

Malaria acquired in the Torres Strait

Anthony Merritt¹, Dan Ewald², Andrew F. van den Hurk¹, Seriako Stephen Jnr², Jenni Langrell²

Abstract

Two cases of *Plasmodium vivax* malaria acquired in the Torres Strait during 1997 are reported. The source of infection could not be firmly established but two possibilities are discussed. Anopheline mosquitoes are present in the Torres Strait, and malaria is frequently imported from Papua New Guinea (PNG), thus transmission by local mosquitoes poses an ongoing threat. However, in this particular location, Badu Island, no recent importation of malaria was identified and mosquito surveillance demonstrated low numbers of anopheline species at the time and for the preceding two years. These cases could also feasibly be explained by a variant of 'baggage malaria' in which mosquitoes already infected with the malaria parasite were imported from PNG in one of the small boats that regularly make this journey. These cases serve as a reminder to health care providers in northern Australia to consider the diagnosis of malaria in patients presenting with a febrile illness.

Introduction

Malaria is commonly diagnosed in the Torres Strait with virtually all cases being imported from Papua New Guinea (PNG). During 1996, for example, a total of 67 cases were notified; 50 of these were visitors from PNG and the remainder were local residents with a history of travel to PNG. Despite the presence of anopheline mosquitoes in the Torres Strait, in particular *Anopheles farauti sensu lato* (*An. farauti s.l.*),¹ locally acquired cases of malaria are uncommon. The last known cases were acquired on the island of Saibai in 1991

(unpublished data, Tropical Public Health Unit).

Two cases of *Plasmodium vivax* (*P. vivax*) malaria that were acquired in the Torres Strait in 1997 are presented in this report.

Methods and Results

Malaria was confirmed in two residents of Badu Island in the Torres Strait in mid-June 1997. Both had *P. vivax* detected in blood films at the Thursday Island Hospital and subsequently confirmed by the Malaria Reference Laboratory, Centre for Public Health Sciences, Brisbane. The two cases were unrelated and lived

in homes separated by a distance of at least 500 metres in a community of over 600 people. Neither case had ever travelled to PNG, nor had they recently travelled elsewhere in the Torres Strait.

The first case was a 17 year old male who initially presented with fever and headache on 5 June 1997. He commenced oral amoxicillin therapy on 9 June for bilateral otitis media and cough, but his fever persisted and blood films confirmed malaria on 11 June. He responded rapidly to oral quinine (600mg x3 daily for 3 days) and Fansidar (3 tabs on day 3).² He underwent

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ISSN 0725-3141
Volume 22
Number 1
22 January 1998

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primaquine therapy (7.5mg x3 daily for 14 days)³ following a normal glucose-6-phosphate dehydrogenase (G6PD) assay, and has remained well.

The second case was a 54 year old male who presented on 9 June with bilateral otitis media. He commenced oral amoxicillin therapy and re-presented the following day with fever and confusion. He was evacuated to the Thursday Island Hospital and treated with intravenous ceftriaxone and penicillin for presumed septicaemia. Blood films confirmed malaria later that day and he responded rapidly to oral quinine (600mg x3 daily for 3 days). His G6PD levels were low and he was not treated with primaquine.

Further cases of malaria were actively sought by clinic staff. Blood films were taken from the household contacts and immediate neighbours of both cases and from other patients who subsequently presented to the Badu Health Centre with a febrile illness. A total of 17 additional films were collected and examined at the Thursday Island Hospital. Staff at each of the other clinics throughout the Torres Strait were informed of the situation and requested to arrange blood films for all febrile patients. No further cases of malaria were detected.

Discussion

The specific mechanism of transmission is unclear in these cases. Transmission by local mosquitoes would require: a source of infection (such as, a visitor from PNG with gametocytes present in peripheral blood), the presence of adequate numbers of the mosquito vector, and climatic conditions that allowed the completion of extrinsic incubation of the parasite within the mosquito.⁴

The source of infection could not be identified. The last recognised case of imported malaria on Badu Island was on 22 February 1997, when *P. vivax* (with gametocytes) was detected. The time taken for extrinsic incubation in the mosquito is 8-16 days and the incubation period in humans is usually 12-17 days.⁴ Although prolonged incubation up to 9 months or more has occurred in more temperate areas, in tropical regions such as the Torres Strait, incubation periods for *P. vivax* are typically short.⁵ Therefore, it is most unlikely that the two

locally-acquired cases in June were linked to the February importation.

Unrecognised importation could have occurred at a later date as people frequently travel to and from PNG. Visitors from PNG slept in the house of the first case in late March, and frequently stayed with neighbours of the second case. Several factors contribute to the possibility of unrecognised importation; visits to the island are often brief, PNG residents with a history of recurrent malaria may have asymptomatic parasitaemia, and the gametocytes of *P. vivax* appear early in the infection, possibly before a diagnosis is made.

Mosquito surveillance has been actively maintained in the Torres Strait following several cases of Japanese encephalitis in 1995.⁶ This surveillance has shown that the numbers of *An. farauti s.l.* have consistently been low on Badu Island for the last two years. Light traps baited with dry ice were set in late March 1997 and yielded an average count of three *An. farauti s.l.* per trap, with 25 captured in a trap set about one kilometre from the community (unpublished data, van den Hurk, Tropical Public Health Unit). Further light trapping and a larval survey on Badu Island on 17 June 1997 detected low total mosquito numbers and no anopheline species. Such low levels are considered to indicate a negligible risk of local malaria transmission.⁷

Climatic conditions during this period were probably adequate for completion of parasite development in the mosquito, as nearby Horn Island recorded a minimum temperature of 19°C and minimum relative humidity of 58% for the months of April and May 1997 (personal communication, Bureau of Meteorology, Brisbane).

The absence of an identified recent imported case, and the capture of such low numbers of *An. farauti s.l.* make it difficult to readily accept that local transmission occurred in this manner, although it cannot be completely ruled out.

Local transmission could also feasibly occur if mosquitoes already carrying the parasite were themselves imported from a malarious area. This phenomenon, although rare, is well recognised elsewhere with titles such as 'airport', 'harbour' and 'baggage' malaria, in recognition of infected mosquitoes purportedly travelling to

non-endemic regions in planes, boats and personal baggage.^{8,9,10,11} There are no direct flights from PNG to Badu Island, but considerable numbers of visitors from PNG regularly travel to the island in small open boats; a journey of about four hours duration. It is plausible that infected mosquitoes could be imported in 'baggage' carried on such trips.

These cases serve as reminder that, while the risk of serious outbreaks of malaria in northern Australia is increasingly recognised as low,¹² health care providers in northern Australia may occasionally encounter an unusual case of malaria. The diagnosis should be considered in patients presenting with a febrile illness so that prompt treatment can be given.

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Importation of *Aedes Albopictus* in Townsville, Queensland

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The mosquito *Aedes albopictus* (*Ae. albopictus*) is a vector of dengue virus in southeast Asia. However, it is most notable for its accidental introductions into and subsequent colonisation of new areas. *Ae. albopictus* importations, primarily via used tyres infested with eggs, have been documented in the United States of America,^{1,2} Europe³ and Australia.⁴ The vector has become established in the southeastern part of the United States of America and parts of southern Europe.¹ In the USA, the establishment of *Ae. albopictus* in temperate regions has extended the area at potential risk for the introduction of dengue and other arboviral diseases. To date, in these newly colonised areas, there has been no evidence of dengue transmission and the vector has not been implicated in outbreaks of other arboviral diseases. However, eastern equine encephalomyelitis (EEE) virus has been isolated from wild populations of *Ae. albopictus* in the United States of America.¹

The establishment of *Ae. albopictus* in Australia would be likely to have less impact in the tropical areas than in the temperate zones. Moore and Mitchell¹ state 'in areas where *Ae. aegypti* is abundant, this species might be expected to play a far more important role in dengue transmission than *Ae. Albopictus*'. The major impact of the establishment of this vector would be the extension of the dengue receptive area from tropical Australia into southern coastal areas, and the possibility that it could become involved in the transmission of other arboviruses, such as Ross River virus. In cities with heavy international air traffic, there is a risk of travellers arriving with dengue viraemia. The presence of *Ae. albopictus* in these cities creates the potential for dengue transmission. However, explosive urban epidemics, such as those that

occur in the tropics associated with *Ae. aegypti*,⁵ would be very unlikely.

