AUSTRALIA

COMMUNICABLE DISEASES INTELLIGENCE

ISSN 0725-3141 VOLUME 18 NUMBER 11 30 May 1994

CONTENTS

Editor: Helen Longbottom
Deputy Editor: Jenny Hargreaves

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

CDI is produced fortnightly by:
AIDS/Communicable Diseases Branch
Department of Human Services and Health
GPO Box 9848 Canberra ACT 2601
Fax: (06) 289 7791 Telephone: (06) 289 1555

Contributions covering any aspect of communicable diseases are invited. Publication does not preclude authors from arranging publication of their material elsewhere.

Opinions expressed in *CDI* are those of the authors and not necessarily those of the Department of Human Services and Health or other Communicable Diseases Network - Australia affiliates. Figures given may be subject to revision.

Parts of *CDI* are also available on the *CDI* Bulletin Board System, accessible with a computer, communications software and a modem on (06) 281 6695.

COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

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

THREE DEATHS FROM THE LATE COMPLICATIONS OF MEASLES

J Hanna, Tropical Public Health Unit, Cairns; R Messer, Paediatric Unit, Cairns Base Hospital

Over the past year three children have died in north Queensland from the late complications of measles.

Case 1

A Caucasian boy was diagnosed as having subacute sclerosing panencephalitis (SSPE) at seven years of age. He died seven years after the diagnosis at 15 years of age. There was a possible history of measles at eight months of age; he had never been immunised.

Case 2

An Asian boy, adopted from abroad at seven months, was diagnosed as having SSPE at 4.5 years of age; he died five months later. There was a possible history of measles at four months; he had been immunised at 16 months of age.

Case 3

An un-immunised Aboriginal girl developed serologically-confirmed measles at 20 months of age; within a week she was admitted to hospital for management of 'viral pneumonia'. Her respiratory status slowly deteriorated and she was eventually diagnosed as having bronchiolitis obliterans with respiratory failure; she died 4.5 months later.

One month after the onset of measles the child was diagnosed as having had a recent adenovirus infection (complement fixation titre 256). Although adenovirus is a well recognised cause of bronchiolitis obliterans, coinfection with measles and adenovirus can be devastating[1]. We too believe that the 'measles infection rendered the host more susceptible to the adenovirus'[1], and therefore that the measles infection was the primary event.

Comment

Although the importance of delayed mortality from measles has been recognised for some time in developing countries[2], little attention has been given to late measles deaths in industrialised countries. SSPE is likely to be a predominant cause of delayed measles mortality in the latter situation. Ten years ago concerns were raised about the apparently 'high incidence' of SSPE in Australia[3]; we are concerned that this may still be the case.

Unfortunately there is no ongoing surveillance of SSPE in Australia, and therefore any data describing measles-related mortality in Australia are likely to underestimate the problem. The British Paediatric Surveillance Unit (BPSU) took over surveillance of SSPE in England and Wales in 1986 and that surveillance is ongoing[4]. SSPE surveillance in England and Wales has been in place for 25 years, and has enabled important conclusions (for example, the greater risk of SSPE when measles occurs under one year of age) and trends (for example, the increasing proportion of SSPE in United Kingdom-born Asians) to be described[5]. We believe that the recently established Australian Paediatric Surveillance Unit (APSU)[6], which is modelled on the BPSU scheme, would be the ideal mechanism for SSPE surveillance in Australia.

It has long been recognised that measles can be a severe disease in Aboriginal children[7]. It is likely that environmental and cultural factors that contribute to 'crowding', and therefore to intense exposure, contribute to this increased severity of measles[8]. However nutritional factors, in particular a subclinical vitamin A deficiency, may also contribute to the increased severity[9].

Although most of the evidence correlating vitamin A deficiency and measles severity comes from developing countries, several recent studies have demonstrated low vitamin A levels in children with measles in the United States[10-12]. Indeed, even in the United States there seems to be a correlation between the severity of measles and the vitamin A level[11,12]. These findings have led the Committee on Infectious Diseases of the American Academy of Pediatrics to recommend that vitamin A supplementation should be considered for 'patients six months to two years of age hospitalised with measles and its complications'[13]. We believe that a similar recommendation should be considered for Aboriginal (and perhaps other Australian) children; an expert panel could be convened by the Australian College of Paediatrics for this purpose.

Meanwhile, a large outbreak of measles continues in Australia[14]. As was the case ten years ago, there is surely a compelling 'argument for intensified vaccination in Australia'[3].

References

1. Warner JO, Marshall WC. Crippling lung disease after measles and adenovirus infection. *Br J Dis Chest* 1976;70:89-94.
2. Clements CJ, Strassburg M, Cutts FT, Torel C. The epidemiology of measles. *Wld Hlth Statist Quart* 1992;45:285-291.
3. Robbins SJ. Measles and subacute sclerosing panencephalitis. *Med J Aust* 1984;141:325-327.
4. Begg N. Subacute sclerosing panencephalitis. In: Lynn R, editor. *British Paediatric Surveillance Unit: Seventh Annual Report 1992.* London: British Paediatric Surveillance Unit, 1993:9.
5. Miller C, Farrington CP, Harbert K. The epidemiology of subactue sclerosing panencephalitis in

England and Wales 1970-1989. *Int J Epidemiol* 1992;**21**:998-1006.

6. Chant K, Elliot E. The Australian Paediatric Surveillance Unit. *NSW Public Health Bull* 1994;**5**:6.
7. Hanna JN, MacIntyre AB, Worswick DA, Burrell CJ. Seroconversion after administration of measles vaccine to central Australian Aboriginal children at nine months of age. *Med J Aust* 1989;**150**:188-192.
8. Aaby P. Social and behavioural factors affecting transmission and severity of measles. In Caldwell J, Findley S, Caldwell P, Santow G, Cosford W, Braid J, Broers-Freeman D, editors. *What we know about health transition: the cultural, social and behavioural determinants of health.* The proceedings of an international workshop; 1989 May 15-19 (Health transition series no 2); Canberra;Health Transition Centre, Australian National University, 1990:826-842.
9. Hussey GD, Klein M. A randomised, controlled trial of vitamin A in children with severe measles. *N Engl J Med* 1990;**323**:160-164.
10. Arrieta AC, Zaleska M, Stutman HR, Marks MI. Vitamin A levels in children with measles in Long Beach, California. *J Pediatr* 1992;**121**:75-78.
11. Frieden TR, Sowell AL, Henning KJ, Huff DL, Gunn RA. Vitamin A levels and severity of measles: New York city. *Am J Dis Child* 1992;**146**:182-186.
12. Butler JC, Havens PL, Sowell AL, Huff DL, Peterson DE, Day SE et al. Measles severity and serum retinol (vitamin A) concentration among children in the United States. *Pediatr* 1993;**91**:1176-1181.
13. Committee on Infectious Diseases. Vitamin A treatment of measles. *Pediatr* 1993;**91**:1014-1015.
14. National Notifiable Diseases Surveillance System, 9 January 1994 to 22 January 1994. *Comm Dis Intell* 1994;**18**:70-71.

Addendum

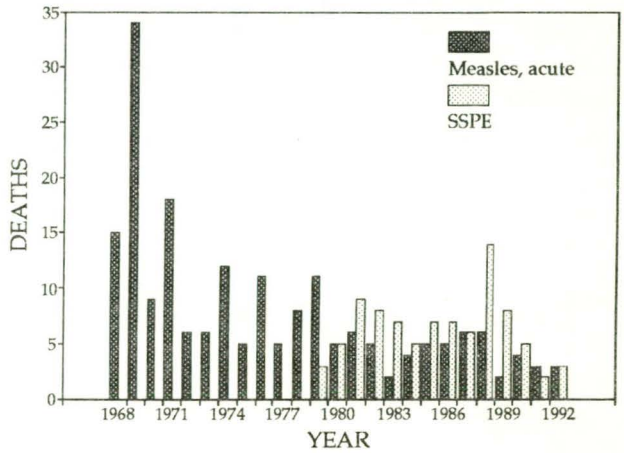
Since this report was submitted, a 19 year old male has died from acute measles encephalitis in Townsville. His prior immunisation status is not known. This means that the current measles epidemic has so far claimed two lives in north Queensland.

CDI editorial comment

One further measles encephalitis death is known to have occurred recently elsewhere in Queensland. The patient was female and, as for the Townsville patient, in the 15 to 24 years age group. Twenty-three per cent of measles cases notified since the beginning of 1993 have been in this age group.

Acute measles deaths and SSPE deaths occur every year in Australia. Between 1968 and 1992, the Australian Bureau of Statistics reported 196 acute measles deaths (ICD-8 055 from 1968 to 1978, ICD-9 055 from 1979 to 1992)(Figure)[1].

Figure. Measles[1] and SSPE[2] deaths reported to the Australian Bureau of Statistics, 1968 to 1992, by year



1. Acute measles deaths were coded as ICD-8 055 from 1968 to 1978 and as ICD-9 055 from 1979 to 1992.
2. SSPE deaths coded as ICD-9 046.2 from 1979 to 1992. SSPE deaths are not available for 1968 to 1978.

From 1968 to 1978, when measles vaccine was being introduced, 129 acute measles deaths were reported at an average of 11.7 per year. Seventy-eight (60%) were in children under the age of five years and 64 (50%) were in children under the age of two years. There were 66 male deaths and 63 female deaths (M:F ratio 1.00:1.06).

Between 1979 and 1992, there were markedly fewer acute measles deaths, particularly in children under the age of five years. Sixty-seven deaths were reported, at an average of 4.8 per year. Forty-nine (73%) were recorded for persons under the age of 15 years: 20 (30%) in the under five years age group, 10 (15%) in the five to nine years age group and 19 (28%) in the 10 to 14 years age group. Thirty-eight deaths were females and 29 were males (M:F ratio 1.00:1.30).

SSPE deaths have been recorded by the Australian Bureau of Statistics since 1979 (ICD-9 046.2). Eighty-nine SSPE deaths have been reported for this period, at an average of 6.4 per year (Australian Bureau of Statistics, personal communication) (Figure). Data on SSPE deaths prior to 1979 are not available.

A preliminary total of 4461 notifications of measles was made to State and Territory health authorities in 1993, at an annual rate of 25.3 per 100,000 population. This is the highest number and rate of measles notifications made for a year since measles notification began to be reintroduced in the States and Territories during the 1980s and notifications became nationally compiled in 1987. The previous highest number and rate were recorded for 1992 (1425 notifications made at a rate of 8.5 per 100,000 population).

Measles notifications began to increase in April 1993, peaked in November 1993 and have since fallen to the levels reported prior to the outbreak in most areas of

the country. They increased first in Tasmania (beginning in April and peaking in July), then New South Wales (beginning in May-June and peaking in November), the ACT (beginning in July and peaking in August-September), Queensland (beginning in September and peaking in November) and Victoria (peaking in September-October). Western Australian measles notifications increased in March this year.

Reference

1. Australian Bureau of Statistics. *Mortality tabulations 1968 to 1992*. Canberra: Australian Bureau of Statistics, 1979 to 1993.

