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A prolonged outbreak of *Campylobacter* infection at a training facility

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Abstract

Campylobacter outbreaks are rarely detected despite _Campylobacter_ being the most common food-borne illness notified to public health authorities. We report a prolonged outbreak of _Campylobacter_ occurring over a three month period at a training facility. Seventy-eight cases were detected, 16 of which were confirmed _Campylobacter_ infections. In seven affected groups of people using the facility, the attack rate ranged between 19% and 67%. An investigation of one sporting group showed that illness was associated with consumption of cucumber served at a self-serve salad bar. Six people attending the facility in other weeks also reported illness after eating only at the salad bar. Transmission of _Campylobacter_ ceased after changes were instituted to food preparation and storage in the facility kitchen. _Comm Dis Intell_ 1997;21:57-61.

Introduction

Campylobacter outbreaks are rarely detected despite being the most common food-borne disease notified to public health authorities[1]. In countries such as Australia, New Zealand and the United Kingdom, the majority of notified cases are sporadic with no readily identifiable source[1, 2, 3]. Where outbreaks of *Campylobacter* infection are detected, they are often of short duration and associated with point sources, such as chicken, water or milk[4, 5, 6, 7, 8, 9].

On 23 October 1995, the South Australian Health Commission (SAHC) was alerted to an outbreak of gastrointestinal illness among members of an external course at a training facility. Eighteen of 27 people had gastrointestinal symptoms and one person had *Campylobacter* cultured from a faecal specimen. Further investigation revealed similar illnesses in other groups using the facility. Several groups were investigated to determine the source of the infections and to control the outbreak.

Methods

A case was defined as a person who:

- had attended the facility between August and

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Contents

November 1995 and had a stool culture positive for *Campylobacter*, or
- had diarrhoea for one day, or
- had four of the following symptoms: diarrhoea, nausea, vomiting, abdominal pain, fever, headache, myalgia and malaise.

People reporting gastrointestinal symptoms were asked to present to their general practitioner and submit a faecal specimen for testing. Data were analysed using Epi Info version 6.02 statistical software.

Each week the training facility catered for approximately 300 people, many of whom stayed in residential blocks on site. We investigated 11 groups that used the facility between August and November 1995 to determine (1) the magnitude of the outbreak, (2) its source and (3) duration.

To determine the magnitude of the outbreak, we intensively followed up all groups that used the facility for more than one day in the week of 15 to 21 October. Leaders of groups attending in that week distributed a self-administered questionnaire asking about symptoms experienced and the onset and duration of illness.

To determine the source of the outbreak, we conducted a retrospective cohort analysis of a group of 12 year old children attending a sports camp (sporting group 3) during the week of 15 to 21 October 1995. This group was selected because participants were easily accessible and able to provide detailed exposure histories. We conducted telephone interviews of this group using a structured questionnaire, and asked respondents about gastrointestinal illness and consumption of foods and beverages during the first three days of that week.

To determine the duration of the outbreak, we contacted groups that had used the facility up to eight weeks prior to notification of the outbreak and two weeks following the outbreak. SAHC investigators or group leaders contacted participants and collected details of the symptoms experienced, onset and duration of the illness, and if they had consulted a medical practitioner.

To identify cases that may not have been ascertained through the above methods, we also searched notifications of *Campylobacter* between August and November 1995 in the South Australian Notifiable Diseases Database. Notified cases with occupations relating to the training facility's normal business were contacted and asked if they had been at the facility during the two weeks prior to their illness.

Environmental investigations

The local council environmental health officer (EHO) inspected the kitchen and made interim recommendations concerning hygiene and sanitation. When more cases occurred the following week, we conducted an audit of food handling procedures and hygiene at the training facility kitchen and eating area (2 November 1995). Kitchen and storeroom facilities were examined for potential sources of contamination. Food handlers at the training facility were interviewed to determine hygiene practices and any recent illness.

Laboratory investigations

During the audit of food hygiene, samples of foods, spring and mains water and swabs of food preparation areas were collected in sterile containers and stored on ice. These were submitted to the Institute of Medical and Veterinary Science (IMVS) for *Campylobacter* culture within two hours of collection[10, 11]. Food handlers supplied faecal specimens which were tested for *Salmonella*, *Campylobacter*, *Yersinia*, *Shigella*, *Vibrio* and enteric parasites at the IMVS[12].

Results

Epidemiological findings

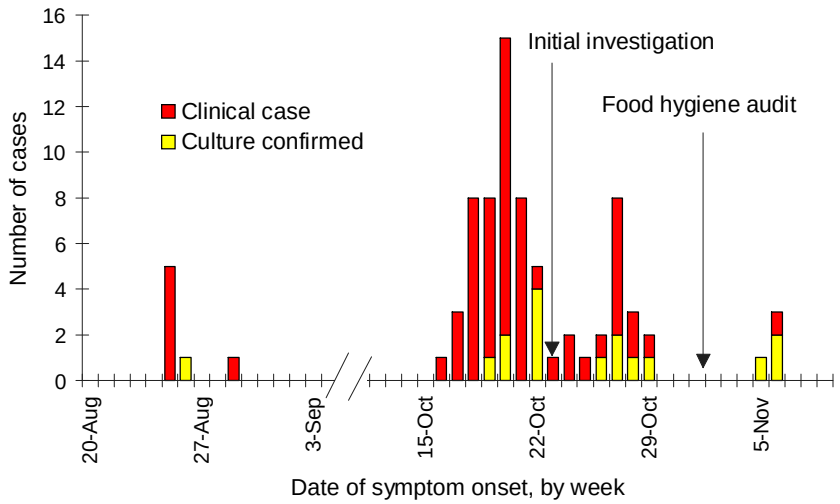
We contacted members of 11 groups that had used the facility in the three months between 18 August and 10 November (Table 1), although many more groups would have also used the facility during this period. From the 11 groups, 290 (85%) of 341 persons were contacted and agreed to participate in the investigation.