To prevent the introduction of exotic vectors, Australia has long maintained a strict policy of aircraft disinsection. The Australian Quarantine and Inspection Service (AQIS) also requires the fumigation of shipments of imported used tyres and unprotected new tyres with methylbromide, and inspects cargoes for mosquito larvae. As a result, importations of *Ae. albopictus* in Australia have been recognised early and subsequently controlled.⁴

This report describes an unusual importation of *Ae. albopictus* into Townsville, Queensland. On 10 May 1997, a shipment from Papua New Guinea arrived at the Townsville Port. The cargo included a cement truck agitator bowl that had been loaded on in Port Moresby, PNG, on 2 May 1997. An inspection on 15 May 1997 by AQIS personnel revealed that the agitator bowl contained water with a large number of mosquito larvae and pupae.

The bowl was fumigated with 128 g/m³ of methylbromide that day, while temephos was used to kill the larvae. Larvae were identified by Queensland Health (QH) vector control personnel and a Queensland Institute of Medical Research entomologist, as *Ae. albopictus*.

In response to the finding, an extensive mosquito survey and control program commenced on 22 May 1997 in the Townsville Port precinct and surrounding area. AQIS, QH and Townsville City Council (TCC) personnel conducted house-to-house searches for water-holding containers within 1 km of the wharf. No *Ae. albopictus* larvae were found in the water-holding containers within 1 km of the wharf although some *Ae. notoscriptus* and *Ae. aegypti* larvae

were present. TCC personnel conducted ultra low volume fogging with bioresmethrin in the area to kill any adult *Ae. albopictus*. Seven ovitraps made of used tyres were set on 24 May 1997 in the area and monitored weekly for potential oviposition over a two month period. No *Ae. albopictus* eggs were found in the ovitraps. The larval and ovitrap surveys suggest strongly that *Ae. albopictus* did not establish a population in the Townsville Port area.

It is perhaps fortuitous that *Ae. albopictus* did not establish a population in the area surrounding the port. The large agitator bowl contained numerous larvae and pupae. Adult mosquitoes were also noted inside the bowl, and had 5 days (10-15 May) to disperse. A heavy rain on 16-17 May (45 mm) could have hatched recently laid eggs. However, subsequent weather was cool and dry; June had a mean temperature of 20.2°C, with only 7.6 mm of rain. Overall, these weather conditions would have minimised egg hatching and rapid development of larvae.

In response to the time delay from ship arrival until inspection, AQIS have instigated procedures to ensure that cargo is inspected within 24 hours of arrival. While it appears that establishment of *Ae. albopictus* in Australia was avoided on this occasion, this event highlights the fact that mosquitoes can be transported in cargo other than tyres, and that a quick, thorough response can prevent colonisation.

Acknowledgements

We would like to thank Dr Brian Kay and Bruce Russell of the Queensland Institute of Medical Research for useful discussions and confirmation of the identification, and Ian Kuhl of Townsville City Council for aiding in the

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investigation. We also appreciate the discussions and input by John Piispanen, Tropical Public Health Unit, Townsville.

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Dengue in Queensland

Queensland Health's Tropical Public Health Unit has reported 40 confirmed and 15 probable cases of dengue fever in Cairns, up until 21 January 1998. Fourteen patients have been hospitalised.

The outbreak which began in December 1997 is due to dengue type

3 (outbreaks in northern Queensland in recent years have been due to dengue type 2). There appears to more than a single focus of infection. Residents have been advised to take action to stop mosquitoes breeding around their homes and to avoid being bitten. Mosquito control teams

from the Tropical Public Health Unit and Cairns City Council are spraying in and around homes in the dengue warning area. Other recommendations include the screening of doors and windows to prevent mosquito entry and the use of personal insect repellent.

Surveillance data in *CDI*

The Communicable Diseases Surveillance section of *Communicable Diseases Intelligence (CDI)* includes reports from a number of national surveillance schemes. These schemes are conducted to monitor the occurrence of communicable diseases in Australia, to detect trends, to highlight needs for further investigation and to implement or manage control measures. This article describes the surveillance schemes which are routinely reported on in *CDI*.

Surveillance has been defined by the World Health Organization as the 'continuing scrutiny of all aspects of the occurrence and spread of disease that are pertinent to effective control', it is characterised by 'methods distinguished by their practicability, uniformity, and frequently by their rapidity, rather than complete accuracy'.¹ Although some surveillance schemes aim for complete case ascertainment, some include only a sample of all cases of the conditions under surveillance, and these samples are subject to systematic and other biases.

Results generated from surveillance schemes must be interpreted with caution, particularly when comparing results between schemes, between different geographical areas or jurisdictions and over time. Surveillance data may also differ from data on communicable diseases which may be gathered in other settings.

The major features of the surveillance schemes for which *CDI* publishes regular reports are described below. Other surveillance schemes for which *CDI* publishes occasional reports include the National Mycobacterial Surveillance System (*CDI* 1997;21:261-269), the Australian Mycobacterium Reference Laboratory Network (*CDI* 1997;21:245-249), the Hib Case Surveillance Scheme (*CDI* 1997;21:173-176) and the National *Neisseria* Network (*CDI* 1997;21:189-192 and *CDI* 1997;21:217-221).

National Notifiable Diseases Surveillance System

National compilations of notifiable diseases have been published intermittently in a number of publications since 1917 (see *CDI* 1993;17:226-236). The National Notifiable Diseases Surveillance System (NNDSS) was established in 1990 under the auspices of the

Communicable Diseases Network Australia New Zealand (CDNANZ).

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).² Under this scheme, notifications are made to the State or Territory health authority under the provisions of the public health legislation in their jurisdiction. Computerised, de-identified unit records of notifications are supplied to the network secretariat at the Department of Health and Family Services for collation, analysis and publication in *CDI*.

Data provided for each notification include a unique record reference number, State or Territory code, disease code, date of onset, date of notification to the relevant health authority, sex, age, Aboriginality, postcode of residence, and the confirmation status of the report (as defined by each State or Territory).

Each fortnight, State and Territory health authorities submit a file of notifications received for the year to date; the data files therefore include notifications for both the current reporting period and updated notifications for all previous reporting periods in the current year.

The data are presented on the *Communicable Diseases - Australia* internet site each fortnight. They are also published in *CDI* every four weeks. Cases reported to State and Territory health authorities for the current reporting period are listed by State or Territory, and totals for Australia are presented for the current period, the year to date, and for the corresponding periods of the previous year. HIV infection and AIDS notifications are not included in this section of *CDI*. Surveillance for these conditions is conducted separately by the National Centre for HIV Epidemiology and Clinical Research and is reported in the HIV and AIDS Surveillance reports (see below).

A commentary on the notification data is included with the tables in each issue and graphs are used to illustrate trends in the data.

The interval from the end of a reporting period to the date of publication of collated data in *CDI* is currently 15 days.

