbyopia (loss of visual acuity as a consequence of aging);
- those with visual impairment very often have eye disease and are not merely suffering from old age; and
- the major eye disorders affecting the older population, such as cataract, glaucoma and age-related macular degeneration, are all progressive and if untreated will cause visual impairment and eventual blindness.

Early detection and treatment can effectively control most of these disorders.

Livingston PM, Guest CS and Taylor HR. *Med J of Aust* 1994; 160:3-4

PROGRESS IN POLIO ERADICATION

Few issues in public health policy have generated a longer controversy than the choice between oral and inactivated polio virus vaccines. Experts in the field have concluded that the combined approach could be usefully evaluated in countries (such as Australia) with high vaccination coverage and that have achieved, or are on the verge of achieving, elimination of natural infection. The use of sequential schedules of two doses of inactivated polio virus vaccine followed by two or more doses of polio virus vaccine could be considered, particularly in countries where vaccine-associated poliomyelitis has become a major concern but where the threat of importation of wild polio virus remains. In most countries an inactivated polio virus vaccine-only schedule is a realistic option only when natural infection has apparently been eliminated globally.

Patriarca PA, Foege WH and Swartz TA. *Lancet* 1993; 1461-1463

HIGH-SUGAR DIET AND CHILDHOOD BEHAVIOUR

Both dietary sucrose (refined sugar) and the sweetener aspartame have been considered a possible cause of hyperactivity and other behaviour problems in children. An American prospective study among small numbers of children (about 25 in each of two groups) has clearly shown that even when intake of sucrose and aspartame exceeds typical dietary levels neither dietary sucrose nor aspartame affects children's behaviour or cognitive function. One group contained normal pre-school children and the other consisted of children who were recruited through advertisements and were allegedly sensitive to sugar.

Wolraich ML, Lindgren SD, Stumbo PJ et al. *New Eng J of Med* 1994; 330:301-7.

PEPTIC ULCER DEATHS IN AUSTRALIA

Johanna Westbrook and Louise Rushworth of the NSW Health Department have examined the mortality due to peptic ulcer in Australia between 1953 and 1989. Their study shows that deaths are associated with particular periods of birth. For example, women born between 1898 and 1913 have a greater risk of dying from duodenal ulceration than preceding or subsequent generations. This effect has been found in other countries. There is likely to have been an environmental problem for these women, perhaps the stress associated with World War I and the economic depression of the 1930s.

More than 800 people die each year in Australia as a result of peptic ulcer disease. The vast majority of peptic ulcer deaths occur in the elderly.

Westbrook JI and Rushworth RL. *Int J of Epidemiol* 1993; 22:1085-1092.

Monitoring trauma outcomes

► *Continued from page 63*

trauma care. Other review processes operate at the network and hospital levels. Some of these, such as clinical audit of deaths, will provide statistical summaries for system-wide review.

Information on trauma indicators is presented in Table 2 as follows:

- phase of care being monitored;
- questions to be answered about the appropriateness, performance or outcomes of the relevant components functioning at this phase;
- data requirements to provide outcome information; and
- health outcome indicators used to monitor this phase of care.

EDITOR'S NOTE

In June 1994 the NSW Health Department released the document New South Wales Trauma System Policy Review 1994, on which this report is based.

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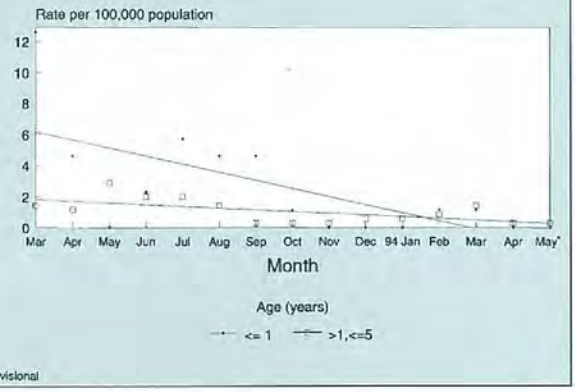
INFECTIOUS DISEASES

