Presumptive summer influenza A: an outbreak on a trans-Tasman cruise

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Abstract

A number of recent reports from the Northern Hemisphere have drawn attention to the occurrence of summer outbreaks (May to August) of influenza A among cruise ship passengers and their contacts. In cases amongst passengers returning to Canada from Alaska, exposure appears to have occurred during the land-based Alaskan tour with illness developing during the subsequent cruise. A late summer outbreak of influenza A among passengers and crew on the return leg of a 14-day Sydney-New Zealand-Sydney cruise is reported in this article.*Commun Dis Intell* 2000:24;45-47.

Keywords: influenza A, outbreak, cruise ship, upper respiratory tract infection, surveillance

Introduction

Influenza A outbreaks have been reported from cruise ship passengers and contacts in the Northern Hemisphere.[1-3] In recent years, staff members of the South Eastern Sydney Public Health Unit (SESPHU) have worked together with companies operating regular international cruises out of Sydney to develop a routine program for surveillance of gastroenteritis and acute respiratory tract infection. Reporting by masters of vessels to this surveillance system is also designed to comply with the pratique or human health clearance requirements of the Quarantine Act administered by the Australian Quarantine and Inspection Service (AQIS) of the Department of Agriculture, Fisheries and Forestry Australia (AFFA). There are two components to this surveillance system, which is still being refined:

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1. *The end-of-cruise medical report, sent by facsimile 12-24 hours before the vessel is due to berth in Sydney.*

   In this report the ship's doctor provides information on deaths and medical disembarkations during the cruise, and the total numbers of attendances at the medical clinic by passengers and crew for acute diarrhoeal illness, upper respiratory tract infection (URTI), lower respiratory tract infection (LRTI) and pneumonia.

2. *A system for reporting suspected disease outbreaks at any time during the cruise by facsimile*.

   The surveillance system has been designed to detect potential outbreaks without imposing an unrealistic burden on ships' doctors or the SESPHU.

Outbreak of upper respiratory tract infection on Cruise ship A

Cruise ship A travels throughout the Pacific Islands, with an annual cruise to New Zealand. Voyages generally last 9-14 days. Personnel providing medical services on Cruise ship A maintain a spreadsheet which tallies daily attendances for gastroenteritis, URTI and LRTI. The cruise liner's administration has set an arbitrary level of 3% of the ship's population presenting ill with URTI as a trigger to alert health authorities of a potential outbreak.

On Day 11 of a Sydney-New Zealand-Sydney cruise operating during the first 2 weeks of February 2000, a report was received from the ship's doctor advising that the notional 3% threshold of the ship's complement affected by URTI had been exceeded, with many affected by sore throat and dry cough associated with fever in some instances. The Public Health Unit provided advice to the ship's medical staff concerning the collection and transportation of throat swabs for viral culture. These were collected in Sydney and delivered to the SEALS Virology Laboratory at Prince of Wales Hospital, Randwick. Of the 7 swabs collected, influenza A was identified in 2, with 1 isolate subtyped as H3N2. Blood was not collected for serology.

The end-of-cruise medical report indicated that 88 (8.0%) passengers and 20 (4.1%) crew, or 7.3% of the ship's total complement had attended the clinic for URTI during the cruise. This was the highest figure for URTI presentations since institution of the system for end-of-cruise medical reports in March 1998 (Figure1). When passenger attendances for URTI were analysed by day of cruise (Figure 2), it became apparent that the epidemic began 1 week into the cruise, after the ship had called at Milford Sound (Day 4), Dunedin (Day 6) and Christchurch (Day 7) on New Zealand's South Island. The epidemic peaked on Day 12 when 21 passengers and crew presented to the clinic with URTI. There were no presentations during the cruise for LRTI or pneumonia, nor any deaths, which could be attributed to influenza or its complication. Although

Figure 1. Per cent of ships' complement attending clinic for URTI on Cruise ship A, by cruise number, March 1998 to February 2000

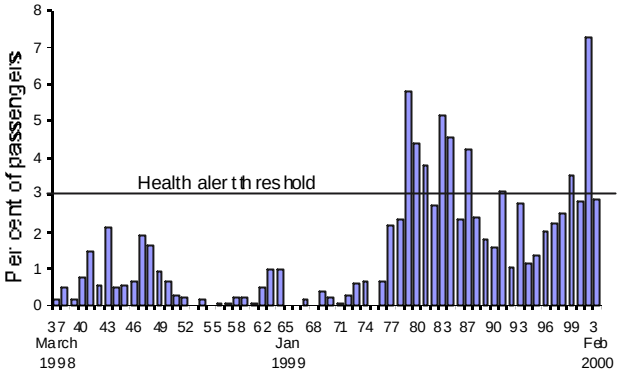
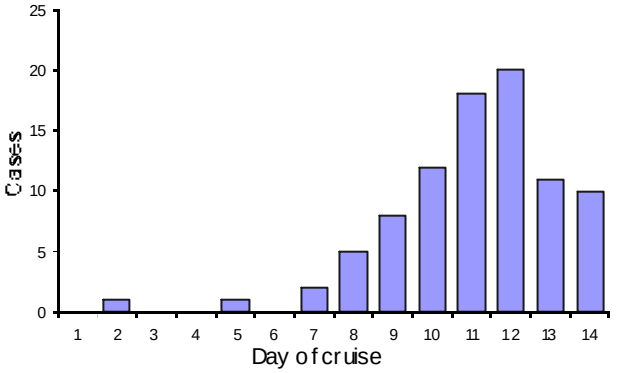


Figure 2. Number of passenger presentations to clinic for URTI on Cruise ship A, by day of cruise, February 2000



there were 2 cases with URTI that occurred on Days 2 and 5 of the cruise, the rapid evolution of the outbreak during the second week of the cruise suggests transmission following common exposure among a number of people, rather person-to-person transmission from 1 index case on the cruise ship. No information was available about clustering among co-travellers. It was not possible to ascertain whether previous cruises in which illness rates exceeded the 3% cut-off were due to influenza or another common aetiological agent.

Contents, *continued*

Discussion

The authors believe that this is the first report of a presumptive influenza A outbreak on an Australian cruise ship, which is of additional interest because of its occurrence in the summer. There has been a previous report of a summer influenza B outbreak on an oil rig anchored in Darwin Harbour, attributed to the frequent arrival of workers from many parts of the world,[4] although it was recognised that in the tropics, influenza can occur throughout the year.[5] In the case of Cruise ship A, it is not possible to say whether the entire epidemic was caused by influenza A, as the virus was isolated from only 2 cases who presented to the clinic at the end of the cruise. However, as small numbers of cases of influenza A had been confirmed on the South Island during January and February (personal communication, Debbie Hulston, Institute of Environmental Science and Research, New Zealand), it is plausible that passengers were exposed to influenza A during South Island tours and subsequent person-to-person transmission resulted in the epidemic which peaked shortly before the ship berthed in Sydney.

During the following cruise, rates of clinic attendance for URTI remained below the 3% threshold (Figure 1). We are currently discussing with the personnel providing medical services to Cruise ship A, the possibility of using near-patient, rapid testing for influenza in the ship's medical clinic. However, the low sensitivity and specificity of these tests needs to be considered (personal communication, WD Rawlinson, SEALS Microbiology Randwick). Such testing might allow the use of antiviral therapy for influenza in the closed population of a cruise ship. The institution of clinical surveillance on Sydney-based cruise ships using a more specific definition for influenza-like illness may also be warranted. We believe that it is premature on the basis of this report to make recommendations for influenza vaccination of cruise ship passengers beyond current NHMRC recommendations for individuals at high-risk of influenza complications.[6] The crew of cruise ships is not routinely vaccinated against influenza at present. Enhanced surveillance of influenza on cruise ships, as has been proposed in North America,[3] is required before authoritative recommendations can be made for passengers and crew embarking on summer cruises on Australian vessels.

Acknowledgments

We wish to thank Associate Professor Bill Rawlinson and Ian Carter of the Virology Division, SEALS Microbiology, Prince of Wales Hospital, Randwick, New South Wales.

References

1. Anonymous. Influenza on a cruise ship in the Mediterranean. *Commun Dis Rep CDR Weekly* 11 Jun 1999;9:209,212.
2. Anonymous. Update: Outbreak of influenza A infection - Alaska and the Yukon Territory, July-August 1998. *MMWR* 1998;47:685-688.
3. Anonymous. Influenza in travellers to Alaska, the Yukon Territory, and on west coast cruise ships, summer of 1999. *Can Commun Dis Rep* 1999;25:137-141.
4. Johnston F, Krause V, Miller N, Barclay L. An outbreak of influenza B among workers on an oil rig. *Commun Dis Intell* 1997;21:106.
5. Benenson AS , Editor. *Control of communicable diseases manual*. 16th Edition. Washington: American Public Health Association, 1995.
6. NHMRC. *The Australian immunisation handbook* (6th edition). Canberra: AGPS, 1997; pp 127-131.

Possible community immunity to Small Round Structured Virus gastroenteritis in a rural Aboriginal community

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Abstract

In April 1998 an outbreak of gastroenteritis affected visitors, but none of the Aboriginal residents, at a Territory Health Services luncheon in a rural Aboriginal community in Central Australia. The epidemiological features and identification of Small Round Structured Virus (SRSV) from two participants suggest that this was an outbreak caused by a SRSV. The attack rate in the visitors who ate or drank food at the luncheon was 73% (11 of 15). Seventeen Aboriginal residents were interviewed, none had gastroenteritis. The community potable wa ter supply was contaminated with faecal bacteria around the time of the outbreak. No particular food could be implicated and laboratory examination of foods was not possible. It is proposed that past exposure to SRSVs may have resulted in the Aboriginal residents developing clinical immunity to infection. The process and consequences of the investigation in this community are also discussed. *Commun Dis Intell* 2000;24:48-50.

Keywords: Small Round Structured Virus, SRSV, gastroenteritits, immunity, Norwalk-like virus

Introduction

On Wednesday 1 April 1998, 17 people from Alice Springs, Darwin and Germany attended a Territory Health Services (THS) function at a rural Aboriginal community of 400-500 residents in Central Australia. The residents and visitors were invited to a shared luncheon after the ceremony. The organisers brought cold meats, fruits, pickles and salad for the luncheon in Alice Springs and scones were obtained from a local registered food outlet.