INVESTIGATION OF A FOOD POISONING INCIDENT INVOLVING STUDENTS AT A UNIVERSITY IN QUEENSLAND

Virgil Kelk, Peter Boland and Andrew Loan, Environmental Health Officers, Public Health Unit, Darling Downs Regional Health Authority; John Bates, Chief Scientist, Public Health Microbiology, Laboratory of Microbiology and Pathology, Brisbane

Introduction

Twenty students reported being ill following a midday meal at university colleges on 17 October 1993. Approximately 200 students sat for this buffet meal at three locations in the residential colleges complex. Twelve students presented to the local base hospital for treatment and three were admitted for observation. Seven students were treated at the university colleges by a local medical practitioner. Students reported a variety of symptoms including nausea, vomiting and diarrhoea.

Methods

A questionnaire on food consumption and illness and a faecal specimen container were distributed to each student reported to have experienced illness. A list of food served at the residential colleges for the day in question, as well as the two previous days, was attached to assist students. An inspection of the student accommodation and college kitchens was undertaken. Food samples obtained from the kitchen and faecal spceimens from the ill students were submitted for analysis.

Results

Student accommodation

All but one of the ill students resided in one of the colleges within the complex. The colleges did not have rainwater tanks, and all water reticulated throughout was delivered from the fully treated town water supply.

Kitchen inspections

All meals for the three locations were prepared at one main kitchen and served at that location and distributed to the two outlying locations. There it was reheated, where necessary, and presented to the students in hot and cold buffets. The buffet unit at the college with most of the ill students was found to be operating between 11 - 13°C.

The overall standard of food hygiene in the main kitchen was poor. Personal hygiene practices of the staff in this area were found to be questionable. No quality assurance program had been implemented to ensure the safe handling and preparation of food items.

Food samples

Samples of chicken pieces, which were allegedly left over from the meal in question, were obtained and submitted for microbiological examination, as were a range of other foods prepared subsequent to the incident. All samples were of a satisfactory microbiological standard except for a sample of whipped cream which showed a high Standard Plate Count and unsatisfactory levels of coliforms, according to the Food Standards Code 1987. Staphylococcal enterotoxin was not detected in the samples of left-over chicken.

Questionnaire

Fifteen questionnaires were returned from the students and revealed incubation periods, duration of illness and symptoms typical of staphylococcal food poisoning. The meal was served between 12 noon and 1 pm,

Figure. Cases of food poisoning, by time of onset of illness, 17 October 1993

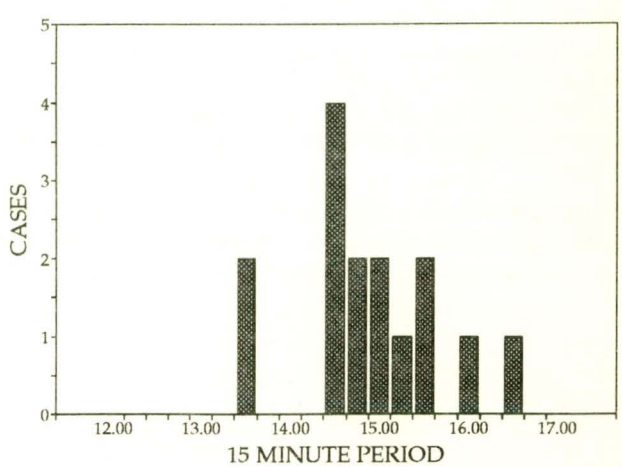


Table. Major food poisoning symptoms reported by respondents

Symptom	Per cent affected
Vomiting	100
Diarrhoea without blood	80
Loss of appetite	80
Nausea	73
Cramping pains in stomach	67
Fever	67
Weakness	67

and all respondents reported becoming ill between 1.30 pm and 4.30 pm (Figure). The duration of the illness ranged between two hours and two days. The most frequently reported symptoms included vomiting, diarrhoea without blood, loss of appetite, nausea, cramping pains in stomach, fever and weakness (Table). All ill students had eaten the cold chicken pieces; there were no other foods common to them all. The diet of respondents over the three days prior to becoming ill was extremely varied.

No common associations between the respondents could be established other than the consumption of food at the college.

Faecal specimens

Six faecal specimens were provided by respondents and submitted to the Laboratory of Microbiology and Pathology for analysis. A heavy growth of *Staphylococcus aureus* was detected in two specimens. A slight growth of *Staphylococcus aureus* was detected in a third specimen which was also found to contain *Campylobacter coli*. No bacterial pathogens were detected in the remaining three specimens.

Analysis for the presence of staphylococcal enterotoxin (using the Tecra ELISA assay) was performed on five of the specimens. One specimen in which no bacterial pathogens were detected contained insufficient faeces to perform enterotoxin analysis. Staphylococcal enterotoxin was detected in two of the faecal specimens, one positive for the presence of *Staphylococcus aureus* and one negative. Cultures of *Staphylococcus aureus* from the three faecal specimens found to contain the organism all produced entertoxin.

One faecal specimen from a student admitted to hospital was analysed in the hospital laboratory. The hospital laboratory did not have the appropriate media to detect the non-enteric bacteria associated with food poisoning. No bacterial pathogens were isolated, and specific tests were not performed to detect either *Staphylococcus aureus* or its enterotoxin by this laboratory.

Comments

The consumption of cold chicken pieces is considered to be the most likely cause of the staphylococcal intoxication experienced. All respondents to the questionnaire indicated that they had consumed the cold chicken and there were no other foods in common. Information provided by those respondents whose faecal specimens were found to be positive for *Staphylococcus aureus* and/or staphylococcal enterotoxin further highlighted the chicken as the most probable causative agent.

Whilst humans are an important reservoir of *Staphylococcus aureus*, the organism is also found on the skin of adult chickens[1]. Certain strains of the organism may become endemic in poultry processing plants with equipment in the plant being a significant source of contamination of carcasses[2].

The frozen chickens delivered to the main kitchen on 11 October 1993 where not examined by kitchen staff to ensure the receipt of a product of high quality. Whilst the chickens may have been in a sound condition, the quality of the chickens upon receipt at the kitchen is an unknown factor. *Staphylococcus aureus* shows little loss of viability during storage for long periods at freezing temperatures[2].

The chickens were thawed at room temperature for some fifteen and half hours and doubts have been raised as to whether they were thoroughly cooked. The subsequent handling, storage and transportation of the cooked chicken also provided numerous opportunities for the chicken to become contaminated after cooking.

The negative result from the faecal specimen submitted to the hospital laboratory highlighted the fact that hospital laboratories may not have the facilities for diagnosis of food poisoning caused by non-enteric bacteria. It is recommended practice for faecal samples from cases of food poisoning to be submitted to public health laboratories for full analysis of food poisoning organisms and their toxins.

References

1. Hobbs, BC, Gilbert, RJ. *Food poisoning and food hygiene*. Fourth ed. Great Britain: Spottiswoode Ballantyne Ltd, 1979.
2. Dick MIB, Grant AJ, Linforth GJ. Staphylococcal enterotoxins In: *Foodborne microorganisms of public health significance*. Fourth ed. Australian Institute of Food Science and Technology Ltd (NSW Branch) Food Microbiology Group, 1989.

SALMONELLA OUTBREAK AND DEEP FRIED ICE CREAM

Jim N Tsirigotes, Food Inspector, Western Sector Public Health Unit; Brian Biffin, A/Senior Food Inspector, Western Sector Public Health Unit; Dr Bin Jalaludin, Deputy Medical Officer of Health, Western Sector Public Health Unit

Introduction

On 21 May 1993, a district hospital laboratory notified the Western Sector Public Health Unit (PHU) of a *Salmonella* positive stool specimen. Two weeks previously, the patient, and eight others, had eaten together at a Chinese restaurant. Seven of the diners developed gastroenteritis after the meal.

In the following two months, from 26 May 1993 to 27 July 1993, we were notified of another five persons with *Salmonella* Typhimurium positive stool samples. All had eaten at the same restaurant on separate occassions. We were told by the restaurant of a further instance of gastrointestinal disease amongst another group of patrons.

We investigated these seven clusters of foodborne disease. All occurred in May 1993, and resulted in at least 37 illnesses. Three persons were hospitalised, and another 14 treated by local doctors.

We report the results of our investigation of these clusters of foodborne disease.

Methods

As we received each notification, patients were questioned regarding their dietary history, including recent visits to restaurants. We also obtained a list of others with whom they had eaten.

We interviewed all cases and others on the list using a structured questionnaire. They were either interviewed by telephone or by mail. We requested demographic details, date and time they ate at the restaurant, history of illness, subsequent visits to a doctor or hospital, and whether any specimens had been collected.

We inspected the restaurant premises six times in July, and obtained the two banquet menus that were used by the restaurant. We sampled a range of high risk foods for bacteriological analysis, including frozen deep fried ice cream, breadcrumbs and a cake crumb/desiccated coconut mix used for coating the deep fried ice cream. We collected stool specimens from all three food handlers employed in the kitchen.

We prepared food specific attack rate tables.

Results

Epidemiological investigation

We received six notifications of *Salmonella* Typhimurium from May to July 1993. These cases had all eaten at the same Chinese restaurant. We were told of another instance of gastrointestinal disease among patrons (cluster 4) by the restaurant. In all there were seven separate clusters of illness linked to the restaurant (Table 1).

We sent questionnaires to 54 persons of whom 46 (85%) replied. Of those who replied, 37 (80%) had been ill after eating at the restaurant (20 males; 17 females). The mean age for males was 37.5 years (age range 1-53 years), and for females it was 34.3 years (age range 1-63 years).

The most common symptom was diarrhoea followed by nausea, headache, abdominal cramps, fever and vomiting (Table 2). The incubation period ranged from 12 to 34 hours, with a median time of 23 hours. The duration of the illness was from two to 35 days.

Six of the seven groups of patrons ate most or all of the foods from one of the two banquet menus. An exception was cluster 7, where a party of two did not eat from the banquet menus. Foods common to both menus included prawns, chicken, spare ribs, beef, fried rice and deep fried ice cream. Cluster 7 ate mongolian lamb, fried rice, prawns and deep fried ice cream .

Inspection of restaurant premises

The standard of hygiene was satisfactory at all times. Adequate facilities existed for the storage of perishable foods, and for the washing of appliances, dishes and hands. There were no obvious conditions which may have contributed to the outbreak. There had not been any unusual occurrences, or changes to routine or staffing during the month of May 1993.

Table 1. Demographic data and incubation period for cases

Cluster	1	2	3	4	5	6	7
Date attended restaurant	May 7	May 8	May 9	May 10	May 14	May 23	May 29
Number of persons in party	9	6	8	11	8	10	2
Number ill	7	4	4	7	5	8	2
Attack rate	78%	67%	50%	64%	63%	80%	100%
Median incubation period (hours)	34	25	28.5	21	25	27	13

Table 2. Symptom frequency

Symptom	Cases
Diarrhoea	30 (81%)
Nausea	29 (78%)
Headache	28 (76%)
Abdominal cramps	26 (70%)
Fever	24 (65%)
Vomiting	21 (57%)
Joint pain	3 (8%)

Food samples

Salmonella Typhimurium was isolated from the samples of deep fried ice cream (cooked and uncooked), bread crumbs, and cake crumbs/desiccated coconut mix. It was not possible to phage type the organism due to lack of suitable sera.

Salmonella was not isolated from other foods on the banquet menu such as pork, cooked prawns, ham, chicken, eggs, spare ribs and fried rice.

Stool samples

Three of the *Salmonella* isolates from the cases were phage type 29, and the other three were phage type RDNC. Stool specimens from the three food handlers were negative for *Salmonella*.