Table 1. Groups attending the training facility by dates of attendance, numbers contacted, and attack rate

Group	Dates of attendance	Total number in group	Number contacted	Number ill	Attack rate (%)	Number culture positive[1]
Sporting group 1	21 - 25/8/95	57	57	6	11	0
Training course 1	14 - 27/10/95	28	27	18	67	1
Sporting group 2	Permanent residents	21	20	5	25	0
Facility staff	Permanent residents	40	31	10	32	6
Facility students	Permanent residents	24	21	4	19	0
Sporting group 3	15 - 21/10/95	31	30	12	40	1
Training course 2	15 - 21/10/95	10	9	5	56	0
Training course 3	15 - 21/10/95	12	5	1	20	1
Sporting group 4	23 - 27/10/95	58	58	13	22	3
Training course 4	30/10 - 3/11/95	39	17	0	0	0
Sporting group 5	6 - 10/11/95	21	15	0	0	0
Total		341	290	74	26	12

1. Four culture positive cases detected by searching Notifiable Diseases Database are not included here.

Figure. Cases of *Campylobacter* infection at the training facility by date of onset of symptoms.



Seventy-eight subjects met the case definition, of whom 16 were culture confirmed (Figure). Four of the 16 culture confirmed cases were ascertained by searching the Notifiable Diseases Database for people with occupations related to the training facility. The median age of cases was 27.8 years (range 12.1 - 62.1 years, *n* = 75) and 66 of 78 cases (85%) were male. Forty-six per cent of cases consulted a medical practitioner. For the week of our intensive investigation (15 to 21 October 1995), we were able to contact 143 of 194 persons (74%) from seven groups. The attack rates in these seven groups ranged from 19% to 67%.

Symptom prevalence for the 12 cases in sporting group 3 were: diarrhoea 92%, abdominal cramps 83%, headache 83%, nausea 58%, fever 58% and myalgia 58%, while only 17% had bloody diarrhoea. The median duration of symptoms for these 12 cases was four days, with a range of one to seven days.

The outbreak lasted for almost 11 weeks, with the first cases on 25 August and the last cases on 6 November 1995. Two further groups (training course 4 and sporting group 5) attending the facility between 30 October and 10 November 1995 reported no illness among group members.

Associations with food

Exposure histories for approximately 150 foods and beverages were obtained from people attending sporting group 3. Only foods consumed at Monday and Tuesday lunchtime were significantly associated with illness (Table 2). Eating cucumber from the salad bar at the Monday lunch was associated with illness. Eating cucumber, lettuce and tomato at the Tuesday lunch also had elevated relative risks, but when adjusted for cucumber consumption on the Monday lunch these were markedly reduced. Six people from other groups using the facility also reported illness after eating only from the self-serve salad bar.

Environmental findings

Foods were served in a buffet style with a section for hot meals and cooked vegetables and at lunch time a separate self-serve salad bar. Drinks available included soft drinks, tea, coffee, spring water, cordial and milk. The salad bar contained cold meat, bread and bread rolls, and salads that were prepared externally and in the facility kitchen.

The kitchen and storerooms were inadequately cleaned and responsibilities for cleaning were not well defined. Food preparation areas for uncooked meats and ready to eat salads were not separated. Recommendations to improve food hygiene were made to the facility management. Visits to the kitchen after the outbreak confirmed major improvements in food hygiene and compliance with recommended changes.

Table 2. Attack rates, relative risks and 95 % confidence intervals for selected foods consumed by members of sporting group 3, 16 to 17 October 1995

		Number who ate item			Number who did not eat item				
Meal	Food	Ill	Total	Attack rate (%)	Ill	Total	Attack rate (%)	Relative risk	95% confidence interval
Monday lunch	Cucumber	9	12	75	3	18	17	4.5	1.5-13.3
	Lettuce	8	18	44	4	12	33	1.3	0.5-3.5
	Rice	1	9	11	11	21	52	0.2	0.03-1.4
	Tomato	8	15	53	4	15	27	2.0	0.8-5.2
Tuesday lunch	Cucumber	5	6	83	7	24	29	2.9	1.4-5.9
	Lettuce	7	10	70	5	20	25	2.8	1.2-6.6
	Rice	4	11	36	8	18	44	0.8	0.3-2.1
	Tomato	5	6	83	7	24	29	2.9	1.4-5.9

All food, water and swab samples were negative for *Campylobacter*. There were no significant changes to the quality of chlorinated mains water before or during the outbreak and a water sample taken near the facility was negative for coliform bacteria. (Reg Walters, Australian Water Quality Centre, personal communication). None of the five food handlers admitted to any recent illness and all submitted faecal specimens for testing. One food handler was positive for *Campylobacter jejeuni* and reported mild symptoms on 27 October 1995, after the beginning of the outbreak.