On the following Monday, 6 April 1998, the Disease Control Unit of the Population Health Unit (PHU) in Alice Springs was informed that several visitors who attended the function had symptoms of gastroenteritis. Early reports indicated that the community residents had not been affected to the same extent as the visitors. An investigation was carried out to determine the source and nature of the outbreak and to investigate the difference in attack rates between Aboriginal residents and the visitors.

Methods

A retrospective cohort study of the visitor group of luncheon participants was performed. In addition, a descriptive study of community residents who participated in the luncheon was undertaken. A case was defined as a person who attended the luncheon and had one of the following symptoms: diarrhoea; nausea; vomiting; fever or body aches, within 5 days.

Case finding

The community was visited to establish the course of events and review health centre attendance records. The health centre staff, who have knowledge about the community, were asked if they were aware of any recent cases of gastroenteritis. All the available community residents who attended or prepared food for the luncheon were also interviewed. Local Aboriginal health workers facilitated administration of a foods and symptoms questionnaire. Visitors were traced from an invitation list.

General practitioners and Emergency Department doctors in Alice Springs were interviewed and the incidence of notifiable diarrhoeal diseases were reviewed for indications of a wider epidemic of gastroenteritis.

Laboratory investigation

Stool specimens were requested from any participant who experienced any symptoms and from community members who prepared the food. The microbiology laboratory at Alice Springs hospital tested the stool specimens for *Campylobacter* spp., *Cryptosporidium* spp., *Shigella* spp., *Salmonella* spp. and rotavirus.

Stool samples were referred to the Victorian Infectious Diseases Reference Laboratory (VIDRL) for electron microscopy (EM) and Reverse Transcriptase - Polymerase Chain Reaction (RT-PCR) testing for a range of SRSVs.

Environmental health inspection

An environmental health officer (EHO) examined the kitchen in the Cultural Centre where the luncheon had been prepared. Results of monthly bacterial testing of the community's potable water supply, performed by the Power and Water Authority (PAWA), from July 1997 to November 1998 were reviewed.

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Results

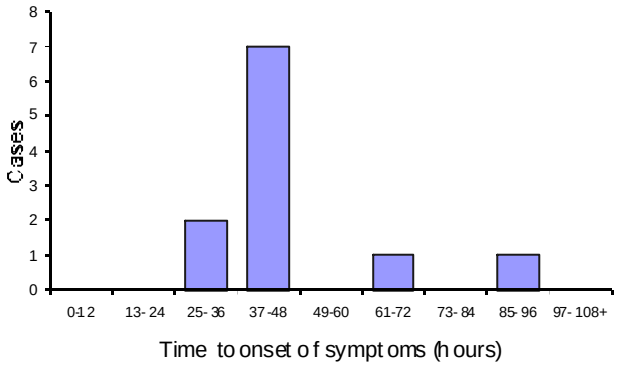
Participation Rate

Thirty-eight people completed the questionnaire, 16 visitors and 22 community residents (17 Aboriginal and 5 non-Aboriginal). The visitor participation rate was 94% (16 out of 17) and the community participation rate was between 28% and 73 % (22 out of an estimated 30-80). The community interviews were conducted 7 days after the function and visitors completed the questionnaires between 7 and 12 days after the function. The age and sex composition of the visitor and interviewed Aboriginal resident groups were similar. The median age of visitors was 39.3 years (range 22.3-55.0) and of Aboriginal residents was 41.2 years (range 33.5-60.9).

Epidemiological investigation

There were 13 cases of gastroenteritis, 11 were visitors and 2 were non-Aboriginal community residents. The most commonly reported symptoms in the visitor cohort were diarrhoea (91%) and nausea (73%). The median incubation period was 46 hours (Figure 1) and the median duration of symptoms was 36 hours.

Figure 1. Gastroenteritis cases in the 'visitor' group, April 1998, by time to onset



The attack rate was 69% (11 of 16) among the interviewed visitors. One visitor did not eat or drink at the function, giving an attack rate of 73% (11 of 15). Food specific risk ratios (RR) did not implicate any particular food or food group. The RR for consuming any non-boiled water was 1.11 (95% CI 0.46-2.66). A greater proportion of the Aboriginal resident respondents ate each type of food than did the visitor group.

There was no background increase of gastroenteritis at the time of the function. Only one person had presented with diarrhoea to the community health centre in the preceding 4 weeks and there was no increase in the notified diarrhoeal diseases in the Alice Springs region or numbers of patients with gastroenteritis at urban health services. The visitor group had not been to common meetings or functions other than the THS luncheon in the preceding 2 weeks. They worked in different buildings, had travelled in a number of different cars and had not eaten from a common source on the way to or from the community.

Microbiological testing

Stool specimens were collected from 7 visitors, between 5 and 7 days after the luncheon. No specimens were collected from asymptomatic visitors or Aboriginal people. One specimen (collected Day 6) revealed *Campylobacter jejuni* and no bacterial pathogens or rotavirus were identified in the other stools.

Two of the 7 specimens were positive for Small Round Structured Virus (SRSV) on RT-PCR testing. One of these was sequenced and found to be closely related to Camberwell virus (99.4% nucleotide identity). Foods were not available for testing and it was not possible to obtain stool samples from food handlers.

Food handling

Most of the food was brought from Alice Springs and had 4 hours of unrefrigerated time. It was prepared in the community Women's Centre without easy access to a dedicated hand washing facility, and was eaten as a buffet of finger food accompanied by tea, coffee, cordial, orange juice and water without ice.

Water supply

In the 2 months prior to the outbreak, source and reticulation samples from the PAWA were unacceptably contaminated according to 1987 National Health and Medical Research Council (NHMRC) guidelines. The level of contamination in March was 4-5 times the acceptable limit for coliforms. In the last week of March PAWA instructed a community worker to dose the water supply system with chlorine (1.5g per 1,000 litres). There are no records confirming that the treatment occurred. In April, samples again failed to meet NHMRC bacteriological standards. The PAWA suspected stagnant water in a reticulation side-line may have been harbouring the source of the contamination.

Discussion

The sequence of events and the epidemic curve implicate the luncheon event as the source of the gastroenteritis outbreak. The laboratory evidence suggests the causal agent was a SRSV, subgroup Camberwell, and is supported by the descriptive epidemiology. The source is unknown but was most likely from contaminated food (handling) or water.

Infectious agent

The median incubation period and median duration of symptoms during this outbreak were consistent with Kaplan's criteria for presumptive diagnosis of Norwalk-like (SRSV) virus infection.[1] SRSVs are recognised as causing outbreaks predominantly in adults, older children and nursing home communities. Transmission can occur via food, particularly shellfish and water,[2,3,4,5] by handlers contaminating the food and by personal contacts.[6,7] A review of SRSVs identified in south eastern Australia over the past 17 years, found the same genogroup (2B-Lordsdale/Camberwell - like) was the most common[8] The two individuals in this outbreak with evidence of SRSV were unlikely to have been incidental carriers since excretion of SRSV is thought to last only a few days after the symptoms have settled unless the person was immunocompromised.[2,9]

One specimen yielding *Campylobacter jejuni* was inadequate evidence to attribute the outbreak to this organism. *C. jejuni* can be present as a carrier state for 2-7 weeks.[10] Despite the delayed stool collection more than one positive sample would have been expected from an outbreak caused by *C. jejuni*.

Possible community immunity

Reported symptoms were confined to the visitors and two non-Aboriginal residents. If the attack rate in the residents had been similar to that seen in the visitors, then between 22 and 58 cases could have been expected in the community. The response rate in the Aboriginal participants was low and they may have interpreted the symptoms differently or been less likely to report symptoms. However, it is considered unlikely that the investigations failed to detect a large outbreak of gastroenteritis among the residents.

Immunity to infection with SRSVs is poorly understood.[2,11] The authors propose that past recurrent gastrointestinal infection or exposure to SRSVs by community residents may have led to a different pattern of susceptibility to that of the visitors. Gastrointestinal infection is very common in the Aboriginal population in Central Australia. The age standardised hospital separation rates for gastroenteritis between 1979 and 1991 were 2-6 times higher amongst the Aboriginal population of the Northern Territory than non-Aboriginals.[12] Furthermore, serological markers of the Norwalk-like group of SRSV, indicating exposure but not necessarily immunity, have been found to be almost universal in older Aboriginal children in the Northern Territory (personal communication, Dr Roger Schnagl).[1]

Recommendations and outcomes

Five months after the outbreak, the EHO and the community Women's Centre developed and delivered a training program for Aboriginal community women on safe food handling. The Women's Centre has arranged for a dedicated hand washing sink to be installed in the food preparation area. The PAWA have instigated regular flushing of a stagnant water reticulation side line. Bacteriological testing had been free of all coliforms until November 1998.

Acknowledgments

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References

1. Kaplan JE, Fieldman R, Campbell DS, Lookabaugh C, Gary GW. The Frequency of a Norwalk-like Pattern of Illness in Outbreaks of Acute Gastroenteritis. *Am J Public Health* 1982,72:1329-32.
2. Lew JF, LeBaron CW, Glass RI, Torok T, et al. Recommendations for Collection of Laboratory Specimens Associated with Outbreaks of Gastroenteritis. *MMWR Morb Mortal Wkly Rep* 1990;39(RR-14):1-13.
3. *Backus Gastroenterology*. 5th edition 1995. WB Saunders publishers, Philadelphia. USA.
4. Dalton C. An Outbreak of Norwalk Virus Gastroenteritis Following Consumption of Oysters. (Commentary) *Commun Dis Intell* 1997;21:321.
5. Stafford R, Strain D, Heymer M, Smith C, et al. An outbreak of Norwalk virus gastroenteritis following consumption of oysters. *Commun Dis Intell 1997;21:317-20.*
6. Caceres VM, Kim DK, Bresee JS, Horan J, et al. A viral gastroenteritis outbreak associated with person to person spread among hospital staff. *Infect Control Hosp Epidemiol.* 1998;19:162-7.
7. Kilgore PE, Belay ED, Hamlin DM, Noel DM, et al. A university outbreak of gastroenteritis due to a small round structured virus. Application of molecular diagnostics to identify the etiologic agent and patterns of transmission. *J Infect Dis.* 1996;173(4):787-93.
8. Wright PJ, Gunesekere IC, Doutree JC, Marshall JA. Small round structured (Norwalk-Like) viruses and Classic Human Calicivirus in South Eastern Australia. 1980-1996. *J Med Virol.* 1998;55:312-20.
9. Davidson MM, Ho-Yen DO. Role of small round viruses and small round structured viruses. (Letter). *Lancet* 1994;344:128.
10. *Control of Communicable Diseases Manual. 16th edition* (1995). Benenson AS (editor) American Public Health Association. Washington, USA.
11. Treanor J, Dolin R. Norwalk viruses and other caliciviruses. in; Mandell GL, Bennett JE, Dolin R (Ed). *Mandell, Douglas and Bennett's principles and practice of infectious disease 4th edition.* New York: Churchill Livingstone Inc. 1995.
12. Plant AJ, Condon JR, Durling G (1995) *Northern Territory Health Outcomes. Morbidity and Mortality 1979 - 91* . Territory Health Services, Darwin.
13. Bowden FJ, Currie BJ, Miller NC, Krause VL. Should Aboriginals in the "Top End" of the Northern Territory be vaccinated against Hepatitis A? *Med J Aust* 1994;161:372-3.