FIGURE 3

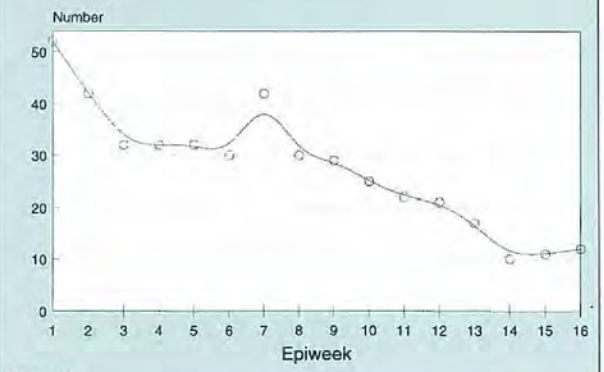
HIB, NSW, <= FIVE YEARS OF AGE MARCH 1993-MAY 1994



* Provisional

FIGURE 4

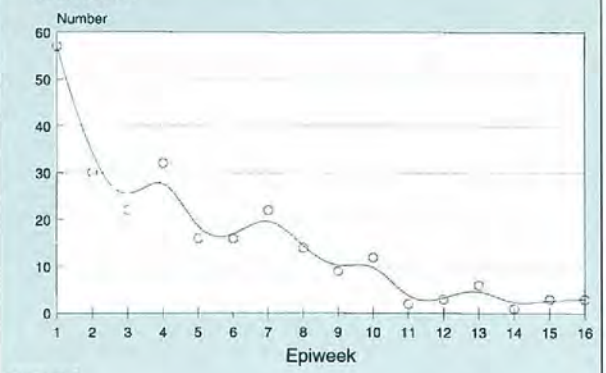
PERTUSSIS NOTIFICATIONS, NSW, 1994 BY EPIWEEK



Source: IDSS

FIGURE 5

MEASLES NOTIFICATIONS, NSW, 1994 BY EPIWEEK



Source: IDSS

NOTIFICATIONS

HAEMOPHILUS INFLUENZAE TYPE B (HIB)

A total of 22 notifications for Hib disease was received for the period January to May 1994, a rate of 0.85/100,000 population. This compares with a notification rate of 3.80/100,000 population for 1992 and 2.18/100,000 for 1993. For children less than five years of age, the notification rate has decreased from 24.1/100,000 population in 1993 to 6.49/100,000 population this year. This decrease is directly attributable to the immunisation program for children aged less than five years.

PERTUSSIS (WHOOPING COUGH)

The decrease in notifications continues (Figure 4). The notification rate for pertussis for the period January to May 1994 was 17.4/100,000 population, a decrease from 20.1 for the first four months of the year.

Nineteen per cent of notifications were for children aged less than five years. A further 40 per cent of notifications were for school-aged children. These proportions have not changed since the previous reporting period. The mean age for notifications was 22.2 years (range one month to 87 years).

Four Local Government Areas (LGAs) – Sutherland, Ballina, Lismore and Grafton – have reported 20 or more notifications this year.

MEASLES

Notifications for measles continue to decrease (Figure 5). The notification rate for the period January to May 1994 was 9.76/100,000 population. This compares with a rate of 11.7 for the first four months of the year.

Four LGAs – Blacktown, Blue Mountains, Lismore and Coffs Harbour – have reported 10 or more notifications.

The mean age for notifications was 8.3 years (range three months to 64 years). Sixteen per cent of notifications were for neonates and infants (≤ one year of age). Fifty-nine per cent of notifications were for children over the age of five years, while 25 per cent were for people 12 years and older.

Measles is notifiable by medical practitioners, laboratories and hospital chief executive officers under the Public Health Act 1991. For the period January to May, 63 per cent of notifications were made by medical practitioners, 15 per cent by hospital chief executive officers, 13 per cent by laboratories and 9 per cent by other agencies (e.g. childcare facilities).

LEGIONNAIRES' DISEASE

A total of 13 notifications for Legionnaires' disease has been received this year, a rate of 0.5/100,000 population. Only two notifications were received for April 1994. Three deaths were reported to the end of May.

Seven isolates of Legionella have been recorded on the Infectious Diseases Surveillance System – five for *L pneumophila*, one for *L longbeachae* and one for *L micdadii*.