Discussion

This outbreak of *Campylobacter* infection was unusual in that it affected a large number of people and lasted for nearly three months. While 3,294 sporadic *Campylobacter* notifications were received by the SAHC during 1995, this outbreak represents the only cases in which a specific food item was implicated (unpublished data, SAHC Notifiable Diseases Database). One of the main difficulties in detecting outbreaks of *Campylobacter* infection from notification data is the current lack of an epidemiologically useful sub-typing system[2, 13].

The outbreak also illustrated the usefulness of collecting occupational status in surveillance reports as we were able to identify four cases in the Notifiable Diseases Database.

We suspect that this outbreak was caused by salads from the self-serve salad bar that were probably contaminated by raw meat. The salad bar was installed at the training facility five months before the outbreak occurred. The fact that at least six people became ill after eating only foods served at the salad bar further implicates it as the most likely vehicle for this outbreak.

In this outbreak we were unable to determine whether the vegetables were contaminated prior to being purchased by the facility. An investigation of the chain of distribution from greengrocer to wholesaler to producer proved very difficult due to its retrospective nature and inadequately kept records. Where possible, public health authorities should proceed as far up the distribution chain as possible.

This outbreak raises the question of food safety in the primary producing industry, as very few vegetable growers utilise hazard analysis and critical control point (HACCP) plans.

However, we believe that cross contamination in the facility kitchen was a more likely cause of this outbreak than the purchase of contaminated vegetables because (1) kitchen staff reported washing all vegetables, (2) cooked and uncooked foods were not separated during preparation and (3) no cases occurred more than one incubation period after changes to food preparation were instituted. Our audit of food hygiene identified many deficiencies and, in particular, a high risk of raw meats contaminating ready to eat salad items during preparation. Similar outbreaks of *Campylobacter* and *Salmonella* have occurred in the United States of America and the United Kingdom, after fruit and salads became cross-contaminated by uncooked meat and poultry during preparation[14, 15].

In recent years there has been an increasing number of reported outbreaks associated with contaminated produce. These have included *Salmonella* Bovismorbificans in alfalfa sprouts[16], *Shigella* contamination of lettuces[17] and salad[18], *Salmonella* Heidelberg in tomato salad[15], *Citrobacter freundii* contaminated parsley[19], *Escherichia coli* 0157:H7 in salads[20], small round structured virus in salads[21], *Cyclospora cayatenensis* contamination of rasberries[22] and many others[14, 23]. Produce may become contaminated at the place of production, during transportation or during handling and preparation. Because salads are consumed raw and they are vulnerable to cross-contamination they may be responsible for a significant proportion of outbreaks reported to health authorities[14, 23, 24]. These outbreaks emphasise the importance of HACCP plans from 'farm to plate' for primary produce such as fruit and vegetables[25].

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Concurrent outbreaks of *Salmonella* Typhimurium in South Australia

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Abstract

The Communicable Disease Control Branch of the South Australian Health Commission received 45 laboratory notifications of *Salmonella* between 23 December 1996 and 17 January 1997. A rapid screening test, undertaken by the Institute of Medical and Veterinary Sciences, Adelaide, was the first indication that this was more than one outbreak, prompting the establishment of separate investigations. Three *Salmonella* Typhimurium (*S.* Typhimurium) phage types were subsequently identified. Investigations are continuing into an outbreak of *S.* Typhimurium phage type (PT) 64, while investigations failed to identify any association between four cases of PT 44. As of 12 February 1997, 71 notifications had been confirmed as *S.* Typhimurium PT 135. Epidemiological investigations found this outbreak was associated with consumption of bread rolls with a meat filling distributed through local Asian grocery stores from a home-based manufacturer. The product was voluntarily withdrawn and there have been no new cases of PT 135. *Comm Dis Intell* 1997;21:61-62.

Introduction

On 31 December 1996, the Communicable Disease Control Branch of the South Australian Health Commission received a laboratory notification of a *Salmonella* isolated from the faecal specimen of a two year old female with an Indochinese name. A second case with an Indochinese name was notified on 2 January 1997 and a further seven were notified on 15 January.

Methods

On 16 January, all laboratories were asked to notify isolation of *Salmonella* by telephone. Investigation forms were sent to three practitioners who had been consulted by most of the patients and to the Womens and Childrens Hospital. A range of information including disease details, patient contacts, animal contacts, travel details and food history was collected.

From 21 January, local council environmental health officers contacted each notified case to complete the information requested in the investigation forms. Food samples were obtained from the homes of cases, associated retail outlets and from the manufacturer of the suspected food. All food samples were refrigerated and transported to the Institute of Medical and Veterinary Sciences (IMVS), Adelaide.

The Australian Salmonella Reference Centre at the IMVS conducted serotyping and phage typing of all isolates. As an early indicator, the IMVS undertook Randomly Amplified Polymorphic DNA (RAPD) analysis of the isolates.

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5. Epidemiology Branch, South Australian Health Commission, Adelaide.

A case-control study commenced by telephone interview on 29 January to test the hypothesis that a particular meat-filled bread roll was associated with the outbreak of *Salmonella* Typhimurium phage type 135 (*S.* Typhimurium PT 135).

Results

Forty-five laboratory notifications o**f** *Salmonella* were received between 23 December 1996 and 17 January 1997. RAPD typing on 18 January indicated that the *Salmonella* isolated in the previous week consisted of two groups: one RAPD type correlated with phage type 64 and the second RAPD group, which had not at that time been phage typed, included all the isolates from people with Indochinese names. In the next week it was found that this second RAPD group were all *S.* Typhimurium PT 135. A third group of four *S.* Typhimurium PT 44 were not epidemiologically linked.