Factors influencing vaccination uptake

Workshop Report
*Current Australian research on the behavioural, social and demographic factors influencing immunisation, Royal Alexandra Hospital for Children, Sydney, March 1998**

Edited by Jill M Forrest, Margaret A Burgess and Peter B McIntyre
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Abstract

Current Australian research on factors influencing vaccination was discussed at a workshop held at the Royal Alexandra Hospital for Children, Sydney, in March 1998, sponsored by the National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (NCIRS). The application of decision making theory to vaccination behaviour, the expectations and experiences of mothers, and reasons why parents fail to vaccinate their children were considered. Mothers' perceptions of the risks of vaccines, preferences of parents and providers for the mode of vaccine delivery, and community and social factors were all found to be part of the framework within which vaccination is accepted in Australia. Consumer considerations, media influences and overseas comparisons were discussed. *Commun Dis Intell* 2000;24:51-53.

Keywords: vaccination, immunisation, uptake, social, behavioral, demographic

Introduction

As effective immunisation has led to the decline of many diseases, [1] people have become more aware of the side effects of vaccines. Most parents plan to have their children immunised; a recent Tasmanian study showed that newly delivered mothers were willing and eager to have their babies immunised, and that incomplete immunisation was primarily due to delay.[2] In industrialised countries lower vaccination uptake is associated with younger parents, single mothers, larger families, less exposure to the media, and lower socioeconomic status. In a Melbourne based study, reported barriers to vaccination included lack of detailed and balanced information, health providers not listening to or understanding mothers' concerns, service problems and concerns about minor side effects.[3] In an attempt to approach the issue of vaccination uptake in a broader way the influence of behavioural, social and demographic factors was discussed in this two-day workshop. The speakers and panel members, listed in Appendix 1, included a range of health professionals and consumers. This article summarises the key points arising from discussions at the meeting.

Discussion topics

Risk perception and decision making

Parents' beliefs influence their acceptance of vaccination, and the perception of risk is subjective. Many non-vaccinating parents believe the risk of disease is low, the risk of vaccine side effects is high, and/or vaccination is ineffective. The Melbourne based study, conducted in 1995 with 45 mothers, showed that 'complete immunisers' were fearful of the outcomes of unfamiliar diseases, and 'incomplete immunisers' considered vaccines less effective.[3] Specifically, many 'non-immunisers' were fearful of unknown/long-term side effects of vaccines, mistrusted the motives of health providers, and believed vaccination was a social experiment; they felt diet and building up general immunity were viable and safe alternatives.

Except for a few highly educated mothers who make a deliberate decision not to vaccinate, most people do not make decisions about health purely on the scientific evidence. Decision making is complex.[4] Focus group studies in western Sydney suggested that parental reactions to children's immediate distress are stronger than their feelings about later benefits from vaccination. It was proposed that this can be countered by strong commitments to vaccination, strong social support, and depictions of children suffering from diseases (for example, television advertisements of children with pertussis). In our society childhood vaccination is a cultural truism ('what every good mother does for her child') which many accept automatically, without thinking through the issues.

Parents' perception that the risk associated with vaccination could be increased when a child has a minor illness may delay vaccination. 'Overloading the child's immune system' is a common parental fear; many are concerned about the number and mix of vaccines, especially for vulnerable (for example, asthmatic) children. The perception that vaccines are dangerous, parents' belief that they can control a disease should it develop, doubts about vaccine effectiveness, and belief that doctors overstate the dangers of disease may all prevent or delay vaccination,[5] as may decisions made under conditions of uncertainty (if you are unsure of the outcome, you are less likely to make a decision).

* Detailed conference report available from authors at the above address.

Consent

Consent can be difficult, especially for overseas visitors or divided families, and the age of consent varies between States and Territories. Even if parents consent, children cannot be vaccinated unless they are willing. Adolescents are difficult to reach, and have a poor perception of risk.[6] Difficulties parents and vaccination providers have with consent forms are magnified in adolescents.

Improving uptake

Vaccination could be combined with other important preventive interventions for children. Flexible delivery modalities and the cultural appropriateness of the message are important, as is the relationship between vaccination and membership of ethnic communities. Health providers should listen to parents and treat their concerns seriously. In the past, minor illnesses were accepted as contraindications for vaccination; the change in policy and practice needs to be explained, and parents' wishes should be respected if they are not convinced that it is in the interests of their children to be vaccinated when they are sick.

Service provision

In Victoria, home vaccination of unvaccinated children identified through the Australian Childhood Immunisation Register (ACIR) was judged as cost-effective.[7] Melbourne mothers favoured maternal and child health nurses vaccinating during a well-child visit, vaccination at child-care centres and opportunistic vaccination by general practitioners and mobile vans, but opposed unspecified government incentives, or withholding some of the maternity allowance until children were fully vaccinated.[3] Tasmanian mothers felt that general practitioners should provide mother-friendly appointments and better information about procedures, benefits and reactions. Many favoured general practitioner based outreach programs, with home visits.[2]

Influence of providers

A western Sydney study found that, although parents and general practitioners preferred different regimens, 90% of parents were willing for their general practitioner to influence their decision.[8] Tasmanian[2] and Victorian[3] mothers expressed trust in health providers, whose influence has also been noted in overseas studies.[9]

Information for parents and providers

Melbourne parents felt that reliable information was one of their greatest needs, and that lack of suitable detailed information was a barrier to informed decision-making.[3] Recently, access to local publications about vaccination from the Commonwealth Department of Health and Aged Care have become more easily available on the Internet (http://immunise.health.com.au/). These are *The Australian immunisation handbook*, 6th edition (updated 7th edition available soon), *Understanding childhood immunisation*, and *Myths and realities* (which addresses specific allegations of the anti-vaccination lobby).

Most people's understanding of vaccines, vaccination and the diseases they prevent is gleaned from the printed media, but published anti-vaccination arguments may unduly influence them. However, in a review of 40 months of Australian print media coverage, only 115 of 2,440 (4.7%) articles and letters about childhood vaccination contained statements opposing vaccination.[10]

Incentives

It was found that financial incentives encouraged prenatal visits and childhood check-ups in France and Austria, and Britain used financial rewards to increase general practitioner vaccination rates.[11] In Australia, the General Practitioner Immunisation Incentive (GPII) Scheme aims to improve low vaccination rates by monetary rewards to general practitioners and by parental financial incentives.[12]

Conclusions

The Workshop's main conclusions were: (a) decision making theory suggests that people do not make scientifically rational decisions; (b) parents find difficulty assessing the risks of vaccines and the risks of diseases; (c) communication and services should be tailored to the needs of parents; (d) improving parenting skills could be combined with improving parents' health-related behaviour; (e) different strategies are required to reach adolescents and adults (rather than parents), especially high-risk adolescents; (f) incentives need evaluation; and (g) consumers must be informed about choices and services, and their views and rights should be respected.

Suggested interventions included: (a) targeting incompletely vaccinated children using the ACIR; (b) educating parents through their children; (c) providing a wider range of information packages; (d) overcoming barriers to access; (e) involving consumers; and (f) identifying gaps in behavioural research.

Overall it was agreed that people need to be able to make informed choices about health care and that some people make unusual choices, but compulsory vaccination is unacceptable. Taking account of the social context of people's lives is extremely relevant to the concerns of the health consumer movement, and extends and enriches the medical/scientific model of research, thinking and decision making. As stated in a recent study, 'It is essential that personalised strategies are developed to assist each mother to take advantage of immunisation for her child within the context of her personal socioeconomic status, cultural beliefs and life style.'[2]

Appendix 1

Workshop speakers and panel members

NCIRS: Dr Helen Achat, Mr Mark Bartlett, Professor Margaret Burgess, Dr Jill Forrest (for Dr Margaret Kilmartin, University of Tasmania), Dr Peter McIntyre

Research and Development Unit, University of Western Sydney, Macarthur: Dr Pat Bazeley, Ms Lyn Kemp

Centre for Adolescent Health, Royal Children's Hospital, Melbourne: Ms Lyndal Bond

Department of Public Health and Community Medicine, University of Sydney:
Associate Professor Simon Chapman

Centre for the Public Awareness of Science, Australian National University: Ms Cathy Frazer

Department of Evidence-Based Care and General Practice, Flinders University, South Australia:
Ms Anne Magarey

Health Issues Centre, Melbourne: Ms Merinda Northrop

Royal Alexandra Hospital for Children:
Professor Kim Oates

Australian Centre for Effective Healthcare, University of Sydney: Professor George Rubin

Parent and Family Support Centre, School of Psychology, University of Queensland:
Associate Professor Matthew Sanders

Population Health Unit, Territory Health Services, Northern Territory: Dr Sandra Thompson

Psychology Department, Flinders University, South Australia: Ms Kelly White.