Discussion

In our experience this is the first reported case in which fried ice cream has been implicated in a foodborne illness. The short cooking time for the ice-cream (60-90 seconds), meant that *Salmonella* organisms could survive the cooking process[1].

The clinical symptoms and the incubation period of the affected patrons are characteristic of *Salmonella* infection[2,3,4].

Our inspection of the kitchen revealed a possible mechanism of contamination of the deep fried ice-cream. The deep fried ice cream was prepared by coating frozen ice cream with bread crumbs, liquid egg, and a mixture of cake crumbs and desiccated coconut. The tray of bread crumbs used for the coating was stored directly beneath a tray containing white flour used for coating raw chicken and pork. We observed that the action of coating the meat resulted in small amounts of flour spilling over into, and contaminating, the tray of bread crumbs below, and therefore the ice cream.

As the laboratory was unable to phage type the *Salmonella* Typhimurium isolated from deep fried ice cream and its coating ingredients, we were unable to compare these isolates with those from the cases.

In most of the clusters, all ate foods from most of the dishes served. Thus, calculating food specific attack rates did not assist us in identifying the contaminated food.

We were notified of the index case of each cluster through the infectious disease notification system. However, there was a lag time before the notifications arrived at the PHU. The delay made it impossible to obtain left-over food samples for bacteriological analysis.

Our investigation implicates deep fried ice cream as the possible source for the outbreak. The deep fried ice cream was possibly contaminated by *Salmonella* organisms through inappropriate food handling practices. Contamination was most likely from the raw chicken or raw pork. The eggs were not considered as a source of contamination as they were from a reputable source. The fresh liquid egg used in preparing the coating was removed from the shell at the time of preparation and any residual was discarded. Despite the fact the stool samples from the food handlers were negative for *Salmonella*, there is also the possibility that the foods were contaminated by a human carrier during the period of the outbreak.

Acknowledgments

We wish to thank the food microbiological staff of the Division of Analytical Laboratory, NSW Department of Health, and the Institute for Clinical Pathology and Medical Research, Westmead Hospital, for their assistance. We would also like to thank Ms Rita Petrovs, Food Inspector Western Sector Public Health Unit for her help in the investigation.

References

1. Hayes PR. *Food Microbiology and Hygiene* . London: Elsevier Applied Science Publisher, 1985.
2. Benenson AS, *Control of Communicable Diseases in Man*, 15th ed. Washington: American Public Health Association, 1990.
3. Hobes BC, Roberts D. *Food Poisoning and Food Hygiene*. 5th ed. London: Edward Arnold, 1987.
4. Topley WW, Wilson GS. *Principles of Bacteriology Virology and Immunity Vol* 33.London: Edward Arnold, 1990.

SALMONELLA SURVEILLANCE, AUSTRALIA, FOURTH QUARTER 1993

Reproduced with acknowledgment from the Human Fourth Quarter Report, National Salmonella Surveillance Scheme Report 1994;(3), editors Joan Powling, Bahiep Truong and Diane Lightfoot

There were 1610 reports received by the National *Salmonella* Surveillance Scheme (NSSS) for the fourth quarter of 1993 (Table 1).

Two isolates of *S.* Abortusovis were received (October, November) from sisters aged six months and five years living on a sheep property in northern New South Wales. As its name suggests, this *Salmonella* serotype specifically affects sheep causing abortion. This is a new isolate for Australia and is possibly the first record of human isolates anywhere in the world[1].

New and unusual *Salmonella* serovars reported during the quarter were *S.* Amsterdam var 15+ (F/32 Victoria, ex Bali), *S.* Emmastad (F/66 Northern Territory), *S.* Enteritidis phage type (PT) 11a (M/33 Victoria, ex Thailand), *S.* Friedenau (M/42 Victoria), *S.* Isangi (M/31 Western Australia, ex Bali), *S.* Lohbruegge (F/<1 Northern Territory), *S.* Onderstepoort (M/1 Northern Territory) and *S.* Panama (F/47 Western Australia, ex Bali).

Salmonella infections - case rates

There were 1131 Australian acquired cases of *Salmonella* infection reported during this quarter which represented a 27% increase over the total number of cases for the same period last year (890). There were 98 follow-ups, one case from an immigrant and 134 cases acquired overseas.

By comparison to the fourth quarter of 1992, there was an increase in the *Salmonella* case rate per 100,000 head of population in all States and Territories except Western Australia where there was a 13% decrease. The highest percentage increases in case rates were recorded from Tasmania (96%), Victoria (87%) and South Australia (69%). The case rate more than doubled in the ACT.

Two cases of *S.* Enteritidis PT 4 were notified as acquired in Australia during December (F/4 northern Tasmania, M/2 Hunter region of New South Wales).

Infections acquired overseas

The most common *Salmonella* infection acquired overseas was *S.* Enteritidis PT 4 with 17 cases reported from travellers returning from Asia (Singapore, Thailand, the Philippines, Bali and Hong Kong) and Europe (United Kingdom). There were 11 cases of *S.*Hadar (all

Table 1. Total reports of enteric pathogens, fourth quarter 1993, by State or Territory

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
Salmonella	15	262	295	382	99	142	53	116	1364
Shigella species	1	24	18	23	12	40	0	23	141
Aeromonas species	0	1	6	2	0	0	0	0	9
Campylobacter species	0	0	50	0	0	0	0	0	50
Escherichia coli (EPEC)	0	0	0	0	0	0	0	0	0
Plesiomonas species	0	0	0	0	0	0	0	0	0
Vibrio species	0	0	0	1	0	0	0	0	1
Yersinia species	0	7	3	33	2	0	0	0	45
Total	16	294	372	441	113	182	53	139	1610

Table 2. Case rates per 100,000 of *Salmonella* infection acquired in Australia and total cases, selected quarters, by State or Territory

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
4th quarter 1993	4.4	4.2	5.6	12.6	6.6	6.9	11.2	65.2	1131
3rd quarter 1993	4.4	2.7	2.2	7.7	4.1	7.7	4.1	49.1	703
4th quarter 1992	1.6	3.9	3.0	10.7	3.9	7.9	5.7	55.5	890
4th quarter 1991	5.6	5.1	3.5	14.1	5.6	8.5	4.8	54.9	1098
4th quarter 1990	2.4	5.8	4.6	12.8	5.6	8.7	7.1	43.3	1131
4th quarter 1989	10.4	5.8	5.5	14.0	10.7	13.8	8.9	83.3	1426

from Bali) and seven cases of *S.* Agona (Bali, Singapore, Thailand and Hong Kong).

The cases acquired overseas are listed as follows. They include migrants and refugees and exclude enteric fever.

ASIA

Indonesia: *C. jejuni* subspecies *jejuni*, *S.* Emek, *S.* Kentucky, *S.* Montevideo;
Bali: S. Agona (2), *S.* Amsterdam var 15+, *S.* Chester, *S.* Emek, *S.* Enteritidis PT 4 and PT 4a, *S.* Hadar (11), *S.* Infantis, *S.* Isangi, *S.* Kentucky, *S.* Litchfield, *S.* London, *S.* Oslo, *S.* Panama, *S.* Potsdam, *S.* Stanley, *S.* Typhimurium PT 104, PT 12a (2), PT 141 and PT 44, *Sh. boydii* 4, *Sh. flexneri* 6 (2), *Sh. sonnei* (2), *Sh. sonnei* biotype a.
Thailand: *S.* Agona (2), *S.* Anatum (3), *S.* Blockley, *S.* Derby, *S.* Enteritidis PT 11a and PT 4 (5), *S.* Krefeld, *S.* Mbandaka, *S.* Paratyphi B bv Java 3b var and *S.* Paratyphi B bv Java untypable, *Sh. flexneri* 2a, *Sh. sonnei* biotype g.
Malaysia: *A. caviae*, *S.* Blockley (2), *Sh. dysenteriae* 2, *Sh. flexneri* 4.
Singapore: *S.* Agona, *S.* Enteritidis PT 4 (3), *S.* Paratyphi B bv Java 3b var, *S.* Typhimurium PT 135, *Sh. sonnei* biotype g.
China: *S.* Meleagridis var 15+.
Hong Kong: *S.* Agona, *S.* Enteritidis PT 4 (2) and PT 14b, *S.* Rissen, *Sh flexneri* 3a.
Vietnam: *S.* Oslo.
Cambodia: *S.* Wandsbek subsp II.
Philippines: *S.* Enteritidis PT 4, *S.* Typhimurium PT 12a, *Sh. sonnei* biotype a.
India: *S.* Blockley, *S.* Braenderup, *S.* Enteritidis PT 4a, *S.* Friedenau, *S.* Newport, *S.* Stanley, *S.* Virchow (2), *S.* Worthington, *Sh. boydii* 1, *Sh. boydii* 8, *Sh. flexneri* 1b, *Sh. flexneri* 2 and 3c, *Sh. sonnei.*
Nepal: *S.* Singapore.
Unspecified countries: *S.* Agona, *S.* Lansing, *S.* Montevideo.

Table 3. Typhoid and paratyphoid cases

Vi-phage type	Sex/age (years)	State or Territory	Notes
S. Typhi			
46	M/17	NSW	Patient from Noumea
A		M/5	NSW no details provided
A		M/38	WA no details provided
A		F/3	NSW no details provided
A		M/24	NSW no details provided
D2	M/25	Qld	Acquired in Papua New Guinea
D6	F/51	NSW	Acquired in Indonesia
E1a	M/53	NSW	Family contact with Portugal
E1a	F/26	NSW	Daughter of M/53 above
E1a	M/2	NSW	Grandson of M/53 above
M1	F/43	Vic	Visited Peru, hepatitis A also
M3	F/55	WA	Acquired in Asia
degraded	F/13	Vic	Recent return from Nepal
untypable	ns/ns	NSW	Traveller on cruise ship
untypable	M/40	NSW	Acquired in Indonesia
untypable j:z66	M/24	NSW	Acquired in Indonesia
untypable j:z66	M/21	NSW	Travel in Indonesia with M/24 above
S. Paratyphi A			
1	M/36	NT	Travel in India and Indonesia
1	M/25	WA	Mixed with *S.* Paratyphi A RDNC
2	M/34	Vic	Visited Pakistan
4	M/35	Vic	Acquired in South-east Asia
5	F/22	Qld	No details provided
RDNC	M/25	WA	Returned from India
RDNC	M/34	NSW	Travelled in India
untypable	F/27	Vic	Travelled in India
S. Paratyphi B			
3aI var 1	F/21	NSW	History not provided
3b var 2	M/20	Qld	No information
3b var 3	M/35	Vic	Travel in Indonesia and Singapore

ns not stated.

AFRICA

Ghana: *S.* Typhimurium RDNC.

MIDDLE EAST

Lebanon: *S.* Enteritidis PT 1, *Sh. sonnei* biotype g.
Turkey: *C. jejuni* subspecies *jejuni.*

EUROPE

France: *S.* Typhimurium PT 12a.
Russia: *Sh. flexneri* 3c.
United Kingdom: *S.* Enteritidis PT 4 (3).
Unspecified countries: *S.* Paratyphi B bv Java 1 var.