The quality and completeness of data compiled in the National Notifiable Diseases Surveillance System are influenced by various factors. Tables, graphs and commentary must be interpreted with caution, particularly when comparisons are made between States and Territories and with data from previous years. Each State or Territory health authority determines which diseases will be notifiable within its jurisdiction, and which notifications are accepted as satisfying criteria. In some cases these differ from the NHMRC case definitions. In addition, the mechanism of notification varies between States and Territories. Notifications may be required from treating clinicians, diagnostic laboratories or hospitals. In some cases different diseases are notifiable by different mechanisms. The proportion of cases seen by health care providers which are the subject of notification to health authorities is not known with certainty for any disease, and may vary among

diseases, between jurisdictions and over time.

HIV and AIDS Surveillance

National surveillance for HIV and AIDS is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR) within the University of New South Wales, 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, either by the diagnosing laboratory (Australian Capital Territory, New South Wales, Tasmania and Victoria) or by a combination of laboratory and doctor sources (Northern Territory, Queensland, South Australia and 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.

Currently, two tables presenting HIV infection diagnoses, AIDS diagnoses and AIDS deaths are published in each issue of *CDI* when available.

Tabulations of diagnoses of HIV infection and AIDS are based on data available three months after the end of the reporting period, to allow for reporting delay and to incorporate newly available information. More detailed information on diagnoses of HIV infections and AIDS is published quarterly in the *Australian HIV Surveillance Report*, available from the NCHECR. In 1997 the centre produced its first annual report.

Australian Sentinel Practice Research Network

The Research and Health Promotion Unit of the Royal Australian College of General Practitioners operates the Australian Sentinel Practice Research Network (ASPREN). ASPREN is a national network of general practitioners who report on a number of conditions each week. The aim of ASPREN is to provide an indicator of the burden of disease in the primary

health care setting and to detect trends in consultation rates.

There are currently about 100 participating general practitioners in the network from all States and Territories. Seventy-five per cent of these are in metropolitan areas and the remainder are rural based. Between 7,000 and 8,000 consultations are recorded each week.

The list of conditions is reviewed annually by the ASPREN management committee, and an annual report is published.

For 1998, 12 conditions are being monitored, all of them related to communicable diseases issues.

These include first attendance for an episode of influenza, rubella, measles, chickenpox, pertussis, Ross River virus infection, and gastroenteritis.

The other recordable conditions are: a reaction to pertussis vaccine, or attendances which result in the initiation of HIV testing (by doctor or patient), or in the immunising of a person with ADT (adult diphtheria and tetanus) or pertussis vaccine.

Data for communicable diseases are published every four weeks in *CDI*. For each of the four reporting weeks reviewed, the number of cases is presented in tabular form together with the rate of reporting per 1,000 consultations. Brief comments on the reports accompany the table.

The case definitions are as follows:

Influenza

- (a) Viral culture or serological evidence of influenza virus infection, or
- (b) influenza epidemic, plus four of the criteria in (c), or
- (c) six of the following:
 - (i) sudden onset (within 12 hours)
 - (ii) cough
 - (iii) rigors or chills
 - (iv) fever
 - (v) prostration and weakness
 - (vi) myalgia, widespread aches and pains
 - (vii) no significant respiratory physical signs other than redness of nasal mucous membrane and throat
 - (viii) influenza in close contacts.

Rubella

(a) An acute exanthem with enlarged lymph nodes, most prominently suboccipital and post auricular, with a macular rash on the face, spreading to the trunk and proximal portions of the limbs, or

(b) serological evidence of rubella infection.

Measles

(a) Serological or virological evidence of acute measles, or

(b) two of the following:

- (i) prodrome including injected conjunctivae, fever and cough
- (ii) white specks on a red base in the mucous membranes of the cheek (Koplik's spots)
- (iii) confluent maculopapular eruption spreading over the face and body, or

(c) an atypical exanthem in a partially immune person during an epidemic of measles.

Chickenpox

An acute, generalised viral disease with a sudden onset of slight fever, mild constitutional symptoms and a skin eruption which is maculopapular for a few hours, vesicular for 3 to 4 days, and leaves a granular scab.

Pertussis

(a) Respiratory infection with a characteristic staccato paroxysmal cough ending with a high-pitched inspiratory whoop, or

(b) respiratory infection with persistent cough (3 weeks) in contact with known pertussis, or

(c) demonstration of *Bordetella pertussis*.

Ross River virus infection

A patient who presents with:

- (a) joint pain, and
- (b) lethargy, and
- (c) a history of exposure to mosquitoes.

All three must be present for a diagnosis of Ross River virus infection.

Note: this symptom complex would also apply to conditions resulting from infections with Barmah Forest virus and some other arboviruses.

HIV testing (patient initiated)

Testing for HIV undertaken as a result of a patient request.

Note: Requests made by insurance companies for HIV testing should be excluded.

HIV testing (doctor initiated)

Testing initiated for a medical practitioner determined reason.

Note: Requests made by insurance companies for HIV testing should be excluded.

Gastroenteritis

Intestinal disease, presumed or proven to be infective in origin, recorded once only.

ADT

Any consultation at which an Adult Diphtheria and Tetanus (ADT) immunisation is given.

Pertussis vaccination

Administration of any pertussis containing vaccine.

Pertussis vaccination reaction

An adverse event reported with the following characteristics:

(a) in children who were vaccinated by the reporting general practitioner (not other GPs or clinics) on or after 1 January 1998;

(b) the occurrence of one or more of the following symptoms within 48 hours of the administration of vaccination with any pertussis containing vaccine:

- (i) local redness or swelling of any severity
- (ii) fever greater than 38.0°C
- (iii) crying or screaming
- (iv) somnolence that interferes with normal play or feeding
- (v) any severe event (as indicated in the current Australian Immunisation Handbook, for example, seizure, hypotonic-hyporesponsive episode, anaphylaxis.

Note: the adverse reaction may be reported in person or by telephone, at the time of the event or at a subsequent visit for a scheduled vaccination.

Surveillance of Serious Adverse Events Following Vaccination

The Serious Adverse Events Following Vaccination Surveillance Scheme is a national surveillance scheme initiated through the National Childhood Immunisation Program. The scheme aims to identify and report in a timely

fashion all serious adverse events which follow childhood vaccination. This permits (i) the identification of illnesses of infrequent occurrence that may be associated with vaccination, (ii) the estimation of rates of occurrence of events temporally associated with vaccination, (iii) monitoring for unusually high rates of adverse events, (iv) the provision of information to inform the debate on the risks and benefits of vaccines and (v) the identification of areas that require further research.

A serious adverse event following vaccination is defined as:

(a) The occurrence of one or more of the following conditions within 48 hours of the administration of a vaccine:

- (i) persistent screaming (for more than three hours)
- (ii) a temperature of 40.5°C or more, unexplained by any other cause
- (iii) anaphylaxis
- (iv) shock
- (v) hypotonic/hyporesponsive episode, or

(b) the occurrence of one or more of the following conditions within 30 days of the administration of a vaccine:

- (vi) encephalopathy
- (vii) convulsions
- (viii) aseptic meningitis
- (ix) thrombocytopenia
- (x) acute flaccid paralysis
- (xi) death
- (xii) other serious event thought to be associated with a vaccination.

Reports on serious adverse events are collected by State and Territory health authorities and forwarded to the Department of Health and Family Services every fortnight. Information collected on each case includes the vaccine(s) temporally associated with the event, possible risk factors in the child's medical history and details about the nature, timing and outcome of the event. Methods of collecting reports vary between States and Territories. Telephone reporting is accepted to minimise health care provider paperwork. States and Territories also report on follow up at 60 days.

Reports of the surveillance scheme are published quarterly. Acceptance of a report does not imply a causal relationship between the administration of the vaccine and the medical outcome, or that the report has been verified as to its accuracy.