References

1. Ball LK, Evans G, Bostrom A. Risky business: challenges in vaccine risk communication. *Pediatrics* 1998;101:453-458.
2. Kilmartin MR, Woodward DR, Blizzard CL, Turner K. Immunisation of babies—the mothers' perspective. *Aust Fam Physician* 1998;27Suppl1:S11-S14.
3. Bond L, Nolan T, Pattison P, Carlin J. Vaccine preventable diseases and immunisations: a qualitative study of mothers' perceptions of severity, susceptibility, benefits and barriers. *Aust NZ J Public Health* 1998;22:441-446.
4. Chen RT, Hibbs B. Vaccine safety: current and future challenges. *Pediatr Ann* 1998;27:445-455.
5. Meszaros JR, Asch DA, Baron J, Hershey JC, Kunreuther H, Schwartz-Buzaglo J. Cognitive processes and the decisions of some parents to forego pertussis vaccination for their children. *J Clin Epidemiol* 1996;49:697-703.
6. Thompson SC, Ogilvie EL, Veit FC, Crofts N. Juvenile offenders and hepatitis B: risk, vaccine uptake and vaccination status. *Med J Aust* 1998;169:306-309.
7. Bond LM, Nolan TM, Lester RA. Home vaccination for children behind in their immunisation schedule: a randomised controlled trial. *Med J Aust* 1998;168:487-490.
8. Bartlett MJ, Burgess MA, McIntyre PB, Heath TC. Parent and general practitioner preferences for infant immunisation: reactogenicity or multiple injections? *Aust Fam Physician* 1999;28 Suppl:S22-S27.
9. Taylor JA, Darden PM, Slora E, et al. The influence of provider behaviour, parental characteristics, and a public policy initiative on the immunization status followed by private pediatricians: a study from pediatric research in office settings. *Pediatrics* 1997;99:209-215.
10. Leask J-A, Chapman S. An attempt to swindle nature: press anti-immunisation reportage 1993-1997. *Aust NZ J Public Health* 1998;22:17-26.
11. Lynch ML. The uptake of childhood immunization and financial incentives to general practitioners. *Health Econ* 1994;3:117-125.
12. Achat H, McIntyre P, Burgess M. Health care incentives in immunisation. *Aust NZ J Public Health* 1999;23:285-288.

Measles Control Campaign update

The Commonwealth of Australia, in conjunction with all State and Territory governments, conducted the Measles Control Campaign (MCC) between August and November 1998. The Campaign aimed to increase measles vaccination coverage and was the first stage of a longer term strategy to eliminate measles from Australia. It consisted of national media, education and vaccination programs and included the following four components:

- moving the second dose of measles-mumps-rubella vaccine (MMR) from 10-16 years of age to 4-5 years of age;
- school based delivery of a catch-up dose of MMR for primary school aged children;
- reminder letters to parents of pre-school aged children due or overdue for the first dose of MMR; and
- a letter to all parents of high school children advising them of the change to the routine MMR schedule, the importance of the second dose and asking them to ensure that their child had received two doses of the MMR vaccine.

The Campaign was very successful, with around 1.7 million, or 96%, of primary school aged children being vaccinated during the Campaign. More than 1.3 million of these children were vaccinated in the school program in almost 8,800 schools in all States and Territories. A serosurvey conducted after the Campaign showed that 94% of children aged 6-12 years were immune to measles, an increase from 84% before the Campaign. The *Australian Measles Control Campaign 1998 Evaluation Report* can be obtained from the Immunise Australia Internet website at http://immunise.health.gov.au.

Yellow fever vaccination for the Hajj

The Pilgrimage to Mecca (the Hajj) in Saudi Arabia is held each year in March and April. Pilgrims may arrive in Saudi Arabia between late January and early March and then commence leaving the country in early April. Up to 1,500 Australian residents travel to Mecca each year during the Hajj season.

Yellow fever has not been reported in Saudi Arabia and the Saudi Health Ministry has advised WHO that only those travellers arriving from declared yellow fever infected countries will be required to have valid yellow fever vaccination certificates. Vaccination requirements for the Hajj are published in the *Weekly Epidemiological Record* in early January each year.

However, for the past two years, the Saudi Embassy in Australia has adopted the policy of requiring all Australian travellers to the Hajj to be vaccinated against yellow fever as a condition of the issuing of the special Hajj visas. The Commonwealth Department of Health and Aged Care has asked the Department of Foreign Affairs and Trade to seek a clarification of the yellow fever vaccination policy from the Saudi Ministry of Health. When this issue is clarified, an update will be provided to State and Territory health authorities and will be published in *CDI*.

Yellow fever in Brazil

Brazil is a declared yellow fever infected country. In January and February this year a number of confirmed cases of yellow fever were reported by the National Health Foundation, which estimates that there may be up to 120 cases per year. The confirmed cases have all been acquired in jungle areas, with some cases reported to have been acquired in national parks that are popular tourist destinations.

The WHO recommends that all travellers to Brazil should be vaccinated against yellow fever.

Data analysis by date of onset for NNDSS

From this issue onwards an additional set of summary tables presenting data by date of onset for each calendar month, will be included for the National Notifiable Diseases Surveillance System. Data for January 2000, by date of onset, are presented in Tables 1 and 2 of this issue and are discussed in the highlights section. Tables 3 and 4 present data by report date for the 4 week period, 2 to 29 February 2000, for information only.

Tables 1 and 2 include a comparison between the total January 2000 data and the totals for December and January 1999; and a 5 year mean which is calculated using December to February data for the previous 5 years (MMWR Weekly Feb 25, 2000:49(07);139-146). In subsequent editions year to date figures will also be included and compared to the mean for the year to date figures for the previous 5 years.

Where onset date data were not available the report date has been substituted by the National Centre of Disease Control as a proxy of the onset date.

Communicable Diseases Surveillance

Highlights

Communicable Diseases Surveillance consists of data from various sources. The National Notifiable Diseases Surveillance System (NNDSS) is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The *CDI* Virology and Serology Laboratory Reporting Scheme (LabVISE) is a sentinel surveillance scheme. The Australian Sentinel Practice Research Network (ASPREN) is a general practitioner-based sentinel surveillance scheme. In this report, data from the NNDSS are referred to as 'notifications' or 'cases', whereas those from ASPREN are referred to as 'consultations' or 'encounters' while data from the LabVISE scheme are referred to as 'laboratory reports'.

Vaccine preventable diseases

A total of 418 notifications were received with an onset date in January. Most of the notifications were the result of continuing pertussis activity in most States and Territories. Cases of pertussis were distributed across all age groups with a predominance in the 10-19 year age group (Figure 1). There were 8 notifications of measles and 17 notifications of rubella in January, a decrease from the mean of the last five years (82 measles and 191 rubella notifications). Most measles cases were evenly distributed between decade age groupings up to 30 years of age, with 2 cases per grouping. Of the 2 cases under 10 years of age, 1 was a resident under 1 year and the other was a 4 year old visiting from overseas. Most rubella cases occurred in those aged between 20 and 29 years (8) with a female predominance (Figure 2). There was no increase in the number of notifications of other vaccine preventable diseases. Of interest, there was 1 case of tetanus reported from Queensland in a male aged over 70 years.

A total of 46 reports of meningococcal disease were received with an onset date in January, which is similar to numbers from the previous year but an increase compared with the mean for the months of December to February over the last 5 year period (25). Most cases occurred in those under 30 years of age and were spread evenly in decade age groupings, with a similar ratio overall of males to females (1.2:1). Overall there were 4 deaths reported in

Figure 1. Notifications of pertussis, January 2000, by age group and sex

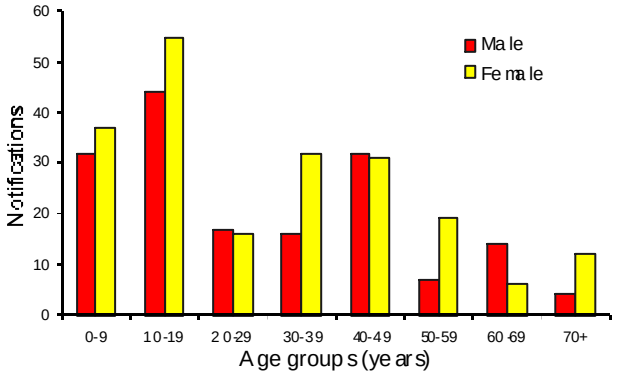


Figure 2. Notifications of rubella, January 2000, by age group and sex

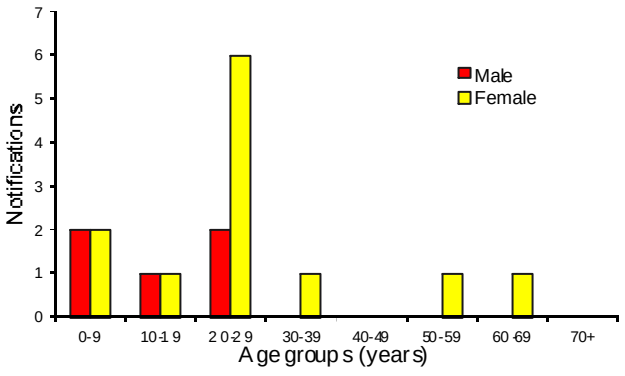


Figure 3. Notifications of salmonellosis, January 1991 to January 2000, by date of onset

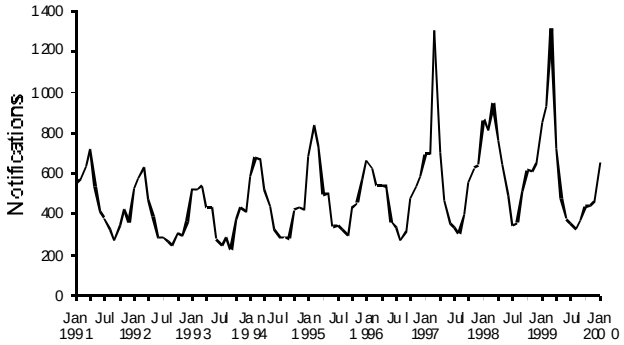


Figure 4. Notifications of dengue, January 1991 to January 2000, by date of onset

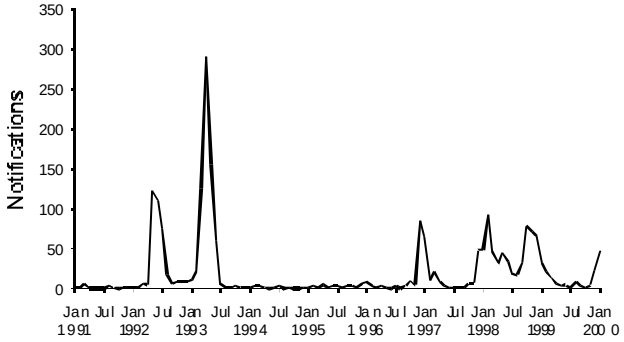
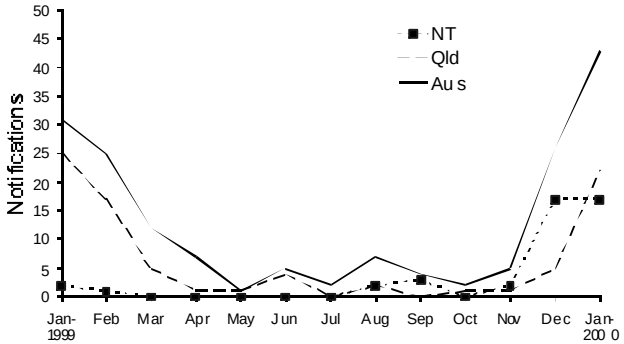


Figure 5. Notifications of dengue, January 1999 to January 2000, for Northern Territory, Queensland and Australia, by month of onset



this period. Serotype information was provided for 78% of cases. Of those with serogroup details available 55% (20) were serotype B, 42% (15) were serotype C, and 3% (1) was serotype Y.