PACIFIC

Solomon Islands: *Sh. flexneri* 2.
New Zealand: *S.* Enteritidis PT 4.
Fiji: *Sh. sonnei* biotype g.
Western Samoa: *Sh. sonnei* biotype a.

UNSPECIFIED COUNTRIES

S. Anatum, *S.* Bovismorbificans PT 7, *S.* Emek, *S.* Enteritidis PT 4 (2) and RDNC, *S.* Hadar (2), *S.* Kentucky, *S.* Krefeld, *S.* Montevideo, *S.* Stanley (2), *S.* Typhimurium 12a, *S.* Uganda, *S.* Virchow, *Sh. flexneri* 1b, *Sh. flexneri* 3a (2), *Sh. sonnei* biotype a.

Typhoid and paratyphoid cases

There were 17 reports of *S.* Typhi, eight reports of *S.* Paratyphi A and three reports of *S.* Paratyphi B (Table 3).

S. Paratyphi B biovar Java was reported for 29 cases. Five cases were reported as acquired overseas (Europe, Thailand (2), Nepal and Singapore) and the remainder were acquired in Australia. There were 16 cases of the serotype Battersea reported, eight of these from the Northern Territory following on from the outbreak in September (*CDI* 1994;18:183).

Table 4. Isolations from blood, urine and unusual sites

Organism	Sex/age (years)	State or Territory	Organism	Sex/age (years)	State or Territory
Bacteraemias excluding enteric fever					
S. Aberdeen	F/18	ACT	*S.* Typhimurium 44	M/62	Vic
S. Ball	M/<1	NT	*S.* Typhimurium 8	M/21	Vic
S. Cerro	M/2	NSW	*S.* Typhimurium 9	F/<1	Vic
S. Enteritidis PT4	M/70	Vic	*S.* Typhimurium RDNC	F/50	NSW
S. Muenchen	F/88	NSW	*S.* Virchow	M/<1	Qld
S. Typhimurium 135	F/60	Vic	*S.* subsp I ser rough:r:1,2	M/14	NSW
S. Typhimurium 135	M/44	Vic	*Sh.* boydii 1	F/56	NT
S. Typhimurium 27	M/60	NT	*Sh.* flexneri 1a	M/39	SA
S. Typhimurium 44	F/61	SA	*Sh.* flexneri 1b	M/27	NSW
S. Typhimurium 44	F/49	SA			
Urines					
S. Anatum	F/62	Qld	*S.* Meleagridis 15+	F/26	Vic
S. Berta	F/79	Vic	*S.* Newport	M/73	NSW
S. Bovismorbificans 23	F/75	Vic	*S.* Typhimurium 135	F/78	Vic
S. Brandenburg	M/33	NSW	*S.* Typhimurium 135	M/46	NSW
S. Chester	F/10	NT	*S.* Typhimurium 135	F/22	Vic
S. Heidelberg	M/38	ACT	*S.* Typhimurium 44	F/56	Vic
S. Infantis	F/85	Vic	*S.* Typhimurium untypable	F/78	SA
S. Litchfield	F/59	Vic	*S.* subsp I ser rough:c:1,6[1]	F/73	Qld
Unusual sites			Site		
S. Agona	M/60	Vic	Peritoneal swab		
S. Brandenburg	M/33	NSW	Urethral swab (urine also, see above)		
S. Bredeney	M/7	NSW	Pus from ankle wound		
S. Enteritidis RDNC	M/15	Qld	Ileum tissue and lymph node		
S. Enteritidis PT 4	M/60	NSW	Ankle abscess (query overseas travel)		
S. Heidelberg PT 1	F/35	Qld	Unspecified wound		
S. Newport	F/16	SA	Paraspinal abscess		
S. Virchow	M/23	Qld	Abdominal cyst, post appendectomy		

1. Antigenic formula for *S.* Birkenhead is *S.* subsp I ser 6,7:c:1,6.

Table 5. Cases of *Shigella* infection acquired in Australia, by State or Territory

Organism	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
Sh. boydii 1	0	0	0	0	1	1	0	1	3
Sh. boydii 2	0	0	1	0	0	0	0	0	1
Sh. flexneri	0	1	0	0	0	0	0	0	1
Sh. flexneri 1a	0	0	0	0	2	0	0	0	2
Sh. flexneri 1b	0	7	0	1	0	0	0	0	8
Sh. flexneri 2	0	0	0	4	0	17	0	0	21
Sh. flexneri 2a	0	2	1	6	0	0	0	6	34
Sh. flexneri 3a	0	0	3	0	1	0	0	0	4
Sh. flexneri 6	0	0	0	1	1	0	0	1	3
Sh. flexneri untypable	0	0	0	0	0	0	0	2	2
Sh. flexneri var Y	0	0	1	1	0	1	0	0	3
Sh. sonnei	0	1	0	7	0	14	0	0	22
Sh. sonnei biotype a	0	2	0	0	3	0	0	11	16
Sh. sonnei biotype g	1	2	2	0	0	0	0	1	6
Total	1	15	8	20	8	33	0	22	107

Isolations from blood, urine and unusual sites

During the quarter, there were 19 reports of bacteraemia excluding enteric fever, 16 reports from urines and eight reports from unusual sites (Table 4).

Shigella infections

There was a total of 141 reports of *Shigella* infections received for this quarter. Of these, six were follow-up specimens, one was from an immigrant and 27 were reported from travellers returning from overseas leaving a total of 107 cases reported as acquired in Australia (Table 5). This was a decrease of 35% over the 165 cases reported for the corresponding period of 1992.

Sh. flexneri serotypes 2 and 2a, *Sh. sonnei* and *Sh. sonnei* biotype a accounted for 87% of all Australian acquired *Shigella* infections. The incidence of *Sh. boydii* from north-western Australia has abated and only three cases were reported this quarter.

Shigella infections reported as acquired overseas included *Sh. boydii* 1 (India), *Sh. boydii* 4 (Bali) and *Sh. boydii* 8 (India), *Sh. dysenteriae* 2 (Malaysia), *Sh. flexneri* 1b (India), *Sh. flexneri* 2a (Thailand, Solomon Islands), *Sh. flexneri* 3a (Hong Kong), *Sh. flexneri* 3c (Russia, India), *Sh. flexneri* 6 (Bali), *Sh. sonnei* (India, Bali), *Sh. sonnei* biotype a (Philippines, Western Samoa, Bali), *Sh. sonnei* biotype g (Thailand, Lebanon, Fiji).

Top ten *Salmonella* serovars

The top ten *Salmonella* serovars accounted for 66% of all Australian acquired cases reported to the NSSS (62% last year)(Table 6). The most common serovar was *S.* Typhimurium with 414 cases from 31 phage types of which the most common was PT 135 (81 cases). *S.* Saintpaul was in second place with 63 cases (35 from

Table 6. Top ten *Salmonella* serovars

Serovar	Position in 3rd quarter, 1993	Cases	% of total	Origin and number of cases
S. Typhimurium[1]	1	414	36.6	NSW 46, Vic 37, WA 23
S. Saintpaul	2	63	5.6	Qld 17, NSW 15, NT 7
S. Newport[1]	7	55	4.9	WA 17, Qld 4
S. Virchow	3	43	3.8	Qld 29
S. Chester	8	33	2.9	Qld 12, NSW 4, WA 3
S. Birkenhead[2]	9	31	2.7	Qld 17
S. Heidelberg[2]	9	31	2.7	Qld 9, NSW 6
S. Enteritidis[2]	9	28	2.5	Qld 6, NSW 5, SA 4
S. Infantis	-	28	2.5	SA 10, Vic 6, NSW 5
S. Muenchen	6	25	2.2	Qld 8, NT 7, NSW 4
Total		751	66.4	

1. Associated with outbreaks or incidents.
2. Equal 9th position last quarter.

In: *S.* Infantis.

Table 7. Top five phage types of *S.* Typhimurium

Phage type	Position in 3rd quarter, 1993	Cases	% of total	Origin and number of cases
135	2	81	19.6	Vic 38, NSW 14, Qld 11, WA 11
44	3	78	18.8	Vic 43, SA 14, Qld 9
9	1	56	13.5	Vic 24, Tas 15
170[1]	5	25	6.0	Vic 12, NSW 7
64	-	25	6.0	NSW 4, Tas 4, Qld 3, SA 3
Total		265	63.9	

1. Equal fifth position last quarter.

Queensland) and *S.* Newport was a newcomer to the list in third place with 55 cases. *S.* Enteritidis was in eighth place with 28 cases.

The top five phage types of *S.* Typhimurium comprised 63.9% of the total (Table 7). The number of cases of *S.* Typhimurium PT 44 has increased particularly in Victoria (43 cases) and Western Australia (14). PT 9 is still common in Victoria (24 cases) and Tasmania (14) but has slipped to third position after having been the most common phage type for several years.

Mixed infections

There were 13 mixed infections reported for the quarter (Table 8).

Outbreaks

Four recognised outbreaks and three smaller incidents were recorded during the quarter. The largest outbreak was of *S.* Newport in New South Wales in which 27 cases were reported between 5 and 17 November. Investigation of an incident of gastroenteritis at an oil drilling camp in Queensland revealed a mixed infection of *Aeromonas* species and *S.* Newport. There were six more reports of this serovar from Western Australia following on from the large outbreak which began in March.

Table 8. Mixed infections, fourth quarter 1993

Organisms	Sex/age (years)	State or Territory
S. Agona, *C. jejuni*	M/22	Qld
S. Anatum, *C. jejuni*	M/33[1]	ACT
S. Anatum, rotavirus	M/<1	Qld
S. Eastbourne, *S.* Anatum	F/33	NT
S. Emmastad, *S.* subsp I ser 17:a:-	F/66	NT
S. Enteritidis PT 4a, *S.* Infantis	F/44[1]	SA
S. Enteritidis PT 26, *A. sobria*	F/<1	Qld
S. Havana, *Sh. sonnei* biotype a	M/1	NT
S. Newport, *Aeromonas*	M/18[2]	Qld
S. Newport, *Aeromonas*	F/28[2]	Qld
S. Oslo, *A. sobria*	F/1	NT
S. Stanley, *S.* Paratyphi A RDNC	M/34[1]	NSW
S. Virchow, *Aeromonas* species	M/27[1]	Vic

1. Acquired overseas (M/33 Thailand, F/44 Bali, M/34 India, M/27 India).
2. Part of outbreak at an oil exploration camp in Queensland in

The suspected outbreaks and increased incidence of enteric pathogens for the quarter are summarised below.

Northern Territory

The outbreak of *S.* Paratyphi B biovar Java Battersea, which began in mid September, continued into October with eight more cases from the Territory, three from northern Queensland and two from north-western Western Australia.

There was an outbreak of *S.* Eastbourne among kitchen staff at a hospital ten days before Christmas. During routine screening of staff *S.* Anatum was also isolated. The cases continued to be reported into January 1994.

New South Wales

From the first week in November thirty-five cases of *S.* Newport were reported from New South Wales. Both adults and young children were affected but infants less than two years of age were not.

The first case of *S.* Kottbus was reported from western New South Wales during the quarter. This preceded the increased incidence of cases from this region, particularly around Brewarrina, in early January (Update,*CDI* 1994;**18**:186).

Queensland

S. Newport was also reported from central Queensland from early October and an outbreak of a mixed infection of *S.* Newport and *Aeromonas* species was reported from an oil exploration camp in the first week of November. All cases were adults.

