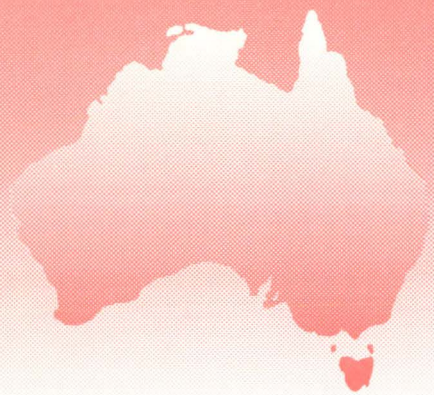

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Editor: Helen Longbottom
Deputy Editor: Jenny Hargreaves

Editorial and Production Staff: Leslee Roberts, Margaret Curran, David Evans, Htoo Myint, Toni Hogan, Michelle Wood and Leona Seib

COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

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COMMUNICABLE DISEASES NETWORK-AUSTRALIA
A National Network for Communicable Diseases Surveillance

INCREASE IN REPORTS OF *SALMONELLA* SUBSP I SER 16:L,V:-

J Powling, D Lightfoot, B Truong, National Salmonella Surveillance Scheme, Microbiological Diagnostic Unit, University of Melbourne, Victoria

Since the first week of April this year there has been an increase in the number of cases of salmonellosis caused by an unnamed serovar, *Salmonella* subsp I ser 16:l,v:- reported to the National *Salmonella* Surveillance Scheme (NSSS). This serovar has, until now, occurred at a low frequency in the Australian population and has been reported almost exclusively from communities in the far north of Queensland (Table 1). Most reports have been for children under the age of three years (Table 2).

Records of the NSSS show that in the eight years between 1985 and 1992 only 54 cases were reported. Of these, 45 (83%) were reported from Queensland with 34 (75% of the Queensland cases) reported from the region north of Townsville to Cape York referred to as Far North Queensland (FNQ).

Prior to 1993 only 18% of cases were from metropolitan areas. The remainder were reported from Aboriginal communities in the far north of Queensland and the Northern Territory. In 1993, 37% of cases were metropolitan in origin.

To 30 June 1994, only five of the 61 cases have been reported from far north Queensland, one was reported from an Aboriginal community in central Australia and ten from rural areas in New South Wales, Queensland and Victoria. The remaining 45 cases (74%) were reported from all the mainland capital cities as well as some of the major regional urban areas.

There have been only three isolations of *S.* subsp I ser 16:l,v:- from sites other than faeces. In 1990 the two adult cases involved isolates from ovarian cyst fluid (31 year old female from Tasmania) and urine (72 year old female from Victoria). In 1994 there has been one more urine isolate (53 year old female), also from country Victoria. One case (77 year old male from the Hunter Region, New South Wales) reported recent acute renal failure secondary to previous *S.* Typhimurium infection.

There were only 15 non-human notifications to the NSSS prior to 1993. In 1990, there were four isolates reported from a survey of dogs living in Aboriginal communities in the Northern Territory. In 1991, there were five isolates from meat meal in New South Wales

Table 1. Cases of *Salmonella* subsp I ser 16:l,v:-, January 1985 to 30 June 1994, by State or Territory and year

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994[1]
Qld (FNQ)	7 (2)	3 (3)	4 (4)	10 (9)	5 (4)	3 (2)	6 (4)	7 (6)	16 (10)	27 (5)
NSW	0	0	0	0	0	2	1	0	3	29
Vic	0	0	0	0	0	1	0	0	3	11
SA	0	0	0	0	0	0	0	0	1	7
WA	0	0	0	0	0	0	0	0	2	3
NT	0	0	0	1	1	0	1	1	2	1
Tas	0	0	0	0	0	1	0	0	0	0
ACT	0	0	0	0	0	0	0	0	0	2
Total (% FNQ)	7	3 (100)	4 (100)	11 (82)	6 (66)	7 (28)	8 (50)	8 (75)	27 (37)	80 (6)

1. To 30 June.

Table 2. Cases of *Salmonella* subsp I ser 16:l,v:-, January 1986 to 30 June 1994, by age group and sex and year

Age group	1986	1987	1988	1989	1990	1991	1992	1993	1994[1]
Less than 3 years	3	2	6	4	3	4	3	11	35
3 - 9 years	0	1	0	0	1	0	2	5	19
10 - 19 years	0	0	1	0	0	0	1	7	5
20+ years	0	0	4	0	2	3	2	4	17
Unknown	0	1	0	2	1	1	0	0	4
Total	3	4	11	6	7	8	8	27	80

1. To 30 June.

and one isolate from sunflower meal in Victoria. In 1992, there was one isolate from cotton seed meal and three isolates from dairy factory environments in Victoria, and one isolate from a sewage treatment plant at Mackay in Queensland. In addition, one isolate from a horse in Queensland was reported by the Australian *Salmonella* Reference Laboratory[1].

However, in 1993 there were 104 non-human reports of this serovar to the NSSS. A survey of the environment (faeces, feathers and dust) of egg layer sheds by the University of Queensland Department of Microbiology resulted in 23 isolates from five establishments in the region north of Townsville in April and 57 isolates from four sheds near Brisbane in September. Four isolates from meat meal and two from poultry feed were also reported from the survey. It should be emphasised that these are isolates from a survey and do not represent the incidence of infection with this serovar.

Seven isolates from egg albumen mixed with gum were reported from Brisbane in August 1993. Other non-human reports from Queensland were from dogs living in an Aboriginal community north of Cairns. During a survey of dog health in December 1993 three isolates were made along with several other serovars which are specific to this region such as *S.* Virchow, *S.* Aberdeen and *S.* Zanzibar. The most recent reported isolate was from macadamia nuts in Queensland in June 1994.

In New South Wales the first isolates of *S.* ser 16:l,v:- from non-human sources were made in June and July 1993 when there were ten isolates from sewage effluent and sediment samples from three Sydney sewage treatment plants. There was also one isolate from a pig in June.

Three confirmed infections with this serovar have been reported from New Zealand since mid-June (Communicable Disease Centre, New Zealand, personal communication). One case was from Auckland (16 month old female), the second from Christchurch (22 month old male) and the third from Nelson (nine year old male who had had contact with an Australian relative in the week prior to becoming ill).

It may be of interest to note that the antigenic formula for *S* . Welikade, another serovar which has a restricted distribution in the far north of Queensland and the Northern Territory, is *S.* subsp I ser 16:l,v:1,7.

Reference

1. Australian Salmonella Reference Laboratory. *1992 Annual Report.* Adelaide: Institute of Medical and Veterinary Science, 1993.

A RURAL *SALMONELLA* OUTBREAK: IMPLICATIONS FOR INVESTIGATION AND PREVENTION IN THE AMATEUR MASS CATERING SETTING

Mary Y Beers[1,2], *Scott Cameron*[1], *Jenny Feldheim*[1]

In April 1994 the Communicable Diseases Control Unit (CDCU), South Australian Health Commission (SAHC) received five laboratory notifications of *Salmonella* Typhimurium infection from the Australian Salmonella Reference Laboratory at the Institute of Medical and Veterinary Science (IMVS). The cases were females aged between 50 and 75 years. All cases were from the mid-north of South Australia, but resided in different local government areas. There was no initial indication of any link between these cases, apart from sex, age group and serotype. *S.* Typhimurium is the most common of the Salmonellae to be notified in humans in South Australia and therefore cannot be regarded as a specific indicator of a common source without further characterisation such as phage typing.

Prior to receipt of the second notification, a relative of one of the cases telephoned the CDCU with information concerning a sporting event, hosted by a local club, which his relative had attended. The informant indicated that a number of persons (in addition to the relative) had become ill subsequent to the event, but not all had sought medical advice.

Methods

We contacted the general practitioner of the case reported by the relative and confirmed the information supplied. A questionnaire specifically designed for the investigation of *Salmonella* cases was sent by the investigating officer at the CDCU to the nursing staff at the hospital where the first notified case was being treated. The questionnaire sought more information on environmental and occupational exposures, travel, contacts, food history and water sources and eating patterns. (Normally this would have been sent to the local Environmental Health Officer (EHO), however this case was an inpatient at the time of the investigation.) Questionnaires were also sent to EHOs responsible for the local government areas where the other four notified cases resided.

1. Communicable Disease Control Unit, South Australian Health Commission.
2. National Centre for Epidemiology and Population Health, Canberra.

The EHO of the region where the sporting event was held was contacted and asked to investigate the local club and obtain a list of participating clubs and individuals, identify catering arrangements, obtain a list of foods eaten on the day and enquire about other people who may have reported illness.

The EHO was also asked to request any available food sample for laboratory testing. A sample of cooked meat which had been stored in a freezer was supplied. Reporting doctors were also followed up by the CDCU.

Results

Some 50 people had attended the sporting event from a number of widely spread country towns. The geographical area represented was in the vicinity of 10,000 square kilometres of low density population. A list of attendees and telephone numbers was not available.

Questionnaires were distributed to the five notified cases and all were returned to CDCU. The questionnaire revealed that all notified cases had attended the sporting event. The local club president reported that she also had been ill with gastrointestinal symptoms and was aware of others who reported similar illness subsequent to the event, although neither the president nor the other cases she knew of had sought medical attention or completed a questionnaire.

The food for the day was provided by participants in the tournament. It was not possible to obtain a complete list of foods, but they included a salad provided by each person, and cold meat, including ham and lamb, cut up on the premises prior to the lunch. Afternoon tea included tea, coffee, home made cakes and sandwiches. It is possible that raw milk was consumed, as many participants would have come from farms in the area.

The club president indicated that one of the persons preparing the food prior to the lunch had complained of having had gastrointestinal symptoms for a few days prior to the event, and was still unwell on the day. This person had later been 'run out of town' on suspicion of being the source of infection. His whereabouts were unknown so the EHO was unable to obtain a faeces sample from him.

Phage typing results were received about three weeks after the initial laboratory notification. They showed that all notified cases were found to be infected with *Salmonella* Typhimurium phage type 9. The sample of cooked meat which was sent for laboratory testing was negative for *Salmonella*.

Discussion

We could but conclude that the five cases of *S.* Typhimurium phage type 9 were associated with attendance at the sporting event. *S.* Typhimurium phage type 9 is one of the more common phage types of this serovar reported in South Australia. It has been responsible for between 13% and 16% of *S.* Typhimurium notifications in South Australia over the past five years, although the number of notifications reduced from 1991 to 1993.

The investigation had been delayed for a total of about two weeks after the sporting event, so it proved impossible to identify all the food items, who had brought them to the tournament, or what food handling processes had been employed. Food consumption information was only obtained from the notified cases so food specific attack rates could not be calculated. It is possible that a sick food handler may have been the source but food and animal sources could not be excluded. Potential sources of *Salmonella* Typhimurium phage type 9 include meats such as beef, lamb and poultry, and infected humans. Environmental sources including water and sewage are reported at times.

