Communicable Diseases Intelligence

Contents

Communicable Diseases Network - Australia
A national network for communicable diseases surveillance

Commonwealth Department of Health and Family Services

Q fever vaccination in Queensland abattoirs

Morton Bell[1,2], Mahomed Patel[1] and John Sheridan[2]

Abstract

Outbreaks of Q fever continue to be recorded in abattoirs despite a protective vaccine being available. All accredited abattoirs in Queensland were surveyed to ascertain the number that conducted Q fever vaccination programs. Only ten of the 30 abattoirs had vaccination programs. Vaccination programs were present at all abattoirs with more than 360 employees. Thirty-seven per cent of abattoir employees worked at abattoirs that did not have vaccination programs. Research is required into the attitudes and barriers to vaccination at smaller abattoirs so that vaccination coverage can be increased. Economic data, including litigation costs, should be considered in a cost-effectiveness study so that smaller abattoirs appreciate the benefits of implementing vaccination programs. The protocols for vaccination of new employees should be analysed for their capacity to provide appropriate worker coverage. Abattoir workers are a readily identifiable at-risk group who should be fully protected from this occupational disease. It is the responsibility of industry and health authorities to ensure all workers are appropriately protected. *Comm Dis Intell* 1997;21:29-31.

Introduction

Q fever is an acute debilitating disease caused by *Coxiella burnetii*. It is a zoonosis, an occupational hazard and a significant cause of morbidity among abattoir employees[1,2,3,4,5].

Outbreaks of Q fever in abattoirs involving as many as 30 or more workers have been investigated and reported on for over 30 years[1,2,3,4,5]. These reports have recorded the severity of the disease in those affected and the high level of absenteeism during outbreaks. The disease can result in prostration for up to five days, an average of two weeks off work and a fatigue syndrome which can last for weeks, months or years[4,6]. It has been estimated that the cost of an uncomplicated acute case of Q fever is $7,000[6]. The cost of a chronic case, which may complicate up to 20% of acute cases, can range up to $50,000[6]. These costs include medical and legal expenses, compensation, lump sum payment and replacement labour.

In 1995 there were 184 notifications of Q fever in Queensland, and approximately 40% of these were reported in abattoir workers (unpublished data, Queensland Health, Notifiable Diseases System).

During 1995, there was one confirmed outbreak of 30 cases in a southern Queensland abattoir and another smaller

1. Master of Applied Epidemiology Program, National Centre for Epidemiology and Population Health, The Australian National University Canberra, ACT 0200.
2. Communicable Diseases Branch, Queensland Health, Brisbane.

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probable outbreak. Neither of the affected establishments had a vaccination program in operation.

Although a vaccine with 100% efficacy has been available since 1989, few practitioners are familiar with the prevaccination hypersensitivity test that is essential to its safe administration[7,8]. Prevaccination testing consists of a skin hypersensitivity test and test for antibodies followed by vaccination for those who are neither sensitised nor immune. The cost of vaccination varies according to the number of employees tested at a time and the number requiring vaccine. Large-scale testing programs have shown that around half to two-thirds of current employees could require vaccination[7]. Vaccination has been shown to confer protection for at least five years[8]. Ongoing exposure to the organism in the abattoir may act to boost protection. As vaccination is highly efficacious, its use has been widely advocated to the meat processing industry[7,8]. Despite this, outbreaks in abattoirs continue to occur.

The question arose as to whether Q fever outbreaks were continuing to occur because of a lack of vaccination coverage in abattoirs. We decided to determine the percentage of abattoirs vaccinating their employees and the percentage of meat processing industry workers who were covered by vaccination programs.

Background

There are two classes of facility which process meat for human consumption in Queensland. These are abattoirs and slaughterhouses, both of which must be accredited by the Queensland Meat and Livestock Authority (QMLA). Accredited abattoirs are larger facilities with many employees that process larger numbers of animals. Slaughterhouses are much smaller, employ fewer people and account for less than five per cent of employees in the meat processing industry. This investigation was confined to accredited abattoirs.

Methods

A list of accredited abattoirs was obtained from the QMLA. An accredited abattoir was defined as a facility processing meat for human consumption, with full-time meat inspection staff and accredited by the QMLA under the *Meat Industry Act 1993* and Conditions for Accreditation for Meat Processing. The study was further limited to abattoirs which slaughtered animals that are known to be able to transmit Q fever; these included abattoirs slaughtering cattle, sheep and goats.

In July 1996, a telephone survey of abattoir health and safety officers (HSO) was conducted to ascertain which abattoirs had implemented Q fever vaccination programs and the number of staff employed at each abattoir. Information on costs associated with vaccination in Queensland was obtained from CSL Vaccines Limited.

Results

The Queensland Meat and Livestock Authority provided a list of 33 accredited abattoirs. Thirty of these abattoirs were eligible for the study and the remaining three were excluded, because one slaughtered only horses, another only pigs and the third was closed. Employee numbers ranged from 10 to 800 per abattoir.

Ten of the 30 abattoirs, employing 63% of abattoir workers in Queensland, had Q fever vaccination programs in place (Table). Three additional abattoirs had submissions and costings presently before management or boards for approval. Each of the seven abattoirs with a staff of more than 360 employees had vaccination programs. None of the 13 with less than 170 employees had a vaccination program. Abattoirs without vaccination programs were distributed across Queensland.