Sentinel Chicken Surveillance Programme

The Sentinel Chicken Surveillance Programme is used to provide an early warning of increased flavivirus activity in Australia. The main viruses of concern are Murray Valley encephalitis (MVE) and Kunjin which cause the potentially fatal disease Australian encephalitis in humans. These viruses are enzootic in parts of the north-east Kimberley region of Western Australia and the Northern Territory but are epizootic in other areas of the Kimberley and in north Queensland. MVE virus is also responsible for occasional severe epidemics of Australian encephalitis in eastern Australia. The most recent was in 1974 when there were 13 fatalities and cases were reported from all mainland States. Since then, 48 cases have been reported and all but one of these were from the north of Australia.

Since 1974, a number of sentinel chicken flocks have been established in Australia to provide an early warning of increased MVE virus activity. These programs are supported by individual State health departments. Each State has a contingency plan which will be implemented if one or more chickens in a flock seroconverts to MVE virus.

Currently 26 flocks are maintained in the north of Western Australia, seven in the Northern Territory, nine in New South Wales and ten in Victoria (Figures 1, 2, 3 and 4). The flocks in Western Australia and the Northern Territory are tested all year round but those in New South Wales and

Figure 1. Sentinel chicken flock sites, Western Australia

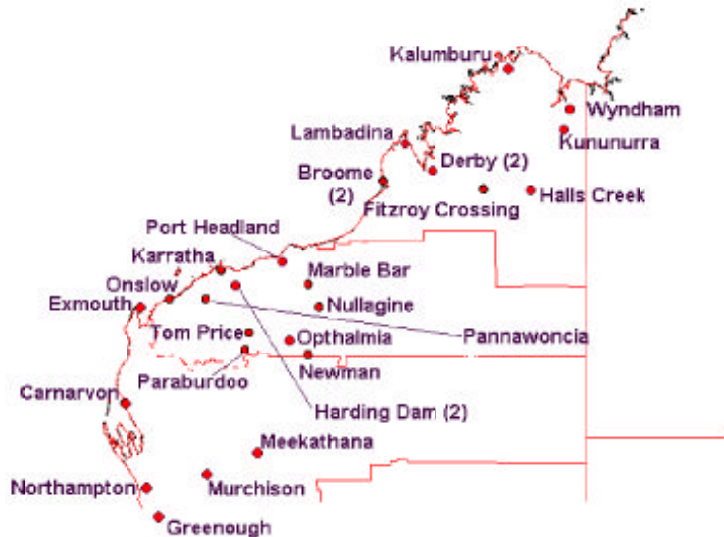


Figure 2. Sentinel chicken flock sites, Victoria

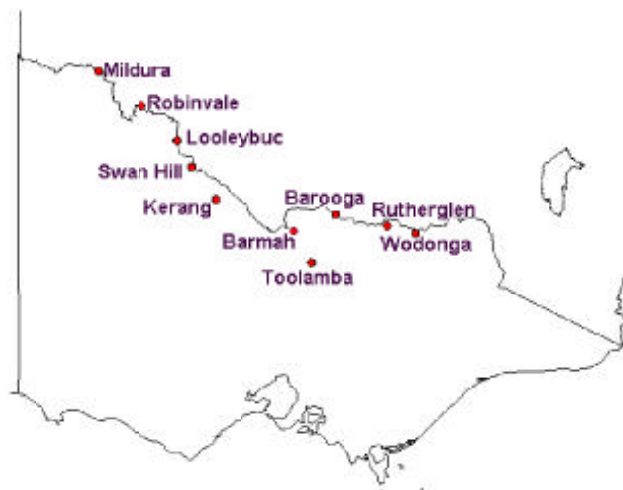


Figure 3. Sentinel chicken flock sites, New South Wales

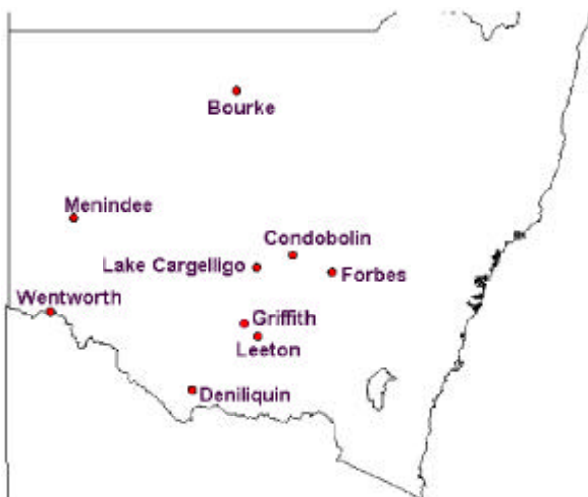


Figure 4. Sentinel chicken flock sites, Northern Territory



Victoria are tested only in the summer months, during the main MVE risk season.

Results are coordinated by the Arbovirus Laboratory in Perth and reported bimonthly.

Gonococcal surveillance

The Australian Gonococcal Surveillance Programme (AGSP) includes ten reference laboratories in all States and Territories and in New Zealand. These laboratories report data on sensitivity to an agreed 'core' group of antimicrobial agents quarterly. The antibiotics which are currently routinely surveyed are the penicillins, ceftriaxone, ciprofloxacin and spectinomycin, all of which are administered as single dose regimens. When *in vitro* resistance to a recommended agent is demonstrated in 5% or more of isolates, it is usual to reconsider the inclusion of that agent in current treatment schedules. 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 resistance to the tetracyclines. Comparability of data is achieved by means of a standardised system of testing and a program-specific quality assurance process. Reports of the program are published quarterly.

National Influenza Surveillance

Influenza surveillance in Australia is based on several schemes collecting a range of data which can be used to measure influenza activity. From autumn to spring, the results of each of the schemes are published together as National Influenza Surveillance to facilitate a national view of influenza activity.

In 1997, four sentinel general practitioner schemes contributed reports of influenza-like illness: the Australian Sentinel Practice Research Network, Tropical Influenza

Surveillance from the Northern Territory, the New South Wales Sentinel General Practice Scheme and the Victorian Sentinel General Practice Scheme. The number of cases of influenza and the total consultations for each week are reported, and a graph depicts the data for the season to date.

National absenteeism surveillance data are provided by Australia Post. Reports are based on the proportion of their employees (approximately 37,000) absent on sick leave for a selected day each week. Absenteeism data for the reporting period is published in each issue.

The *CDI* Virology and Serology Laboratory Reporting Scheme contributes laboratory reports of influenza diagnoses, by week of specimen collection, virus type and method of diagnosis. Graphs of the data for the year to date are presented. The WHO Collaborating Centre for Influenza Reference and Research at the Commonwealth Serum Laboratories, Melbourne provides information on antigenic analysis of isolates received from Australia, New Zealand, other countries of the region and South Africa.

Virology and Serology Laboratory Reporting Scheme (LabVISE)

The Virology and Serology Laboratory Reporting Scheme began operating in 1977. The scheme comprises 21 sentinel laboratories from all States and the Australian Capital Territory. Contributors submit data on the laboratory identification of viruses and other organisms. Laboratories elect to submit data either on computer disk using LabVISE software (written in Epi Info), or on paper forms in the same format. Each record includes mandatory data fields (laboratory, specimen collection date, a patient identifier code, specimen source, the agent detected and the method of diagnosis), and optional fields (specimen code number, sex, date of

birth or age, postcode of residence, clinical diagnosis, risk factors and comments).

Reports are collated, analysed and published currently every four weeks. Each report includes two summary tables. The delay between date of specimen collection and date of publication ranges from two weeks to several months. A commentary on the laboratory reports includes the observation of recent trends with accompanying graphical presentation.