GONORRHOEA

A total of 135 notifications for gonorrhoea has been received this year, a rate of 5.3/100,000 population. This represents a 20 per cent decrease over the same period last year. Only 32 per cent of notifications were for a specific site.

MENINGOCOCCAL DISEASE

Twenty-five notifications for meningococcal disease have been received this year, a rate of 0.17/100,000 population. This represents a 29 per cent decrease over the same period last year.

Since July 1993, bacterial meningitis due to meningococcus has exceeded that due to Hib (Figure 6).

INFLUENZA SURVEILLANCE

During May data on GP sentinel surveillance were received on approximately 16,000 patient visits a week to 110 doctors through nine Public Health Units (PHUs). The percentage of total consultations for influenza-like illness remained fairly constant in most areas of NSW, with the exceptions of Western Sydney and Wentworth (WSW) which increased to 3.7 per cent, and Northern Districts (ND) which increased to 1.8 per cent. However, the average for the State is still less than 2 per cent, similar to levels at the same time last year. A level of 10 per cent may be considered an epidemic.

Data on school absentee rates are now being received from five PHUs covering more than 9,000 students in 13 schools around the State. No clear upward trend is yet discernible.

Laboratory reports show no increase this year in influenza diagnoses. Only six positive serology samples (including both influenza A and B) have been reported in the past two months by The Prince of Wales laboratory and none at Westmead ICPMR. There have been only two viral isolates of influenza A at Westmead ICPMR.

SENSITIVITY OF GONOCOCCAL ISOLATES IN SYDNEY AND NSW, JANUARY-MARCH 1994

The Neisseria Reference Laboratory at The Prince of Wales Hospital examined a total of 144 isolates of Neisseria gonorrhoeae in the first quarter of 1994, a similar number to that examined in 1993 (157) and 1992 (146).

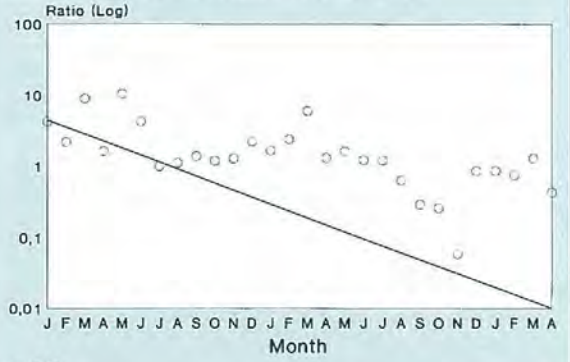
Antibiotic resistance is little different from that observed in the corresponding period in 1993, with about 40 per cent of strains having one form of penicillin resistance. The percentage of stains chromosomally resistant to penicillin continues to be high, with about 32 per cent of all isolates showing this characteristic.

Little resistance to other antimicrobial agents was seen in this group of isolates. All strains were sensitive to ceftriaxone and spectinomycin. Only three strains (2 per cent) showed high level resistance to the tetracyclines. No strains with high-level quinolone resistance were detected.

The male:female ratio of infection was 6:1, a distribution of disease seen for quite some time. Strains with decreased sensitivity to penicillin now comprise a much higher proportion of isolates from males. These appear to have displaced the fully sensitive isolates of A/S class Wt/IB2 which predominated in male patients for a number of years, although strains of this type are still circulating.