Since 1993, there has been an increase in the use of the Q fever vaccine in Queensland, mainly in the meat processing industry (G. Newman, CSL Vaccines Ltd., personal communication).

Cost of vaccination

Skin tests and serology to assess immune status to Q fever cost $55, and vaccine an additional $65 per individual. Assuming that half of those tested are immune, the approximate cost to initiate a vaccination program for 300 employees would be 300 x $55 plus 150 x $65, a total of $26,250 as a one-off cost. This is equivalent to the cost of disease in four cases with acute Q fever infections.

Assuming a staff turnover of ten per cent per annum, in the same abattoir, where all new employees require vaccination, the recurrent annual cost would be $3,600, or $69 per week. If annual staff turnover was 30%, the projected recurrent cost would be $10,800, or $208 per week. These may represent slight under-estimates as the $55 for testing depends to some extent on economies of scale and proximity to medical practitioners.

Discussion

This study found that vaccination programs were being offered in only one-third of abattoirs, which employed two-thirds of the abattoir workforce in Queensland. Employees not offered vaccination programs worked in the smaller abattoirs, employing less than 360 workers.

To ensure protection of employees from Q fever, all abattoirs need to

Table. Abattoirs in Queensland by number of employees and Q fever vaccination program

Size of abattoir by employee numbers	Abattoirs with a vaccination program (total employee numbers)	Abattoirs without a vaccination program (total employee numbers)	Median number of employees per abattoir	Range of employee numbers
>360 employees	7 (3800)	0	500	400 - 800
170 - 360 employees	3 (820)	7 (1845)	270	170 - 360
< 170 employees	0	13 (876)	70	10 - 160
Total	10 (4620)	20 (2721)	190	10 - 800

implement vaccination programs, as well as timely vaccination for all new workers. At present there is not a uniform protocol across the industry for vaccination of new employees.

The major limitation of the study was that the data were obtained by an informal discussion with the health and safety officers, and were not formally validated. We have assumed abattoirs that reported vaccination programs did vaccinate. Our study was an exploratory one to estimate the proportion of abattoirs offering vaccination programs. We believe it is unlikely that respondents would have denied a vaccination program when one was operational at the time. Our estimates therefore reflect the maximum number of abattoirs currently offering vaccination programs.

The barriers to program adoption in abattoirs need to be identified. It is possible that management attitudes or ignorance of the economic benefits of vaccination may be factors. However, lack of easy access to appropriate medical, public heath and occupational health expertise might be important barriers. A study to identify barriers should also include an assessment of the uptake of vaccine in all abattoirs and the timing and appropriateness of vaccination for new employees. This research would assess the true coverage offered by programs.

The cost of vaccination is thought to be a major barrier to program introduction. The abattoirs not offering a vaccination program may be unaware of the cost of this disease or of the chronic complications of the disease. A cost-effectiveness study in these abattoirs comparing the costs of prevaccination testing and vaccination against the costs of the disease, workers' compensation and premiums, replacement labour and litigation, is needed. A favourable economic assessment could assist abattoirs to accept their regulatory responsibilities of providing a safe working environment.

Although a vaccination program may appear expensive, the use of the Q fever vaccine in South Australia reduced the numbers of occupation-related cases and reduced employers workers' compensation premiums[9]. Because the organism is transmitted in aerosols, it is important that not only abattoir employees but all workers who visit or work on an abattoir site are vaccinated against Q fever. This includes service providers such as electricians, plumbers, telecommunication workers, weights and measures inspectors and transport workers. If premises are leased on an abattoir site, for example to meat packers, it must be ensured that these workers, who may not be abattoir employees, are also protected by vaccination.

This study has raised several issues that require research and public health action. Abattoir workers are a readily identifiable at-risk group who should be protected from this occupational disease. All those connected with the meat processing industry, that is management, unions, workers' compensation board members, staff of occupational health and public health units should collaborate to ensure that the incidence of Q fever in abattoirs is minimised by optimising vaccine coverage rates.

Acknowledgments

Mr Gordon Newman CSL Vaccines Limited and Professor BP Marmion, The University of Adelaide and Institute of Medical and Veterinary Science, Adelaide are thanked for information supplied on vaccine use and costs.

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Fatal encephalitis and meningitis at the Gold Coast Hospital, 1980 to 1996

John Gerrard, Gold Coast Hospital, Southport, Queensland 4215

Abstract

The recent association of a fatal human case of encephalitis with a newly identified lyssavirus apparently acquired from a native Australian bat has highlighted the possibility that previous human infections have passed unrecognised. Infected bats have been identified on the Queensland Gold Coast where extensive close contact between bats and humans has occurred for many years. In an attempt to identify previously unrecognised cases of fatal lyssavirus encephalitis, the medical records of the Gold Coast Hospital over a 16 year period from 1980 to 1996 were reviewed. Of 20 cases coded as 'encephalitis' or 'meningitis' where death occurred, none was consistent with an encephalitis due to an unidentified virus. *Comm Dis Intell* 1997;21:32-33.