Bloodborne diseases

There were 1,493 notifications of hepatitis C diagnosed in January 2000 that were not already recorded on the State and Territory notifiable diseases databases. This was an increase from December 1999 (1,337) and from the mean of the last 5 years (1,215), but was less than for January last year (1,601). Of these, 13 were identified as incident cases. The majority of notifications were in the 20-39 year age group (62%) and the male to female ratio was 1.7:1.

Gastrointestinal diseases

There were 659 notifications of salmonellosis with an onset month of January 2000. This was an increase from December 1999 (462) but was less than for January last year (852) and for the mean of the last 5 years (702) (Figure 3). The majority of notifications were in the 0-10 year age group (45%) with a male to female ratio of 1.1:1. Salmonellosis notifications demonstrate marked periodicy, with sumer peaks and winter troughs.

There were 10 notifications of listeriosis with an onset month of January 2000. This was twice the number of notifications as for the previous month (5), January last year (6) and for the mean of the last 5 years (7). Of these cases, 2 were in women of child bearing age and 1 was in a child less than 1 year old.

There were 7 notifications of typhoid with an onset month of January 2000. Of the four States reporting SLTEC/ VTEC there were 4 cases, all from South Australia. There was also 1 case of haemolytic uraemic syndrome (HUS) in New South Wales.

Quarantinable diseases

There were no cases of cholera, plague, rabies, yellow fever or viral haemorrhagic fever with an onset month of January 2000.

Sexually transmissible diseases

There were 505 notifications of gonococcal infection with an onset month of January 2000, which was an increase from December 1999 (323), January last year (481) and for the mean for the last 5 years (373). The majority of notifications were in the 20-29 year age group (39%) with a male to female ratio of 2.5:1.

Vectorborne diseases

There were 47 notifications of dengue with an onset month of January 2000. This was an increase from December 1999 (23), January last year (31) and from the mean for the last 5 years (33) (Figure 4). The majority of notifications were in the 20-39 year age group (47%) with a male to female ratio of 2.0:1. The increase was in Queensland and the Northern Territory. The Queensland cases comprised both imported cases and local transmission whereas all of the Northern Territory cases

were imported (the vector is exotic to the Northern Territory) (Figure 5).

There were 512 notifications of Ross River virus infection with an onset month of January 2000, which was an increase from December 1999 (242), but was similar to the figures for January last year (519) and for the mean for the last 5 years (558). The majority of notifications were in Queensland and Western Australia (81%). Sixty-seven per cent of all notifications were in the 20- 49 year age group with a male to female ratio of 0.9:1.

Other diseases

There were 22 notifications of legionellosis with an onset month of January 2000, with the majority being in Victoria (59%). This was similar to the notifications for December 1999 (15), January last year (24) and for the mean for the last 5 years (19). The age for the notifications ranged from 30 to 79 years and the male to female ratio was 2.6:1.

Tables

There were 7,514 notifications to the National Notifiable Diseases Surveillance System (NNDSS) with an onset date in January 2000 (Tables 1 and 2) and 6,537 notifications in the 4 week period, 2 to 29 February 2000 (Tables 3 and 4). The number of reports for selected diseases have been compared with a 5 year mean, calculated using December to February data for the previous 5 years (Figure 6).

There were 1,559 reports received by the *CDI* Virology and Serology Laboratory Reporting Scheme (LabVISE) in the 4 week period, 27 January to 23 February 2000 (Tables 5 and 6).

The Australian Sentinel Practice Research Network (ASPREN) data for weeks 4 to 7, ending 20 February 2000, are included in this issue of *CDI* (Table 7).

Table 1. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood vaccination, received by State and Territory health authorities in the period 1 to 31 January 2000, by date of onset

Disease[1]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total Jan 2000[2]	Total Dec 1999[2]	Total Jan 1999[2]	Last 5 years mean
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
H. influenzae type b infection	0	1	0	1	0	0	0	1	3	3	4	5
Measles	0	2	0	2	0	0	4	0	8	4	10	82
Mumps	2	2	0	0	2	0	3	4	13	11	9	11
Pertussis	8	129	1	85	18	45	86	4	376	415	350	580
Rubella[3]	0	4	0	6	1	0	5	1	17	17	27	191
Tetanus	0	0	0	1	0	0	0	0	1	0	0	1

1. No notification of poliomyelitis has been received since 1978.
2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
3. Includes congenital rubella.

Table 2. Notifications of diseases received by State and Territory health authorities in the period 1 to 31 January 2000, by date of onset

Disease[1,2,3]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total Jan 2000[4]	Total Dec 1999[4]	Total Jan 1999[4]	Last 5 years mean
Arbovirus infection (NEC)	0	0	0	0	0	0	3	0	3	0	18	9
Barmah Forest virus infection	0	15	1	26	0	0	3	5	50	38	57	59
Brucellosis	0	0	0	2	0	0	0	0	2	3	1	4
Campylobacteriosis[5]	19	0	17	363	162	39	417	123	1,140	980	1,109	1,048
Chancroid	0	0	0	0	0	0	0	0	0	0	0	0
Chlamydial infection (NEC)[6]	19	201	73	360	78	26	231	147	1,135	936	1,049	757
Cholera	0	0	0	0	0	0	0	0	0	1	1	1
Dengue	0	3	17	22	1	0	0	4	47	23	31	33
Donovanosis	0	0	4	1	NN	0	0	0	5	0	4	5
Gonococcal infection[7]	2	100	77	106	19	3	89	109	505	323	481	373
Haemolytic uraemic syndrome	NN	1	0	0	0	0	NN	0	1	2	1	3
Hepatitis A	0	29	14	13	7	0	29	28	120	98	128	234
Hepatitis B incident	2	6	5	3	1	0	4	7	28	33	30	23
Hepatitis B unspecified[8]	2	256	0	59	0	3	129	76	525	446	568	503
Hepatitis C incident	2	3	0	0	3	0	3	2	13	26	24	12
Hepatitis C unspecified[8]	20	556	12	294	66	32	374	126	1,480	1,311	1,577	1,203
Hepatitis (NEC)[9]	0	0	0	0	0	0	0	NN	0	1	0	2
Hydatid infection	0	NN	0	0	0	0	2	0	2	4	2	3
Legionellosis	0	1	0	3	2	0	13	3	22	15	24	19
Leprosy	0	0	0	0	0	0	0	0	0	1	0	2
Leptospirosis	0	3	0	10	0	0	6	0	19	19	30	16
Listeriosis	0	2	1	2	1	0	1	3	10	5	6	7
Malaria	2	18	4	39	1	0	8	1	73	50	70	75
Meningococcal infection	0	19	0	4	1	3	15	4	46	43	39	25
Ornithosis	0	NN	0	NN	0	0	4	1	5	7	5	8
Q Fever	0	14	0	25	0	0	1	0	40	41	35	40
Ross River virus infection	1	31	40	277	15	0	10	138	512	242	519	558
Salmonellosis (NEC)	29	114	34	196	49	16	111	110	659	462	852	702
Shigellosis[5]	0	0	11	8	3	0	7	11	40	30	50	64
SLTEC, VTEC[10]	NN	0	0	NN	4	0	NN	NN	4	6	4	3
Syphilis[11]	0	56	17	49	0	1	0	2	125	85	163	135
Tuberculosis	1	30	2	9	0	2	0	4	48	71	95	121
Typhoid[12]	0	5	0	0	0	0	1	1	7	6	7	10
Yersiniosis (NEC)[5]	0	0	0	6	2	0	0	0	8	7	27	28