Three cases of *S.* Anatum were notified from Townsville, all adults, on the last day of November.

Tasmania

S. Typhimurium PT 9 was implicated in an incident of suspected food poisoning in a nursing home in Hobart in mid-October. Twelve cases, both patients and catering staff, were reported.

Victoria

There was a general increased incidence of *S.* Typhimurium PT 135 in the State during this quarter with twenty-nine cases reported from adults and children, but no infants, during December. Fourteen cases were reported in the week before Christmas and 12 cases were from the town of Melton.

Update

Sh. sonnei has been reported for 70 cases (adults and children) in Western Australia since early January. The cases were from Geraldton (20 cases), Meekatharra (6), the Pilbara region (27) and the Kimberley region (18).

S. Typhimurium PT 170 has been reported for 34 cases in Queensland since mid-February and 28 of these were from Central Queensland. There have been 16 cases from Roma with 14 of these reported within six days in early March. Since early January there has been a general increase in the incidence of PT 170 in eastern Australia with 65 cases (Queensland 34, Victoria 18, New South Wales 13) compared with 25 in the preceding quarter (Table 7).

Reference

Murray C, Davos D. *Salmonella* Abortusovis. *Australian Salmonella Reference Centre Monthly Report* 1994; (February):1.

CDI editorial comment

The National Notifiable Diseases Surveillance System (NNDSS) received 1115 notifications of salmonellosis (not elsewhere classified) with onset dates in the fourth quarter of 1993. As for the NSSS, this was an increase over the third quarter of 1993, the quarter for which the lowest number of salmonellosis notifications were reported (755). There were 936 salmonellosis notifications with onset dates in the fourth quarter of 1992. There were 10 notifications of typhoid with onset in the fourth quarter of 1993, 6 in the third quarter of 1993 and 7 in the fourth quarter of 1992. Shigellosis was notified for 139 cases in the fourth quarter of 1993, a marked decrease compared with the corresponding quarter of 1992 (199), as reported by the NSSS. There were 150 notifications of shigellosis in the third quarter of 1993.

All these diseases are notifiable in all States and Territories of Australia. 'Typhoid' includes paratyphoid in New South Wales and Victoria. In New South Wales, shigellosis is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'. Notifications made to the NNDSS include cases acquired in Australia and overseas.

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

Introduction

Influenza activity has been reported in Australia by the *CDI* Laboratory Virology and Serology Reporting Scheme every winter since 1978, except in 1986 (Figure 1). The season has usually begun between April and June each year, peaked in July, August or September and finished between October and December.

Surveillance of influenza is an important component of the control of influenza. The main objectives are[1]

- early detection of influenza epidemics enabling immunisation of at risk persons not previously vaccinated, and planning for possible impacts on the provision of clinical care,
- monitoring of the effectiveness of immunisation programs,
- the collection and analysis of epidemiological information on influenza morbidity and mortality in order to characterise the nature of the epidemic and to estimate the impact of the disease outbreaks, and
- collection of influenza isolates and analysis of antigenic characteristics of the viruses to provide information on which antigenic variants should be included in the following season's vaccines.

Influenza surveillance in Australia is based on several schemes collecting a range of data which can be used to measure influenza activity. Laboratory diagnoses of influenza provide the most specific marker of influenza activity, however, the sensitivity of this type of surveillance is low because only a small proportion of cases are laboratory confirmed. Other schemes are therefore used to provide less specific surveillance information which can be used as surrogate markers of influenza activity.

This season, the results of each of the schemes will be published together in *CDI* as *National influenza surveillance 1994*, and should facilitate a national view of influenza activity. Fortnightly reports will include all information received in the two weeks preceding publication; information from the individual surveillance schemes may not therefore be for the same time peri-

ods. The reports following this one will be included in the *Communicable Diseases Surveillance* section of *CDI*.

Influenza vaccination

The National Health and Medical Research Council recommends annual autumn influenza vaccination for individuals in the following categories:

- individuals at particular risk of complications:
  - adults and children with chronic debilitating disease, especially those with chronic cardiac, pulmonary, renal and metabolic disorders,
  - persons over the age of 65 years,
  - residents of nursing homes and other chronic care facilities
  - persons receiving immunosuppressive therapy.
- persons engaged in medical and health services and essential public utilities, if they are at increased risk owing to medical disorders such as those above. In the event of a pandemic or other major outbreak, advice should be given about vaccination of staff particularly liable to exposure.

Influenza vaccine composition is reviewed annually on the basis of surveillance results of the previous season, so that changes in the composition can be made to counter 'antigenic shift' and 'antigenic drift' in the viruses. The composition of the vaccine for the 1994 Australian winter was decided in October 1993 after reviewing information on the strains that had been recently detected in both Australia and the Northern Hemisphere[2]. The vaccine contains 15 micrograms each of

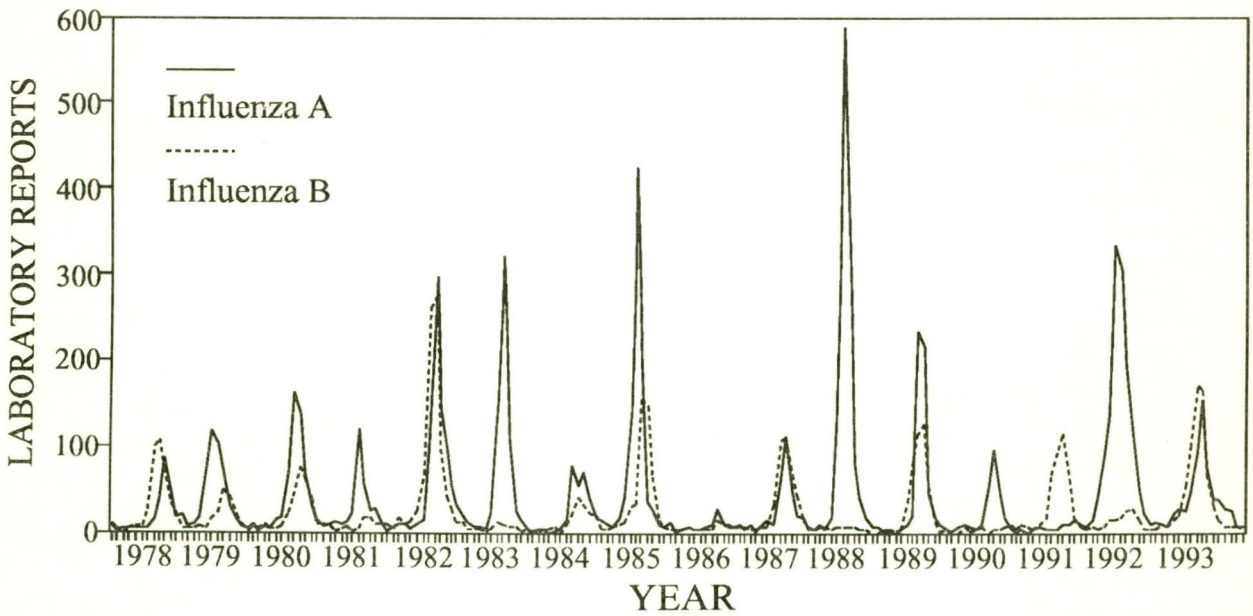
- an A/Texas/36/91 (H_1N_1)-like strain
- an A/Beijing/32/92 (H_3N_2)-like strain
- a B/Panama/45/90-like strain.

1993-94 Northern Hemisphere influenza season

Influenza activity occurred at moderate to moderately severe levels in the Northern Hemisphere in the 1993-94 northern winter[3]. Most activity was associated with influenza A H_3N_2 but influenza B viruses were isolated during periods of sporadic activity or outbreaks in some countries.

Influenza A H_3N_2 viruses were first detected during localised outbreaks in the United States and in Scotland in August and September 1993; typing of the United States' isolates revealed them to be similar to the A/Beijing/32/92 strain. Activity in the United States

Figure 1. ***CDI*** **Virology and Serology Reporting Scheme influenza reports[1], 1978 to 1994, by month of specimen collection**



1. Influenza A includes untyped influenza A, influenza A H_3N_2 and influenza A H_1N_1. Influenza A H_3N_2 predominated in all years with marked influenza A activity except for 1988, when influenza A H_1N_1 predominated.

increased from mid-November and peaked, according to most indicators, in early January 1994. Most outbreaks occurred in schools but they were reported among persons in all age groups; reports of high absenteeism were common at the peak of influenza activity. The proportion of total deaths attributed to influenza and pneumonia exceeded the epidemic threshold for 10 consecutive weeks from mid-December. A total of 3963 influenza virus isolates were reported to the Centers for Disease Control and Prevention; all but four were influenza A. Of the 1899 influenza A viruses that were subtyped, 99% were influenza A H_3N_2.

An epidemic caused by influenza A H_3N_2 occurred in the United Kingdom during November and December. In western and northern continental Europe (Austria, Belgium, Denmark, Finland, the Netherlands, Norway, Sweden and Switzerland), influenza type A H_3N_2 epidemics occurred during November and December. Sporadic cases or outbreaks caused by influenza A H_3N_2 occurred from October to March in Bulgaria, Croatia, the Czech Republic, Germany, Greece, Iceland, Ireland, Italy, Japan, China, Romania, the Russian Federation, Spain, Yugoslavia and Zambia.

Influenza B viruses were isolated much less frequently. They were first reported associated with sporadic activity in China, Hong Kong and Thailand during December and January, and later during outbreaks and sporadic activity in Canada, Finland, Japan, the Netherlands, Portugal, the Russian Federation, Spain, Sweden, Switzerland, the United Kingdom and the United States.

Influenza A H_1N_1 viruses were reported in association with sporadic activity from Hungary, Hong Kong, the Netherlands, the Russian Federation and the United States.

Sentinel General Practitioner Surveillance

Four sentinel general practitioner schemes reporting influenza-like illness are included in the National Influenza Surveillance: the Australian Sentinel Practice Research Network, the Australian Capital Territory Sentinel General Practice Scheme, the New South Wales Sentinel General Practice Scheme and the Victorian Sentinel General Practice Scheme.

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network (ASPREN) is conducted by the Research and Health Promotion Unit of The Royal Australian College of General Practitioners in Adelaide. The Network has about 100 general practitioner recorders in locations throughout Australia (*CDI* 1994;**18**:147-149). Each week (beginning on Mondays) they report the number of cases of influenza-like illness, the age group and sex of the patients and the total number of consultations. About 10,000 consultations are monitored each week.

Total ASPREN influenza reports are usually published in the ASPREN report in each *CDI*; during the influenza season they will also be incorporated into the National Influenza Surveillance report. State/Territory and age and sex information on the influenza reports will also be included at a later date.

The ASPREN infuenza case definition is

(a) viral culture or serological evidence of influenza virus infection, or

(b) influenza epidemic, plus four of the criteria in (c), or

(c) six of the following:

- (i) sudden onset (within 12 hours)
- (ii) cough
- (iii) rigors or chills
- (iv) fever
- (v) prostration and weakness
- (vi) myalgia, widespread aches and pains
- (vii) no significant respiratory physical signs other than redness of nasal mucous membrane and throat
- (viii) influenza in close contacts.