Introduction

In July 1996, a possible lyssavirus infection in a black flying fox found in northern New South Wales was reported in *Communicable Diseases Intelligence*[1]. Infection was subsequently identified in bats on the Queensland Gold Coast, then elsewhere in Queensland and Victoria. Within four months of the initial discovery, a fatal human case of encephalitis due to the same virus was reported in a woman from Rockhampton[2]. The rapidity with which the human infection was detected suggests that either this is a new epizootic or that previous human infection has gone unrecognised. In an attempt to identify previously unrecognised cases of human lyssavirus encephalitis, a review of fatal encephalitis and meningitis cases at the Gold Coast Hospital between 1980 and 1996 was performed.

Methods

Possible cases were identified using the hospital discharge databases of the Queensland Government Health Information Centre spanning the years 1980 to 1996 but excluding 1982. No data were collected during 1982. Between 1980 and 1990, only the principal condition was recorded, but thereafter other conditions were coded. The databases were searched for conditions pertaining to 'encephalitis' or 'meningitis' using ICD9 codes 046 to 049, 320 to 323 and 071, including all subcategories. The case records of any patient who died in hospital were reviewed.

Results

During the 16 year period, 21 patients with recorded codes pertaining to 'encephalitis' or 'meningitis' died in the Gold Coast Hospital. The records of a six year old male with 'bacterial meningitis' could not be located. Of the remaining 20 cases, specific pathogens were isolated in 12 (Table).

Of the remaining eight cases, two had intracranial malignancies, one had transverse myelitis and died of a probable pulmonary embolism, one presented hemiplegic in the terminal phase of AIDS and was not investigated, one had chronic end stage renal failure with encephalopathy, one had severe Parkinson's disease with neurological deterioration, one was a nursing home patient with partially treated bacterial meningitis, and one was an intravenous drug user with a right hemispheric infarction/abscess. None had a clinical picture consistent with an acute unexplained fatal viral encephalitis.

Table.
Fatal cases of encephalitis and meningitis where a pathogen was isolated, Gold Coast Hospital, 1980 to 1996

Pathogen	Fatal cases
Cryptococcus neoformans	3
Neisseria meningitidis	2
Streptococcus pneumoniae	2
Streptococcus agalactiae	1
Streptococcus salvarius	1
Haemophilus influenzae	1
Herpes simplex	1
Influenza type B	1
Total	12

Discussion

The Gold Coast Hospital services a population of 300,000 - 400,000 from Queensland and northern New South Wales. In the region there are three animal sanctuaries and four amateur carer groups involved in the rearing of sick and orphaned flying foxes. Bites and scratches from these animals occur frequently. During the 16 year study period, hundreds of local residents would have been bitten or scratched by these animals and yet no case resembling fatal lyssavirus encephalitis can be identified from computer coded hospital records. Given the rapidity with which the first fatal human lyssavirus infection was identified in Queensland, such infection appears to have been surprisingly rare.

Possible explanations for the failure to identify cases in this study include (1) the virus is not readily transmitted from bats to humans, (2) infection in bats is uncommon, (3) infection in humans is not usually fatal, (4) the virus has been introduced recently into the bat population, or (5) hospital record coding has been inadequate. Clearly, more data from more hospitals need to be collected.

Conclusion

No case resembling a fatal encephalitis due to an unidentified viral pathogen was coded in the records of the Gold Coast Hospital between 1980 and 1996. If enzootic infection with lyssavirus in Gold Coast bat populations was widespread during that period, and if infection is usually fatal in humans, then transmission from bats to humans appears to be an uncommon event.

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An outbreak of dengue 2 in the Torres Strait

Marlene Griffiths[1], Scott Ritchie[2], Diana Terry[2], Rob Norton[3] and Debra Phillips[4]

On 9 December 1996, the Centre for Public Health Sciences, Brisbane, notified the Tropical Public Health Unit, Cairns, that a Torres Strait resident had tested positive for dengue serotype 2 IgM. The Torres Strait experienced a large outbreak of dengue 1 in 1981[1] and a small outbreak of dengue 1 (centred on Thursday Island) in 1990-91[2].

The patient had been to Papua New Guinea during the incubation period and had presumably acquired the infection there[3]. The patient had been viraemic for about a week after the onset of symptoms in late October. In early December an acute illness, characterised by fever, headache, prostration, backache and diarrhoea began to affect many of the residents of the island on which the patient lived (population about 300).

Within 48 hours of the notification, mosquito surveillance and control activities had commenced, community education had begun and health staff throughout the Torres Strait had been alerted to the diagnosis and briefed about dengue.

A house-to-house survey on the island revealed prolific numbers of *Aedes aegypti*, the dengue vector. The Breteau index (the number of breeding containers per 100 premises) was 167; an index of >50 is considered a high risk for dengue transmission[1]. Most *Ae. aegypti* breeding was in containers such as rainwater tanks, tyres, buckets, 44 gallon drums and plant containers. Disposable containers were emptied of water while water storage containers were treated with an insect growth regulator (methoprene).