Data derived from this scheme must be interpreted with caution. The number and type of reports received is subject to a number of biases. These include the number of participating laboratories which has varied over time. The locations of participating laboratories also create bias, as some jurisdictions are better represented than others. Also changes in diagnostic practices, particularly the introduction of new testing methodologies, may affect laboratory reports. The ability of laboratory tests to distinguish acute from chronic or past infection must also be considered in interpretation of the data.

This is a sentinel scheme hence changes in incidence cannot be determined. However general trends can be observed, for example with respect to seasonality and the age-sex distribution of patients.

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CDI Instructions for authors

Communicable Diseases Intelligence (CDI) is a four weekly publication of the National Centre for Disease Control, Commonwealth Department of Health and Family Services and the Communicable Diseases Network Australia. Its aim is to provide timely information about communicable diseases in Australia to those with responsibility for their control. *CDI* has a particular emphasis on public health issues.

CDI invites contributions dealing with any aspect of communicable disease incidence, risk factors, surveillance or control in Australia. Submissions can be in the form of original articles, short reports, surveillance summaries, reviews or correspondence.

On receipt of an article, *CDI* sends a brief acknowledgment indicating that it will be considered for publication. The article will then undergo a review process which may include peer review by two experts in the topic area. Articles may be rejected without peer review. Occasionally reports of urgent public health importance may be published immediately, at the discretion of the Editor. Authors may be asked to revise articles as a result of the review process and the final decision about publication is made by the Editor.

CDI is published on every fourth Thursday of the year. It is finalised for printing on the Monday prior to the publication date. Very topical brief contributions (for example reports of current outbreaks) may be published in the period of receipt, by arrangement with the editorial staff.

Submission procedure

A single copy of the contribution should be submitted to The Deputy Editor, *Communicable Diseases Intelligence*, at the address below. A covering letter should identify the corresponding author and be signed by all authors agreeing to possible publication.

The contribution should be provided in hard copy and on diskette (3.5 inch disks preferred). WordPerfect text format is ideal, although most IBM-compatible word processing formats can be converted. Short contributions may also be sent by email.

Authors

Authors of articles should be identified by their first name, last name, institution and address, with phone and fax contacts for the corresponding author. Each author should have participated sufficiently to take public responsibility for the article. Others contributing to the work should be recognised in the acknowledgments.

Articles and short reports

The text of articles should be structured to contain abstract, introduction, methods, results, discussion, acknowledgments and references, as far as is possible. Short contributions may need fewer subsections. There is no strict word limit for articles but manuscripts of 2,000 words or less are preferred. A word count should be included with the contribution.

Tables and figures

All tables and figures should be referred to within the results section and should not duplicate information in the text. Graphs published are produced in Excel 5. If graphs are to be included, the numerical data on which these are based should also be provided to enable production in house style. Black and white illustrations or photographs can be included if required.

References

References should be identified consecutively in the text by the use of superscript numbers. The Vancouver reference style is used by *CDI* (see International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. *Ann Intern Med* 1997;1126:36-47). All unpublished material should be referred to within the text (instead of the reference list) as personal communication or unpublished observation. The only exception is material which has been accepted for publication (in press).

Protection of patients' rights to privacy

Identifying details about patients should be omitted if they are not essential, but data should never be altered or falsified in an attempt to attain anonymity. Complete anonymity may be difficult to achieve, and written informed consent should be obtained if there is any doubt. Informed consent for this purpose requires that the patient be shown the manuscript to be published.

When informed consent has been obtained it should be included in the article.

Contact details

Contributions and requests for further information should be sent to: The Deputy Editor (Corrine Rann), *Communicable Diseases Intelligence*, National Centre for Disease Control, MDP 6, GPO Box 9848, Canberra, ACT 2601. Telephone: (06) 289 6895 Fax: (06) 289 7791 Email: corrine.rann@health.gov.au

Communicable Diseases Surveillance

Ross River virus infection

Ross River virus is an arthropod-borne virus belonging to the alphavirus group. The major vectors of Ross River virus in Australia are *Culex annulirostris* in inland areas and *Aedes vigilax* in coastal regions.

Disease due to Ross River virus infection is also known as epidemic polyarthritis. Onset most commonly occurs in the late summer and early autumn months. The incubation period is between three and 11 days and infection is frequently subclinical. In those cases which are clinically manifest, signs and symptoms include arthritis, maculopapular rash, malaise, myalgia and fever. Laboratory confirmation is by the detection of a fourfold rise in antibody titre between paired sera.

The National Notifiable Diseases Surveillance System records a peak in Ross River virus infection activity in February and March each year (Figure 1). A total of 6,428

Figure 1. Notifications of Ross River virus infection, 1992 to 1997, by month of specimen collection

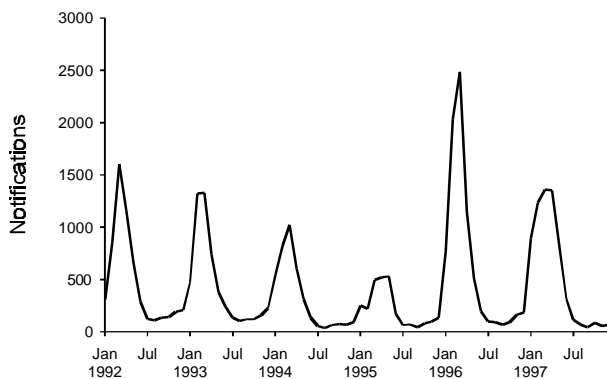


Figure 2. Laboratory reports of Ross River virus, 1992 to 1997, by month of specimen

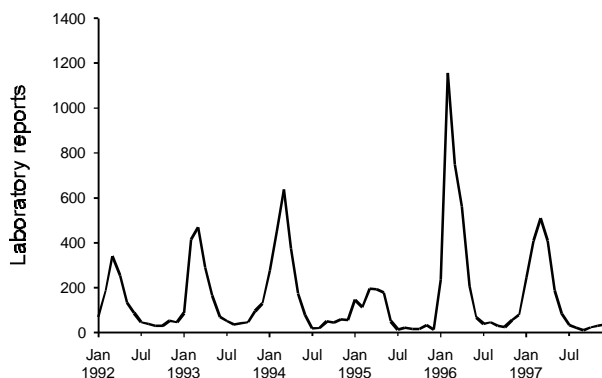
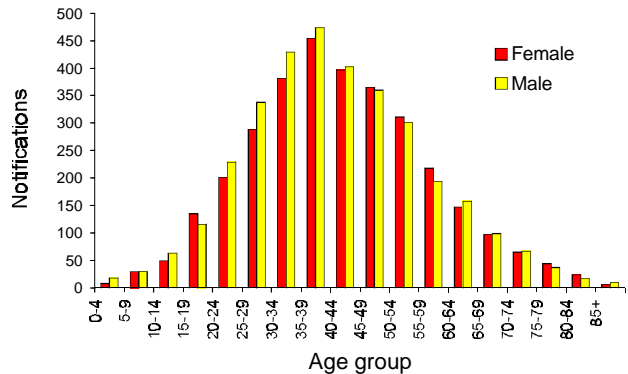


Figure 3. Notifications of Ross River virus infection, 1997, by age group and sex



cases were recorded with onset in 1997, of which 37% were from Queensland and 25% from New South Wales. This is lower than the total for 1996 when a record high number of notifications was received. The Virus and Serology Laboratory Reporting Scheme (LabVISE) records a similar seasonal distribution (Figure 2). In 1997 most cases were in the 30-49 years age group, as is usually the case (Figure 3). The male:female ratio was 1:1.

The most important preventative measure for Ross River virus infection is the avoidance of mosquito bites. This can be achieved by the use of adequate insect screening on windows and doors and the wearing of loose fitting clothing and the use of personal insect repellents when going outside. This is of particular importance at this time of year when infection is more likely to occur.