FIGURE 6

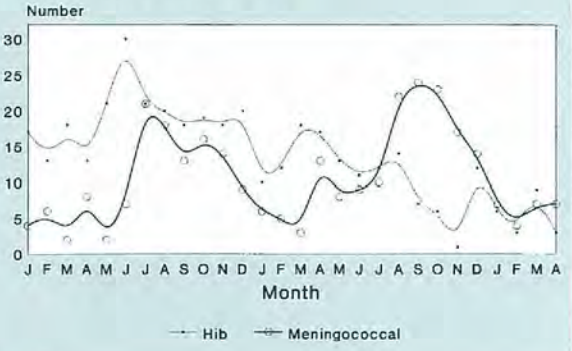
BACTERIAL MENINGITIS NOTIFICATIONS HIB: MENINGOCOCCAL, JANUARY 1992-APRIL 1994



Source: IDSS

FIGURE 7

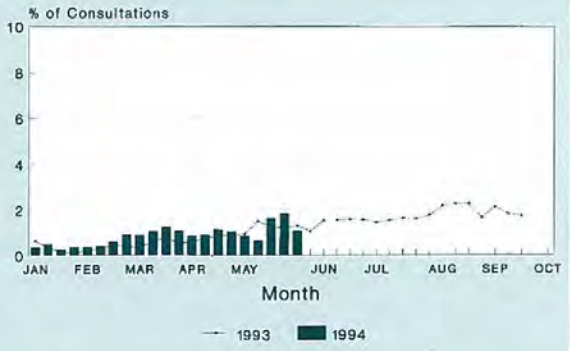
BACTERIAL MENINGITIS NOTIFICATIONS NSW, JANUARY 1992 - APRIL 1994



Source: IDSS

FIGURE 8

"INFLUENZA-LIKE ILLNESS" NSW



Source: NSW Sentinel GP Network

TABLE 3

INFECTIOUS DISEASE NOTIFICATIONS FOR 1994
FOR NOTIFICATIONS RECEIVED BY MAY 31, 1994
BY MONTH OF ONSET

Condition	Feb	Mar	Apr	May	Total
Adverse event after immunisation	5	1	4	–	10
AIDS	32	45	21	5	103
Arboviral infection	64	78	46	36	224
Foodborne illness (NOS)	6	5	64	2	77
Gastroenteritis (instit.)	11	9	47	3	70
Gonorrhoea	26	34	29	10	99
H influenzae epiglottitis	1	5	1	3	10
H influenzae infection (NOS)	1	1	1	1	4
H influenzae meningitis	–	2	1	1	4
H influenzae septicaemia	1	1	1	–	3
Hepatitis A – acute viral	50	49	46	22	167
Hepatitis B – acute viral	6	1	9	3	19
Hepatitis B – unspecified	291	351	281	135	1,058
Hepatitis C – acute viral	1	–	–	–	1
Hepatitis C – unspecified	709	674	526	249	2,158
Hepatitis D – unspecified	2	–	1	1	4
Hepatitis – acute viral (NOS)	1	–	–	–	1
HIV infection	47	47	28	28	150
Hydatid disease	1	1	–	–	2
Legionnaires' disease	4	4	7	–	15
Leptospirosis	2	2	–	2	6
Listeriosis	2	–	–	–	2
Malaria	25	18	13	3	59
Measles	71	34	13	10	128
Meningococcal infection (NOS)	–	–	1	1	2
Meningococcal meningitis	3	5	6	2	16
Meningococcal septicaemia	1	2	1	4	8
Mycobacterial atypical	35	35	8	1	79
Mycobacterial infection (NOS)	7	15	14	4	40
Mycobacterial tuberculosis	23	13	12	1	49
Pertussis	131	109	72	73	385
Q fever	20	17	14	3	54
Rubella	7	4	1	2	14
Rubella – congenital	1	–	–	–	1
Salmonella (NOS)	73	77	55	24	229
Salmonella bovis morbificans	3	2	2	1	8
Salmonella typhimurium	56	54	46	5	161
Syphilis	85	103	81	25	294
Tetanus	–	–	1	1	2
Typhoid and paratyphoid	6	3	2	–	11
Total	1,811	1,801	1,455	651	5,747