The time delay experienced in receiving information from the field prevented further intensive investigation. Country Environmental Health Officers have large areas to cover, and they often serve a number of local councils. The nature of this work structure can make the rapid investigation of outbreaks such as this very difficult.

However, this outbreak exemplifies the problems of voluntary mass food handling/catering for community events. Foods prepared in many homes and at premises where food handling is not subject to surveillance by relevant authorities, are potentially at risk of contamination from a number of human, animal and environmental sources. A community education program directed at non-commercial food handling, in this case amateur mass catering, could usefully be developed to assist in the prevention of further outbreaks. Likewise, domestic food preparation could be improved by a differently slanted program. Irrespective of the quantity and quality of epidemiological data collected and analysis that may be possible, the outcome in terms of intervention will nearly always be education and will not be specific to any one agent of infection.

The potential for medico-legal action in relation to such investigations is ever present. The implications of conducting investigations of foodborne illness can be significant in terms of community/personal, social and economic costs as well as for local government EHOs and central surveillance units. Most of the outbreaks detected by, or notified to the central unit, are in the non-commercial community sector. Sociocultural considerations, such as, in the current case, an individual being 'run out of town' on suspicion of being the source of infection, must be carefully evaluated when the decision is being made on whether further investigation is warranted.

The outbreak provided an opportunity to successfully pilot test a new questionnaire developed by the CDCU specifically for the investigation of *Salmonella* outbreaks. Consistency in questioning and support for the EHO who may be under considerable community pressure as a result of the investigation are important for effective outbreak investigation. The CDCU is currently preparing a handbook on the process of

investigation of foodborne disease outbreaks for EHOs and other in the field. We anticipate that this will facilitate more timely investigation of outbreaks by providing information on key contacts and activities in an accessible form for those for whom outbreak investigation is not a frequent task.

Central surveillance and reporting processes enable the identification of outbreaks when cases are widely distributed geographically. Identification of an outbreak may not be possible where notification is solely to local authorities. Liaison between local EHOs and a central SAHC officer provides support to those on the ground, consistency in investigation (by use of a common questionnaire) and ease of analysis, using accessible computer software. Lessons learned from the investigation can be more easily disseminated and educational materials prepared and supplied statewide.

SUSPECTED *CLOSTRIDIUM PERFRINGENS* FOOD POISONING AT A WEDDING RECEPTION IN CANBERRA

Erroll Holdsworth, Public and Environmental Health Service, ACT Department of Health, Canberra

On 4 April 1994 the Public and Environmental Health Service of ACT Health received a complaint that a number of people attending an 8pm wedding reception on Saturday 5 March had become ill with gastrointestinal symptoms. The complainant was the bride who had become aware of the cases after returning from her honeymoon.

About sixty persons had attended the function. A caterer had supplied a spit roast and salads. No guest list could be produced but a number of guests' names were supplied by the bride. Questionnaire sheets were left with the bride who obtained information from six guests who had been ill. A phone investigation was undertaken to obtain as many guests names and contact numbers as possible; a total of 26 names were finally obtained.

The history of some of the guests was obtained for two days prior to the event. This was discontinued when three things became obvious:

1. no common food or other association prior to the wedding reception,
2. symptoms and clustering of cases after the wedding reception,
3. a second meal (lunch on Sunday 6 March) was a possible source.

The 26 guests were then interviewed and asked about foods consumed at the wedding reception and the Sunday lunch.

A suspected case was defined as a person who attended the wedding reception on 5 March who suffered diarrhoea within 48 hours of the reception. Diarrhoea was defined simply from the patients' responses.

The caterer was contacted and advised of the possible outbreak. A description of the catering service was obtained as was information on the menu, ingredients and methods of preparation used.

No food samples were left from the function and no stool samples had been taken so microbiological analysis was not possible.

Results

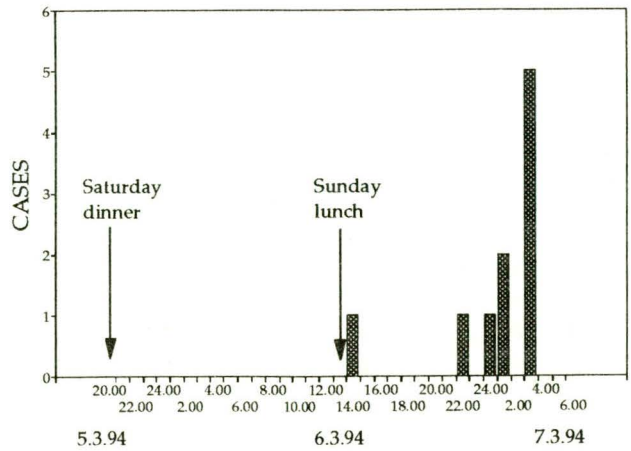
The caterer had provided a beef spit roast with six side salads and dessert. The roast had been placed on the spit at about 11am on the day of the wedding and cooked for seven hours at '60°C' in a dry heat spit. The meat was cooked by 6pm and transported to the reception where it was reheated until the party ate at 8pm. No temperature probing of the spit was undertaken.

An inspection of the caterers' premises revealed that no sterilisation of the roasting spear was undertaken prior to its insertion into the roast. The spear was stored in a garage and could easily have been exposed to possible contamination by soil, dust, vermin or flies.

Meat described as 'what was left on the bone' and 'a large chunk of meat' was left with the party by the caterers, as were leftovers of three salads.

The bride threw the salads out when she returned home late on the Saturday night. The leftover meat was refrigerated at the same time.

Figure. Cases of suspected food poisoning, by hour of onset, 5 to 7 March 1994



At Sunday lunch, fourteen persons consumed the re-heated meat on sandwiches. The bride commented that the meat was required to be sliced and 'cooked again' as it was very undercooked. Of the 14 persons who ate this lunch, 10 were later ill.

Some of the meat was left in the refrigerator until Monday afternoon when the bridegroom threw it out because 'it was really off'. He had placed bread into the fridge to try and 'remove the odour'.

Ten suspected cases were identified through interviews. Most cases had onset on the Sunday night or early Monday morning, with the peak in the early hours of Monday morning (Figure). The illness duration ranged between five and 40 hours (with a median of 20 hours). Seven of the ten cases were male. There was no age specific pattern that emerged.

The predominant symptoms were diarrhoea (100%), abdominal cramps (90%) and nausea (60%). Vomiting, fever, headache and dizziness were also reported.

Food specific attack rates were determined for the 26 interviewed guests (Table). The strongest association between illness and a food was for the roast beef at the Sunday lunch (p = 0.0002). A statistically significant risk was also determined for the zucchini salad (p = 0.02) served on the Saturday.

The incubation range would have been 18 to 31 hours with a median of 29 hours if the source had been the first meal. However, based on the evidence implicating the second meal as the source, there was an incubation range of one to fifteen hours with a median of 12.5 hours.

Discussion

The outbreak was characterised by cases with rapid onset, short duration and diarrhoea and abdominal pains as the predominant symptoms. The clinical symptoms and the anecdotal evidence of the 'off meat' and undercooked meat suggests that *Clostridium perfringens* was responsible. There is a possibility of the illness being caused by preformed toxins, however shorter incubation periods would have been expected.

The statistical association points strongly to the serving of the beef at the Sunday lunch as the major source of this outbreak, and reheated meat is a typical source of *Clostridium perfringens* food poisoning. The zucchini salad had been prepared and handled well. This, with the low pH of the commercial dressing contributed to the investigators giving no further consideration to the zucchini salad as a source.

The first case occurred at 2pm on the Sunday, only one hour after consumption of the lunch. It is possible that the diarrhoea reported by this case at this stage was the result of 'a heavy night of drinking'. The true onset of symptoms of this particular suspected case was possibly later on Sunday night when 'it really hit him'.

The Sunday lunch was consumed after a series of events which could have contributed to high numbers of *Clostridium perfringens*(10^5/g) required for a food poisoning outbreak.

1. The very large roast was cooked with a long time - low temperature process (seven hours at 60°C). Many reports were received that the meat towards the bone was undercooked. The source of contami-

Table. Food specific attack rates

Food	Persons who ate the food				Persons who did not eat the food				Difference in percentage	Relative risk (95% CI[1])
	Ill	Not ill	Total	Attack rate (%)	Ill	Not ill	Total	Attack rate (%)		
Roast beef Saturday	9	13	22	41	1	3	4	25	+16	1.64 (0.28-9.61)
Roast beef Sunday	10	4	14	71	0	12	12	0	+71	[2]
Gravy	4	9	13	31	2	3	5	40	-9	0.77 (0.20-2.96)
Tossed salad	6	6	12	50	4	7	11	36	+14	1.38 (0.52-3.61)
Pasta salad	5	4	9	56	5	8	13	38	+17	1.44 (0.59-3.56)
Zucchini salad	6	1	7	86	4	12	16	25	+61	3.43 (1.39-8.44)[3]
Mushroom salad	6	4	10	60	2	11	13	15	+44	3.90 (0.99-15.37)
Coleslaw	5	7	12	42	5	6	11	45	-4	0.92 (0.36-2.33)
Potatoes	6	9	15	40	4	4	8	50	-10	0.80 (0.32-2.03)
Bread sticks	6	9	15	40	4	4	8	50	-10	0.80 (0.32-2.03)
Chocolate mousse	3	3	6	50	7	10	17	41	+9	1.21 (0.46-3.24)
Apple strudel	0	5	5	0	10	8	18	56	-56	
Fresh fruit	3	0	3	100	7	13	20	35	+65	2.86 (1.57-5.19)[4]

1. CI Confidence interval.
2. p = 0.0002, Fisher exact test.
3. p = 0.02, Fisher exact test.
4. p = 0.07, Fisher exact test.

nation could have been the unsterilized spit spear. Growth from the centre of this roast would suit the clostridium anaerobe.

2. A large piece of leftover meat was likely to have been left at room temperature for three to four hours, allowing further bacterial multiplication.
3. The large piece of meat was eventually placed into the refrigerator which was already overstocked with wedding reception foods. This possibly caused a high fridge operating temperature. The centre temperature of the meat would possibly have allowed growth of *Clostridium perfringens*.

These factors could have combined to produce the high numbers of ingested viable cells required for food poisoning symptoms to occur. Although the meat was fried prior to the Sunday lunch, it may not have been heated enough to kill a high loading of *Clostridium perfringens*.

The outbreak appears to have been caused by poor cooking procedures adopted by the caterer and poor handling of leftover foods by the function organisers. The case emphasises the increased care required with large sized pieces of meat.