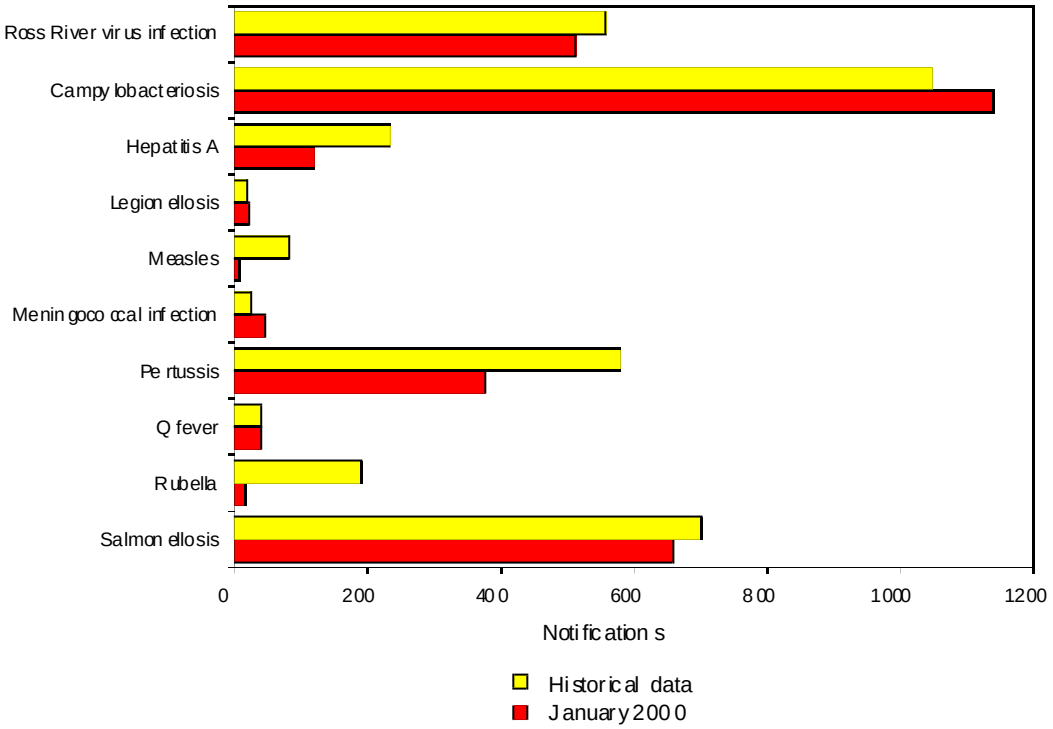
1. Diseases preventable by routine childhood vaccination are presented in Table 1 (by date of onset).
2. For HIV and AIDS, see Tables 8 and 9.
3. No notifications have been received during 2000 for the following rare diseases: lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.
4. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
5. Not reported for NSW because it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.
6. WA: genital only.
7. NT, Qld, SA , Vic and WA: includes gonococcal neonatal ophthalmia.
8. Unspecified numbers should be interpreted with some caution as the magnitude may be a reflection of the numbers of testings being carried out.
9. Includes hepatitis D and E.
10. Infections with *Shiga*-like toxin (verotoxin) producing *E. Coli* (SLTEC/VTEC).
11. Includes congenital syphilis.
12. NSW, Qld: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Figure 6. Selected diseases from the National Notifiable Diseases Surveillance System, and historical data,[1] by date of onset



1. The historical data are a 5 year mean, calculated using December to February data for the previous 5 years (1994/95 to 1998/99).

Table 3. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood vaccination, received by State and Territory health authorities in the period 2 to 29 February 2000, by date of report

Disease[1]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 2000[2]	This period 1999[2]	Year to date 2000[2]	Year to date 1999
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
H. influenzae type b infection	0	1	0	0	0	0	0	1	2	4	4	8
Measles	1	2	0	5	0	0	1	0	9	14	20	21
Mumps	3	1	1	0	1	0	3	6	15	13	30	17
Pertussis	14	148	2	48	24	30	81	5	352	317	788	715
Rubella[3]	0	3	0	3	0	0	4	0	10	25	33	54
Tetanus	0	0	0	1	1	0	0	0	2	0	2	0

1. No notification of poliomyelitis has been received since 1978.
2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
3. Includes congenital rubella.

Table 4. Notifications of diseases received by State and Territory health authorities in the period 2 to 29 February 2000, by date of report

Disease[1,2,3]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 2000[4]	This period 1999[4]	Year to date 2000[4]	Year to date 1999
Arbovirus infection (NEC)	0	0	0	0	0	0	7	0	7	22	9	43
Barmah Forest virus infection	0	13	0	25	0	0	3	8	49	64	97	113
Brucellosis	0	0	0	0	0	0	0	0	0	1	3	4
Campylobacteriosis[5]	21	-	10	287	130	16	363	118	945	969	2,152	2,237
Chancroid	0	0	0	0	0	0	0	0	0	0	0	0
Chlamydial infection (NEC)[6]	25	161	64	328	83	31	288	162	1,142	1,039	2,404	2,053
Cholera	0	1	0	0	0	0	0	0	1	1	1	1
Dengue	0	1	15	29	1	0	1	4	51	8	93	69
Donovanosis	0	0	2	0	NN	0	0	0	2	2	5	5
Gonococcal infection[7]	1	70	88	76	17	0	63	91	406	432	955	905
Haemolytic uraemic syndrome	NN	1	0	0	0	0	NN	0	1	5	2	5
Hepatitis A	0	14	9	18	6	0	18	30	95	159	220	310
Hepatitis B incident	1	5	0	4	1	0	1	3	15	29	52	58
Hepatitis B unspecified[8]	6	217	0	54	0	2	11	93	383	513	996	1,041
Hepatitis C incident	1	2	0	-	8	0	1	10	22	24	46	50
Hepatitis C unspecified[8]	26	583	13	246	87	31	307	149	1,442	1,581	3,126	3,191
Hepatitis (NEC)[9]	0	0	0	0	0	0	0	NN	0	0	0	0
Hydatid infection	0	NN	0	2	0	0	1	0	3	1	5	4
Legionellosis	0	1	0	5	1	0	20	3	30	30	47	49
Leprosy	0	0	0	0	0	0	0	0	0	0	0	0
Leptospirosis	0	3	0	8	0	0	2	0	13	29	33	61
Listeriosis	0	0	0	3	2	0	1	0	6	2	15	8
Malaria	0	3	7	45	1	1	15	2	74	94	147	155
Meningococcal infection	0	9	1	2	0	0	4	5	21	14	77	53
Ornithosis	0	NN	0	NN	1	0	10	0	11	6	16	14
Q Fever	0	7	0	35	1	0	1	2	46	34	95	80
Ross River virus infection	0	36	29	274	34	0	40	153	566	632	1,062	1,086
Salmonellosis (NEC)	9	86	33	207	31	12	122	90	590	794	1,292	1,682
Shigellosis[5]	0	-	7	8	2	1	8	11	37	38	77	91
SLTEC, VTEC[10]	NN	0	0	NN	4	0	NN	NN	4	3	10	7
Syphilis[11]	1	40	18	59	0	0	0	5	123	145	276	286
Tuberculosis	1	23	11	11	0	0	0	1	47	65	106	132
Typhoid[12]	0	3	0	1	0	0	3	0	7	9	17	13
Yersiniosis (NEC)[5]	0	-	0	3	4	0	1	0	8	16	17	41

1. Diseases preventable by routine childhood vaccination are presented in Table 3 (by date of report).
2. For HIV and AIDS, see Tables 8 and 9.
3. No notifications have been received during 2000 for the following rare diseases: lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.
4. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
5. Not reported for NSW because it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.
6. WA: genital only.
7. NT, Qld, SA , Vic and WA: includes gonococcal neonatal ophthalmia.
8. Unspecified numbers should be interpreted with some caution as the magnitude may be a reflection of the numbers of testings being carried out.
9. Includes hepatitis D and E.
10. Infections with *Shiga*-like toxin (verotoxin) producing *E. Coli* (SLTEC/VTEC).
11. Includes congenital syphilis.
12. NSW, Qld: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 27 January to 23 February 2000, and total reports for the year[2]

	State or Territory[1]								This period 2000[3]	This period 1999[3]	Year to date 2000[3]	Year to date 1999
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
Measles, mumps, rubella												
Measles virus	0	0	0	0	0	0	2	0	2	2	8	6
Mumps virus	0	0	0	0	0	0	0	6	6	6	11	9
Rubella virus	0	0	0	0	0	0	1	0	1	7	7	11
Hepatitis viruses												
Hepatitis A virus	0	0	3	5	5	0	0	6	19	39	40	75
Arboviruses												
Ross River virus	1	4	17	75	24	0	0	62	183	162	341	290
Barmah Forest virus	0	0	2	19	0	0	0	4	25	6	46	26
Dengue not typed	0	1	14	1	0	0	0	25	41	1	88	8
Flavivirus (unspecified)	0	0	1	14	0	0	3	0	18	2	20	11
Adenoviruses												
Adenovirus type 1	0	1	0	0	0	0	0	0	1	1	1	1
Adenovirus type 3	0	0	0	0	2	0	0	0	2	4	5	6
Adenovirus type 4	0	0	0	0	1	0	0	0	1	2	1	4
Adenovirus type 40	0	0	0	0	0	0	0	6	6	1	9	7
Adenovirus not typed/pending	0	7	0	2	25	0	9	45	88	56	172	150
Herpes viruses												
Herpes virus type 6	0	0	0	0	0	0	0	1	1	0	2	0
Cytomegalovirus	1	10	0	24	47	2	9	12	105	72	206	176
Varicella-zoster virus	0	11	1	40	8	4	32	41	137	122	270	299
Epstein-Barr virus	0	5	1	83	80	1	6	25	201	153	388	411
Other DNA viruses												
Papovavirus group	0	0	0	0	0	0	0	4	4	0	4	0
Molluscum contagiosum	0	0	0	0	0	0	0	1	1	2	3	3
Parvovirus	1	0	0	0	0	0	12	20	33	33	57	65
Picorna virus family												
Rhinovirus (all types)	0	5	0	0	0	0	1	8	14	17	32	37
Enterovirus not typed/pending	0	1	1	3	0	0	9	24	38	52	85	99
Ortho/paramyxoviruses												
Influenza A virus	2	3	1	3	10	0	7	25	51	15	131	65
Influenza B virus	0	0	0	0	4	0	0	6	10	5	14	15
Parainfluenza virus type 1	0	2	0	0	0	0	0	3	5	3	13	5
Parainfluenza virus type 2	0	0	0	0	2	0	0	0	2		2	4
Parainfluenza virus type 3	0	0	0	0	9	2	0	9	20	18	54	79
Respiratory syncytial virus	2	7	1	8	1	0	8	27	54	44	98	84
Other RNA viruses												
HTLV-1	0	0	0	0	0	0	0	2	2	0	2	0
Rotavirus	1	11	0	0	17	2	3	1	35	30	89	91
Reovirus (unspecified)	0	1	0	0	0	0	0	0	1	0	1	0

Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 27 January to 23 February 2000, and total reports for the year[2] (continued)

	State or Territory[1]								This period 2000[3]	This period 1999[3]	Year to date 2000[3]	Year to date 1999
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
Other												
Chlamydia trachomatis not typed	5	25	25	90	37	1	4	82	269	231	518	462
Chlamydia psittaci	0	0	0	0	0	0	6	1	7	7	12	13
Chlamydia species	0	2	0	0	0	0	0	0	2	1	2	1
Mycoplasma pneumoniae	0	0	0	21	3	0	9	6	39	87	97	198
Coxiella burnetii (Q fever)	0	2	0	4	0	0	1	1	8	15	18	27
Streptococcus group A	0	6	8	25	0	0	0	0	39	0	80	0
Bordetella pertussis	0	3	0	10	3	0	25	1	42	39	119	93
Legionella pneumophila	0	0	0	0	0	0	1	0	1	5	1	8
Legionella longbeachae	0	0	0	0	0	0	0	3	3	1	9	9
Leptospira species	0	0	0	2	0	0	0	0	2	0	5	0
Treponema pallidum	0	1	11	24	0	0	0	1	37	0	87	0
Entamoeba histolytica	0	0	0	1	0	0	0	2	3	0	6	0
Total	13	108	86	454	278	12	148	460	1,559	1,241	3,154	2,848

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. From January 2000 data presented are for reports with report dates in the current period. Previousl y reports included all data received in that period.
3. Totals comprise data from all laboratories. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.