To date, nearly 70 residents of the island have tested positive for dengue, but there are many more who have had compatible symptoms. Although there are now very few new cases being reported from the island, it was inevitable that cases would occur on other islands in the Torres Strait. Cases of dengue became apparent on two nearby islands in mid and late December. Mosquito surveillance on these islands also revealed intense *Ae. aegypti* activity. To date 34 residents of these two islands have proven dengue 2 infection.

Altogether there have so far been 116 confirmed cases of dengue in the Torres Strait, and it now appears that cases are beginning to occur on other islands. Strategies will need to be planned to minimise the risk of future outbreaks of dengue, which could, of course, result in severe haemorrhagic dengue, especially in children[1].

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1. Torres Strait Public Health Program, Queensland Health, PO Box 391 Thursday Island, Queensland 4875
2. Tropical Public Health Unit, Cairns, Queensland
3. Townsville General Hospital, Townsville, Queensland
4. Centre for Public Health Sciences, Brisbane, Queensland

Communicable Diseases Surveillance

Ross River virus infection reports increasing

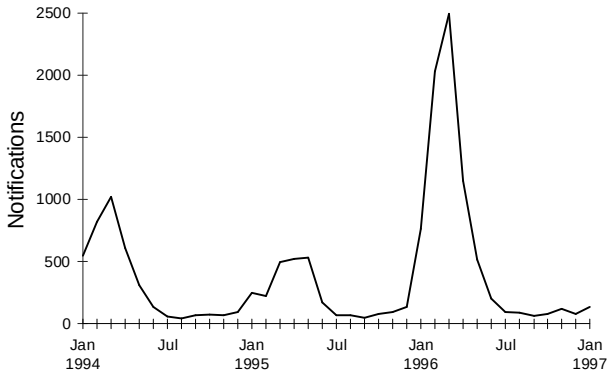
Ross River virus is a mosquito-borne alphavirus which causes an illness characterised by arthralgia, myalgia, fever and rash. Symptoms may continue for months. Macropods are thought to be the major hosts of Ross River virus, and the illness can be transmitted by many species of mosquito. Ross River virus infection has been reported from all States and Territories in Australia, but is more common in northern States and in coastal areas.

Ross River virus infection occurs predominantly in the summer months in Australia, and an increase in reports for 1997 has commenced. Peaks in Ross River virus infection have occurred in January to April in previous years, including a large outbreak in early 1996 (Figure 1). A rise in the number of infections is expected in January and February. There were 149 reports of Ross River virus infection to the National Notifiable Diseases Surveillance System for the current period (Table 2), more than twice the number reported for the previous 4 week period. The largest number of reports came from New South Wales and Queensland.

Laboratory reports of Ross River virus infection to LabVISE increased slightly in December, but the January rise is not yet evident (Figure 2). The age distribution of Ross River virus infection cases reported to the National Notifiable Diseases Surveillance System for 1996 shows the highest number of reports were for the 30-60 years age range (Figure 3). The male:female ratio was 1:1.

Persons living in northern Australia and in coastal areas where Ross River virus occurs should take precautions against mosquito bites, particularly in the coming summer months. Precautions include wearing long sleeved clothing and mosquito repellant when outside, and having mosquito screening on houses. Local health authorities may also issue warnings when there is evidence of Ross River virus transmission in an area.

Figure 1. Ross River virus infection notifications to the National Notifiable Diseases Surveillance System, 1994 to January 1997



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 1997;21:5.

Figure 2. Ross River virus laboratory reports to LabVISE, 1994 to January 1997

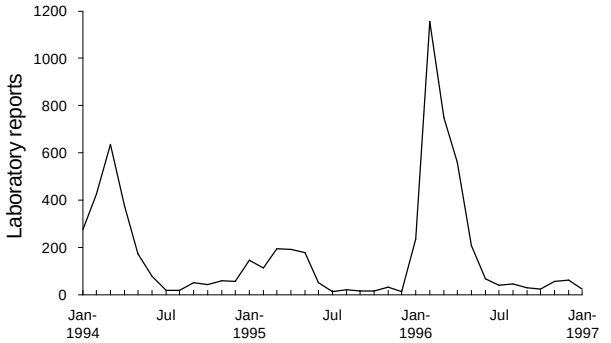
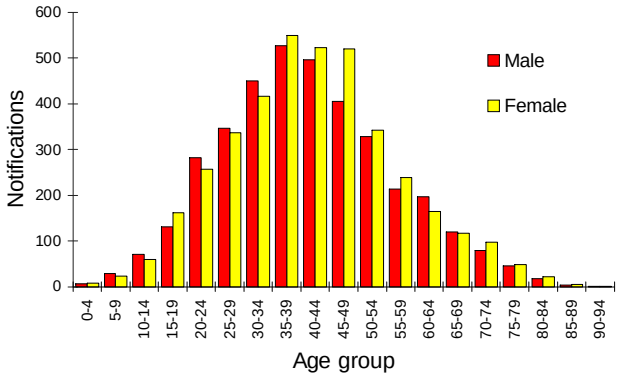


Figure 3. Ross River virus infection notifications to the National Notifiable Diseases Surveillance System, by age and sex, 1996



Reporting period 8 January to 21 January 1997

There were 2,828 notifications received for this two-week period (Tables 1, 2 and 3). The number of reports for selected diseases have been compared with average data for this period in the previous three years (Figure 4).