The caterer has been required to comply with a number of Hazard Analyses and Critical Control Point procedures that will be outlined on his license provisions to prevent a reoccurrence. Information is to be left with his clients regarding the proper handling and cooking of leftover foods.

The outbreak highlighted that some roast spit caterers may have a poor knowledge of safe food cooking and handling procedures. A search of current literature revealed no guidelines available for this form of cooking. The ACT Public and Environmental Health Service intends contacting relevant meat industry groups to assess the possibility of developing guidelines for the cooking of such unusually large pieces of roast meat.

AN OUTBREAK OF GASTROENTERITIS ASSOCIATED WITH A WEDDING RECEPTION IN VICTORIA

Priscilla Robinson and Rory Wilby, Health and Community Services, Victoria

Introduction

An outbreak of gastroenteritis occurred during the few days following a wedding reception held in March 1994 at a tennis club in rural Victoria. About 80 guests attended the event from a very wide geographical area (including interstate). Food served to family and friends attending the reception was also consumed by staff of the tennis centre and by two passers-by at the centre.

Methods

Two days after the function we were informed that a number of persons who had attended had developed gastrointestinal symptoms, predominantly diarrhoea and vomiting. The local Environmental Health Officer inspected the premises, and found that although the facilities for food handling for a limited number of meals were adequate, the refrigeration facilities were inadequate to handle a reception of this type.

All the meat for the function had been prepared the day prior to the function and then stored in a domestic refrigerator which was too small to adequately maintain the temperature of the meat at below 10°C. On the day of the reception the meat was sliced and then reheated. The vegetables were purchased frozen or fresh, and the sauces and dips were pre-packed in tins or tubs. Desserts were commercially produced, and a relative made the wedding cake.

The rest of the premises were found to be generally satisfactory.

Catering for the function was organised by the tennis club using persons apparently regularly used as casual labour for catering purposes.

A complete list of wedding guests was obtained, plus contact numbers for the staff employed for the function by the tennis club. In addition, two young women who had been playing tennis and were not part of the wedding group were included. They had been given soup and a meat roll whilst waiting for transport home.

Interviews were conducted within five days of the start of the outbreak by staff from Health and Community Services or by the local Environmental Health Officer. All the persons involved were contacted by telephone for a short interview to collect background information and a food history. Twelve interviews were completed by proxy (six by a wife, five by a mother, and one by a mother-in-law).

Faecal samples were obtained from the 14 wedding guests and reception staff who were still symptomatic at the time of the survey. Samples were examined for bacterial and viral pathogens at the Microbiological Diagnostic Unit (MDU), University of Melbourne and the Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital.

The data were analysed using EpiInfo 5.1b.

We defined a case as a person who consumed food prepared for the wedding reception and developed symptoms of diarrhoea and/or vomiting within 72 hours.

Results

Questionnaires were completed for 68 of the 90 persons who consumed food prepared for the function (Table 1). Although all but five of these persons lived in Victoria they had not been together at any time before the wedding. There was no sociodemographic clustering by occupation, and apart from people employed as food handlers for the wedding, there was no occupational association with the food handlers for the wedding, there was no occupational association with the food industry.

Thirty-six of the respondents were female (28 wedding guests, six staff and the two passers-by) and 32 were male (30 guests and two staff).

Table 1. Summary of people associated with outbreak

	Interviewed	Not interviewed	Total
Wedding guest	58	22	80
Staff	8	0	8
Other	2	0	2
Total	68	22	90

Table 2. Gastroenteritis attack rate, by age group

Age group (years)	Ill	Not ill	Total	Attack rate (%)
0 - 19	5	1	6	83
20 - 29	28	8	36	78
30 - 39	4	2	6	67
40 - 49	4	3	7	57
50 - 59	5	4	9	56
60 - 89	3	1	4	75
Total	49	19	68	72

Table 3. Symptoms reported for the cases of gastroenteritis

Symptom	Cases	Per cent
Diarrhoea	34	69
Vomiting	35	71
Nausea	45	92
Headache	26	53
Stomach cramps	42	86
Fever	32	65
Aching muscles	30	61
Other[1]	11	22

1. Anorexia 1, backache 1, malaise 1, lassitude 1, hot and cold sweats and shivers 7.

In all, 49 of the 68 people for whom information was available developed symptoms of gastroenteritis (43 of 58 guests, four of eight staff, and both passers-by), giving an attack rate amongst those interviewed of 72.1%. If the denominator is taken as being all the 90 persons involved, the attack rate drops to 54.4%, however, as it is unlikely that all the persons who we did not interview remained well, this can be said to be the minimum potential attack rate.

There was no difference in attack rate between females and males. Twenty-six of the 36 females surveyed (72.2%) and 23 of the 32 males (71.9%) developed symptoms. Attack rates consistently fell by agegroup, until age 60+ (Table 2). Although the youngest and oldest people appeared to have the highest attack rates, it must be borne in mind that there were very few persons in these age categories.

There was no significant difference in attack rates between wedding guests and others.

The 49 persons who became ill reported a variety of symptoms. Nausea, diarrhoea and vomiting were the most common (Table 3).

The earliest case's symptoms were noted during the night after the reception and the last case's symptoms began 3 days (up to 49 hours) after the reception ended (taken as the midnight after the late afternoon reception) (Figure). The mean incubation period was 28 hours. Symptoms lasted from one to four days.

The food served at the wedding reception included two dips, oysters, soups, bread, two main course dishes and two desserts, a variety of vegetables and garnishes, tea, coffee, an orange juice punch and wedding cake. The relative risks calculated for the foods ranged between 1.31 (for oysters) and 0.69 (for both beans and gravy). Beans and tomatoes were significantly more likely to be eaten by persons who remained well. No food was statistically significantly associated with illness.

Results of the laboratory investigations were negative.

Figure. Gastroenteritis cases, by period of onset after midnight on the night after the reception

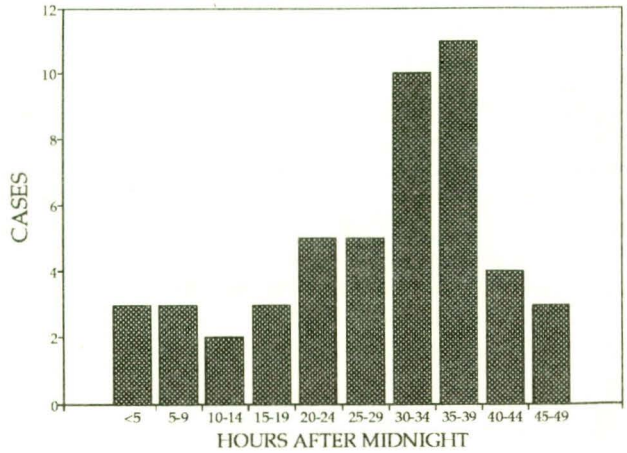


Table 4. The relative risk of illness associated with specific foods prepared for the wedding reception

Food	Persons who ate the food			Persons who did not eat the food				
	Ill	Not ill	Attack rate (%)	Ill	Not ill	Attack rate (%)	RR (95% CI[1])	p^2
Salmon dip	17	6	74	32	13	71	1.04 (0.66-1.38)	0.97
Oysters	9	1	90	40	18	70	1.31(1.00-1.71)	0.26 (F)[3]
Mexican dip	9	2	82	40	17	70	1.17(0.84-1.62)	0.71 (F)
Chicken soup	18	7	72	31	12	72	1.00 (0.73-1.36)	0.79
Pumpkin soup	26	11	70	23	8	74	0.95 (0.71-1.27)	0.93
Bread roll	30	14	68	19	5	79	0.86 (0.65-1.15)	0.50
Pork	24	11	69	25	8	78	0.91 (0.67-1.22)	0.70
Lamb	29	11	73	20	8	71	0.96 (0.73-1.26)	0.96
Potatoes	42	19	69	7	0	100	0.69 (0.58-0.82)	0.18 (F)
Sour cream	41	18	70	8	1	89	0.78 (0.59-1.04)	0.43 (F)
Beans	38	19	67	11	0	100	0.69 (0.55-0.80)	0.03 (F)
Tomatoes	35	18	66	14	1	93	0.71 (0.56-0.90)	0.05 (F)
Gravy	43	19	81	6	0	100	0.69 (0.59-0.82)	0.17 (F)
Apple sauce	12	10	55	37	9	80	0.88 (0.68-1.02)	0.05
Mint jelly	15	5	75	34	14	71	1.06 (0.78-1.45)	0.96
Cheesecake	23	10	70	26	9	74	1.12 (0.65-1.93)	0.88
Mousse	22	9	71	27	10	75	0.97 (0.72-1.31)	0.37
Cream	27	13	68	22	6	79	0.86 (0.64-1.15)	0.47
Wedding cake	11	6	65	38	13	75	0.87 (0.89-1.28)	0.53 (F)
Chocolates	13	5	72	36	14	72	1.00 (0.72-1.40)	0.77
Mints	11	7	61	38	12	76	0.80 (0.54-1.20)	0.37
Tea	0	1	0	49	18	73		0.28 (F)
Coffee	10	8	56	39	11	78	1.26 (0.87-1.83)	0.21 (F)
Orange punch	20	7	74	29	12	71	0.94 (0.62-1.42)	0.98

1. CI Confidence interval.
2. *p*-value for chi sqaure.
3. Fisher exact test.

Table 6. Summary of results of food interviews between interviewers

	Interviewer			
	B	C	A	Total
Total interviews	23	14	31	68
Mean number of foods	9.4	13.8	11.4	11.2
SD[1] of mean foods	3.2	3.4	4.0	3.9
Range	1-15	7-18	3-18	1-18

ANOVA $p = 0.003$.
1. SD Standard deviation.

Difference in responses between interviewers

There was variation in the responses given to the food questionnaires between the interviewers. There was a significant difference in the total numbers of foods reported as eaten (Table 6), so the overall interpretation of results must be treated with caution (ANOVA $p = 0.003$). The proportion of guests reported as consuming a number of foods, in particular the wedding cake and chocolates, was also significantly different for each interviewer. Wedding cake was consumed by a much higher proportion of the interviewees of interviewers C (50%) and A (26%) compared with interviewer B (9%).

Discussion

Our overall results implicated no particular food item in this outbreak of gastroenteritis. Although persons who ate some foods were significantly less likely to be ill, (tomatoes, beans, gravy and sour cream), confidence limits were much too wide to be able to draw any confident conclusions from the food histories.

Of concern was the apparent variation in the distribution of positive responses for foods eaten between interviewers, despite the use of a standard questionnaire. Whilst it is possible that one or two foods might have been consumed in the pattern the responses reflected, it seems unlikely that all of the differences were due to chance alone. The possibility of finding true

associations between food consumption and subsequent illness in this situation is lessened.