\- No data received this period.

Table 6. Virology and serology laboratory reports by contributing laboratories for the reporting period 27 January to 23 February 2000[1]

State or Territory	Laboratory	This period	Total this period[2]
Australian Capital Territory	The Canberra Hospital	0	0
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	49	182
	New Children's Hospital, Westmead	18	22
New South Wales	Repatriation General Hospital, Concord	0	0
	Royal Prince Alfred Hospital, Camperdown	19	24
	South West Area Pathology Service, Liverpool	0	0
Queensland	Queensland Medical Laboratory, West End	529	532
	Townsville General Hospital	7	8
South Australia	Institute of Medical and Veterinary Science, Adelaide	277	313
Tasmania	Northern Tasmanian Pathology Service, Launceston	6	9
	Royal Hobart Hospital, Hobart	0	0
Victoria	Monash Medical Centre, Melbourne	22	52
	Royal Children's Hospital, Melbourne	42	55
	Victorian Infectious Diseases Reference Laboratory, Fairfield	92	210
Western Australia	PathCentre Virology, Perth	468	505
	Princess Margaret Hospital, Perth	30	32
	Western Diagnostic Pathology	0	0
Total		1,559	1,944

1. The complete list of laboratories reporting for the 12 months, January to December 2000, will appear in every report from January 2000 regardless of whether reports were received in this reporting period. Reports are not always received from all laboratories.
2. Total reports include both reports for the current period and outstanding reports to date.

Table 7. Australian Sentinel Practice Research Network reports, weeks 4 to 7, 2000

Week number	4		5		6		7	
Week ending on	30 January 2000		6 February 2000		13 February 2000		20 February 2000	
Doctors reporting	63		65		66		65	
Total encounters	6,713		7,636		8,684		8,135	
Condition	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Influenza	10	1.5	10	1.3	13	1.5	16	2.0
Chickenpox	9	1.3	12	1.6	14	1.6	9	1.1
Gastroenteritis	76	11.3	65	8.5	95	10.9	74	9.1
Gastroenteritis with stool culture	11	1.6	17	2.2	14	1.6	13	1.6
ADT immunisations	54	8.0	44	5.8	64	7.4	74	9.1

The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The system coordinates the national surveillance of more than 40 communicable diseases or disease groups endorsed by the National Health and Medical Research Council (NHMRC). Notifications of these diseases are made to State and Territory health authorities under the provisions of their respective public health legislations. De-identified core unit data are supplied fortnightly for collation, analysis and dissemination. For further information, see CDI 2000;24:6.

LabVISE is a sentinel reporting scheme. Currently 17 laboratories contribute data on the laboratory identification of viruses and other organisms. This number may change throughout the year. Data are collated and published in Communicable Diseases Intelligence every four weeks. These data should be interpreted with caution as the number and type of reports received is subject to a number of biases. For further information, see CDI 2000;24:10.

ASPREN currently comprises about 120 general practitioners from throughout the country. Between 7,000 and 8,000 consultations are reported each week, with special attention to 14 conditions chosen for sentinel surveillance in 2000. CDI reports the consultation rates for five of these. For further information, including case definitions, see CDI 2000;24:7-8.

Additional Reports

Gonococcal surveillance

John Tapsall, The Prince of Wales Hospital, Randwick, NSW, 2031 for the Australian Gonococcal Surveillance Programme.

The Australian Gonococcal Surveillance Programme (AGSP) reference laboratories in the various States and Territories report data on sensitivity to an agreed 'core' group of antimicrobial agents quarterly. The antibiotics that are currently routinely surveyed are penicillin, ceftriaxone, ciprofloxacin and spectinomycin, all of which are administered as single dose regimens and currently used in Australia to treat gonorrhoea. When in vitro resistance to a recommended agent is demonstrated in 5% or more of isolates from a general population, it is usual to remove that agent from the list of recommended treatments.[1] Additional data are also provided on other antibiotics from time to time. At present all laboratories also test isolates for the presence of high level (plasmid-mediated) resistance to the tetracyclines, known as TRNG. Tetracyclines are however not a recommended therapy for gonorrhoea in Australia. Comparability of data is achieved by means of a standardised system of testing and a programme-specific quality assurance process. Because of the substantial geographic differences in susceptibility patterns in Australia, regional as well as aggregated data are presented.

Reporting period 1 July to 30 September 1999

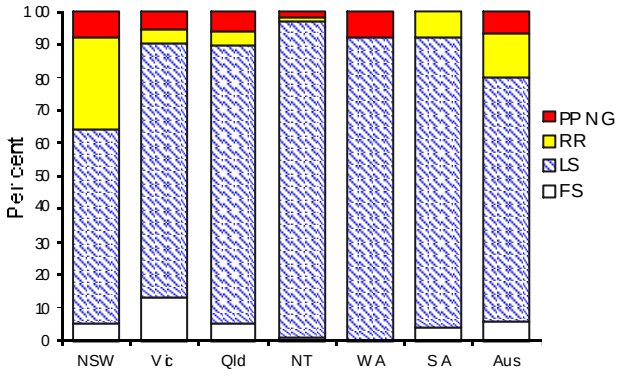
The AGSP laboratories examined a total of 859 isolates in this quarter. About 40% of this total was from New South Wales, 20% each from Victoria and Queensland, 10% from the Northern Territory and Western Australia and 3% from South Australia. Isolates from other centres were few in number.

Penicillins

Figure 6 shows the proportions of gonococci fully sensitive (MIC ≤ 0.03 mg/L), less sensitive (MIC 0.06 – 0.5 mg/L), relatively resistant (MIC ≥1 mg/L) or penicillinase producing (PPNG) aggregated for Australia and by State and Territory. A high proportion of PPNG and relatively resistant strains fail to respond to treatment with penicillins (penicillin, amoxycillin, ampicillin) and early generation cephalosporins.

Twenty per cent of all isolates were penicillin resistant by one or more mechanisms. The penicillin-resistant isolates

Figure 6. Penicillin resistance of gonococcal isolates, 1 July to 30 September 1999, by region



FS Fully sensitive to penicillin, MIC ≤ 0.03 mg/L

LS Less sensitive to penicillin, MIC 0.06 – 0.5 mg/L

RR Relatively resistant to penicillin, MIC ≥ 1 mg/L

PPNG Penicillinase producing *Neisseria gonorrhoeae*

comprised about one-third of all isolates in New South Wales and 8-10% of gonococci in Queensland, Victoria, South Australia and Western Australia. In the Northern Territory, 3% of isolates were penicillin resistant.

PPNG were present in all States and Territories in this quarter with the exception of South Australia. The number of PPNG isolated across Australia (56) increased in this quarter compared to the corresponding period in 1998 (44). Half of all the PPNG were found in Sydney (28) and Perth had the highest proportion of PPNG (8%). Acquisition data on PPNG, where available, suggested overseas contacts in Indonesia, the Philippines, Thailand, China and Singapore as sources of PPNG. In Perth, most PPNG were also TRNG, and Indonesia was a common source of acquisition. In New South Wales and Victoria local transmission of PPNG was noted.

The number of gonococci resistant to the penicillins by chromosomal mechanisms (CMRNG) was double that of PPNG, with the 115 CMRNG representing about 14% of stains tested. In the corresponding quarter in 1998 the number (217) and proportion (26%) of CMRNG were twice that in this period. CMRNG were present in all centres except Tasmania and Western Australia. More than a quarter of New South Wales isolates were CMRNG, but in most other centres they represented less than 5% of gonococci.

Ceftriaxone and spectinomycin

All isolates in Australia were again susceptible to these injectable agents.

Quinolone antibiotics

The total number (152) and proportion (18%) of isolates with altered susceptibility to the quinolone group (QRNG) remained high. The QRNG isolates were distributed widely, being present in all centres except Tasmania and South Australia. They were however, particularly concentrated in New South Wales and Victoria. Forty-four isolates (29%) were QRNG in Victoria and 93 (26%) in New South Wales and together these accounted for 90% of all QRNG. Eighteen of the New South Wales and 5 of the Victorian QRNG exhibited high level resistance (MIC ciprofloxacin ≥ 1 mg/L) and MICs ranged up to 16mg/L. Most infections with this group of high level resistance QRNG were acquired overseas. However, the majority QRNG were in males, locally acquired and in the MIC range 0.06 – 0.5 mg/L. QRNG were also prominent in Brisbane where 7% of strains were of this type, again mainly in males and in the lower MIC range. Three QRNG were noted in Western Australia and one each in the Australian Capital Territory and Northern Territory.

In the corresponding period in 1998, the 37 QRNG represented about 4% of all isolates.

High level tetracycline resistance (TRNG)

The number (85) and proportion (10%) of TRNG detected also increased when comparisons were made with 1998 data (46 TRNG, 5.5%). TRNG were particularly prominent in Sydney, Melbourne, Brisbane and Perth with TRNG ranging between 8% and 11% of strains in those centres. One or two TRNG were present in Adelaide, the Northern Territory and Tasmania.

Reference

1. Anonymous. Management of sexually transmitted diseases. World Health Organization 1997; Document WHO/GPA/TEM94.1 Rev 1 p. 37.

HIV and AIDS Surveillance

National surveillance for HIV disease is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR), in collaboration with State and Territory health authorities and the Commonwealth of Australia. Cases of HIV infection are notified to the National HIV Database on the first occasion of diagnosis in Australia, by either the diagnosing laboratory (ACT, New South Wales, Tasmania, Victoria) or by a combination of laboratory and doctor sources (Northern Territory, Queensland, South Australia, Western Australia). Cases of AIDS are notified through the State and Territory health authorities to the National AIDS Registry. Diagnoses of both HIV infection and AIDS are notified with the person's date of birth and name code, to minimise duplicate notifications while maintaining confidentiality.