TABLE 4

SUMMARY OF NSW INFECTIOUS DISEASE NOTIFICATIONS
MAY 1994

Condition	Number of cases notified			
	Period		Cumulative	
	May 1993	May 1994	May 1993	May 1994
Adverse reaction	2	–	9	14
AIDS	23	5	168	140
Arboviral infection	28	36	561	250
Brucellosis	1	–	2	–
Cholera	–	–	–	–
Diphtheria	–	–	–	–
Foodborne illness (NOS)	17	2	66	93
Gastroenteritis (instit.)	64	3	103	71
Gonorrhoea	24	10	170	135
Haemophilus influenzae type b	13	5	70	27
Hepatitis A	66	22	294	218
Hepatitis B	303	138	1,520	1,398
Hepatitis C	497	249	2,260	2,724
Hepatitis D	1	1	4	5
HIV infection	43	28	245	191
Hydatid disease	–	–	–	2
Legionnaires' disease	7	–	39	18
Leprosy	–	–	–	–
Leptospirosis	1	2	9	7
Listeriosis	–	–	4	4
Malaria	12	3	79	83
Measles	42	10	256	281
Meningococcal infection	8	7	35	33
Mumps	1	–	1	1
Mycobacterial tuberculosis	28	1	161	82
Mycobacterial – atypical	32	1	176	121
Mycobacterial infection (NOS)	2	4	11	43
Pertussis	30	73	211	561
Q fever	35	3	162	79
Rubella	28	2	177	23
Salmonella infection (NOS)	–	30	511	508
Syphilis	81	25	294	385
Tetanus	50	1	4	2
Typhoid and paratyphoid	2	–	18	12
Typhus	–	–	–	–
Viral haemorrhagic fevers	–	–	–	–
Yellow fever	–	–	–	–

SALMONELLA

Salmonella typhimurium phage type 9

The Microbiological Diagnostic Unit (MDU), University of Melbourne, in association with the National Salmonella Surveillance Scheme has advised of a cluster of eight notifications of *Salmonella typhimurium* phage type 9 between May 6 and May 25 from five PHUs. This follows notification of an outbreak of 33 cases of S. typhimurium phage type 9 in January and February, seven of which were traced to a takeaway food outlet in the Central Sydney Area.

Salmonella subsp. 1 ser 16:lv:-

MDU has also advised of a cluster of five notifications of S. subsp. 1 ser 16:lv:- between April 13 and April 22 from three PHUs. Similar clusters have been notified in Queensland and Victoria. Investigations in Victoria have suggested a possible association with a brand of coconut. Previous veterinary isolations in Queensland have been associated with poultry layers and associated environments.

HEPATITIS E IN AUSTRALIA

Mark J Ferson, Eastern Sydney Public Health Unit
Peter W Robertson, Serology Laboratory, The Prince of Wales Hospital

The hepatitis E virus (HEV) is a recently discovered cause of acute hepatitis, which is transmitted by the faecal-oral route. The infection is marked by acute hepatitis after an incubation period of 20-40 days. There is no carrier state. Hepatitis E infection during pregnancy results in a high case-fatality rate. The virus is the most common cause of acute hepatitis in adults in Asia and Africa, and has been associated with large water-borne epidemics.

Cases described from industrialised countries have occurred in travellers returning from endemic regions. The first Australian case of acute hepatitis E was reported in Victoria in a child who had recently arrived from Pakistan[1]. The diagnosis was confirmed by the presence of specific IgM in the patient's serum, detection by electron microscopy of

compatible viral particles in the faeces and positive results for HEV nucleic acids in serum and faeces using the polymerase chain reaction. More recently, the diagnosis was confirmed in a Northern Territory woman who denied recent travel outside Australia; this case suggests HEV might be endemic in tropical northern Australia[2].

In a preliminary study to determine if HEV is a cause of acute hepatitis in Sydney, the Serology Laboratory at The Prince of Wales Hospital tested for HEV antibodies in 64 consecutive sera from patients with acute hepatitis. Four hepatitis A virus (HAV) IgM-positive and 60 HAV IgM-negative sera were tested using a commercial HEV IgG enzyme immunoassay ('HEV ELISA', Diagnostic Biotechnology, Singapore). All sera were negative for HEV-specific antibodies, suggesting HEV is unlikely to be an important cause of acute viral hepatitis in this country. However, hepatitis E should be considered in patients presenting with acute hepatitis who have recently returned from Asia, Africa or Mexico, and in whom hepatitis A, B and C, Epstein-Barr virus and cytomegalovirus infections have been excluded.

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1. Moaven LD, Fuller AJ, Doultree JC et al. A case of acute hepatitis E in Victoria. *Med J Aust* 1993; 159:14-125.
2. Bowden F, Krause V, Burrow J et al. Hepatitis E in the Northern Territory: a locally acquired case and preliminary evidence suggesting endemic disease. *Commun Dis Intell* 1994; 18:2-3.