This highlights the importance of following a strict interviewing protocol in an investigation such as this one. Consistency of interviewing technique is of the utmost importance, particularly when multiple interviewers are involved. Without standardisation of approach, the only differences demonstrated may be between interviewers and the opportunity of discovering real effects will be lost.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization, the Australian Defence Force and the United Kingdom Communicable Disease Surveillance Centre.

Cholera in Rwanda-Zaire

The World Health Organization (WHO) has deployed teams of epidemiologists in the areas around Goma, Bukavu and Uvira. Large numbers of cholera cases have been reported from Goma but none by 27 July from Bukavu.

Suspected cholera cases have yielded *Vibrio cholerae* O1 El Tor Ogawa. The isolates have been sensitive to nitrofurantoin and nalidixic acid but resistant to tetracycline, doxycycline, trimethoprim-sulfamethoxazole, chloramphenicol and ampicillin. The WHO stresses that most cholera cases can be adequately treated with oral rehydration salts solution; where necessary, furazolidine is the recommended antibiotic in this case.

Cases of measles, dysentery and meningococcal meningitis have also been reported from the refugee camps.

Cholera update

In Malawi, the Chitipa and Karonga Districts of the Northern Region have been declared infected and the Lilongwe District of the Central Region has been removed from the infected areas list.

Cases have been reported for May, June and July from Bolivia, Brazil, Burundi, Costa Rica, El Salvador, Ghana, Guatemala, Honduras, Hong Kong, India, Kenya, Laos, Malawi, Mexico, Mozambique, Nepal, Nicaragua, Peru, Somalia, Singapore and Uganda.

There was a total of 376,845 cases of cholera and 6781 cholera deaths reported from 78 countries in the world in 1993.

Influenza update

In South Africa, influenza A H_3N_2 virus was isolated from an adult male in May and there were 14 influenza B isolates to 14 July. The United Kingdom reported two influenza A H_3N_2 viruses (one from a patient arriving from abroad) and one influenza B virus isolated form sporadic cases in May and June.

Salmonella Virchow phage type 26 in England and Wales

The number of cases of *Salmonella* Virchow phage type 26 (PT 26) has been increasing in England and Wales. In 1993, this PT became the most common *S.* Virchow PT after PT 8. There were 83 cases of human infection in England and Wales in 1992, 188 in 1993 and 124 in the first five months of 1994. Sixty reports had been received for June by 1July 1994. Most of the isolates have been fully sensitive to antimicrobial drugs.

CDI NOTICE TO READERS

Australasian - Papua New Guinea Cryptococcal Surveillance

Sharon Chen, Department of Microbiology, Westmead Hospital

A multicentre Cryptococcal Study Group has recently been formed under the auspices of the Australasian Society for Infectious Diseases (ASID), and in association with the Australian Society for Microbiology (ASM) Mycology Special Interest Group. The aim of this group is to document and report back to participants on the epidemiological, clinical and laboratory data relating to cryptococcal infection in our region. Data to be collected include:

1. Initial surveillance data

Information is to be recorded on a registration form available from Sharon Chen, Department of Microbiology, Westmead Hospital, Sydney (phone (02) 633 6255, fax (02) 893 8659). This information will be entered into a database created specifically for the study. We ask that the completed form be faxed to Westmead Hospital as soon as possible, in order to keep the database up to date. It is intended that the data be collated and fed back directly to participants at regular (probably annual) intervals.

2. Cryptococcal isolates

We propose that isolates be forwarded to and stored at designated laboratories:

Queensland	Princess Alexandra Hospital, contact Graeme Nimmo
New South Wales Australian Capital Territory Papua New Guinea	Westmead Hospital, contact Sharon Chen
South Australia Northern Territory Tasmania	Adelaide Children's Hospital, contact David Ellis
Victoria	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital, contact Bryan Speed
Western Australia	Queen Elizabeth II Medical Centre, contact Rose McAleer
New Zealand	Auckland Hospital, contact Dinah Parr.

Alternatively, they may be forwarded in batches to:

David Ellis, Adelaide Children's Hospital, Adelaide,
Sharon Chen, Westmead Hospital, Sydney,
Robert Pritchard, Royal North Shore Hospital, Sydney.

Isolates will be stored for molecular analysis, serotyping, biotyping (if not already done), and sensitivity testing. This does not preclude laboratories or individuals performing any test on the isolates, if desired. We would however be grateful for you to refer the isolate and ask that you inform us of your laboratory of choice.

We believe that this surveillance will be a very worthwhile activity which will add to our understanding of cryptococcosis. Please let us know if you require further details. We also hope to provide regular feedback to all participants at ASM or ASID scientific meetings and through *Communicable Diseases Intelligence*. In these cases, all contributors will be acknowledged, as will be the case if/when publication is sought. It is also our intention that individual members of the study group should, with the agreement of all, be able to utilise isolates or anonymous clinical data for further study as seems appropriate.

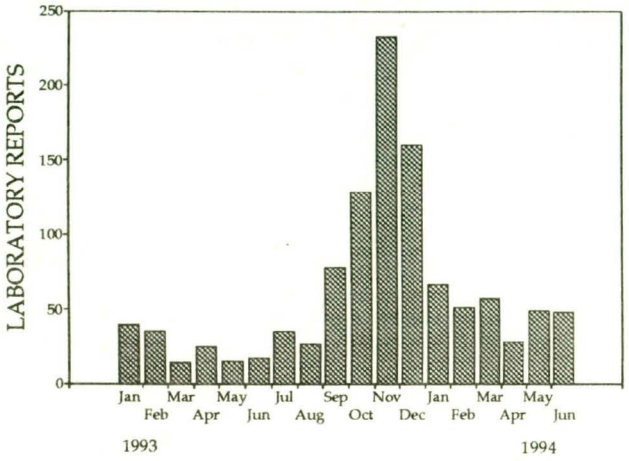
COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1798 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 9, 10 and 11).

- Twenty-six reports of **measles** were received this period, 15 males and 11 females, 18 of whom were in the 5 to 24 year age group. The number of reports received has declined slightly since the beginning of the year (Figure 1).
- **Rubella** was reported for 11 patients this fortnight. Included were 5 females, all in the 23 to 38 year age range, and 6 males in the age range 18 to 26 years. The number of reports has continued to decline since January.
- Twenty-four reports of **hepatitis A** were received, 16 males and 7 females (one sex not stated), age range 5 to 64 years. Included were 2 patients who had recently returned from India.
- Positive **hepatitis B** serology was reported for 91 patients this fortnight, 43 males and 47 females (one sex not stated). Forty-three patients were in the 25 to 44 year age group, and 29 in the 15 to 24 year age group. Included were 13 pregnant women and the newborn baby of a hepatitis B positive mother.
- Positive **hepatitis C** serology was reported for 167 patients this fortnight, 101 males and 64 females (2 sex not stated). One hundred and twenty-seven reports were for the 25 to 44 year age group. Included were 28 injecting drug users, 2 pregnant women, 2 haemophiliacs, one HIV positive patient and one blood transfusion recipient.
- Positive **hepatitis E** serology was reported for 4 patients this period, 14 and 24 year old males and a 30 year old female with clinical hepatitis, all from Victoria, and a female from Western Australia (age unknown). All reported a history of overseas travel. Diagnosis was by IgG detection in all cases.
- **Ross river virus** was reported for 9 patients this period, 8 males and one female, all with specimen collection dates in late June and early July. All but one, a 62 year old female from Moodlu, Queensland, were presumptive diagnoses.
- **Barmah forest virus** was reported for 6 patients this fortnight, all males from Queensland. Specimen collection dates were in late June and early July. All were presumptive diagnoses (IgM positive).
- Forty-six reports of **adenovirus** were received this fortnight, 22 virus isolations and 24 antigen detections. Included was **adenovirus type 3** isolated from the eyes of a 38 year old male and a female of unknown age. **Adenovirus type 5** was isolated from the nasopharynx of a 6 month old male and **adenovirus type 25** was isolated from the urine of a 39 year old HIV positive male. **Untyped adenovirus** was isolated at postmortem from the heart

Figure 1. Measles laboratory reports, 1993 to 1994, by month of specimen collection



and lung of a 6 month old male who had died of SIDS.

- **Herpes simplex virus type 1** was reported for 165 patients this fortnight, 159 isolations and 6 antigen detections. Included was virus isolated from postmortem heart, lung and trachea specimens from a one year old female who had died of SIDS. This virus was also isolated from the eyes of one year old and 74 year old males and a 48 year old female.
- One hundred and fifty-one reports of **herpes simplex virus type 2** were received this period, all diagnosed by virus isolation. Included were 2 transplant recipients.
- There were 70 reports of **cytomegalovirus** infection this fortnight, 51 virus isolations, 16 IgM detections, one fourfold rise in titre and 2 single high titres. Included was isolation from postmortem lung and liver specimens from a 51 year old AIDS patient and from bronchial washings from a 39 year old male HIV positive patient. Three other HIV positive patients were also included. CMV specific IgM was detected in the serum of a 29 year old female who had had a second trimester spontaneous abortion one week previously. Also included were 5 transplant recipients.
- **Varicella-zoster virus** was reported for 27 patients this fortnight, 10 virus isolations, 11 antigen detections, and 6 IgM detections. Included was IgM detected in the serum of a 28 year old female in the first trimester of pregnancy who had a skin rash.
- **Coxsackievirus type A16** was reported for 2 patients this fortnight. An increased number of reports was received for the month of March (Figure 2).
- **Echovirus type 22** was isolate from the nasopharynx of a one year old male with pneumonia.
- **Echovirus type 30** was reported for five patients this fortnight. Included was isolation from a postmortem brain specimen from a 2 year old female who had suddenly died (sister had also died suddenly 4 months previously). The number of reports received continued to decline in June (Figure 3).
- Forty-nine untyped **enterovirus** reports were received this period, 46 virus isolations and 3 single high titres. Included was virus isolated from the leukocytes of a 42 year old male and from the CSF of a 6 day old female.
- **Rhinovirus** was reported for 37 patients this fortnight, 16 under the age of 4 years.
- **Influenza A** was reported for 84 patients this fortnight. Included were 11 H_3N_2 strains. Forty-one diagnoses were by antigen detection, 32 by virus isolation, 2 by fourfold rise in titre, 2 by IgM detection and 7 by single high titre. Included were 46 males and 38 females, 5 in the over 65 year age group. Reports were received for Victoria (34), Western Australia (24), Queensland (16), New South Wales (6) and Tasmania (4). Included was a 4 month old female whose sibling had died of SIDS and a one year old male whose sister also had influenza A.
- Four reports of **influenza B virus** were received this period, 3 from Victoria and one from Western Australia. Included were 3 males and one female all under the age of 24 years. Method of diagnosis was antigen detection (3) and IgM detection (one). Included was a 20 year old male who had recently returned from overseas.
- A single report of an **untyped influenza virus** was received from Western Australia.
- **Parainfluenza virus type 1** was reported for 34 patients this period, 31 of whom were under the age of 4 years. Nineteen diagnoses were by virus isolation and 15 by antigen detection. The number of reports received remains high for the time of year.