National Notifiable Diseases Surveillance System

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 1998;22:4-5.

Reporting period 26 November 1997 to 6 January 1998

There were 5,699 notifications received for this six-week period (Tables 1, 2 and 3). The numbers of reports for selected diseases have been compared with historical data for corresponding periods in the previous three years (Figure 4).

The number of reports of Barmah Forest virus infection has remained low. In previous years, slight increases in

Table 1. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 26 November 1997 to 6 January 1998

Disease ^{1,2}	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
<i>Haemophilus influenzae</i> type b	0	1	0	2	0	0	3	0	6	0	48	51
Measles	9	18	0	46	1	3	13	3	93	34	810	496
Mumps	1	2	0	2	2	0	6	2	15	0	185	128
Pertussis	20	317	7	412	209	3	104	256	1,328	933	9,162	3,943
Rubella	4	1	0	46	17	1	4	5	78	353	1,392	2,816
Tetanus	0	1	0	0	0	0	0	0	1	0	7	2

NN. Not Notifiable

1. No notifications of poliomyelitis have been reported since 1986.

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.

Table 2. Notifications of other diseases received by State and Territory health authorities in the period 26 November 1997 to 6 January 1998

Disease ^{1,2}	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Arbovirus infection (NEC) ³	0	0	0	1	0	0	0	0	1	0	122	50
Barmah Forest virus infection	0	5	-	25	0	0	0	-	30	0	648	833
Campylobacteriosis ⁴	34	-	25	457	217	18	18	138	907	1,424	10,873	12,008
Chlamydial infection (NEC) ⁵	16	NN	132	266	0	2	228	152	796	863	7,905	8,335
Dengue	0	1	0	2	0	-	0	0	3	0	205	43
Donovanosis	0	NN	14	0	NN	0	0	0	14	0	43	48
Gonococcal infection ⁶	0	7	197	79	0	0	338	134	755	417	4,331	4,105
Hepatitis A	8	45	13	54	7	0	28	4	159	152	2,984	2,142
Hepatitis B incident	0	1	2	4	0	0	3	0	10	0	227	225
Hepatitis C incident	1	1	0	-	0	0	-	-	2	0	15	71
Hepatitis C unspecified	34	NN	36	273	NN	6	1	101	451	0	8,675	9,461
Hepatitis (NEC)	0	0	0	0	1	0	1	NN	2	0	17	16
Legionellosis	0	0	1	2	6	0	3	9	21	27	157	189
Leptospirosis	0	3	1	2	0	0	4	0	10	0	123	225
Listeriosis	0	1	0	1	0	0	1	0	3	0	69	68
Malaria	2	4	3	14	2	0	2	3	30	63	725	847
Meningococcal infection	1	6	1	5	1	1	12	3	30	42	482	420
Ornithosis	0	NN	0	0	0	0	1	2	3	0	46	84
Q Fever	0	12	0	22	0	0	4	1	39	66	574	550
Ross River virus infection	0	16	26	47	3	0	7	21	120	209	6,604	7,808
Salmonellosis (NEC)	9	69	55	179	50	4	140	35	541	692	6,717	5,752
Shigellosis ⁴	1	-	18	21	12	0	15	12	79	0	800	669
Syphilis	0	7	41	34	0	1	0	1	84	136	1,191	1,506
Tuberculosis	0	9	0	9	1	0	7	1	27	0	922	1,065
Typhoid ⁷	0	1	1	0	1	0	2	4	9	0	76	84
Yersiniosis (NEC) ⁴	0	-	1	25	2	0	1	0	29	0	244	268

1. For HIV and AIDS, see *CDI* 1997; 21:362. For rarely notified diseases, see Table 3.

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. NT: includes Barmah Forest virus.

4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.

5. WA: genital only.

6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.

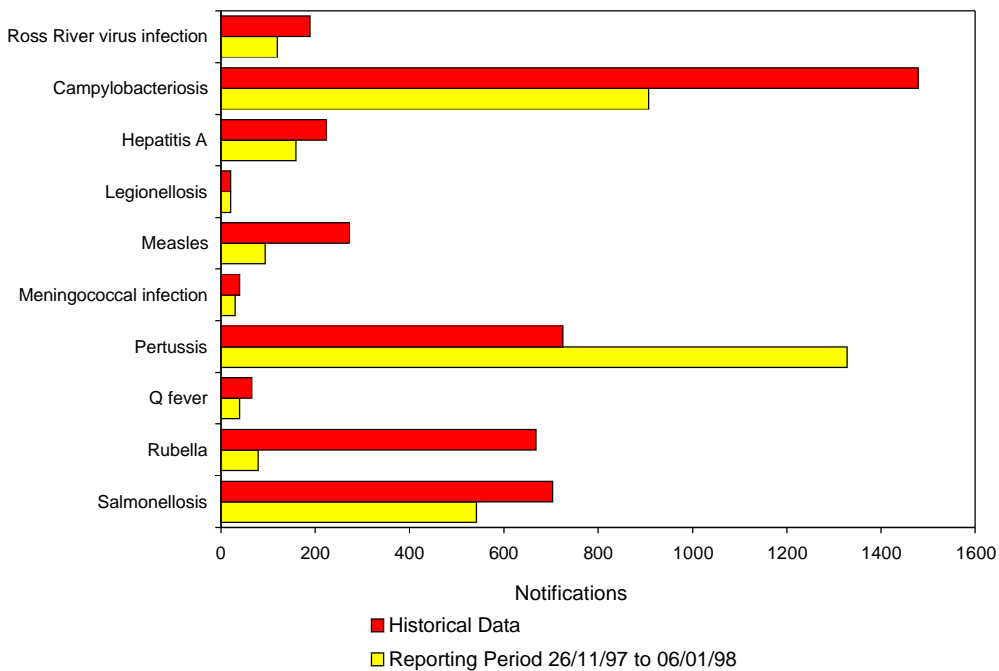
7. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified

- Elsewhere Classified.

Figure 4. Selected National Notifiable Diseases Surveillance System reports, and historical data



1. The historical data are the averages of the number of notifications in the corresponding 4 week periods of the last three years and the two week periods immediately preceding and following these.

The number of reports of Barmah Forest virus infection has remained low. In previous years, slight increases in November and December have usually been followed by larger numbers of cases in the months January to March (Figure 5).

Although the total number of notifications received for hepatitis A during 1997 was 40% higher than for 1996, the average weekly number of reports received for this six-week period was lower than for any other period in 1997, and similar to the number recorded for the same period last year. The lower current numbers might reflect delays in case presentation or diagnosis.

Two cases of invasive *Haemophilus influenzae* type b infection were notified during the current period; both were between 1 and 2 years old. Of 47 cases reported during 1997, 10 were less than 1 year of age, 20 were aged between 1 and 5 years, and 17 were over 5 years old.

Reports of meningococcal infection have declined gradually from a peak notification rate of 10-12 per week during September and October to an average of 5 per week, lower than at the same time last year. Currently reported cases ranged in age from less than 1 year to 78 years. Seven cases (23%) were in children less than 5 years old, and 5 cases (17%) were in the age group 20-24 years.

Table 3. Notifications of rare¹ diseases received by State and Territory health authorities in the period 26 November 1997 to 6 January 1998

Disease ²	Total this period	Reporting States or Territories	Total notifications 1997
Brucellosis	4	Qld, Vic	41
Chancroid			1
Cholera			3
Hydatid infection	7	SA, Vic, WA	59
Leprosy	2	Vic	12

1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1997.
 2. No notifications have been received during 1997 for the following rare diseases: botulism, lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.