NON-NOTIFIABLE STD SURVEILLANCE

During the 1980s *Chlamydia trachomatis* became the most common bacterial STD in North America and Europe, partly due to the improved control of gonorrhoea and syphilis. Sexual health clinics in NSW have noted a substantial decrease in diagnoses of chlamydia infection over the past decade. Comparison of the incidence of notifiable and non-notifiable STDs from NSW surveillance data is complicated by three factors:

- notifiable disease surveillance may be more complete at this stage, as gonorrhoea and syphilis are notifiable by all laboratories and (syphilis only) medical practitioners and hospitals, while for non-notifiable disease surveillance, not all areas of NSW are serviced by sexual health centres (SHCs) and not all SHCs report non-notifiable STDs;
- non-notifiable STD surveillance is subject to more reporting delay; and
- different methods of surveillance may draw from different populations.

However, considering about 10 per cent of NGU is due to Chlamydia infection, it is clear this organism is still a significant public health problem in NSW. In the US Chlamydia infection has been found to be more common among women than men, but this is not reflected in NSW data.

CIGUATERA OUTBREAK, NSW, 1994

Edward Kraa, Senior Policy Adviser, NSW Health Department
Brett Campbell, Food Surveillance Officer,
Central Sydney Public Health Unit

Public Health Units are investigating an outbreak of ciguatera poisoning associated with Queensland spanish mackerel. Initial notification was of four cases from a party of six in the North Sydney Area. The cases had eaten home-cooked fish bought from a retail outlet at Sydney Fish Markets, Pyrmont on May 21. Two cases sought hospital treatment. Subsequently three further cases were notified from the Central Sydney Area. These cases had bought identical fish from the same retail outlet on the same day. All PHUs were notified and asked to undertake active surveillance through Accident and Emergency Units. This surveillance disclosed two further cases in the Hunter Area which had not been previously diagnosed had also bought the same fish from the same location on the same date.

Investigation at the retail outlet revealed three further cases among its staff. All cases were found to have consumed cutlets from one 21 kilogram spanish mackerel which was part of a shipment of spanish mackerel from Queensland. The distribution of the shipment to retail outlets in NSW was traced and action undertaken to ensure no fish remained on sale.

The Department issued a media release advising people who had bought spanish mackerel and then become ill to contact their PHU. One couple who had frozen cutlets of the implicated fish contacted their PHU and thereby avoided illness. Thirty additional cases were notified as a result of the press release.

Ciguatera is a naturally occurring fish toxin (lipid soluble polyether compounds) that has the potential to affect a wide variety of tropical reef fish sporadically. Ciguatera toxins are derived from dinoflagellates *(Gambierdiscus toxicus)* which are consumed by marine organisms. The toxins are transferred from the benthos to herbivorous species and then to carnivorous fish via marine food chains. The toxin becomes more bioconcentrated as it moves up the food chain and poisoning is usually associated with consumption of larger predatory reef fish such as barracuda, coral trout, grouper and spanish mackerel. Fish appear to be protected from the toxin. A previous outbreak in NSW in 1987 involving 64 cases was also traced to Queensland spanish mackerel.

The toxin is tasteless and heat stable. Cooking does not render the fish safe for consumption.

Initial symptoms of ciguatera poisoning are usually gastrointestinal (nausea, vomiting, watery diarrhoea and abdominal cramps) and develop 3-12 hours after consumption of fish. They are usually followed by development of neurological symptoms including paraesthesia, arthralgia, myalgia, dental pain, convulsions, muscular paralysis, audio and visual hallucinations, vertigo, severe headache, diaphoresis, loss of short-term memory and temperature perception reversals. Skin rashes on the limbs, neck and trunk often occur within a few days to a few weeks after consumption. Long-term disability is reported in severe cases with loss of energy, arthralgia, myalgia, headache and pruritus.

Consumption of alcohol can exacerbate symptoms and should be avoided even months after apparent recovery from poisoning. Studies have reported increased severity of illness following further exposure and an increase of the notification rate with age which suggests a possible accumulation of toxin in the human organism. Cases should be advised to avoid consumption of reef fish for 6-12 months.

Intravenous mannitol has been reported as being successfully used for treatment, as reported in the *Med J Aust* 1989, 151:77-80; 1990, 153:306-307; and 1992, 157:567.