Australian Capital Territory Sentinel General Practitioner Scheme

The Australian Capital Territory Sentinel General Practitioner Scheme is conducted by the Australian Capital Territory Department of Health. Seven general practitioners from the ACT report the number of consultations for influenza and the total consultations for each week (beginning on Sundays). The rate of influenza reporting per 1000 consultations each week from 29 May 1994 will be included in the National Influenza Surveillance report each fortnight. The case definition is as for ASPREN.

New South Wales Sentinel General Practitioner Scheme

The New South Wales Department of Health conducts sentinel general practitioner surveillance for influenza like illness each year. This year, surveillance began in January with 45 general practitioners in three Public Health Areas monitoring 5000 to 6000 consultations each week. It has now expanded to about 100 general practitioners monitoring about 15,000 weekly consultations in eight Public Health areas - Illawarra, Central and Southern Sydney, Western Sydney and Wentworth, Hunter, Eastern Sydney, North Sydney, Central Coast and Northern Districts.

The weekly rate of influenza reporting per 1000 consultations will be included in the National Influenza Surveillance report each fortnight. Each reporting week begins on a Tuesday. The case definition is all of the following:

(a) cough

(b) myalgia

(c) no abnormal respiratory physical signs other than inflammation of nasal mucous membranes and throat

(d) two of the following:

(i) sudden onset (less than 12 hours)
(ii) rigors, chills or fever
(iii) prostation or weakness
(iv) influenza in close contacts

Victorian Sentinel General Practitioner Scheme

The Victorian Influenza Surveillance System is managed by the Department of Health and Community Services, Victoria. The sentinel general practitioner surveillance involves 30 general practitioners in the metropolitan and rural areas of Victoria. Fortnightly reports (beginning on Mondays from 2 May) are made of the total number of consultations, the number of patients with influenza, the age and sex of the influenza patients and the postcode of the practice. Twelve of the metropolitan practitioners take throat washings from a maximum of four patients each week for laboratory analysis to provide an estimate of the accuracy of the clinical case definition used.

The case definition is at least four of eight criteria listed in (c) of the ASPREN case definition. In addition, practitioners are asked not to record cases of acute tonsillitis, otitis media, chest infections (that is those with pulmonary crepitations or rhonchi), acute sinusitis or coryza (simple head cold).

Absenteeism Surveillance

Absenteeism surveillance provides a non-specific measure of the effects of influenza epidemics. The National Influenza Surveillance this year includes absenteeism surveillance in Telecom Australia, and a selection of schools in the Australian Capital Territory and in New South Wales.

Telecom Australia Absenteeism Surveillance

Telecom Australia has about 65,000 employees in locations throughout Australia. Each Wednesday, the number of employees absent on sick leave is recorded by the Office of the Chief Medical Officer in Melbourne. The percentage of employees absent each Wednesday will be published as part of the National Influenza Surveillance report.

New South Wales Schools Absenteeism Surveillance

The New South Wales Department of Health is conducting schools absenteeism surveillance. Each week since March, a number of schools have reported their total student absenteeism for the week. In May, six schools with a total of about 4000 students from the Western Sydney and Wentworth Area, the North Coast region and the South East region were involved.

The daily average percentage of students absent each week will be included in the National Influenza Surveillance report.

Australian Capital Territory Schools Absenteeism Surveillance

Schools absenteeism surveillance is being conducted by the Australian Capital Territory Department of Health from the week beginning 30 May. Six schools from throughout the ACT report the total number of students absent and the total enrolled on each Tuesday. The percentage of students absent each Tuesday will be included in the National Influenza Surveillance report.

Victorian total deaths surveillance

During influenza epidemics, there are increases in the number of deaths attributed to influenza, the number attributed to pneumonia and the total number of deaths[4,5]. Monitoring of total deaths can therefore provide influenza surveillance information. Data on fortnightly total numbers of deaths are being collected by the Victorian Department of Health and Community Services, starting with the fortnight beginning 2 May 1994. They will be published fortnightly as a rate per 10,000 population.

Victorian hospital admissions

The Victorian Department of Health and Community Services monitors hospital admissions for influenza and/or pneumonia as part of its influenza surveillance system. Three hospitals document all cases admitted with a provisional diagnosis of influenza and/or pneumonia each fortnight beginning 2 May 1994. The number of admissions and the rate per 100 admissions will be reported in the fortnightly National Influenza Surveillance reports.

Pharmaceuticals dispensed

The consumption of selected pharmaceuticals can also be used as an indirect measure of an influenza epidemic[6]. For this season, the number of selected medications dispensed by Australian Defence Force pharmacies around Australia will be measured. Details of the medications included and reports of the number dispensed and locations will be included in a later National Influenza Surveillance report.

Laboratory surveillance

Laboratory diagnoses of influenza constitute the gold standard in influenza surveillance[6]. The *CDI* Virology and Serology Reporting Scheme contributing laboratories have been reporting influenza diagnoses since 1978 and have enabled continual virological assessment of Australian influenza activity. The WHO Collaborating Centre for Influenza Reference and Research subtypes influenza viruses isolated each season to determine their antigenic characteristics and their relatedness to vaccine strains and strains detected elsewhere in the world.

***CDI* Virology and Serology Reporting Scheme**

There are currently 18 sentinel laboratories from around Australia that contribute reports to the *CDI* Virology and Serology Reporting Scheme. Each influenza report includes the laboratory identification, the date of specimen collection, the type of influenza virus (and subtype if known), the source specimen and infor-

mation on the methods of isolation, direct identification and/or serology used to make the diagnosis. The age and sex of the patient, postcode and coded clinical information are also usually included.

Influenza diagnoses will continue to be included in the fortnightly Virology and Serology Reporting Scheme report but will also be included in the National Influenza Surveillance report. Influenza diagnoses will be reported by State or Territory, week (beginning Sundays) of specimen collection and diagnostic method. Summary age and sex and clinical information will also be included.

WHO Collaborating Centre for Influenza Reference and Research

The World Health Organization Collaborating Centre for Influenza Reference and Research located at CSL Limited, Melbourne, is one of three Collaborating Centres carrying out detailed antigenic analysis of influenza isolates received from laboratories participating in the WHO International surveillance program; the other Centres are located in London and Atlanta. The Melbourne Centre receives virus isolates from throughout Australia and New Zealand and, where possible, from other countries in the region including Papua New Guinea and Fiji. This year the Centre will also receive isolates from South Africa. The Centre also conducts some local influenza surveillance on clinical specimens received through sentinel practices.

Detailed antigenic analysis of all isolates is carried out using panels of polyclonal and monoclonal antisera and a panel of antigens agreed between the three Collaborating Centres. Antigenic variant strains are further analysed by preparing antisera and these are distributed to the other Collaborating Centres where they may be subjected to more detailed study including sequence analysis of the haemagglutinin antigens.

The Centre prepares and submits data to WHO and to the Australian Influenza Vaccine Committee for use in determining influenza vaccine formulations each year and prepares candidate vaccine strains for use in vaccines manufactured for use in Australia and distributed throughout the WHO network.

In order to track the emergence of antigenic variants of influenza it is important that all available virus isolates, from as wide a geographic region as possible, should be studied in detail. All laboratories isolating influenza viruses are urged to forward them to the Centre - please contact the Deputy Director, Alan Hampson on (03) 389 1340 or the Scientist in Charge of the Laboratory, Robert Shaw, on (03) 389 1231.

As regulatory requirements dictate that influenza strains for vaccine production should be passaged exclusively in eggs, laboratories are requested, where possible, to retain samples of clinical specimens yielding isolates of influenza for possible re-isolation in eggs at the Centre. Where storage of such specimens constitutes a problem, please contact the Centre.

Fortnightly updates on the characterisation of influenza by the Centre will be included in the National Influenza Surveillance.

This fortnight's results

Overall this year, influenza like illness reported by sentinel general practitioners has risen since about March. Laboratory diagnoses of influenza have fallen since the first two months of the year. Absenteeism data show no apparent trends. All influenza A strains characterised so far have been of the H_3 subtype and antigenically related to A/Beijing/23/92, one of this year's vaccine components.

SENTINEL GENERAL PRACTITIONER SURVEILLANCE

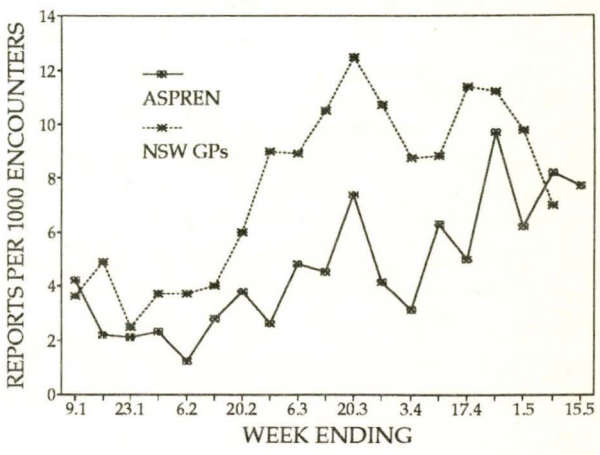
Australian Sentinel Practice Research Network

ASPREN reports have been received this fortnight for weeks 16 (ending 24 April), 17(ending 1 May), 18 (ending 8 May) and 19 (ending 15 May). There were 91 reports of influenza in week 16 (9.7 per 1000 encounters), 58 in week 19 (6.2 per 1000 encounters), 80 reports in week 18 (8.2 per 1000 encounters) and 61 reports in week 19 (7.7 per 1000 encounters). The rate has been rising since the beginning of March (Figure 2).

New South Wales Sentinel General Practitioner Scheme

Results from the New South Wales Sentinel General Practitioner Surveillance Scheme were received for the weeks ending 9 January to 8 May. The number of influenza cases (and the number of cases per 1000 consulations) each week were 20 (3.6), 31 (4.9), 14 (2.5), 22 (3.7), 28 (3.7), 28 (4.0), 46 (6.0), 65 (9.0), 70 (8.9), 100 (10.5), 138 (12.5), 110 (10.7), 79 (8.7), 116 (8.8), 178 (11.4), 174 (11.2), 123 (9.8) and 36 (7.0) (Figure 2). As for ASPREN, the rate of influenza reporting has been rising since the beginning of March.

Figure 2. Sentinel general practitioner influenza cases per 1000 encounters, by week and scheme



Australian Capital Territory Sentinel General Practitioner Scheme

The Australian Capital Territory Sentinel General Practitioner Scheme begins influenza surveillance in the week commencing 29 May. The first results will be included in next fortnight's *CDI*.

Victorian Sentinel Practitioner Scheme

The Victorian Sentinel Practitioner Scheme reported 11 cases of influenza in the fortnight beginning 2 May. This was 4.0 cases per 1000 patient encounters.

ABSENTEEISM SURVEILLANCE

Telecom Australia Absenteeism Surveillance

Telecom Australia reported absenteeism rates of 3.00% on 13 April, 2.62% on 20 April, 2.00% on 27 April, 1.74% on 4 May, 1.71% on 11 May and 0.77% on 18 May (Figure 3). The data from the latest week is not complete and will be updated in the next report.

New South Wales Schools Absenteeism Surveillance

New South Wales schools absenteeism surveillance data has been received for the weeks ending 11 March to 22 May. The average student absenteeism rate per week for the period was 4.9%, 4.6%, 5.2%, 10.1%, 9.3%, 6.4%, 10.4%, 5.7%, 7.5%, 7.9% and 8.3% (Figure 3).