No samples of the suspected foodstuffs consumed by the cases were available for testing. *Salmonella* was not isolated from any food samples obtained from the manufactuer or from retail outlets.

The case-control study found the outbreak of *S.* Typhimurium PT 135 was associated with consumption of a particular meat-filled bread roll distributed through local Asian grocery stores from a home-based manufacturer. The product was voluntarily withdrawn and production ceased on 27 January. There have been no new cases of phage type 135 with onset since this date. A report on the case-control study is being prepared for publication.

Serotyping and phage typing of *Salmonella* isolates is continuing. As of 12 February 1997, 71 notifications linked to consumption of the rolls had been confirmed as *S.* Typhimurium PT 135. Epidemiological investigations are continuing into the outbreak of S. Typhimurium PT 64.

Discussion

Timeliness is an essential component of outbreak investigations, particularly when compilation of food histories is involved. As a result of laboratory screening of the isolates through RAPD typing, the existence of the second outbreak was identified before phage typing confirmed the isolates were *S.* Typhimurium PT 135. The early screening prompted the establishment of separate investigations. Both the early screening and subsequent confirmation through phage typing were crucial because it meant the investigation was not unduly distracted by unrelated cases. This then assisted in the establishment of a hypothesis which we tested using a case-control approach.

Acknowledgements

We would like to thank the following for their assistance with these investigations: notifying laboratories (Queen Elizabeth Hospital, Adelaide, Gribbles Pathology, Clin Path, Flinders Medical Centre, Western Diagnostic, Womens and Childrens Hospital, Adelaide) and general practitioners; local government environmental health officers, particularly in the City of Salisbury and the City of Munno-Para; Dr Christine Roberts and Dr Craig Dalton (National Centre for Epidemiology and Population Health).

Figure 1. Rubella notifications by month of onset, 1991 to 1997

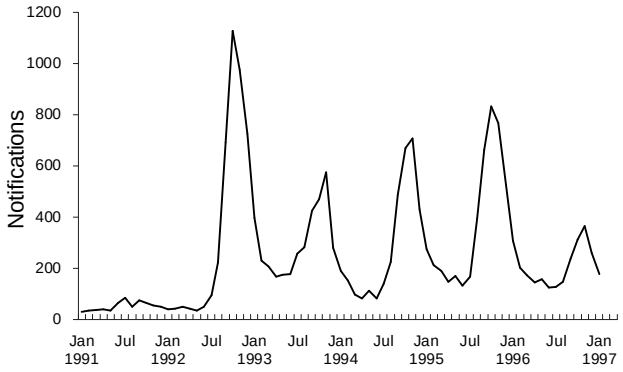


Figure 2. Rubella notifications, 1996, by age group and sex

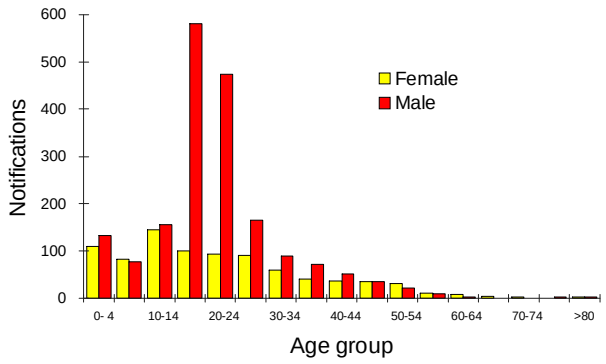
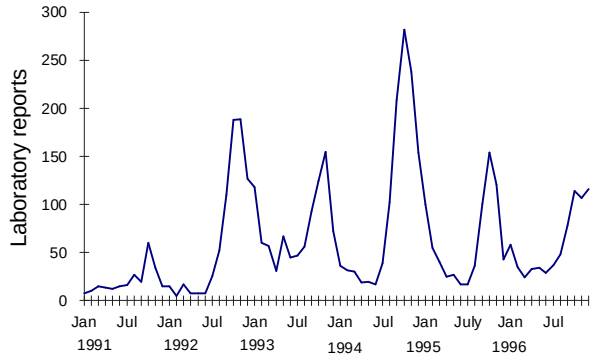


Figure 3. Rubella laboratory reports, 1991 to 1996, by month of specimen collection



Rubella

Rubella is an acute viral infection of children and adults. Clinical symptoms include mild fever, maculopapular rash and lymphadenopathy. The virus is important as it has the potential to damage the developing foetus following maternal infection during pregnancy. Congenital rubella syndrome occurs in up to 90% of infants born to mothers who acquired infection during the first trimester of pregnancy. It may result in foetal death or congenital defects such as deafness, heart disease and mental retardation.

Rubella is transmitted by contact with the nasopharyngeal secretions of infected persons. Patients are infectious for at least one week before and four days following the onset of rash. The incubation period is 14 to 21 days.

The National Health and Medical Research Council recommends that all infants of 12 months of age and adolescents in the 10 - 16 years age group receive rubella vaccine. The aim of rubella vaccination is to prevent congenital rubella syndrome by preventing the circulation of rubella virus in the community.

Outbreaks of rubella have been recorded in Australia by the National Notifiable Diseases Surveillance System (NNDSS) in the spring months of each year since 1992 (Figure 1). The highest monthly number of notifications, 1,126, was recorded in October 1992. The peak in 1996 occurred in November and was lower than those recorded in recent years (Figure 1).