Notifications of campylobacteriosis continue to be high, with 562 reports received this period. This is consistent with previous years which have shown notifications to be greatest during spring and summer (Figure 5). The 0 - 4 years age group accounted for 102 of the notifications, with 110 notifications in the 20 - 29 years age group.

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 8 to 21 January 1997

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
Haemophilus influenzae type B	0	0	1	3	0	0	0	0	4	2	5	5
Measles	0	5	0	9	1	1	3	0	19	31	27	47
Mumps	0	2	0	NN	0	0	2	2	6	8	10	9
Pertussis	6	46	0	62	67	2	89	17	289	191	413	263
Rubella	3	1	1	79	34	0	10	2	130	214	153	309
Tetanus	0	0	0	0	0	0	0	0	0	0	1	0

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 8 to 21 January 1997

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)[3,4]	0	0	2	0	0	0	8	2	12	5	17	5
Barmah Forest virus infection	0	6	-	26	0	0	0	-	32	19	34	20
Ross River virus infection	1	50	6	47	7	2	29	7	149	86	180	95
Dengue	0	1	0	51	0	-	0	2	54	3	54	3
Campylobacteriosis[5]	12	-	8	295	80	14	84	69	562	570	791	737
Chlamydial infection (NEC)[6]	6	NN	9	230	0	8	79	31	363	329	426	380
Donovanosis	0	NN	1	0	NN	0	0	0	1	3	1	3
Gonococcal infection[7]	2	18	21	40	0	0	17	5	103	158	130	193
Hepatitis A	0	17	1	24	7	0	6	3	58	147	78	181
Hepatitis B incident	1	0	0	3	0	0	1	1	6	16	9	17
Hepatitis C incident	2	0	0	-	0	0	-	-	2	1	2	2
Hepatitis C unspecified	3	NN	12	190	NN	7	87	8	307	392	381	487
Hepatitis (NEC)	0	1	0	0	0	0	0	NN	1	0	2	1
Legionellosis	0	4	0	2	1	0	0	1	8	9	11	12
Leptospirosis	0	1	0	9	0	0	3	0	13	18	13	19
Listeriosis	0	0	0	0	0	0	0	2	2	3	5	5
Malaria	1	2	0	27	2	1	4	0	37	29	52	34
Meningococcal infection	0	3	0	7	0	0	3	2	15	13	23	18
Ornithosis	0	NN	0	0	0	0	1	1	2	4	4	5
Q Fever	0	14	0	16	0	0	1	0	31	28	31	33
Salmonellosis (NEC)	2	46	20	160	74	4	15	14	335	347	452	432
Shigellosis[5]	0	-	11	15	12	0	1	4	43	38	52	44
Syphilis	0	6	9	23	0	0	0	3	41	60	53	70
Tuberculosis	1	2	0	12	0	1	9	1	26	56	50	72
Typhoid[8]	0	0	0	1	0	0	1	0	2	5	3	8
Yersiniosis (NEC)[5]	0	-	0	22	1	0	0	0	23	16	28	18

1. For HIV and AIDS, see *CDI* 1997;21:23. 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. Tas: includes Ross River virus and dengue.
4. NT, Vic and WA: includes Barmah Forest virus.
5. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
6. WA: genital only.
7. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
8. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Table 3. Notifications of rare[1] diseases received by State and Territory health authorities in the period 8 to 21 January 1997

Disease[2]	Total this period	Reporting States or Territories	Total notifications 1997
Brucellosis	5	NSW 1, Qld 3, Vic 1	5
Cholera	1	NSW	1
Hydatid infection			2

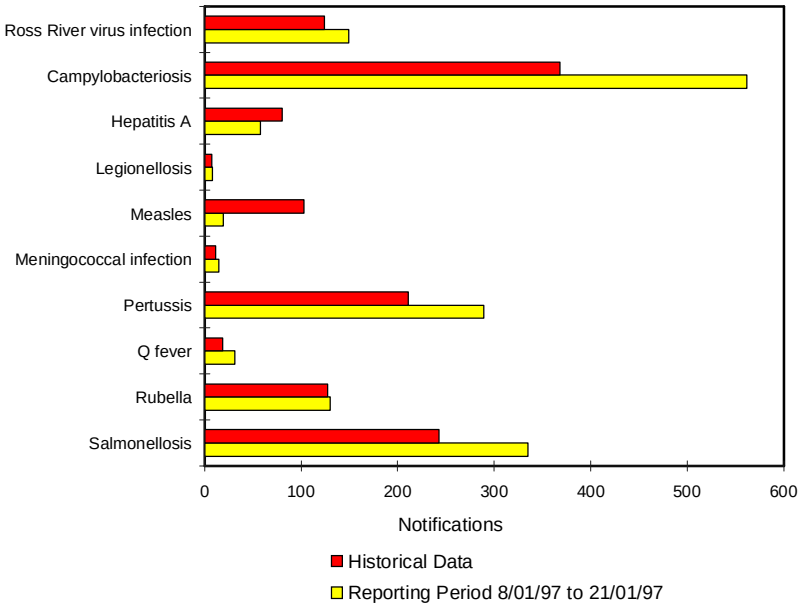
1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1996.
2. No notifications have been received during 1997 for the following rare diseases: botulism; chancroid, leprosy, lymphogranuloma venereum; plague; rabies; yellow fever; or other viral haemorrhagic fevers.