Tabulations of diagnoses of HIV infection and AIDS are based on data available three months after the end of the reporting interval indicated, to allow for reporting delay and to incorporate newly available information. More detailed information on diagnoses of HIV infection and AIDS is published in the quarterly Australian HIV Surveillance Report, and annually in HIV/AIDS and related diseases in Australia Annual Surveillance Report. The reports are available from the National Centre in HIV Epidemiology and Clinical Research, 376 Victoria Street, Darlinghurst NSW 2010. Telephone: (02) 9332 4648; Facsimile: (02) 9332 1837; http://www.med.unsw.edu.au/nchecr.

HIV and AIDS diagnoses and deaths following AIDS reported for 1 to 31 October 1999, as reported to 31 January 2000, are included in this issue of CDI (Tables 8 and 9).

Table 8. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 to 31 October 1999, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Totals for Australia: This period 1999	This period 1998	Year to date 1999	Year to date 1998
HIV diagnoses	Female	0	0	1	3	0	0	0	0	4	8	57	76
	Male	0	0	0	9	4	0	10	0	23	46	465	524
	Sex not reported	0	0	0	0	0	0	0	0	0	0	4	5
	Total[1]	0	0	1	12	4	0	10	0	27	54	526	605
AIDS diagnoses	Female	0	0	0	0	0	0	0	0	0	2	13	15
	Male	0	3	1	1	0	0	0	0	5	13	100	240
	Total[1]	0	3	1	1	0	0	0	0	5	15	113	255
AIDS deaths	Female	0	0	0	0	0	0	0	0	0	1	3	8
	Male	0	5	0	1	1	0	3	1	11	10	80	123
	Total[1]	0	5	0	1	1	0	3	1	11	11	84	131

1. Persons whose sex was reported as transgender are included in the totals.

Table 9. Cumulative diagnoses of HIV infection, AIDS and deaths following AIDS since the introduction of HIV antibody testing to 31 October 1999, by sex and State or Territory

		State or Territory: ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
HIV diagnoses	Female	25	593	10	145	61	6	211	111	1,162
	Male	192	10,700	107	1,948	672	79	3,854	897	18,449
	Sex not reported	0	260	0	0	0	0	24	0	284
	Total[1]	217	11,572	117	2,100	733	85	4,102	1,011	19,937
AIDS diagnoses	Female	8	182	0	47	25	3	68	26	359
	Male	86	4,607	36	807	345	44	1,601	344	7,870
	Total[1]	94	4,801	36	856	370	47	1,676	372	8,252
AIDS deaths	Female	3	114	0	31	15	2	47	16	228
	Male	65	3,164	24	561	230	28	1,256	246	5,574
	Total[1]	68	3,286	24	594	245	30	1,309	263	5,819

1. Persons whose sex was reported as transgender are included in the totals.

Bulletin Board

International Society of Travel Medicine/WHO/CDC
2nd European Conference of Travel Medicine
29-31 March 2000
Venice, Italy
Contact: Dr Walter Pasini, Italy
Phone: 390-541-24301
Fax: 390-541-25748
Email: wpasini@rimini.com

Meningococcal disease workshop
Meningococcal disease in Australia
Surveillance and vaccine policy - 2000 and beyond
14-15 April 2000
The New Children's Hospital
Westmead, New South Wales
Contact: Kate Wyllie
Fax: 02 9845 3082
Email: katew2@nch.edu.au

Australian Society for Infectious Diseases Meeting
16-19 April 2000
Fairmont Resort Leura
Organisers: Dart Associates:
Phone: 02 94189396
For scientific content: Contact Tom Gottlieb,
Concord Hospital
Phone: 02 9767 7533
Fax: 02 9767 7868 or
Email: Tom@micr.crg.cs.nsw.gov.au

Australian Infection Control Association
First Biennial Conference
Infection Control Beyond 2000
3-5 May 2000
Hilton Adelaide International, South Australia
Contact: AICA 2000 Secretariat
PO Box 1280 , Milton, Queensland 4064
Phone: 07 3369 0477
Fax: 07 3369 1512
Email: aica2000@im.com.au
Website: http://www.aica.org.au/aica2000.htm

Australian School of Environmental Studies
Arbovirus Research in Australia
3-7 July 2000
Couran Cove Nature Resort, Gold Coast, Queensland
Contact Dr Michael Brown
Queensland Institute of Medical Research
PO Box Royal Brisbane Hospital
Herston, Queensland, 4029
Website: http://www.mcaa.org.au

Royal North Shore Hospital
Outpatient Parenteral Therapy - beyond 2000
17-22 September 2000
Fairmont Resort
Leura, New South Wales
Phone: 02 9956 8333
Fax: 02 9956 5154
Email: confact@conferenceaction.com.au

The Australasian Society for HIV Medicine
12th Annual Conference
16-19 November 2000
The Carlton Crest, Melbourne, Victoria
Phone: 02 9382 1656
Fax: 02 9382 3699
Email: B.Pearlman@unsw.edu.au

The CDI Bulletin Board is provided as a service to readers. Every effort has been made to provide accurate information, but readers are advised to contact the relevant organisation for confirmation of details. Information about the availability of resources is included when space allows. Inclusion of a resource on the Bulletin Board does not imply endorsement of the resource by either the Communicable Diseases Network Australia New Zealand or the Commonwealth Department of Health and Aged Care.

Contributions to the Bulletin Board are invited from those organisations with forthcoming events relevant to communicable disease control.

Overseas briefs

Source: World Health Organization (WHO)
This material has been summarised from information on the WHO Internet site. A link to this site can be found under 'Other Australian and international communicable diseases sites' on the CDI homepage.

Viral haemorrhagic fever/Marburg in Democratic Republic of Congo

The National Institute for Virology, South Africa has confirmed 7 cases of Marburg haemorrhagic fever from the Watsa Health Zone in the eastern Democratic Republic of Congo. Onset dates of illness range from late-December 1999 to mid-February 2000. The 6 newest cases occurred in adult males and 3 of these have died, but it is not known at this time if the cases were gold miners working in Durba. Marburg infections in miners in Durba were first diagnosed in April 1999, but are believed to have begun as early as November 1998.

Cholera in Madagascar - update

From 1 December 1999 until 3 March 2000, a total of 12,481 cases of cholera with 736 deaths was reported, compared with a total of 8,665 cases with 490 deaths reported during the period March to November 1999. The WHO Regional Office for Africa has participated in various activities in response to the cholera situation and took part in the initial investigation of the outbreak in the northern part of the country in March 1999. WHO has continued to provide technical support with other partners and is standing by to provide further assistance immediately if requested by the health authorities of Madagascar.

Listeriosis in France

The outbreak of listeriosis reported in France began during the second half of December 1999. Twenty-six cases including 7 deaths have so far been reported and the number of cases is expected to increase slightly in the next few days given the long incubation period of listeriosis (up to 2 months). The Ministry of Health issued a press release stating that a pork tongue in jelly is suspected to be the origin of the outbreak, on the basis of case-control study data. However, the name of the brand has not yet been identified and the Pasteur Institute in Paris is screening *Listeria monocytogenes* food isolates to detect the epidemic clone.

Food contaminated with *L. monocytogenes* is a significant source of illness and death worldwide. The case fatality rate in recent outbreaks and sporadic cases is around 20%-30%. From early August 1998 to 6 January 1999, at least 50 cases caused by a rare strain of the bacterium *L. monocytogenes*, serotype 4b, were reported in the United States of America. Six adults died and 2 pregnant women had spontaneous abortions. The vehicle for transmission was identified as hot-dogs and possibly processed meats produced under many brand names by one manufacturer.

Listeria in ready-to-eat foods was identified as a priority for risk assessment by the Codex Committee on Food Hygiene (CCFH) in order to develop an international strategy for the reduction of illness from this source. In response, WHO and FAO are undertaking risk assessments for *L. monocytogenes* in ready-to-eat foods. In October 2000, the preliminary report of a Joint FAO/WHO consultation on microbiological risk assessment will be delivered to CCFH, which is expected to define more focussed questions for further study. A final report will be delivered to CCFH in 2001.

Meningococcal disease in Central African Republic

On 1 February, WHO was informed of an increase in cases of meningococcal meningitis that occurred between October 1999 and January 2000. A total of 86 cases and 14 deaths were reported. The localities affected were: Vakaga – 25 cases, 2 deaths; Bamingui-Bangoran – 19 cases, 5 deaths; Haute Katto – 7 cases, 5 deaths; Ouham Pend – 35 cases, 2 deaths. Vaccination campaigns have been carried out in the affected areas, and the situation is being closely monitored by the WHO Regional Office for Africa.

Imported yellow fever case in the Netherlands

The national health authorities have reported an imported case of yellow fever in a 32 year old unvaccinated male who went on a 4-week holiday to Suriname. He became ill on 12 January after his return to the Netherlands on 9 January. He was admitted to hospital in The Hague where he recovered and was recently discharged. Yellow fever was diagnosed by serological testing on 16 February.

Hantavirus pulmonary syndrome in Panama

Twelve suspected cases including 3 deaths from Hantavirus pulmonary syndrome have been reported from Las Tablas and Guarare districts, Los Santos Province. The diagnosis has been confirmed by serological tests (positive IgM and IgG) on samples from 3 surviving patients. Testing was performed by the Centers for Disease Control and Prevention (CDC) in the United States of America.

Preventive measures are being taken to educate and inform the public to avoid contact with rodents and their excreta. A seroprevalence study in humans and rodents for virus detection and identification of reservoir species is underway. Clinicians in the area have been trained in case management.

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Website

http://www.health.gov.au/pubhlth/cdi/cdihtml.htm

Contributions

Contributions covering any aspects of communicable diseases are invited. All contributions are subject to the normal refereeing process. **Instructions to authors can be found in *CDI* 2000;24:5.**

Contacts other than subscriptions

CDI is produced every four weeks by the National Centre for Disease Control, Department of Health and Aged Care, GPO Box 9848, Canberra, ACT, 2601; Fax: (02) 6289 7791, Phone: (02) 6289 8245; email: cdi.editor@health.gov.au.

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