Between 1992 and 1996 more than 2,000 cases of rubella were reported for women of childbearing age. Each year the highest number of rubella cases was reported for the 15 - 19 years age group (Figure 2), with more males being reported than females. This probably reflects the lack of immunity in males as most would not have been immunised. In 1996 the male:female ratio was 2.1:1.

The LabVISE laboratory reporting scheme recorded a similar epidemic pattern to that recorded by the NNDSS, with peak reporting in the spring of each year since 1992 (Figure 3). As this is a sentinel reporting scheme it is not possible to compare absolute numbers of reports with NNDSS. However the seasonal trends recorded by both schemes are similar.

Dengue

There were 108 reports of dengue to the National Notifiable Diseases Surveillance System for 1996, with 70 cases having onset in December (Figure 4). The number of cases reported for 1996 was higher than for any year since more than 600 cases were reported for 1993. Eleven cases have been reported with onset dates in 1997. The majority of cases (72%) were reported from Queensland, where an outbreak of dengue 2 occurred in the Torres Strait (see *CDI* 1997;21:33). In 1996 the male:female ratio was 1:1.1, and 69% of cases were in the 20 - 54 years age range.

The LabVISE scheme recorded 29 reports of dengue 2 this reporting period. All were from Queensland and had

Figure 4. Dengue notifications 1991 to 1997, by month of onset

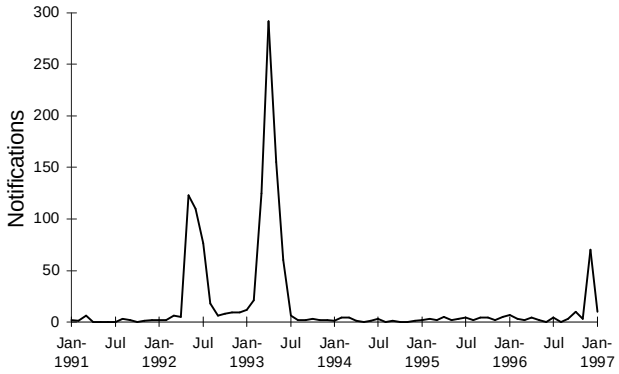
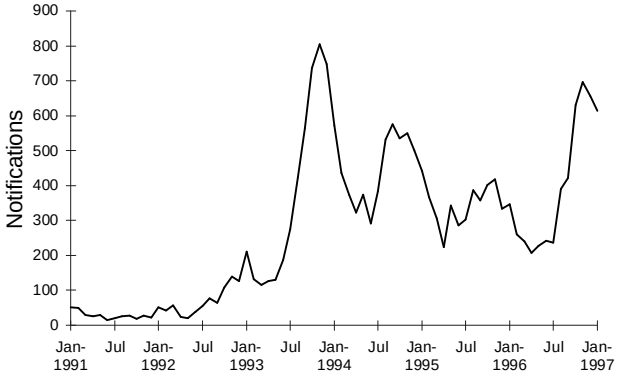


Figure 6. Pertussis notifications 1991 to 1997, by month of onset



specimen collection dates in December 1996. The male:female ratio was 1.4:1 and 35% were in the 25 - 44 years age range. This is the highest monthly total since June 1993. Eleven reports of untyped dengue were also received for December.

National Notifiable Diseases Surveillance System

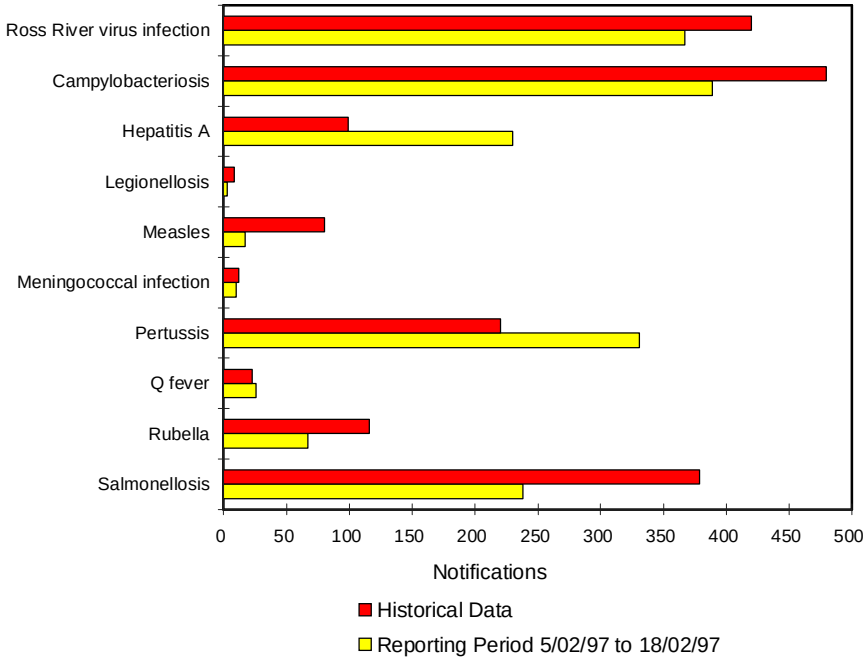
The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The system coordinates the national surveillance of more than 40 communicable diseases or disease groups endorsed by the National Health and Medical Research Council (NHMRC). Notifications of these diseases 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.

Reporting period 5 to 18 February 1997

There were 1,972 notifications received for this two week period (Tables 1, 2 and 3). The numbers of reports for selected diseases have been compared with average data for this period in the previous three years (Figure 5).