Figure 2. Coxsackievirus type A16 laboratory reports, 1993 to 1994, by month of specimen collection

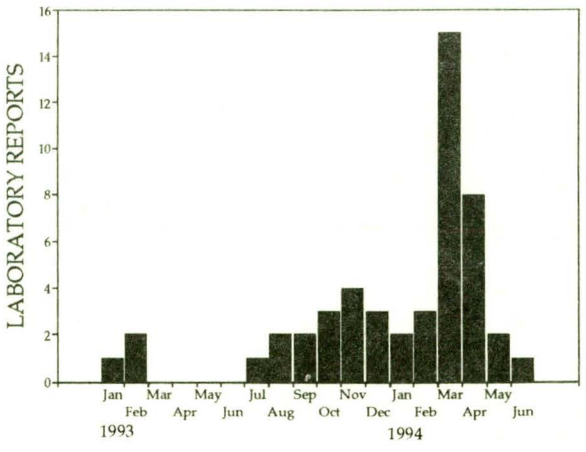
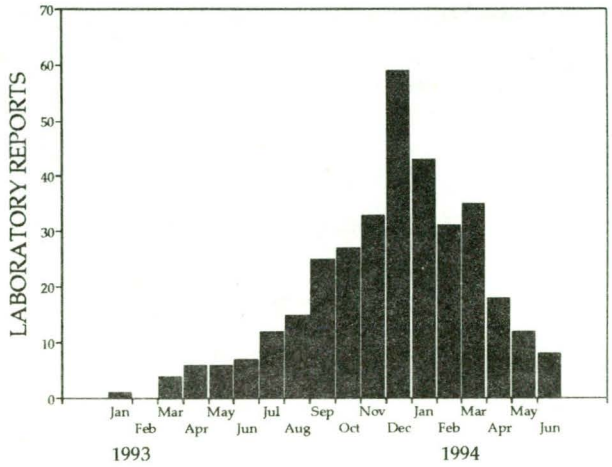
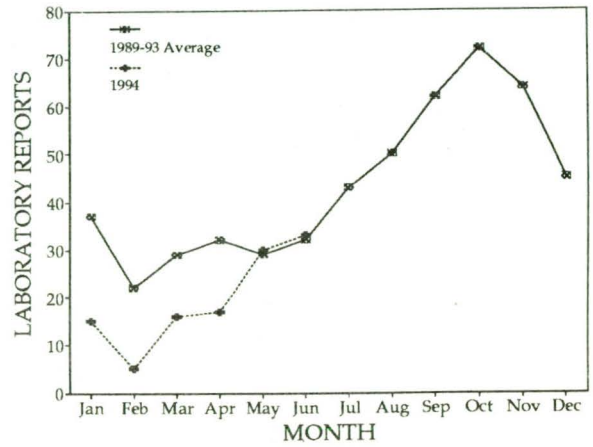


Figure 3. Echovirus type 30 laboratory reports, 1993 to 1994, by month of specimen collection



- Eighteen reports of **parainfluenza virus type 3** were received this fortnight, 14 for patients under the age of 4 years. Diagnosis was by virus isolation (4), antigen detection (12) and single high titre (2). The number of reports has risen over recent months but remains average for the time of year (Figure 4).
- Four hundred and thirty-five reports of **respiratory syncytial virus (RSV)** were received this fortnight, 306 for patients under one year of age and a total of 407 under the age of 4 years. Diagnosis was by virus isolation (106), antigen detection (324) and serology (5). Included was an 82 year old male with a diagnosis of pneumonia. The number of reports continues to rise.
- A single report of positive **HTLV-1** serology was received for a 25 year old female from the Northern Territory.
- **Rotavirus** was reported for 106 patients this period, 60 males and 46 females. Ninety-nine patients were less than 4 years of age, 38 being in the under one year age group.
- Sixty-one reports of ***Chlamydia trachomatis*** were received this fortnight, 45 females and 16 males. Fifty-one patients were in the 15 to 44 year age group. Diagnosis was by culture (25) and antigen detection (36).
- ***Chlamydia psittaci*** was reported for 4 patients this period. Included was a 47 year old male who had had long term exposure to many bird species.

Figure 4. Parainfluenza virus type 3 laboratory reports, 1989 to 1993 average and 1994, by month of specimen collection



- Twenty-five reports of ***Mycoplasma pneumoniae*** were received, 11 males and 14 females 10 of whom were in the 15 to 44 year age group.
- **Q fever** was reported for 12 patients this period, 10 males and 2 females. Diagnosis was by fourfold rise in titre (4), IgM detection (7) and single high titre (one). Included was a meatworker from Queensland.
- ***Toxoplasma gondii*** was reported for 2 pregnant patients this period, a 30 year old (IgM positive and fourfold rise in titre) and a 31 year old who had a cat (IgM positive).

Australian Sentinel Practice Research Network

Data for weeks 28 and 29 are included in this issue of *CDI* (Table 1). There were 10684 consultations reported for week 28 and 8429 for week 29. The rate of influenza reporting has remained elevated compared to earlier in the year, but has not increased markedly over the last few weeks. Influenza reporting rates have been lower than the national average for New South Wales and Victoria and higher than average in the Northern Territory, Western Australia and Queensland. Chickenpox reporting rates continue to fluctuate widely.

Table 1. Australian Sentinel Practice Research Network, weeks 28 and 29, 1994

Condition	Week 28, to 17 July 1994		Week 29, to 24 July 1994	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	276	25.8	224	26.6
Measles	0	0	0	0
Chickenpox	34	3.2	11	1.3
Pertussis	3	0.3	1	0.1
Gastroenteritis	95	8.9	115	13.6

HIV and AIDS Surveillance

Methodological note

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

Tabulations of diagnoses of HIV infection and AIDS are based on data available three months after the end of the reporting interval indicated, to allow for reporting delay and to incorporate newly available information. More detailed information on diagnoses of HIV infection and AIDS is published in the quarterly *Australian HIV Surveillance Report*, available from the National Centre in HIV Epidemiology and Clinical Research, 376 Victoria Street, Darlinghurst NSW 2010. Telephone: (02) 332 4648 Facsimile: (02) 332 1837.

HIV and AIDS diagnoses and AIDS deaths reported for February 1994, and cumulative to 28 February 1994, as reported to 31 May 1994, are included in this issue of *CDI* (Tables 2 and 3).

Australian Encephalitis Sentinel Chicken Surveillance Programme: Serological results for May and June 1994

AK Broom[1], *JS Mackenzie*[1], *L Melville*[2], *D Phillips*[3], *L Smythe*[3]

Sentinel chicken serology was undertaken for 20 of the 26 flocks in the north of Western Australia in May and June this year. In May there were a number of seroconversions in flocks throughout the Kimberley and in areas of the Pilbara. There were 2 seroconversions at Wyndham, one to Murray Valley encephalitis virus (MVE) and one to MVE and Kunjin virus (KUN), one

Table 2. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS, occurring in the period 1 to 28 Feburary 1994, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
										This period 1994	This period 1993	Year to date 1994	Year to date 1993
HIV diagnoses	Female	0	3	0	0	0	0	3	1	7	6	11	14
	Male	0	42	0	18	2	0	17	5	84	77	162	159
	Sex not reported	0	1	0	0	0	0	0	0	1	0	3	1
	Total[1]	0	46	0	18	2	0	20	6	92	83	176	174
AIDS diagnoses	Female	0	0	0	0	0	0	0	0	0	1	1	1
	Male	0	30	0	2	0	0	9	0	41	32	87	74
	Total[1]	0	30	0	3	3	0	9	0	41	33	88	75
AIDS deaths	Female	0	1	0	0	1	0	0	0	2	1	5	2
	Male	1	19	0	7	2	0	10	1	40	18	82	49
	Total[1]	1	20	0	7	3	0	10	1	42	19	87	51

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

Table 3. Cumulative diagnoses of HIV infection, AIDS and deaths from AIDS since the introduction of HIV antibody testing to 28 February 1994, by sex and State or Territory

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
HIV diagnoses	Female	10	493	4	76	39	3	137	44	806
	Male	138	9177	71	1313	498	68	2988	648	14901
	Sex not reported	0	2031	0	2	0	0	44	0	2077
	Total[1]	148	11709	75	1394	537	71	3176	693	17803
AIDS diagnoses	Female	2	98	0	21	12	2	30	10	175
	Male	54	2763	20	433	199	25	1001	208	4703
	Total[1]	56	2866	20	456	211	27	1036	218	4890
AIDS deaths	Female	2	58	0	13	8	1	14	3	99
	Male	38	1841	14	304	122	19	740	135	3213
	Total[1]	40	1904	14	318	130	20	757	138	3321

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

at Kununurra to MVE, one at Halls Creek to MVE and 5 at Broome to MVE, 3 out of town at Roebuck Station and 2 from the town flock in the Pilbara. There were 7 seroconversions at the Harding Dam, 4 to MVE and 3 to MVE and KUN and one at Opthalmia Dam to MVE. There were no seroconversions in June.

There were also a number of seroconversions in May, mainly to MVE, from flocks in the Northern Territory. There were 4 new seroconversions at Gove, 2 to MVE, one to KUN and one to MVE and KUN, 7 to MVE at Katherine and one to MVE in the Leanyer flock. In June there were 3 seroconversions at Murganella, 2 to MVE and one to KUN, one to MVE at Smith Point and one to MVE from Howard Springs.

There has been some MVE activity in the north of Queensland, with 3 seroconversions to MVE from Aurukun in April and one in May.

The sentinel chickens in both Victoria and New South Wales are not bled over the winter months and the programme will not recommence until October/November 1994.

1. Department of Microbiology, The University of Western Australia.
2. Berrimah Agricultural Research Centre, Darwin, Northern Territory.
3. State Health Laboratories, Brisbane, Queensland.

National Influenza Surveillance 1994

Australian Capital Territory Department of Health; Australian Defence Force; Australian Sentinel Practice Research Network; Communicable Diseases Intelligence Virology and Serology Reporting Scheme Contributing Laboratories; New South Wales Department of Health; Telecom Australia; Victorian Department of Health and Community Services; World Health Organization (WHO) Collaborating Centre for Influenza Reference and Research, Melbourne

Overall this fortnight, the number of laboratory reports of influenza A continues to rise. Reports have been received from throughout the country. The rate of influenza reporting from sentinel general practitioner surveillance has continued to increase this fortnight whilst the reported rate of absenteeism has remained static.