Gonococcal infection was reported for 103 persons this period. Persons in the 15 - 34 years age group represented 77% of the total notifications. The male: female ratio was 2.6:1. Notifications of gonococcal infection have gradually risen in the last three years (Figure 6).

Rubella was reported for 130 persons this period, with 79 notifications from Queensland and 34 from South Australia. The number of notifications appears to be decreasing after being high in recent months. Sixty-eight cases (52%) were for the 15 - 29 years age group. There was a predominance of males, with the male:female ratio being 2.2:1.

Three hundred and thirty-five notifications of salmonellosis were reported this period. One hundred and twenty-six of the cases were in the 0 - 4 years age group. Included

Figure 4. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



1. The historical data are the averages of the number of notifications in 9 previous 2-week reporting periods: the corresponding periods of the last 3 years and the periods immediately preceding and following those.

Figure 5. Campylobacteriosis notifications, 1994 to 1996, by month of onset

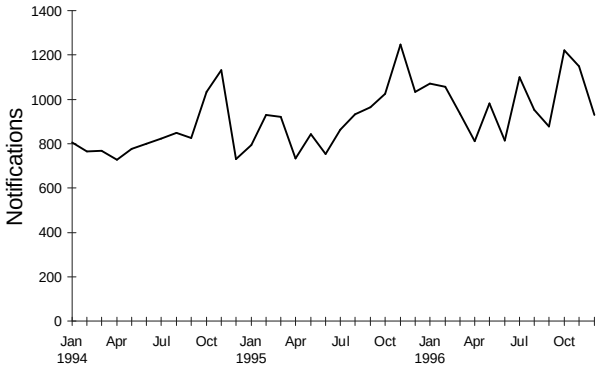
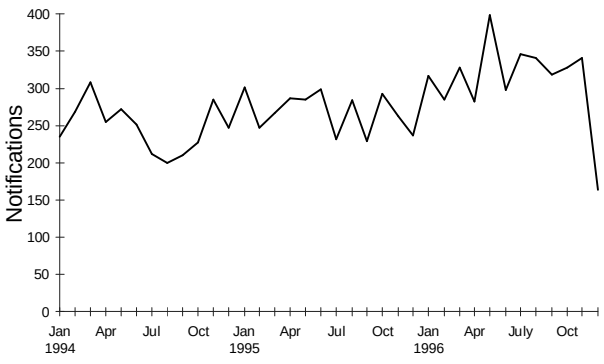


Figure 6. Gonococcal infection notifications, 1994 to 1996, by month of onset



were apparent clusters of 3 or more cases in postcode regions of Queensland (6) and South Australia (6).

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network (ASPREN) comprises 99 sentinel general practitioners from throughout the country. Approximately 9,000 consultations are recorded each week for 12 conditions. Of these, CDI reports the consultation rate for influenza, rubella, measles, chickenpox, pertussis and gastroenteritis, Ross River virus, HIV testing (patient initiated) and HIV testing (doctor initiated). For further information including case definitions see CDI 1997;21:6.

Data for weeks 1, 2 and 3 ending 5 January, 12 January and 19 January 1997 respectively are included in this issue of *CDI* (Table 4). The consultation rate for rubella remains low. The rates for chickenpox and gastroenteritis are lower over the two most recent weeks than for the previous four weeks.

In 1997 three new conditions have been included. They are Ross River virus infection, HIV testing (patient initiated), and HIV testing (doctor initiated).

Sentinel Chicken Surveillance Programme

AK Broom[1], J Azuolas[2], L Hueston[3], JS Mackenzie[4], L Melville[5], DW Smith[6] and PI Whelan[7]

1. Department of Microbiology, The University of Western Australia
2. Veterinary Research Institute, Victoria
3. Virology Department, Westmead Hospital, New South Wales
4. Department of Microbiology, The University of Queensland
5. Berrimah Agricultural Research Centre, Darwin
6. PathCentre, Perth
7. Department of Health and Community Services, Darwin

Sentinel chicken flocks are used to monitor 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. Currently 23 flocks are maintained in the north of Western Australia, ten in the Northern Territory, ten in New South Wales and ten in Victoria. The flocks in Western Australia and the Northern Territory are tested all year round but those in Victoria are tested only from November to March, during the main MVE risk season. Results are coordinated by the Arbovirus Laboratory in Perth and reported bimonthly. For more information see CDI 1997;21:6-7.

Sentinel chicken serology was carried out for all of the 23 flocks in Western Australia in November and December 1996. There were no seroconversions to flaviviruses during this period.

A new flock was established at the Arid Zone Research Institute at Alice Springs in November 1996, and this brings the total number of sentinel chicken flocks in the Northern Territory to ten. Six flocks from the Northern Territory were tested in November and December 1996. During this period there were no seroconversions to flaviviruses.

The sentinel chicken flocks in New South Wales and Victoria were bled and tested in December and there were no seroconversions to flaviviruses during this period.