The number of pertussis cases has continued to increase, with 331 reports for the current period. More than 800 reports have been received with onset dates in 1997 (Figure 6). The male: female ratio was 1:1.3 and 36% of cases were aged under 10 years.

Figure 5. 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.

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 5 to 18 February 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	1	0	0	0	0	0	0	1	3	10	9
Measles	0	2	0	7	1	3	2	2	17	21	61	82
Mumps	0	2	0	NN	0	0	1	0	3	3	19	17
Pertussis	13	62	2	39	99	4	97	15	331	153	1143	537
Rubella	3	1	0	33	11	0	13	6	67	121	282	547
Tetanus	0	0	0	0	0	0	0	0	0	0	1	1

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 5 to 18 February 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	3	4	0	0	0	3	2	12	4	43	16
Barmah Forest virus infection	0	14	0	14	1	0	2	-	31	45	86	88
Campylobacteriosis[5]	12	-	9	169	64	14	71	50	389	505	1652	1696
Chlamydial infection (NEC)[6]	6	NN	6	105	0	13	0	44	174	277	845	937
Dengue	0	0	1	23	0	-	0	2	26	3	81	7
Donovanosis	0	NN	0	0	NN	0	0	0	0	3	1	9
Gonococcal infection[7]	3	4	11	36	0	2	0	9	65	141	320	453
Hepatitis A	6	90	3	88	8	1	32	2	230	114	391	398
Hepatitis B incident	0	1	0	2	0	0	0	1	4	11	22	36
Hepatitis C incident	0	0	0	-	0	0	-	-	0	3	2	7
Hepatitis C unspecified	13	NN	13	94	NN	13	4	15	152	398	864	1218
Hepatitis (NEC)	0	0	0	1	0	0	0	NN	1	2	5	5
Legionellosis	0	0	0	2	0	0	0	1	3	9	22	26
Leptospirosis	0	1	0	3	0	1	0	0	5	6	19	31
Listeriosis	0	0	0	0	0	0	1	0	1	1	12	8
Malaria	1	7	0	0	0	0	1	0	9	26	80	96
Meningococcal infection	1	2	0	2	0	1	3	1	10	12	43	37
Ornithosis	0	NN	0	0	0	0	3	0	3	2	14	11
Q Fever	0	15	0	8	0	0	3	0	26	16	68	56
Ross River virus infection	1	72	27	85	53	2	115	12	367	564	878	867
Salmonellosis (NEC)	3	47	12	80	37	12	24	23	238	317	1006	1048
Shigellosis[5]	0	-	9	6	8	0	1	7	31	29	111	97
Syphilis	0	10	6	13	0	0	0	3	32	65	129	171
Tuberculosis	1	2	0	13	2	0	10	2	30	54	105	161
Typhoid[8]	0	0	0	2	0	0	2	1	5	12	13	27
Yersiniosis (NEC)[5]	0	-	0	14	4	0	0	0	18	17	60	46

1. For HIV and AIDS, see *CDI* 1997;21:52. 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.

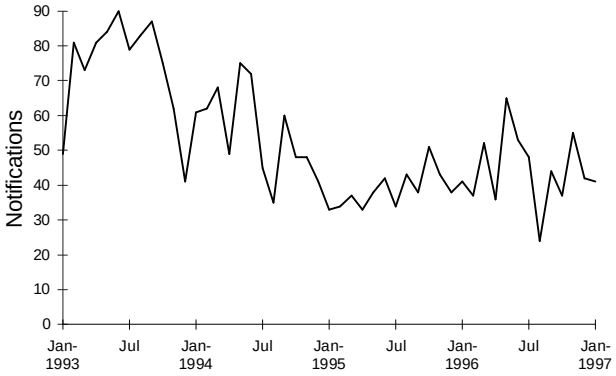
- Elsewhere Classified.

Table 3. Notifications of rare[1] diseases received by State and Territory health authorities in the period 5 to 18 February 1997

Disease[2]	Total this period	Reporting States or Territories	Total notifications 1997
Brucellosis	2	Qld	9
Cholera			1
Hydatid infection			2
Leprosy	1	NSW	1

1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1995.
2. No notifications were received during 1996 for the following rare diseases: botulism; chancroid; lymphogranuloma venereum; plague; rabies; yellow fever; or other viral haemorrhagic fevers.

Figure 7. Q fever notifications 1993 to 1997, by month of onset



Notifications of hepatitis A have still not substantially increased above previous years, despite the large outbreak in New South Wales (see *CDI* 1997;21:46). There were 336 cases reported with onset dates in 1997, with 133 (40%) from New South Wales and 107 (32%) from Queensland. The male:female ratio was 1.6:1 with 42% of cases in males in the 20 - 54 years age range.

Twenty-six cases of Q fever were reported for this period, but the numbers of cases with onset dates in December and January was not higher than in previous years (Figure 7). In 1996, 53% of cases were reported from New South Wales and 32% from Queensland. The male:female ratio was 5.7:1, with 95% of cases in the 15 - 64 years age range.

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 rates for chickenpox, HIV testing (doctor initiated), HIV testing (patient initiated), influenza, measles, pertussis, Ross River virus infection, rubella and gastroenteritis. For further information including case definitions see CDI 1997;21:6.