Sentinel general practitioner surveillance (Figure 5)

- The **Australian Sentinel Practice Research Network** reported 10684 consultations for week 28 (ending 17 July) and 8429 consultations for week 29 (ending 24 July). There were 276 reports of influenza in week 28 (25.8 per 1000 encounters) and 224 reports in week 29 (26.6 per 1000 encounters). Reporting rates in Queensland, Tasmania, Western Australia and the Northern Territory were above the national average this fortnight whilst those of New South Wales, Victoria and South Australia were lower.
- **The Australian Capital Territory Sentinel General Practitioner Scheme** reported 42 influenza consultations for the week ending 16 July (58 per 1000 consultations), 40 for the week ending 23 July (49 per 10000 consultations) and 58 for the week ending 30 July (52 per 1000 consultations). The rates have continued to rise.
- The **Victorian Sentinel Practitioner Scheme** reported 108 influenza cases in the fortnight ending 22 July. They were reported at a rate of 21 per 1000 consultations, an increase since the last reporting period.

Absenteeism surveillance (Figure 6)

- **Telecom Australia Absenteeism Surveillance** reported absenteeism rates of 1.1% on 20 July and 0.4% on 27 July. Recent absenteeism rates reported by this Scheme are lower than those reported earlier in the year.
- The **Australian Capital Territory Schools Absenteeism Surveillance** revealed absenteeism rates of 7.5% on Tuesday 17 July 8.2% on Tuesday 23 July and 8.0% on Tuesday 30 July.

Laboratory surveillance

- The ***CDI* Virology and Serology Reporting Scheme** has received 275 reports of **influenza A** so far this year, 184 other than single high titres. The number of reports continues to rise (Figure 7). **Influenza A** was reported for 84 patients this fortnight including 11 H_3N_2 strains. Forty-one diagnoses were by antigen detection, 32 by virus isolation, 2 by fourfold rise in titre, 2 by IgM detection and 7 by single high titre. Included were 46 males and 38 females, 5 in the over 65 year age group. Reports were received for Victoria (34), Western Australia (24), Queensland (16), New South Wales (6) and Tasmania (4). Included was a 4 month old female whose sibling had died of SIDS and a one year old male whose sister also had influenza A.

Figure 5. Sentinel general practitioner influenza cases per 1000 encounters, by week and scheme

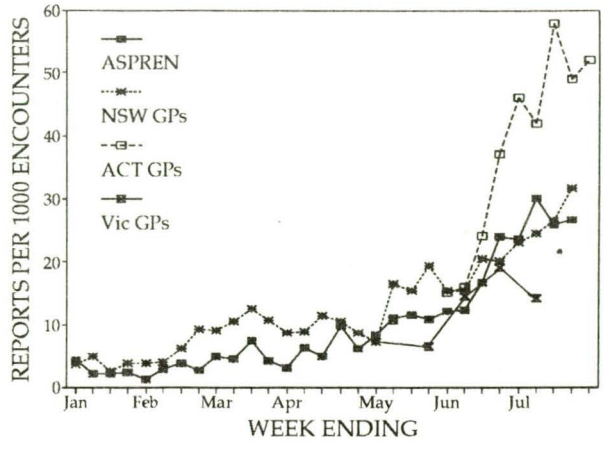


Figure 6. Absenteeism rates per 100 employees or students, by week and scheme

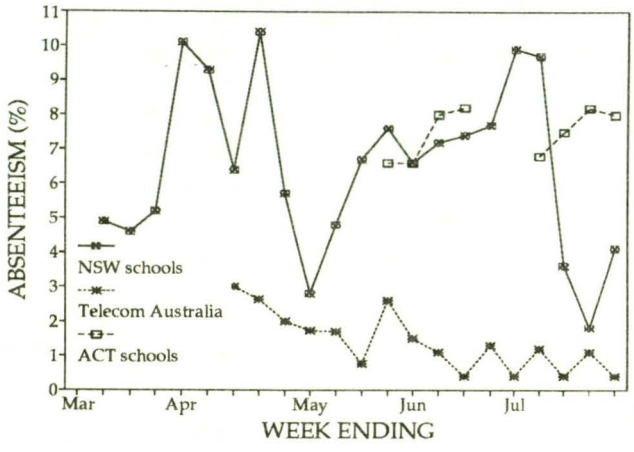


Figure 7. Influenza A laboratory reports, 1994, by method of diagnosis and week of specimen collection

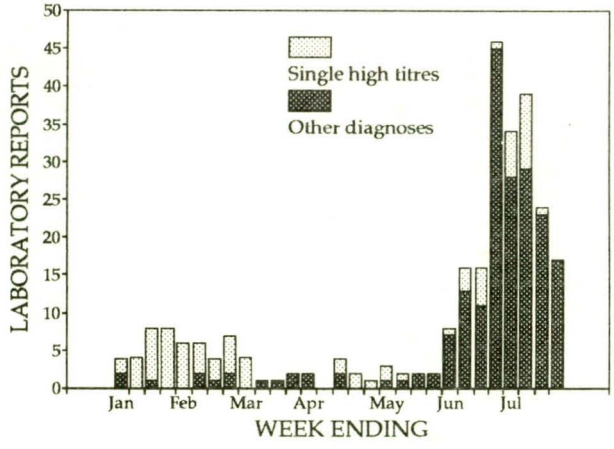
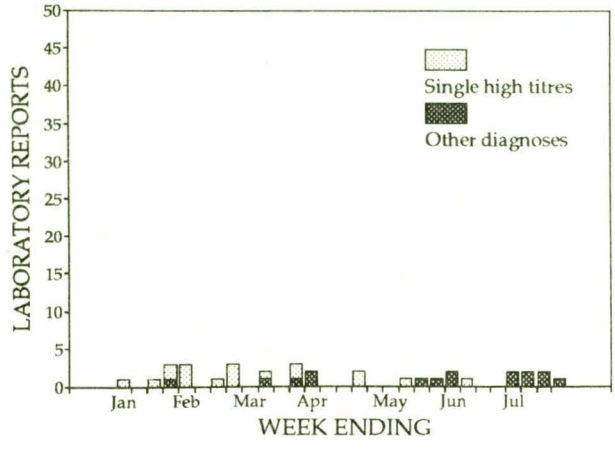


Figure 8. Influenza B laboratory reports, 1994, by method of diagnosis and week of specimen collection



- There have been 34 reports of **influenza B** so far this year, 16 with diagnoses other than single high titre (Figure 8). Four reports of **influenza B virus** were received this period, 3 from Victoria and one from Western Australia. Included were 3 males and one female all under the age of 24 years. Method of diagnosis was antigen detection (3) and IgM detection (one). Included was a 20 year old male who had recently returned from overseas.
- A single report of an **untyped influenza virus** was received from Western Australia.

Other surveillance

- **Victorian total deaths surveillance:** there were 1251 deaths reported in Victoria in the fortnight ending 22 July. This was a rate of 2.8 per 10,000 population, slighly lower than the rate reported for the previous fortnight.
- **Victorian hospital admissions:** there were 57 admissions for influenza and/or pneumonia in three Victorian hospitals in the fortnight ending 22 July, a rate of 0.9 per 100 admissions. This was a slightly lower than the rate reported in the previous fortnight.

Sterile Sites Surveillance (LabDOSS)

There were 137 reports of recent sepsis this fortnight, provided by 7 laboratories:

New South Wales: ICPMR Westmead, 46, John Hunter Hospital, Newcastle 29, Royal Prince Alfred Hospital, 13.
Queensland: Central Queensland Pathology Laboratory, Mackay, 3.
Western Australia: Sir Charles Gairdner Hospital, Perth, 17.
Northern Territory: Alice Springs Hospital, 14.
ACT: Woden Valley Hospital, Canberra, 15.

Organisms reported 5 or more times from blood are detailed in Table 4. Other blood isolates not included in Table 4 were:

Gram positive: 1 *Corynebacterium* species, 1 *Entercoccus faecalis*, 4 group A *Streptococcus*, 3 group B *Streptococcus*, 1 group G *Streptococcus*, 2 *Streptococcus* 'milleri', 2 *Streptococcus sanguis*, 1 *Streptococcus mitis*, 1 *Streptococcus salivarius*, 3 *Streptococcus* species, 1 *Lactobacillus* species.

Gram negative: 1 *Citrobacter diversus*, 2 *Enterobacter aerogenes*, 2 *Enterobacter cloacae*, 3 *Klebsiella pneumoniae*, 3 *Pseudomonas aeruginosa*, 3 *Serratia marcescens*, 2 *Proteus vulgaris*, 3 *Serratia* species, 1 *Alcaligenes* species, 1 *Pasteurella multocida*, 1 *Xanthomonas maltophilia*.

Anaerobes: 2 *Clostridium* species, 1 *Bacteriodes fragilis*, 1 *Fusobacterium* species.

Fungi: 2 *Candida* species.

Twelve patients were under the age of one month (Figure 9).

Table 4. LabDOSS reports of blood isolates, by organism and clinical information

Organism	Clinical information						Risk factors					Total[1]
	Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary tract	Skin	Surgery	Immunosuppressed	IV line	Hospital acquired	Neonatal	
Staphylococcus aureus	2	1				3	3	4				18[2]
Staphylococcus epidermidis	1			1					3			5
Staphylococcus coagulase negative	1					1	3	3			2	11
Streptococcus pneumoniae		12						1				19
Escherichia coli		2		4	6		1	4	1		2	19

1. Only organisms with 5 or more reports are included in this table.
2. MRSA.

Table 5. LabDOSS reports of meningitis and/or CSF isolates, by organism and age group

	1-11 months	1-4 years	5-14 years	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	75+ years	Total
Neisseria meningitidis group C							1			1
Enterobacter aerogenes								1		1
Streptococcus pneumoniae	1									1
Staphylococcus aureus								1		1

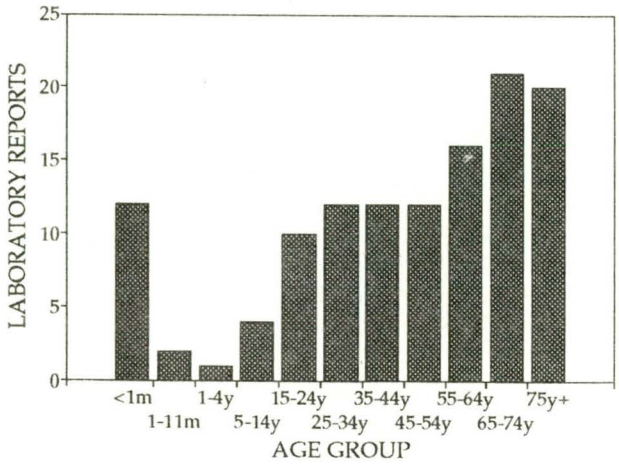
Meningitis and/or CSF isolate reports

There were 4 reports of meningitis and/or CSF isolates (Table 5).