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 1997;21:8-9.

There were 1,345 reports received in the *CDI* Virology and Serology Reporting Scheme this period (Tables 5 and 6).

The number of reports of measles remains low. There were 55 reports received for 1996, compared with less than 153 in 1995 and 1,199 in 1994.

Seventeen reports of influenza B were received this period. Included were 11 males and 6 females, 7 of whom were under the age of 14 years. The number of reports of influenza B rose to 22 in December. Ten of these were from South Australia, 9 from Western Australia and 3 from Victoria. This is the highest monthly total since September 1995 (Figure 7).

Parainfluenza virus type 3 was reported for 35 patients this period, 31 (89%) of whom were under the age of 5 years. The number of reports fell in December after peaking in October (Figure 8).

Table 4. Australian Sentinel Practice Research Network reports, weeks 1, 2 and 3, 1997

	Week 1, to 5 January 1997		*Week 2, to 12 January 1997*		*Week 3, to 19 January 1997*	
Condition	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Influenza	16	3.5	23	3.4	7	1.8
Rubella	4	0.9	1	0.1	2	0.5
Measles	0	0.0	0	0.0	1	0.3
Chickenpox	20	4.4	15	2.2	9	2.3
Pertussis	2	0.4	5	0.7	0	0.0
Gastroenteritis	100	21.8	100	14.7	51	12.8
Ross River virus infection			6	0.9	4	1.0
HIV testing (patient initiated)			13	1.9	7	1.8
HIV testing (doctor initiated)			7	1.0	2	0.5

Figure 7. Influenza B laboratory reports, 1995 to 1996, by month of specimen collection

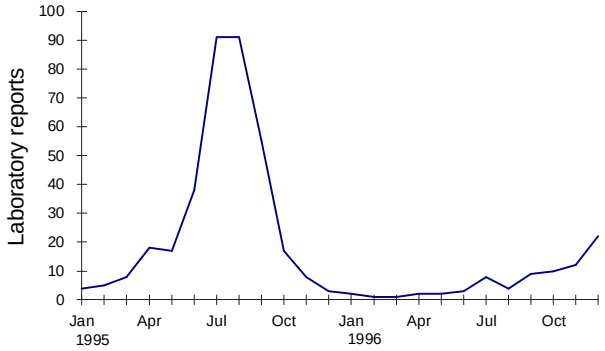


Figure 8. Parainfluenza virus type 3 laboratory reports, 1994 to 1996, by month of specimen collection

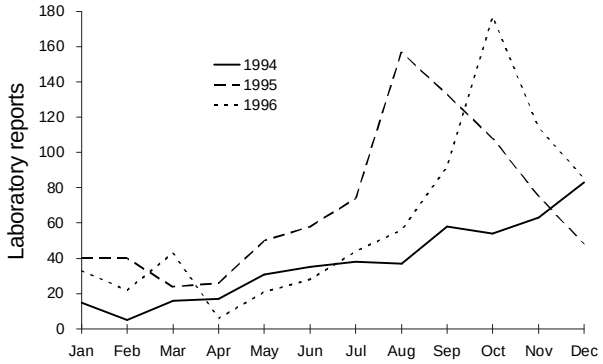


Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 2 to 15 January 1997, historical data[2], and total reports for the year

	State or Territory[1]								Total this fortnight	Historical data[2]	Total reported in *CDI* in 1997
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
Measles, mumps, rubella											
Measles virus							1		1	24.2	8
Mumps virus							2		2	2.5	6
Rubella virus		1	1	60	28		2	1	93	57.0	214
Hepatitis viruses											
Hepatitis A virus		4	1	14	6		1	3	29	20.5	68
Hepatitis D virus					1				1	0.8	5
Arboviruses											
Ross River virus			10	17	1		1	20	49	37.7	142
Barmah Forest virus			2	17				1	20	6.7	39
Kunjin virus								1	1	0.2	1
Flavivirus (unspecified)				3			1		4	0.8	4
Adenoviruses											
Adenovirus type 1					2		2		4	2.3	8
Adenovirus type 2					3		3		6	3.2	10
Adenovirus type 3							7		7	8.3	8
Adenovirus type 5							1		1	0.2	1
Adenovirus type 6					2				2	0.0	2
Adenovirus type 7							3		3	3.0	4
Adenovirus type 8							4		4	0.7	4
Adenovirus type 19							1		1	0.0	1
Adenovirus type 40							1		1	0.0	5
Adenovirus type 42							1		1	0.0	1
Adenovirus not typed/pending		4			12		2	3	21	46.5	160
Herpes viruses											
Cytomegalovirus		6		37	6	1	12	3	65	57.8	145
Varicella-zoster virus	1	4	1	68	12		25	10	121	54.2	228
Epstein-Barr virus		12	5	111	40		10	20	198	93.2	456
Other DNA viruses											
Papovavirus group		1							1	0.0	1
Molluscum contagiosum							1		1	0.3	2
Parvovirus							38		38	8.0	78

Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 2 to 15 January 1997, historical data[2], and total reports for the year, continued