Figure 5. Notifications of Barmah Forest virus infection, 1995 to 1997, by month of onset

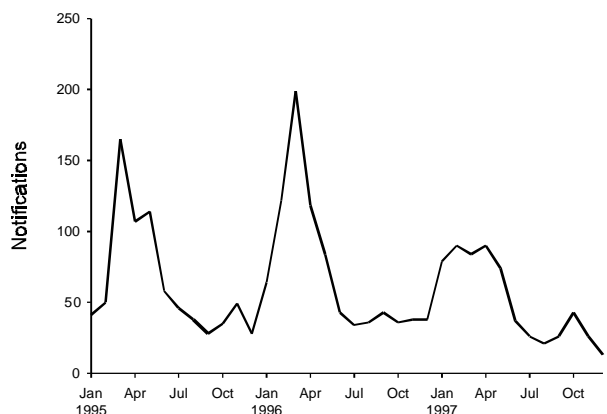
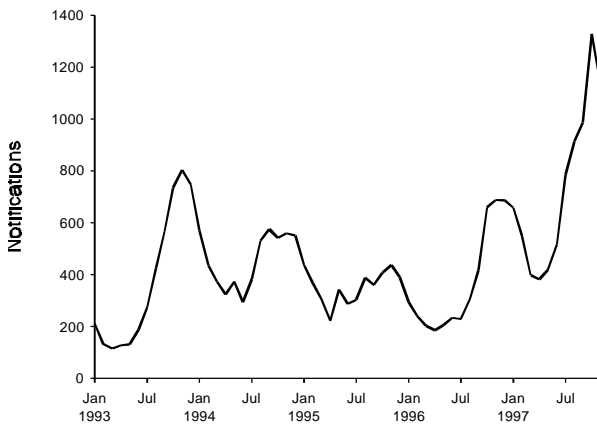


Figure 6. Notifications of pertussis, 1993 to 1997, by month of onset



After a rise in the number of notifications for measles during the period September to November, the number of reports has declined during the current period. However, notifications remain much higher than during the same period in 1996-97. Among current cases, 47 (51%) were in the 0-4 years age group.

Although the average weekly number of reports for pertussis during the current period (221 per week) was slightly lower than in the previous six-week period (285 per week), the number of cases remained very high, and was more than 40% above the number reported during the corresponding period one year ago (Figure 6). Total notifications reported during 1997 were 2.3 times the total reported in 1996. Among current cases, 51 of 1,328 (3.8%) were in children under one year of age, and 73 (5.5%) were in children 1-4 years old. The predominant age groups affected were 5-9 years and 10-14 years (23.2% of cases occurring in each age group).

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network (ASPREN) currently comprises 107 general practitioners from throughout the country. Up to 9,000 consultations are reported each week, with special attention to 12 conditions chosen for sentinel surveillance. Of these, CDI reports the consultation rates for chickenpox, gastroenteritis, HIV testing (doctor initiated), HIV testing (patient initiated), influenza, measles, pertussis, Ross River virus infection and rubella. For further information, including case definitions, see *CDI* 1998;22:5-6.

Data for weeks 50 and 51, ending 14 and 21 December 1997 respectively, are included in this issue of *CDI* (Table 4). During this reporting period, the consultation rates for pertussis and chickenpox remained moderately high in comparison to 1996 rates. For the other conditions, consultation rates have remained low or steady. There was no increase in the consultation rate for Ross River virus infection.

LabVISE

The Virology and Serology Laboratory Reporting Scheme, LabVISE, is a sentinel reporting scheme. Twenty-one laboratories contribute data on the laboratory identification of viruses and other organisms. Data are collated and published in *Communicable Diseases Intelligence* each fortnight. 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* 1998;22:8.

There were 1,492 reports received in the *CDI* Virology and Serology Laboratory Reporting Scheme this four week period (Tables 5 and 6).

Table 4. Australian Sentinel Practice Research Network reports, weeks 50 and 51, 1997

Condition	Week 50, to 14 December 1997		Week 51, to 21 December 1997	
	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Chickenpox	11	1.6	15	2.3
Gastroenteritis	76	11.0	73	11.2
HIV testing (doctor initiated)	14	2.0	8	1.2
HIV testing (patient initiated)	8	1.2	17	2.6
Influenza	13	1.9	4	0.6
Measles	0	0	0	0
Pertussis	6	0.9	2	0.3
Ross River virus infection	1	0.1	2	0.3
Rubella	1	0.1	2	0.3

Figure 7. Influenza laboratory reports, 1995 to 1997, by type and month of specimen

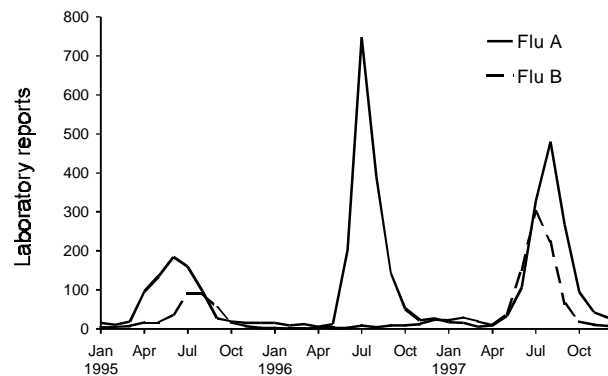


Figure 8. Parainfluenza type 3 laboratory reports, 1995 to 1997, by month of specimen collection

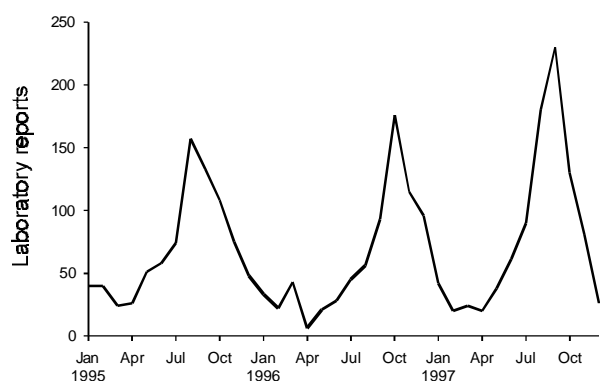


Figure 9. *Mycoplasma pneumoniae* laboratory reports, 1993 to 1997, by month of specimen collection

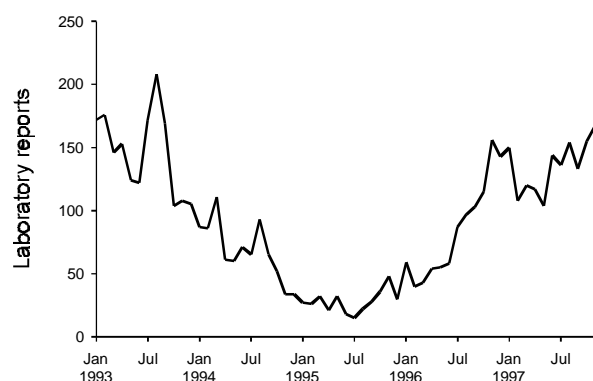


Table 5. Virology and serology laboratory reports by State or Territory¹ for the reporting period 4 December 1997 to 6 January 1998, and total reports for the year