Australian Capital Territory Schools Absenteeism Surveillance

The Australian Capital Territory schools absenteeism surveillance begins in the week commencing 29 May. The first results will be included in next fortnight's *CDI*.

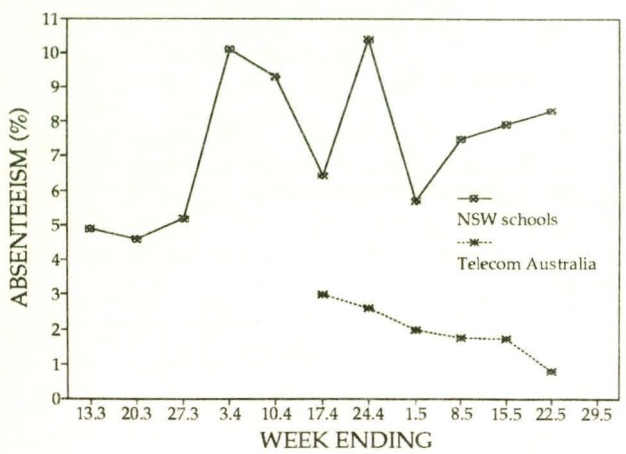
Victorian total deaths surveillance

There were 1298 deaths reported in Victoria in the fortnight beginning 2 May. This was a rate of 2.9 per 10,000 population.

Victorian hospital admissions

There were 29 admissions for influenza and/or pneumonia in two Victorian hospitals in the fortnight beginning 2 May. One hospital was unable to provide data this fortnight.

Figure 3. Absenteeism rates per 100 employees or students, by week and scheme



Pharmaceuticals dispensed

The Australian Defence Force pharmaceutical dispensing surveillance will commence in the near future.

LABORATORY SURVEILLANCE

CDI Virology and Serology Reporting Scheme

Reports of influenza received by the *CDI* Virology and Serology Reporting Scheme have decreased since the beginning of the year. So far, there have been 64 reports of influenza A (17 other than single high titre diagnoses), one from New South Wales, two from the Northern Territory, three from Queensland, 38 from South Australia, one from Tasmania, nine from Victoria and 10 from Western Australia (Figure 4).

There have been 21 reports of influenza B (five other than single high titre), one from the ACT, two from New South Wales, two from the Northern Territory, 14 from South Australia, one from Victoria and one from Western Australia (Figure 5).

Figure 4. Influenza A laboratory reports, 1994, by method of diagnosis and week of specimen collection

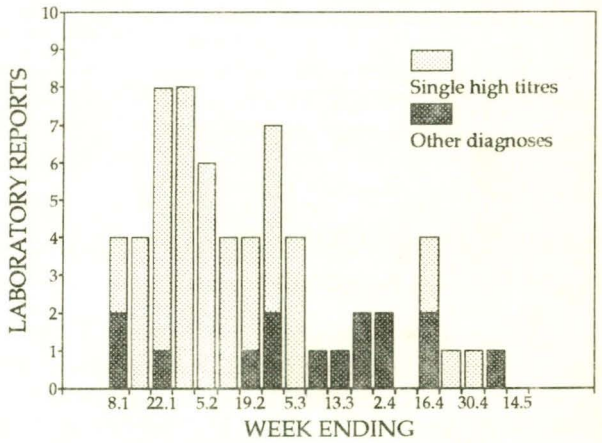
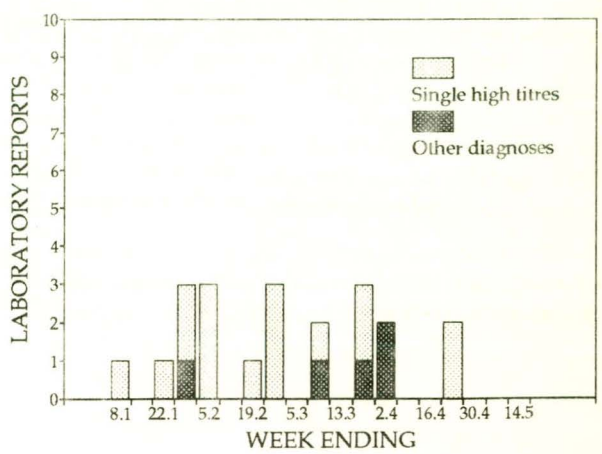


Figure 5. Influenza B laboratory reports, 1994, by method of diagnosis and week of specimen collection



This fortnight, influenza A was reported for three patients, one isolation (21 year old Victorian male), and two single high titres (69 year old male and 27 year old female, both from Western Australia). A single report of influenza B was received for a three year old female from the Northern Territory (direct immunofluorescence on a nasopharyngeal specimen).

WHO Collaborating Centre for Influenza Reference and Research

To date initial antigenic analysis has been undertaken for thirteen strains of influenza A (A/Wellington/1/94, A/Vic/1/94, A/Perth/1-10/94 and A/S.Aust/1/94) and one strain of influenza B (B/Perth/1/94).

All of the influenza A isolates have been characterised as H_3 subtype and are antigenically related to A/Beijing/32/92. There is some antigenic heterogeneity amongst the isolates and some appear most closely related to a slight variant A/Guangdong/25/93.

The B/Perth/1/94 isolate is most similar to B/Sichuan/8/92, a strain which is closely related to B/Panama/45/90.

References

1. Ghendon Y. Influenza surveillance. *Bull World Health Organ* 1991;**69**:509-515.
2. Composition of the Australian influenza vaccine for the 1994 winter. Comm Dis Intell 1993;17:513-514.
3. Update: influenza activity - United States and worldwide, 1993-94 season, and composition of the 1994-95 influenza vaccine. *MMWR* 1994;**43**:179-183.
4. Scragg R. Effect of influenza epidemics on Australian mortality. *Med J Aust* 1985;**142**:98-102.
5. Curwen M, Dunnell K, Ashley J. Hidden influenza deaths. *BMJ* 1990;**300**:896.
6. Dab W, Quenel P, Cohen JM, Hannoun C. A new influenza surveillance system in France: the Ile de France "GROG". 2. Validity of the indicators (1984-1989). *Eur J Epidemiol* 1991;7:579-587.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization (WHO), the Department of Foreign Affairs and Trade and the Public Health Laboratory Service Communicable Disease Surveillance Centre, London.

Invasive group A *Streptococcus* infections in the United Kingdom

Seven persons resident in Gloucestershire in the United Kingdom have developed disease characterisitic of invasive group A streptococcal infection since February 1994 and three of them have died[1]. Four had confirmed and two had probable necrotising fasciitis and another had septic arthritis and septicaemia. The first two cases were post-operative patients in a local hospital. The five other cases appear to have acquired infection in the community; two of these had diabetes and one was receiving long term treatment with corticosteriods. Four were women and three were men; their ages ranged from 46 to 68 years. Group A streptococci were isolated from blood or joint aspirates from five patients. The isolates were typed as four different M types (M1(2), M3, M5 and untypable) that are routinely expected to be encountered. Investigations of the isolates' toxin production have also demonstrated different combinations of toxin genes.

A comprehensive microbiological and epidemiological investigation is being carried out and surveillance for invasive group A streptococcal disease, surveillance for necrotising fasciitis and detailed characterisation of strains is continuing.

There has been no increase in laboratory reports of systemic infection with group A streptococci in England and Wales in the past three years. In the first 16 weeks of 1994, 200 blood isolates were reported, compared with 212 and 200 in the first 16 weeks of 1993 and 1992, respectively. The cases are within expected annual figures.

(There has been no recent increase in reports of systemic infection with group A streptococci received by the LabDOSS (*CDI* Laboratory Reporting Schemes).)

Meningococcal meningitis in Nepal

Increased cases of group A/C meningococcal meningitis have been reported recently from the Kathmandu valley of Nepal. The Department of Foreign Affairs and Trade encourages all travellers to Nepal to ensure that their meningococcal vaccination is current.

Cholera update

Cases were reported from the Bokeo Province in Laos during April, and the Province has been declared infected. No cases of cholera have been reported from Zimbabwe since November 1993 and all areas of the country have been removed from the list of infected areas.

Cases of cholera have also been reported for February, March and April from Bolivia, Brazil, Burundi, El Salvador, India and Somalia.

Reference

1. Invasive group A streptococcal infections in Gloucestershire. *Communicable Disease Report* 1994;4:97.

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1468 reports received in the *CDI* Virology and Serology Reporting Scheme (Tables 9, 10 and11). This fortnight, we welcome the Commonwealth Serum Laboratories, Melbourne as contributors to the Scheme.

- Twelve reports of **measles** were received this period, 7 males and 5 females in the age range 10 months to 25 years.
- **Mumps** was diagnosed by IgM detection in a 14 year old Victorian female with bilateral parotitis, fever and headache.
- **Rubella** was reported for 11 patients this fortnight including 5 females in the 15 to 44 year age group. Included was a 26 year old female with fetal death in utero at 18 to 20 weeks' gestation. Diagnosis was by IgM detection in all cases.
- Ten reports of **hepatitis A** were received, 3 males and 6 females (one sex not stated), age range 1 to 64 years.
- Positive **hepatitis B** serology was reported for 79 patients this fortnight, 43 males and 34 females (2 sex not stated). Forty-nine patients were in the 25 to 44 year age group. Included were 5 pregnant females and 2 patients with a history of injecting drug use, one of whom also had positive hepatitis C serology.
- Positive **hepatitis C** serology was reported for one hundred and ninety-six patients this fortnight, 118 males and 73 females (5 sex not stated). One hundred and fifty-eight reports were for the 25 to 44 year age group. Included were 37 injecting drug users, 3 pregnant females and a 14 year old haemophiliac. Also included was a one day old premature baby whose mother had a history of injecting drug use and a 37 year old HIV positive male.
- **Ross River virus** infection was reported for 107 patients this period, 90 of whom were from Queensland. Three cases were confirmed (fourfold change in titre), one from the Northern Territory, one from Derby, Western Australia and the other from elsewhere in Western Australia (precise location not stated). The remainder were presumptive diagnoses (IgM positive).
- Ten reports of **Barmah Forest virus** were received, 9 from Queensland and one from New South Wales. All were presumptive diagnoses (IgM positive).
- Twenty-eight reports of **adenovirus** were received this fortnight, 19 isolations and 9 antigen detections. **Adenovirus type 9** was isolated from the urine of a 28 year old male. Twenty-two of the reported adenoviruses were untyped, including an isolate from the eye of a 40 year old female.
- **Herpes simplex virus type 1** was reported for 155 patients this fortnight, 151 isolations and 4 antigen detections. Included was isolation from the the eye of a 5 year old male and a 21 year old female, and from the ear of a 13 year old male.
- There were 69 reports of **cytomegalovirus** this fortnight, 44 virus isolates, 24 IgM detections and one single high titre. Included were 5 HIV/AIDS patients, 3 transplant recipients (including a 64 year old lung transplant recipient and a 16 year old liver transplant recipient), and 2 other immunocompromised patients. This virus was isolated from postmortem heart, lung and trachea specimens from an 11 week old male who had died of SIDS, and from the breast milk of a 30 year old mother whose baby was infected *in utero*.
- **Varicella-zoster virus** was reported for forty patients this fortnight, 15 virus isolations, 17 antigen detections, 6 IgM detections, one fourfold rise in titre and one single high titre.
- **Echovirus type 22** was isolated from the nasopharynx of a 16 month old female with an upper respiratory tract infection.
- Twelve reports of **echovirus type 30** were received this fortnight including 8 cases of meningitis. Nine patients were female, 3 male, all in the age range 7 to 47 years.
- Fifty-one untyped **enterovirus** reports were received this period. Included was virus isolation from the CSF from a 2 month old male and from a postmortem specimen from a 3 month old male. This virus was also isolated from the nasopharynx of a 3 month old male with eye disease.
- **Rhinovirus** was reported for 32 patients this fortnight. Three were under the age of one month and a total of 25 were under 4 years of age.
- **Influenza A** was reported for 3 patients, one isolation (21 year old Victorian male), and 2 single high titres (69 year old male and 27 year old female, both