	State or Territory[1]								Total this fortnight	Historical data[2]	Total reported in *CDI* in 1997
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
Picornavirus family											
Coxsackievirus A16							2		2	0.0	3
Coxsackievirus B2		4					2		6	0.8	7
Coxsackievirus B5					1		1		2	0.7	2
Echovirus type 5		1							1	0.0	1
Echovirus type 7		1			2	1	3		7	0.0	11
Poliovirus type 1 (uncharacterised)		1							1	0.3	2
Poliovirus type 2 (uncharacterised)		2							2	0.5	3
Rhinovirus (all types)		4		2	6		13	2	27	25.7	123
Enterovirus not typed/pending		4		11			1	8	24	40.0	133
Ortho/Paramyxoviruses											
Influenza A virus				2			1	3	6	8.8	85
Influenza B virus					7		3	7	17	2.0	41
Influenza virus - typing pending					24				24	0.0	25
Parainfluenza virus type 1								1	1	1.2	16
Parainfluenza virus type 2		1							1	0.7	10
Parainfluenza virus type 3		3		8	13		6	5	35	27.8	241
Parainfluenza virus typing pending					20				20	1.0	20
Respiratory syncytial virus		2		2	1	1	3		9	19.3	46
Other RNA viruses											
Rotavirus		3			26	8	4	2	43	39.7	138
Astrovirus							1		1	0.0	1
Norwalk agent							24		24	2.0	29
Other											
Chlamydia trachomatis not typed		11	17	110	35	6	11	21	211	121.3	677
Chlamydia psittaci							15		15	8.8	18
Chlamydia species		1							1	2.2	3
Mycoplasma pneumoniae		12		27	2		27	16	84	17.3	298
Coxiella burnetii (Q fever)		9		5					14	10.7	53
Rickettsia australis				1					1	0.5	3
Bordetella pertussis		3		28			47	9	87	32.5	339
Legionella longbeachae								1	1	0.7	6
Legionella species				3					3	0.2	3
TOTAL	1	94	37	526	250	17	283	137	1,345	792.7	3,938

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 6. Virology and serology laboratory reports by contributing laboratories for the reporting period 2 to 15 January 1997

State or Territory	Laboratory	Reports
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	22
	Royal Alexandra Hospital for Children, Camperdown	17
	Royal Prince Alfred Hospital, Camperdown	5
	South West Area Pathology Service, Liverpool	24
Queensland	Queensland Medical Laboratory, West End	557
	State Health Laboratory, Brisbane	12
South Australia	Institute of Medical and Veterinary Science, Adelaide	249
Tasmania	Royal Hobart Hospital, Hobart	16
Victoria	Microbiological Diagnostic Unit, University of Melbourne	10
	Monash Medical Centre, Melbourne	16
	Royal Children's Hospital, Melbourne	63
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	198
Western Australia	PathCentre Virology, Perth	93
	Western Diagnostic Pathology	63
TOTAL		1,345

Overseas briefs

Sources: World Health Organization (WHO) and Pacific Public Health Surveillance Network

Meningitis, Togo

From November 1996 to 27 January 1997 an outbreak of meningitis caused 739 cases with 121 deaths in Togo. Meningococcal meningitis is suspected but laboratory investigations are not yet completed. Most cases occurred in the town of Dapaong, Savanes District in northern Togo. The population of Dapaong is 206,000, and that of the whole of Savanes District 300,000. WHO has begun procurement and provision of vaccine, oily chloramphenicol and injection material.

Cholera, Bolivia

The Ministry of Health of Bolivia has reported an outbreak of cholera in Yacuiba, Tarija Province. This area is on the border of Salta Province, Argentina where an increase in cholera cases has been reported. From 1 to 16 January, 492 cases had been reported in Yacuiba. A further 231 cases with 6 deaths occurred in other provinces in Bolivia - Beni, Potosi and Santa Cruz. Fifty per cent of these cases have been laboratory confirmed. A team from the Ministry of Health and the Pan American Health Organization/WHO is coordinating efforts to promote preventive measures in the affected areas. A meeting was held on 18 January between the Bolivian and Argentinian health authorities to discuss and implement environmental control measures.

Measles, French Polynesia

Between September 1996 and 5 January 1997, 326 suspected cases of measles were reported from the Society and Marquisas island groups in French Polynesia. Eight cases were confirmed by serological testing, 122 (37%) were vaccinated and 164 (50%) were aged 10 years or older. Measles vaccination between the ages of 12 and 18 months has been compulsory in French Polynesia since 1986. In 1997 the administration of a second dose is to be introduced at secondary school entry age (11 to 13 years) for all children. In addition, children between 11 and 14 years not immunised in the past will be immunised.

Dengue

New Caledonia: Fourteen cases of dengue had been notified in New Caledonia in the two weeks prior to 20 January 1997. Five cases have been confirmed: three are serotype 2 and two are serotype 3 dengue. Dengue 3 has been endemo-epidemic in New Caledonia since early 1995, however dengue 2 has not been notified since 1972. Members of the population under the age of 25 are therefore at risk of contracting dengue 2.

French Polynesia: Between August 1996 and 29 December 1996 a total of 659 confirmed cases of dengue 2 were recorded in the outbreak in French Polynesia. There were 2,307 notified suspected clinical cases for the same period.

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