Isolates from sites other than blood or CSF

Joint fluid: 2 *Staphylococcus aureus*.

Figure 9. LabDOSS reports of blood isolates, by age group



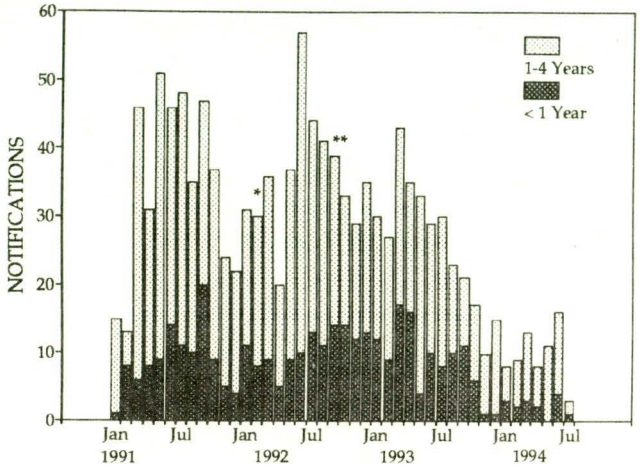
Other: 5 *Staphylococcus aureus*, 1 MRSA, 1 *Streptococcus* 'milleri', 2 *Streptococcus* species, 1 *Enterobacter cloacae*, 1 *Citrobacter freundii*.

National Notifiable Diseases Surveillance System, 10 July to 23 July 1994

There were 1822 notifications for the period. Incomplete data were available from Western Australia (Tables 6,7 and 8 and Figure 12). From this fortnight, notifications of hepatitis B and hepatitis C have been categorised into 'acute' and 'unspecified' cases for Table 7 (Notifications of other diseases received by State and Territory health authorities received for the reporting period). The 1994 year to date totals have similarly been separated, however totals for 1993 continue to comprise acute and unspecified cases.

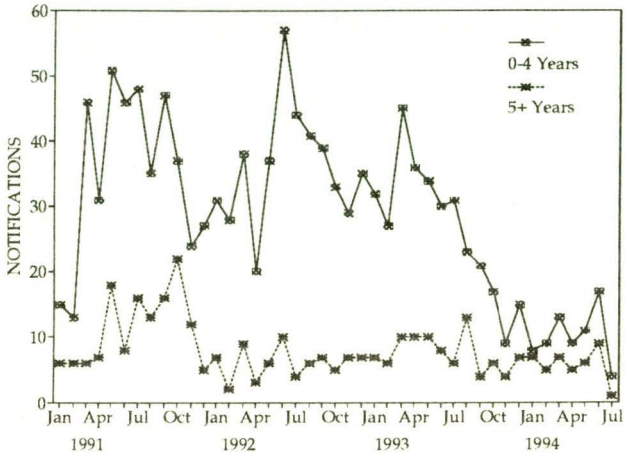
- Forty-four cases of **Ross River virus infection** were reported; 24 cases were male and 20 were female. Recorded ages ranged from the 5-9 to the 85-89 years age groups. Cases were resident in Satistical Divisions in northeast New South Wales and Queensland. Onset dates were in May (9), June (20) and July (15).
- Eighty-three notifications of **gonococcal infection** were received; 54 cases were male, 23 were female, and the sex was unrecorded for 6 cases. Recorded

Figure 10. *Haemophilus influenzae* type b infection notifications for persons under the age of 5 years, January 1991 to June 1994, by age



* PRP-D approved in February 1992.
** Infant vaccine approved in September 1992.

Figure 11. *Haemophilus influenzae* type b infection notifications, January 1991 to June 1994, by age group and month of onset.



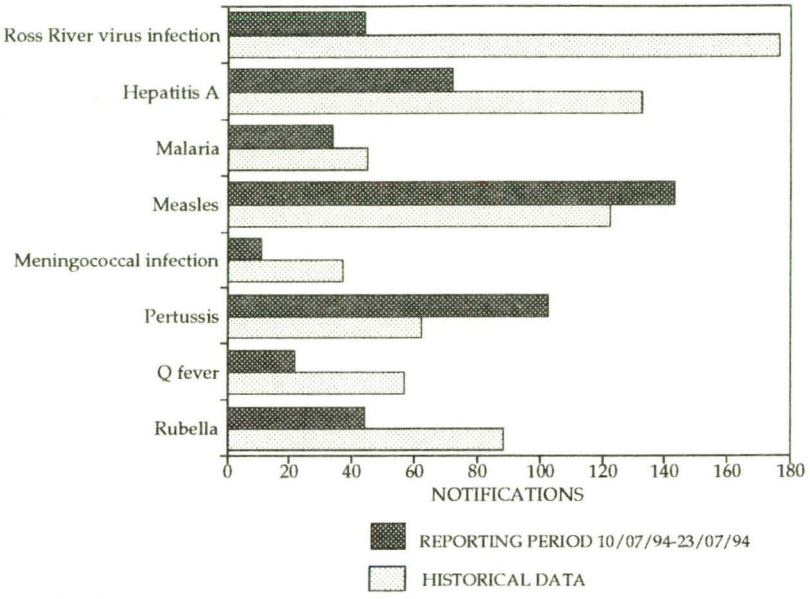
ages were between the 0-4 and the 50-54 years age groups with one case in a female aged 4 years.

- There were 5 cases of ***Haemophilus influenzae* type b infection** reported; 2 cases were male and 3 were female. Cases ranged in age from the 0-4 to the 30-34 years age groups with 3 cases aged less than 5 years (Figure 10). Onset dates were June (one) and July (4). Notifications of infection in persons aged 5 years or more has remained stable since October 1991 (Figure 11).
- Seventy-two cases of **hepatitis A** were reported; 39 cases were male, 32 were female and the sex of one case was unrecorded. Cases ranged in age from the 0-4 to the 90-94 years age group.
- There were 68 cases of **hepatitis B** notified; 10 cases were from States and Territories that report incident cases only. Of the incident cases, 8 were male and 2 were female. Recorded ages of incident cases ranged from the 20-24 to the 70-74 years age groups.
- Two cases of **hydatid infection** were reported; one case was male and one female. Recorded ages were in the 15-19 and the 30-34 years age groups.
- Six cases of **legionellosis** were reported; 4 cases were male and 2 were female. Recorded ages were between the 35-39 and the 75-79 years age groups. Four cases were resident in the Statistical Division of Sydney and two cases were resident in the Statistical Division of Melbourne. Onset dates were May (one), June (one) and July (4).
- There were 6 notifications of **leptospirosis** received; 5 cases were male and one was female. Cases ranged in age from the 30-34 to the 0-54 years age groups. Four cases were resident in the Statistical Division of Far North Queensland. All onset dates were in June.
- Two cases of **listeriosis** were reported. One case was male and one was female and recorded ages were in the 75-79 years age group.
- Thirty-four cases of **malaria** were reported; 22 cases were male and 12 were female. Cases ranged in age from the 10-14 to the 40-44 years age group. Recorded onset dates were March (3), April (9), May (8), June (8), and July (8). Six cases were resident in the 'malaria receptive zone'.
- **Measles** activity continues with 143 cases reported in the period. Seventy-nine cases were male, 63 were female and the sex of one case was unrecorded. Cases were aged between the 0-4 and the 55-59 years age group with a mean age of 12.3 years. Seventy-eight per cent of cases were resident in Queensland. There were 24 apparent clusters of between 2 and 12 cases each resident in the same postcode area. Apparent clusters were in New South Wales (2), Victoria (one), and Queensland (21).
- Eleven cases of **meningococcal infection** were reported; 8 cases were male and 3 were female. Recorded ages were between the 0-4 and the 90-94 years age group with 8 cases aged less than 20 years. Onset dates were June (one) and July (10). There were no apparent clusters.
- One hundred and three cases of **pertussis** were reported; 42 cases were male and 61 were female. Cases were aged from the 0-4 to the 75-79 years age groups with 5 cases aged less than one year and 24 cases aged less than 5 years. There were 11 apparent clusters of between 2 and 11 cases each in the same postcode area.
- There were 22 notifications of **Q fever** received; 19 cases were male and 3 were female. Cases were

aged between the 20-24 years and the 50-54 years age groups.

- There were 44 cases of **rubella** reported; 24 cases were male, 19 were female and the sex of one case was unrecorded. Cases were aged from the 0-4 to the 50-54 years age groups with 10 cases reported in females in the 15-45 years age group.
- Seventy-four cases of **syphilis** were reported; 29 cases were male, 44 were female and the sex of one case was unrecorded.
- A single cases of **tetanus** was reported for a male in the 55-59 years age group who was resident in rural South Australia.
- There were 29 notifications of **tuberculosis** received in the period. Ten cases were male, 18 were female, and the sex of one case was unrecorded. Cases ranged in age from the 5-9 to the 80-84 years age groups. Onset dates were December (one), February (one), April (one), May (one), June (9), and July (16).

Figure 12. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



1. The historical data are the averages of the number of notifications 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. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 10 to 23 July 1994

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1]			
									This period 1994	This period 1993	Year to date 1994	Year to date 1993
Diphtheria	0	0	0	0	0	0	0	0	0	4	23	16
Haemophilus influenzae b infection	0	2	0	0	1	0	2	0	5	21	123	273
Measles	1	11	0	111	3	1	15	1	143	160	2044	1077
Mumps	0	0	NN	NN	0	NN	0	0	0	1	11	7
Pertussis	2	31	0	48	14	0	7	1	103	77	2961	940
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[2]	1	0	2	33	0	0	6	2	44	95	835	1712
Tetanus	0	0	0	NN	1	0	0	0	1	0	10	7

1. 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.
2. NT, Tas: CRS only.

NN Not Notifiable.