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1. Capra MF, Cameron J. Ciguatera Poisoning, in *Toxins and Targets*, ed Watters D et al 1992.
2. Fleming LE. A pilot study of a new ELISA test for ciguatoxin in humans. *Bull Soc Pathol Exot* 1992; 85: 508-9.
3. Gillespie NC et al. Ciguatera in Australia. *Med J Aust* 1986; 145:584-590.
4. Lewis RJ. Ciguatoxins are potent ichthyotoxins. *Toxicon* 1992; 30: 207-11.

TABLE 5

INFECTIOUS DISEASE NOTIFICATIONS FOR 1994
FOR NOTIFICATIONS RECEIVED BY MAY 31, 1994
BY PUBLIC HEALTH UNIT

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NC	ND	WNS	CW	SW	SE	U/K	Total
Adverse event after immunisation	–	–	–	2	4	3	–	1	–	–	1	–	–	–	2	1	–	14
AIDS	25	5	47	4	23	13	10	2	5	1	3	1	–	1	–	–	–	140
Arboviral infection	–	3	–	–	–	–	6	2	4	24	158	31	11	1	8	2	–	250
Foodborne illness (NOS)	1	10	7	11	13	7	5	4	1	1	20	–	2	8	2	1	–	93
Gastroenteritis (Instit.)	12	1	–	3	3	19	–	1	–	1	–	1	–	30	–	–	–	71
Gonorrhoea	16	9	53	5	7	1	6	3	4	4	2	7	10	2	4	2	–	135
H. influenzae epiglottitis	1	2	–	–	1	2	2	2	2	–	–	–	–	–	–	–	–	12
H. influenzae infection (NOS)	–	–	–	–	1	–	1	2	1	–	1	–	–	–	–	–	–	6
H. influenzae meningitis	–	–	–	1	1	–	1	–	–	–	–	–	–	2	–	–	–	5
H. influenzae septicaemia	–	–	–	–	1	–	–	–	–	–	2	–	1	–	–	–	–	4
Hepatitis A – acute viral	10	7	23	23	21	1	15	2	3	12	23	28	3	12	35	–	–	218
Hepatitis B – acute viral	4	1	9	2	1	–	–	–	–	1	3	1	2	1	–	3	–	28
Hepatitis B – unspecified	189	169	134	325	221	11	184	18	23	35	25	12	5	6	11	2	–	1,370
Hepatitis C – acute viral	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	2
Hepatitis C – unspecified	317	171	461	249	233	60	265	83	111	166	340	55	13	71	67	60	–	2,722
Hepatitis D – unspecified	–	1	–	–	–	–	1	–	–	–	3	–	–	–	–	–	–	5
Hepatitis, acute viral (NOS)	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	2
HIV infection	33	11	79	14	9	3	8	2	2	5	1	–	–	–	–	–	29	191
Hydatid disease	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Legionnaires' disease	2	2	1	4	3	–	3	–	2	–	–	–	–	1	–	–	–	18
Leptospirosis	1	–	–	–	–	–	–	–	–	2	3	–	–	–	1	–	–	7
Listeriosis	–	–	1	–	–	–	–	–	1	1	–	–	1	–	–	–	–	4
Malaria	11	5	10	5	6	1	19	1	4	1	7	2	–	1	4	6	–	83
Measles	24	5	10	15	21	25	18	3	8	21	69	27	21	11	–	3	–	281
Meningococcal infection (NOS)	–	1	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	3
Meningococcal meningitis	2	3	2	2	3	1	–	2	–	2	1	–	–	1	1	1	–	21
Meningococcal septicaemia	–	2	–	1	1	–	–	1	–	2	2	–	–	–	–	–	–	9
Mumps	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Mycobacterial atypical	25	8	39	4	6	4	15	3	–	7	6	1	–	1	2	–	–	121
Mycobacterial infection (NOS)	11	–	3	–	1	1	17	1	–	2	3	–	1	–	3	–	–	43
Mycobacterial tuberculosis	12	18	6	19	12	1	1	1	3	4	3	1	–	–	1	–	–	82
Pertussis	12	36	42	27	52	17	32	8	29	37	224	11	13	13	2	6	–	561
Q fever	2	–	–	–	1	–	–	–	–	9	14	23	27	–	3	–	–	79
Rubella	–	–	2	–	5	1	4	1	–	–	4	4	–	–	2	–	–	23
Rubella – congenital	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
Salmonella (NOS)	15	26	25	29	24	8	30	11	7	16	44	13	16	9	13	3	–	289
Salmonella bovis morbificans	–	1	1	1	1	1	2	–	–	2	–	–	–	–	–	–	–	9
Salmonella typhimurium	18	19	12	6	44	8	25	10	14	15	3	7	4	8	16	1	–	210
Syphilis	68	28	103	50	25	3	25	3	5	1	19	16	31	4	4	–	–	385
Tetanus	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	2
Typhoid & paratyphoid	3	2	2	–	–	1	–	–	–	–	–	3	–	–	–	1	–	12
Total	817	548	1,072	806	747	192	696	167	230	382	985	247	162	183	182	94	29	7,539