Data for weeks 6 and 7 ending 9 and 16 February respectively are included in this issue of *CDI* (Table 4). The consultation rate for influenza-like illness has remained at low levels since the beginning of October. The consultation rate for gastroenteritis has remained low during the last 6 reporting weeks. Consultation rates for chickenpox have continued to decline from the higher rates reported during December. The numbers of reported cases of measles, rubella and pertussis have remained low. Consultation rates for Ross River virus infection remain low. HIV testing accounted for 4 per thousand consultations in the current reporting weeks, three-quarters of these tests being patient-initiated.

Table 4. Australian Sentinel Practice Research Network reports, weeks 6 and 7, 1997

Condition	*Week 6, to 9 February 1997*		*Week 7, to 16 February 1997*	
	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Chickenpox	14	1.8	15	2.1
Gastroenteritis	88	11.6	85	12.0
HIV testing (doctor initiated)	7	0.9	7	1.0
HIV testing (patient initiated)	21	2.8	21	3.0
Influenza	14	1.8	15	2.1
Measles	1	0.1	1	0.1
Pertussis	0	0.0	3	0.4
Ross River virus infection	4	0.5	2	0.3
Rubella	4	0.5	1	0.1

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 1,245 reports received in the *CDI* Virology and Serology Reporting Scheme this period (Tables 5 and 6).

Ross River virus infection was reported for 107 patients this period. The male:female ratio was 1.3:1 and 84% of patients were in the 25 - 64 years age group. Diagnosis was by IgM detection (105) and four-fold rise in titre (2). Ninety-seven reports have been received so far for January, which is low for the time of year (Figure 8). However data for this month may be incomplete.

The number of laboratory reports of influenza B has risen in recent months (Figure 9). A total of 16 reports have been received with specimen collection dates in 1997. These were from Western Australia (5), Victoria (7), South Australia (3) and the Australian Capital Territory (one). For 1996 and 1997 the male:female ratio was 1.4:1 and 32% of reports were for children under the age of 5 years.

Rotavirus was reported for 74 patients this fortnight, most (77%) of which were from Western Australia. Most reports were for males, with the male:female ratio 1.6:1, and 68% were for children in the 1 - 4 years age group. The number of reports is high for the time of year (Figure10).

Figure 8. Ross River virus laboratory reports, 1994 to 1997, by month of specimen collection

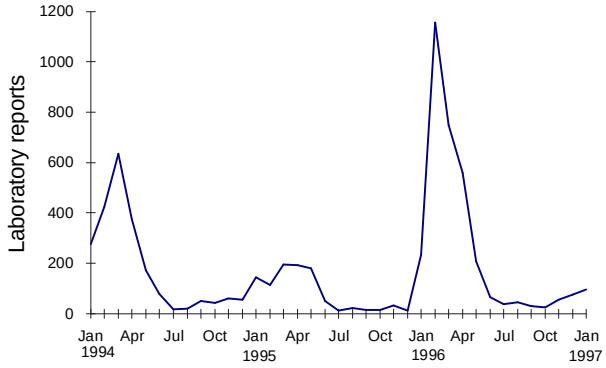


Figure 9. Influenza B laboratory reports, 1995 to 1997, by month of specimen collection

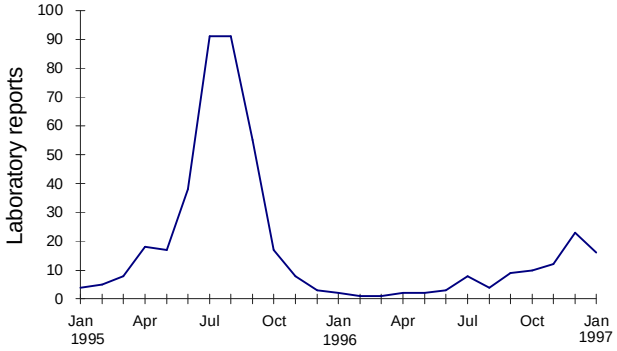


Figure 10. Rotavirus laboratory reports 1995 to 1997, by month of specimen collection

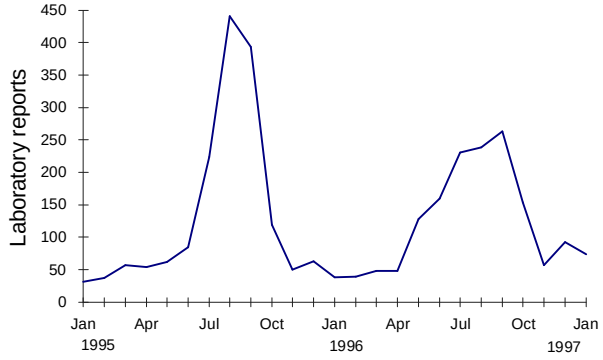


Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 30 January to 12 February 1997, historical data[2], and total reports for the year