Table 7. Notifications of other diseases[1] received by State and Territory health authorities in the period 10 to 23 July 1994

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This period 1994	This period 1993	Year to date 1994	Year to date 1993
Arbovirus infection												
Ross River virus infection	0	5	0	39	-	NN	0	0	44	94	3625	4718
Dengue	0	-	0	0	-	NN	0	0	0	111	13	385
NEC[3]	0	2	NN	11	0	0	0	0	13	21	445	379
Campylobacteriosis[4]	7	-	6	64	98	8	109	3	295	314	5315	4394
Chlamydial infection (NEC)[5]	7	NN	3	133	20	10	40	4	217	279	3658	3796
Donovanosis	0	NN	0	0	NN	NN	0	0	0	0	58	29
Gonococcal infection[6]	1	12	5	48	8	0	5	4	83	69	1672	1693
Hepatitis A	0	12	2	50	3	0	4	1	72	62	1166	1177
Hepatitis B acute[7]	-	4	2	-	1	2	1	0	10	-	204	-
Hepatitis B unspecified[7]	6			52					58	99	819	1407
Hepatitis C acute[7]	-	0	-	-	0	-	-	-	0	-	13	-
Hepatitis C unspecified[7]	26		2	242		13	102	10	395	321	5120	3791
Hepatitis (NEC)	0	1	0	0	0	0	0	NN	1	3	26	44
Legionellosis	0	4	0	0	0	0	2	0	6	4	125	111
Leptospirosis	0	0	0	5	0	0	1	0	6	5	94	102
Listeriosis	0	0	0	1	0	0	1	0	2	2	20	30
Malaria	0	5	0	23	0	0	6	0	34	15	428	361
Meningococcal infection	0	4	0	2	1	2	1	1	11	14	170	144
Ornithosis	0	NN	0	0	0	0	5	0	5	3	59	52
Q fever	0	5	0	14	0	0	3	0	22	41	394	476
Salmonellosis (NEC)	3	23	16	39	10	2	18	4	115	114	3612	2990
Shigellosis[4]	0	-	0	10	2	0	8	0	20	24	455	454
Syphilis	1	19	1	48	5	0	0	0	74	91	1239	1313
Tuberculosis	0	4	0	7	5	2	11	0	29	33	604	605
Typhoid[8]	0	0	0	0	0	0	0	0	0	0	23	26
Yersiniosis (NEC)[4]	0	-	0	12	0	0	0	0	12	12	275	250

1. For HIV and AIDS, see Tables 2 and 3. For rarely notified diseases, see Table 8.
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. SA, Tas: includes Ross River virus and dengue.
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. Comparative totals for 1993 comprise acute and unspecified cases.
8. NSW and Vic includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

\- Elsewhere Classified.

Table 8. Notifications of rare[1] diseases received by State and Territory health authorities in the period 10 to 23 July 1994

DISEASES	Total this period	Reporting States or Territories	Year to date 1994
Botulism	0		0
Brucellosis	0		9
Chancroid	0		0
Cholera	0		3
Hydatid infection	2	NSW 1, Qld 1	28
Leprosy	0		5
Lymphogranuloma venereum	0		0
Plague	0		0
Rabies	0		0
Yellow fever	0		0
Other viral haemorrhagic fevers	0		0

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1988 to 1993.

Table 9. Virology and serology laboratory reports by State or Territory[1] for the reporting period 14 to 27 July 1994, historical data[2], and total reports for the year

	State or Territory [1]								Total this fortnight	Historical data [2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA											
Measles virus			1	18			4	3	26	8.8	629
Mumps virus				3					3	2.0	52
Rubella virus				10				1	11	17.0	314
HEPATITIS VIRUSES											
Hepatitis A virus		1		14			3	6	24	16.7	220
Hepatitis B virus	4	36		20			21	10	91	94.5	1,491
Hepatitis C virus	4	30		29		2	6	96	167	142.2	3,424
Hepatitis D virus							1		1	1.3	13
Hepatitis E virus							3	1	4	.2	7
ARBOVIRUSES											
Ross River virus				8				1	9	38.0	1,421
Barmah Forest virus				6					6	11.3	183
ADENOVIRUSES											
Adenovirus type 1							1		1	4.0	41
Adenovirus type 2							3		3	4.8	40
Adenovirus type 3							3		3	7.3	34
Adenovirus type 5							1		1	1.5	9
Adenovirus type 8							1		1	.5	62
Adenovirus type 30							1		1	.0	1
Adenovirus type 35							1		1	.2	1
Adenovirus not typed/pending		20		3			8	4	35	47.7	738
HERPES VIRUSES											
Herpes simplex virus type 1		17	2	68		1	50	27	165	150.8	2,868
Herpes simplex virus type 2	1	39	1	68			21	21	151	203.7	3,169
Herpes simplex not typed/pending	4	26		1			2	1	34	33.7	425
Cytomegalovirus		13		22		1	26	8	70	63.5	993
Varicella-zoster virus		3		8			8	8	27	32.5	621
Epstein-Barr virus		6		15			5	6	32	54.7	861
Herpes virus group - not typed								1	1	.8	12
OTHER DNA VIRUSES											
Parvovirus				3			1		4	5.7	46
PICORNA VIRUS FAMILY											
Coxsackievirus A16							2		2	.5	42
Echovirus type 6		4							4	3.2	45
Echovirus type 11		1							1	4.3	38
Echovirus type 14		1							1	1.2	5
Echovirus type 22							1		1	.5	6
Echovirus type 30						1	4		5	1.8	248
Poliovirus type 2 (uncharacterised)		2							2	2.3	23
Poliovirus type 3 (uncharacterised)		1					1		2	1.8	9
Rhinovirus (all types)		1		8			13	3	25	26.3	553
Enterovirus not typed/pending		3		19			5	22	49	32.5	834
ORTHO/PARAMYXOVIRUSES											
Influenza A virus		4		7		4	34	24	73	68.7	342
Influenza A virus H3N2		2		9					11	9.0	14
Influenza B virus							3	1	4	22.2	103
Influenza virus - typing pending								1	1	.5	1

Table 9. Virology and serology laboratory reports by State or Territory[1] for the reporting period 14 to 27 July 1994, historical data[2], and total reports for the year, continued

	State or Territory [1]								Total this fortnight	Historical data [2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
ORTHO/PARAMYXOVIRUSES											
Parainfluenza virus type 1		1		7			17	9	34	4.5	467
Parainfluenza virus type 2								1	1	8.3	45
Parainfluenza virus type 3		1		3			5	9	18	16.7	179
Parainfluenza virus typing pending							5	1	6	2.8	47
Respiratory syncytial virus	17	118		95		4	95	106	435	441.7	1,880
OTHER RNA VIRUSES											
HIV-1				3					3	2.2	57
HTLV-1			1						1	.2	2
Rotavirus		55		3		2	34	12	106	118.7	743
Reovirus (unspecified)		1							1	.2	1
Small virus (like) particle								1	1	2.2	14
OTHER											
Chlamydia trachomatis not typed	2	5		32		1	6	15	61	92.2	1,557
Chlamydia psittaci							4		4	2.5	47
Chlamydia species		1							1	.2	3
Mycoplasma pneumoniae		1		18			5	1	25	66.5	594
Coxiella burnetii (Q fever)		3		5			2	2	12	16.5	196
Streptococcus group A		3		11					14	8.8	175
Bordetella pertussis							7		7	6.3	353
Bordetella species				1					1	2.2	171
Cryptococcus species		1							1	1.0	11
Treponema pallidum	1	9		1					11	16.0	224
Toxoplasma gondii							2		2	1.7	48
TOTAL	33	409	5	518		16	415	402	1,798	1,929.3	26,752

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 10. Virology and serology laboratory reports by clinical information for the reporting period 14 to 27 July 1994

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus			1					12	1	1		11	26
Mumps virus												3	3
Rubella virus								4		1		6	11
HEPATITIS VIRUSES													
Hepatitis A virus							16					8	24
Hepatitis B virus			1		1		18					71	91
Hepatitis C virus							14					153	167
Hepatitis D virus							1						1
Hepatitis E virus							2					2	4

Table 10. Virology and serology laboratory reports by clinical information for the reporting period 14 to 27 July 1994, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ARBOVIRUSES													
Ross River virus										3		6	9
Barmah Forest virus										2		4	6
ADENOVIRUSES													
Adenovirus type 1					1								1
Adenovirus type 2					1			1				1	3
Adenovirus type 3					1				2				3
Adenovirus type 5					1								1
Adenovirus type 8									1				1
Adenovirus type 30						1							1
Adenovirus type 35												1	1
Adenovirus not typed/pending					8	21					1	5	35
HERPES VIRUSES													
Herpes simplex virus type 1					9			89	10		41	16	165
Herpes simplex virus type 2					1			46			94	10	151
Herpes simplex not typed/pending		1			1	1		19	1		1	10	34
Cytomegalovirus		1		4	23			1	1			40	70
Varicella-zoster virus			1					23				3	27
Epstein-Barr virus					3			1				28	32
Herpes virus group - not typed								1					1
OTHER DNA VIRUSES													
Parvovirus								1				3	4
PICORNA VIRUS FAMILY													
Coxsackievirus A16						1						1	2
Echovirus type 6		3										1	4
Echovirus type 11		1											1
Echovirus type 14												1	1
Echovirus type 22					1								1
Echovirus type 30		3										2	5
Poliovirus type 2 (uncharacterised)					1							1	2
Poliovirus type 3 (uncharacterised)					1							1	2
Rhinovirus (all types)					23							2	25
Enterovirus not typed/pending	1	4	2		24	3				1		14	49
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					61							12	73
Influenza A virus H3N2					10							1	11
Influenza B virus					3							1	4
Influenza virus - typing pending					1								1
Parainfluenza virus type 1					33							1	34
Parainfluenza virus type 2					1								1
Parainfluenza virus type 3		1			15							2	18
Parainfluenza virus typing pending					6								6
Respiratory syncytial virus					412				1			22	435

Table 10. Virology and serology laboratory reports by clinical information for the reporting period 14 to 27 July 1994, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
OTHER RNA VIRUSES													
HIV-1												3	3
HTLV-1												1	1
Rotavirus						104						2	106
Reovirus (unspecified)												1	1
Small virus (like) particle						1							1
OTHER													
Chlamydia trachomatis not typed					1				3		35	22	61
Chlamydia psittaci					1							3	4
Chlamydia species									1				1
Mycoplasma pneumoniae					17							8	25
Coxiella burnetii (Q fever)												12	12
Streptococcus group A								2		3		9	14
Bordetella pertussis					7								7
Bordetella species					1								1
Cryptococcus species		1											1
Treponema pallidum											1	10	11
Toxoplasma gondii												2	2
TOTAL	1	15	5	4	669	132	51	200	21	11	173	516	1798

Table 11. Virology and serology laboratory reports by contributing laboratories for the reporting period 14 to 27 July 1994

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	37
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	112
	Royal Alexandra Hospital for Children, Camperdown	39
	South West Area Pathology Service, Liverpool	226
Queensland	Nambour Hospital	6
	Queensland Medical Laboratory, West End	297
	State Health Laboratory, Brisbane	241
Tasmania	Northern Tasmanian Pathology Service, Launceston	11
Victoria	Commonwealth Serum Laboratories, Melbourne	7
	Monash Medical Centre, Melbourne	53
	Royal Children's Hospital, Melbourne	179
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	183
Western Australia	Princess Margaret Hospital, Perth	161
	State Health Laboratory Services, Perth	246
TOTAL		1798