TABLE 6

SURVEILLANCE OF NON-NOTIFIABLE SEXUALLY TRANSMITTED DISEASES
JANUARY-MAY 1994
(Diagnoses from sexual health centres unless otherwise stated in footnote)

* First diagnosis; 1. 01/01/94-31/03/94; 2. 01/01/94-31/01/94; 3. 01/01/94-30/04/94;
4. No data received for 1994; 5. 01/01/94-31/05/94 6. 01/01/94-28/02/94
7. No SHC in Region; 8. Laboratory and SHC data 01/01/94-31/05/94.

AHS Infection		CSA[1]	SSA[2]	ESA[3]	SWS[2]	WSA[4] + WEN	NSA[5]	CCA[5]	ILL[6]	HUN[8]	NC[5]	ND[5]	WNS[3]	CW[7]	SW[8]	SE[4]	Total
Chlamydia trachomatis	Male	–	–	23	1	–	1	–	2	6	–	4	6	–	–	–	43
	Female	1	–	27	1	–	1	1	2	10	1	11	12	–	4	–	71
	Total	**1**	**–**	**50**	**2**	**–**	**2**	**1**	**4**	**16**	**1**	**15**	**18**	**–**	**4**	**–**	**114**
Donovanosis	Male	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Female	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Total	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
*Genital herpes	Male	2	1	108	–	–	7	7	–	12	2	2	1	–	1	–	143
	Female	1	3	49	–	–	4	4	–	9	1	6	2	–	2	–	81
	Total	**3**	**4**	**157**	**–**	**–**	**11**	**11**	**–**	**21**	**3**	**8**	**3**	**–**	**3**	**–**	**224**
*Genital warts	Male	7	6	278	19	–	12	21	11	57	16	4	5	–	2	–	438
	Female	5	6	134	9	–	10	10	4	18	6	15	8	–	2	–	227
	Total	**12**	**12**	**412**	**28**	**–**	**22**	**31**	**15**	**75**	**22**	**19**	**13**	**–**	**4**	**–**	**665**
Nongonococcal urethritis	Male	2	1	215	12	–	5	18	5	27	9	6	5	–	2	–	307
	Female	–	–	–	–	–	2	–	–	–	–	–	2	–	2	–	6
	Total	**2**	**1**	**215**	**12**	**–**	**7**	**18**	**5**	**27**	**9**	**6**	**7**	**–**	**4**	**–**	**313**
Lymphogranuloma venereum	Male	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Female	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Total	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**

Abbreviations used in this Bulletin:
CSA Central Sydney Health Area, SSA Southern Sydney Health Area, ESA Eastern Sydney Health Area, SWS South Western Sydney Health Area, WSA Western Sydney Health Area, WEN Wentworth Health Area, NSA Northern Sydney Health Area, CCA Central Coast Health Area, ILL Illawarra Health Area, HUN Hunter Health Area, NC North Coast Health Region, ND Northern District Health Region, WNS Western New South Wales, CWR Central West Health Region, SWR South West Health Region, SER South East Health Region, OTH Interstate/Overseas, U/K Unknown, NOS Not Otherwise Stated.

Please note that the data contained in this Bulletin are provisional and subject to change because of late reports or changes in case classification. Data are tabulated where possible by area of residence and by the disease onset date and not simply the date of notification or receipt of such notification.