	State or Territory[1]							Total this fortnight	Historical data[2]	Total reported in *CDI* in 1997
	NSW	NT	Qld	SA	Tas	Vic	WA			
Measles, mumps, rubella										
Measles virus			1			2		3	13.8	12
Mumps virus			1					1	2.7	7
Rubella virus	1		38	4	1	1		45	36.3	263
Hepatitis viruses										
Hepatitis A virus	8	4	57	3				72	28.5	159
Hepatitis E virus			1					1	.2	1
Arboviruses										
Ross River virus	8	12	67	6		14		107	198.0	287
Barmah Forest virus		2	8			1		11	13.3	52
Dengue type 2			29					29	.0	29
Dengue not typed			11					11	1.3	15
Flavivirus (unspecified)			1			1		2	1.2	7
Adenoviruses										
Adenovirus type 2						2		2	1.0	12
Adenovirus type 3						1		1	3.0	11
Adenovirus type 5						1		1	.0	2
Adenovirus not typed/pending	3		8	7		10	31	59	29.8	237
Herpes viruses										
Cytomegalovirus	4		33	1	1	13	14	66	53.0	249
Varicella-zoster virus	4	1	41	13		11	4	74	59.5	334
Epstein-Barr virus	8	5	111	26		8		158	96.0	660
Other DNA viruses										
Parvovirus	1			1		7		9	7.8	102
Picornavirus family										
Echovirus type 7	1							1	.2	14
Rhinovirus (all types)	4			1		1		6	9.7	146
Enterovirus not typed/pending			5					5	23.7	141
Ortho/Paramyxoviruses										
Influenza A virus		1	23			1	1	26	7.8	115
Influenza B virus				1		2	5	8	1.5	57
Influenza virus - typing pending				17			2	19	.0	59
Parainfluenza virus type 1							1	1	1.7	18
Parainfluenza virus type 3	2		3			3	12	20	13.7	281
Parainfluenza virus typing pending				17				17	.0	56
Respiratory syncytial virus	4		1	1		2	5	13	16.7	144
Other RNA viruses										
Rotavirus	1			7	3	6	57	74	21.3	231

Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 30 January to 12 February 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
	NSW	NT	Qld	SA	Tas	Vic	WA			
Other										
Chlamydia trachomatis - A-K					1			1	.0	1
Chlamydia trachomatis not typed	7	8	105	36			8	164	139.5	948
Chlamydia psittaci						6		6	4.3	26
Chlamydia species	2		2					4	7.3	8
Mycoplasma pneumoniae	8	1	32	4	2	14	1	62	19.8	413
Coxiella burnetii (Q fever)			5			1		6	6.7	68
Rickettsia australis			1		1	1		3	.2	6
Rickettsia spp - other						1		1	.2	1
Bordetella pertussis	3	1	29		1	115		149	29.0	505
Legionella longbeachae			2					2	.8	8
Leptospira pomona			2					2	.3	6
Leptospira hardjo			2					2	.7	6
Leptospira australis					1			1	.2	1
TOTAL	69	35	619	145	11	225	141	1,245	850.7	5,698

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 30 January to 12 February 1997

State or Territory	Laboratory	Reports
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	10
	Royal Alexandra Hospital for Children, Camperdown	9
	Royal Prince Alfred Hospital, Camperdown	3
	South West Area Pathology Service, Liverpool	17
Queensland	Queensland Medical Laboratory, West End	575
	State Health Laboratory, Brisbane	105
South Australia	Institute of Medical and Veterinary Science, Adelaide	144
Tasmania	Northern Tasmanian Pathology Service, Launceston	11
Victoria	Monash Medical Centre, Melbourne	9
	Royal Children's Hospital, Melbourne	157
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	63
Western Australia	Princess Margaret Hospital, Perth	142
TOTAL		1,245

Overseas briefs

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

Influenza vaccine for the 1997-1998 northern hemisphere season

The composition for the influenza vaccine for the 1997-1998 northern hemisphere season was announced at a meeting of international experts that was held at the World Health Organization headquarters in Geneva on 19 February. The three components to be included are: an A/Wuhan/359/95(H_3N_2)-like strain, an A/Bayern/7/95(H_1N_1)-like strain and a B/Beijing/184/93-like strain. This differs from last year's composition in that the A/Bayern/7/95(H_1N_1) like strain replaces an A/Singapore/6/86(H_1N_1)-like strain.

During the 1996-1997 season several countries in the northern hemisphere reported moderate to severe influenza epidemics. Influenza activity in several countries in western Europe and in north America reached a peak during December 1996 or January 1997 whereas in central and eastern Europe activity increased around mid-January. Influenza A viruses were isolated worldwide and were largely of the influenza A(H_3N_2) subtype. However, most isolates from Asia were influenza B, although in Japan influenza A(H_3N_2) was most prevalent. In North America and parts of Europe, influenza B was frequently reported either along with, or following influenza A. A few laboratory confirmed cases of influenza A(H_1N_1) have been reported since October 1996. Further information is presented in the *WHO Weekly Epidemiological Record* No. 9 published on 28 Februrary.

Typhoid fever, Tadjikistan

On 13 February WHO was informed of a new outbreak of typhoid fever in Tadjikistan. It is estimated that at least 3,000 cases have occurred in the capital city Dushanbé. Other reports indicate this to be a low estimate and that the disease has also spread outside the capital. Case fatality rates have been recorded as around 1%. *Salmonella* typhi has been confirmed by local and international laboratories. While the results of antibiotic sensitivity tests have been contradictory, in view of the current low case fatality rates WHO recommends the continued use of chloramphenicol and co-trimoxazole pending further investigations. Those who do not respond and high-risk groups (infants and the elderly) should be given ciprofloxacin.

Dengue

Cook Islands. The weekly number of dengue fever cases has increased steadily on the island of Rarotonga since the beginning of January 1997. Up to 15 February 1997, 123 cases had been confirmed of which 39 had been hospitalised - none of them severely ill. Only dengue type 2 has been isolated in this outbreak. WHO has sent an expert to assess current control measures.

French Polynesia. From August 1996 to 16 January 1997, the total number of reported cases of Dengue 2 in French Polynesia was 3,908, with 979 cases confirmed. Suspected cases were reported first from the Tuarnotu-Gambier group, and later from the Marquesas islands. Approximately 330 cases were hospitalised.

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