	State or Territory ¹								Total this period	Total reported in CDI in 1997
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA		
Measles, mumps, rubella										
Measles virus	8	3			1				12	75
Mumps virus					2			1	3	46
Rubella virus	3	1		3	5			1	13	554
Hepatitis viruses										
Hepatitis A virus	9	1	3	7	1			1	22	702
Hepatitis D virus					1				1	19
Hepatitis E virus	1								1	4
Arboviruses										
Ross River virus	1	1	5	7	2			36	52	2,137
Barmah Forest virus								1	1	234
Dengue not typed								1	1	61
Flavivirus				2					2	25
Adenoviruses										
Adenovirus type 1					2				2	32
Adenovirus type 2					1				1	43
Adenovirus type 3					1				1	24
Adenovirus not typed/pending	2	8			42			9	61	1,062
Herpes viruses										
Herpes virus type 6								1	1	6
Cytomegalovirus	9	20		10	7	1		19	66	1,137
Varicella-zoster virus	11	2		29	21			38	101	1,414
Epstein-Barr virus	9	2	1	18	55		6	26	117	2,533
Other DNA viruses										
Contagious pustular dermatitis (Orf virus)								5	5	9
Parvovirus				1	3				4	345
Picornavirus family										
Coxsackievirus B3	1						1		2	12
Coxsackievirus B4	1								1	4
Echovirus type 11	1								1	1

Table 5. Virology and serology laboratory reports by State or Territory¹ for the reporting period 4 December 1997 to 6 January 1998, and total reports for the year, continued

	State or Territory ¹								Total this period	Total reported in <i>CDI</i> in 1997
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA		
Echovirus type 22	1								1	1
Rhinovirus (all types)	4	15			12			25	56	644
Enterovirus not typed/pending		1	1					26	28	604
Ortho/paramyxoviruses										
Influenza A virus	26	8			28			4	66	1,445
Influenza B virus	15	2			6			2	25	947
Parainfluenza virus type 1	1	2							3	72
Parainfluenza virus type 2	1			1					2	119
Parainfluenza virus type 3	12	19			10			21	62	1,192
Respiratory syncytial virus	84	14	1	2	15		1	7	124	4,798
Other RNA Viruses										
Rotavirus		2			6	4		4	16	1,561
Other										
<i>Chlamydia trachomatis</i> not typed	56	6	32	41	50		4	75	264	4,675
<i>Chlamydia psittaci</i>		1						1	2	59
<i>Chlamydia</i> species				1					1	31
<i>Mycoplasma pneumoniae</i>	2	1	3	41	72	1	10	6	136	1,926
<i>Coxiella burnetii</i> (Q fever)				3					3	304
<i>Rickettsia australis</i>						1			1	14
<i>Bordetella pertussis</i>	8	1	2	79			52	78	220	2,092
<i>Legionella longbeachae</i>					3			2	5	40
<i>Cryptococcus</i> species	2	1							3	23
TOTAL	268	111	50	245	346	7	74	391	1,492	31,042

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.

The number of reports of Barmah Forest virus have been low recently. However this is expected to increase in the coming months.

Influenza was reported for 91 patients this period including 66 reports of influenza A and 25 reports of influenza B. This is average for the time of year (Figure 7).

Sixty-two reports of parainfluenza virus type 3 were received this period for 33 males and 29 females. Fifty per cent of reports were for infants under the age of one year. The number of reports has continued to fall after peaking in September (Figure 8).

One hundred and thirty-six reports of *Mycoplasma pneumoniae* were received this period. Included were 63 males and 73 females (male:female ratio 1:1.2). Most

Table 6. Virology and serology laboratory reports by contributing laboratories for the reporting period 4 December 1997 to 6 January 1998

State or Territory	Laboratory	Reports
Australian Capital Territory	Woden Valley Hospital, Canberra	301
New South Wales	New Children's Hospital, Westmead	68
Queensland	Queensland Medical Laboratory, West End	266
South Australia	Institute of Medical and Veterinary Science, Adelaide	346
Tasmania	Northern Tasmanian Pathology Service, Launceston	7
Victoria	Microbiological Diagnostic Unit, University of Melbourne Royal Children's Hospital, Melbourne	4 68
Western Australia	PathCentre Virology, Perth Western Diagnostic Pathology	361 71
TOTAL		1,492

reports were received for patients in the 5-14 years age

group (53% of total) followed by those in the 25-44 years age group (24%). Following a rise in late 1996 an increased number of laboratory reports was received throughout 1997 (Figure 9).

Overseas briefs

Source: World Health Organization

Cholera

Chile. The Ministry of Health has reported 33 cases of cholera (12 confirmed) since the last week of December 1997. The districts most affected are in the north of the country (Antofagasta Region). These rural districts are close to the border with Bolivia. The Ministry of Health is implementing control measures including education, water treatment, environmental sanitation, and enhanced epidemiological surveillance. The last reported cholera in Chile was an imported case in 1996.

Democratic Republic of Congo. An outbreak of cholera was reported in a military camp in Haut-Zaire Province. Approximately 800 cases with 54 deaths have been recorded since 18 December 1997. All the cases so far have been in the under-18-years age group which represents two-thirds of the population in this camp. This outbreak is mainly due to flooding and poor sanitary conditions. Local personnel, the WHO and other United Nations agencies are coordinating aid activities.

Nairobi (Kenya). The Ministry of Health reported 265 cases and 16 deaths in the recent outbreak of cholera in some districts of Nairobi. Control measures are being undertaken in collaboration with the WHO. Large numbers of cholera cases were last reported in Nyanza Province during the period June to end October 1997.

United Republic of Tanzania (including Zanzibar). The outbreak which began at the end of January 1997 continued throughout the year. A cumulative total of 35,591 cases and 2,025 deaths had been reported to the end of December, including 1,065 cases and 123 deaths which occurred in Zanzibar since the beginning of December. The incidence of the disease in Zanzibar appears to be decreasing. The WHO office in the United Republic of Tanzania is working closely with the national authorities to control the outbreak. Travellers visiting the United Republic of Tanzania, including Zanzibar, should take the normal precautions regarding food, water and hygiene recommended for all countries where cholera and other water-borne diseases occur.

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Contributions covering any aspects of communicable diseases are invited. Instructions to authors can be found in *CDI* 1998;22:9.

Rift Valley fever, Kenya and Somalia

Rift Valley fever has been confirmed in an outbreak which affected humans and domestic animals in Garissa District, a remote area of north-eastern Kenya. Reports indicate that up to 300 people may have died from the disease. An outbreak of similar magnitude has been reported in Somalia. The first evidence that Rift Valley fever was responsible for the outbreak was obtained on 31 December 1997, and study of animal specimens has confirmed that animals are also infected. It is suspected that other diseases such as malaria, and possibly cholera, are also contributing to the high number of deaths.

The virus is endemic to Africa, south of the Sahara desert, but infections have periodically extended into Egypt. In humans, the virus produces a usually non-fatal dengue-like illness. Rift Valley fever virus is transmitted by mosquitoes. Humans can also be infected by contact with blood or body fluids from infected animals. The risk of human-to-human transmission through direct contact appears to be very low. The WHO, national authorities and international agencies are instigating control measures, and considering the possibility of immunising livestock. The WHO does not recommend any restrictions on travel to Kenya as the area affected is remote.

Influenza, Hong Kong

To the 14 January 1998 there had been 18 confirmed cases of H5N1 influenza in Hong Kong, of which six died. Eight of the 18 confirmed cases have recovered, two are in a satisfactory condition and two remain critically ill. Nine cases were in young children, two in adolescents, and seven were aged between 19 and 60 years. Fourteen of the 18 cases had onset of illness in December 1997.

Influenza A(H5N1) virus has been isolated from 10 geese and ducks in Hong Kong, Special Administrative Region of China. Influenza A(H5N1) had formerly been found only in chickens in Hong Kong. The culture samples were taken from about 1,800 wild and domestic ducks and wild geese collected at markets in Hong Kong before the slaughter of approximately 1.6 million chickens and other birds in early January. These results do not yet allow for a definitive

CDI is produced every four weeks by the National Centre for Disease Control, Department of Health and Family Services, GPO Box 9848 Canberra ACT 2601; fax: (02) 6289 7791, phone: (02) 6289 6895.

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