Figure 1. Parainfluenza virus type 1 laboratory reports, 1992 to 1994 by month of specimen collection

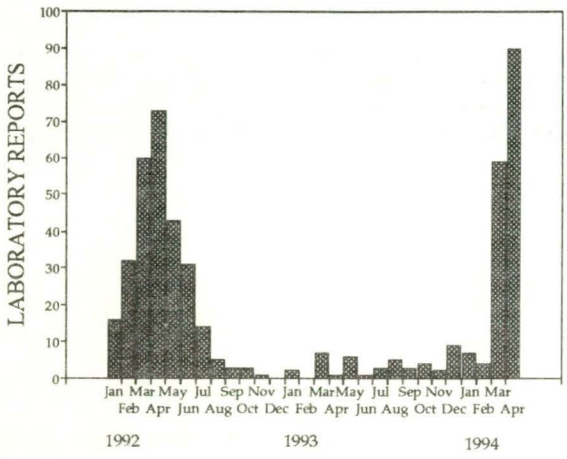
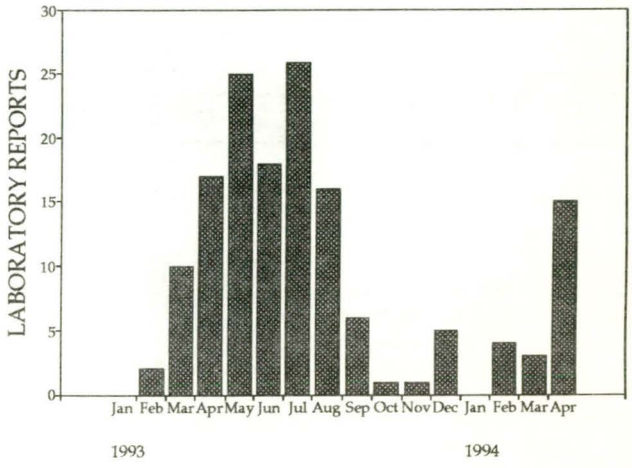


Figure 2. Parainfluenza virus type 2 laboratory reports, 1993 to 1994 by month of specimen collection



from Western Australia). A single report of **influenza B** was received for a 3 year old female from the Northern Territory (direct immunofluorescence on a nasopharyngeal specimen).

- **Parainfluenza virus type 1** was reported for 54 patients this period, 25 from Victoria, 26 from Queensland and 3 from Western Australia. Forty-nine patients were under 4 years of age. Twenty-nine diagnoses were by virus isolation and 25 by antigen detection. The number of reports received continues to rise (Figure 1).
- **Parainfluenza virus type 2** was reported for 4 patients, 3 of whom were under the age of 4 years. All diagnoses were by antigen detection. An increased number of reports were received in the month of April (Figure 2).
- Eight reports of **parainfluenza virus type 3** were received this fortnight, 4 under one year of age and 4 in the one to 4 year age group. Diagnosis was by virus isolation (2) and antigen detection (6).
- Eighty-nine reports of **respiratory syncytial virus (RSV)** were received this fortnight, 55 in the one to 11 month age group. Included were 2 sets of twins (3 months and 7 months of age) and a set of triplets (13 months of age), all from Western Australia. Diagnosis was by virus isolation (25) and antigen detection (64).
- **Rotavirus** was reported for 39 patients this period, 18 males and 19 females (2 sex not stated). Thirty five patients were under 2 years of age. An increased number of reports has been received from Western Australia in recent months (Figure 3).
- Two reports of **Norwalk like virus** were received this fortnight. They were detected by electron microscopy in the faeces of 5 year old and 42 year old males who were involved in a gastroenteritis outbreak at a camp.
- Eighty-five reports of ***Chlamydia trachomatis*** were received this fortnight, 69 females and 15 males (one sex not stated). Eighty-one patients were in the 15 to 44 year age group. Diagnosis was by culture (69), antigen detection (13) and serology (3).
- **Q fever** was reported for 6 patients this period, all males in the age range 34 to 60 years. Two patients reported hepatitis and two pyrexia. All diagnoses were by IgM detection.
- Positive **syphilis** serology was reported for 26 patients this period, 20 males and 6 females; 18 patients were in the 25 to 44 year age group. Included were 4 pregnant females and two patients with a recent history of overseas travel.

Figure 3. Rotavirus laboratory reports, 1994, by State and month of specimen collection

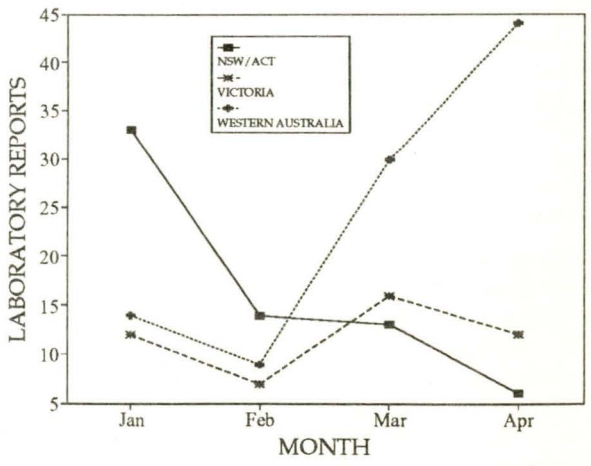
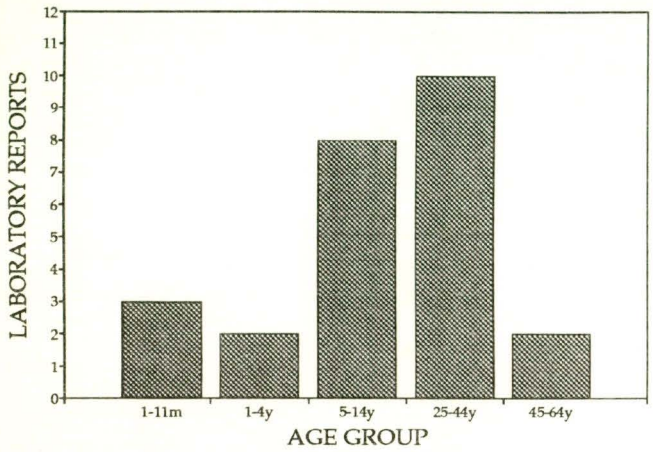


Figure 4. *Bordetella pertussis* laboratory reports for the reporting period, by age group



- ***Bordetella pertussis*** was reported for 26 patients this period, 12 males and 14 females. Twenty patients were over the age of 5 years (Figure 4).

Australian Sentinel Practice Research Network

Data for weeks 16 to 19 included in this issue of *CDI* (Table 1). There were 9416 consultations for week 16, 9417 for week 17, 9753 for week 18 and 7906 for week 19. Influenza was reported at a higher rate than earlier in the year. Chickenpox has been reported at rates varying from 0.6 to 2.2 cases per 1000 encounters since the beginning of the year, in no apparent pattern.

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

Table 1. Australian Sentinel Practice Research Network, weeks 16 to 19, 1994

Condition	Week 16, to 24 April 1994		Week 17, to 1 May 1994		Week 18, to 8 May 1994		Week 19, to 15 May 1994	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	91	9.7	58	6.2	80	8.2	61	7.7
Measles	1	0.1	4	0.4	2	0.2	0	0
Chickenpox	15	1.6	15	1.6	15	1.5	9	1.1
Pertussis	1	0.1	2	0.2	2	0.2	1	0.1
Gastroenteritis	130	13.8	134	14.2	177	18.1	103	13.0

Table 2. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 to 31 December 1993, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
										This period 1993	This period 1992	Year to date 1993	Year to date 1992
HIV diagnoses	Female	0	0	0	0	0	0	4	1	5	6	76	93
	Male	0	18	1	8	4	0	22	4	57	62	909	1096
	Sex not reported	0	0	0	0	0	0	0	0	0	0	111	15
	Total[1]	0	18	1	8	4	0	26	5	62	68	999	1206
AIDS diagnoses	Female	0	0	0	0	0	0	0	0	0	1	36	25
	Male	0	17	0	3	2	0	16	1	39	32	610	596
	Total[1]	0	17	0	3	2	0	16	1	39	34	649	623
AIDS deaths	Female	0	0	0	0	0	0	1	0	1	2	17	15
	Male	0	24	1	4	4	0	22	0	55	40	533	516
	Total[1]	0	24	1	4	4	0	23	0	56	42	533	534

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

Table 3. Cumulative diagnoses of HIV infection, diagnoses of AIDS and deaths following AIDS since the introduction of HIV antibody testing to 31 December 1993, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
HIV diagnoses	Female	9	494	4	75	39	3	135	44	803
	Male	139	9162	71	1296	495	68	2970	643	14844
	Sex not reported	0	2030	0	2	0	0	44	0	2076
	Total[1]	148	11694	75	1376	534	71	3156	688	17742
AIDS diagnoses	Female	2	98	0	21	12	2	29	10	174
	Male	54	2683	20	410	196	25	973	208	4569
	Total[1]	56	2786	20	433	208	27	1007	218	4755
AIDS deaths	Female	2	55	0	13	6	1	12	3	92
	Male	36	1789	14	290	117	18	717	134	3115
	Total[1]	38	1849	14	304	123	19	732	137	3216

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

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 December 1993, as reported to 31 March 1994, are included in this issue of *CDI* (Tables 2 and 3).

Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 10 laboratories. There were 193 reports of recent sepsis: Sullivan Nicolaides Queensland 12; Nambour General Hospital, Queensland 11; Royal Hobart Hospital, Tasmania 16; Northern Tasmanian Pathology Services, Tasmania 6; Woden Valley Hospital, ACT 17; South West Area Pathology Health Service, Liverpool, New South Wales 38; Royal North Shore Hospital, New South Wales 34; Alice Springs Hospital, Northern Territory 12; Princess Margaret Hospital for Children, Western Australia 10; Sir Charles Gairdner Hospital, Western Australia 37.

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 *Bacillus* species, 2 *Streptococcus* Group A (1 year old with skin infection and a 7 year old with osteomyelitis), 2 *Streptococcus* Group B, 2 *Streptococcus*

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

	Clinical information						Risk factors					
Organism	Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary tract	Skin	Surgery	Immunosuppressed	IV line	Hospital acquired	Neonatal	Total[1]
Staphylococcus aureus	2	1				6	2	7	2	7		28[2]
Staphylococcus coagulase negative						3	2			5		17[3]
Enterococcus species					2	2		3		1		6[4]
Streptococcus pneumoniae		5										5
Escherichia coli				13	19		6	6		4	1	46
Enterobacter species				1								5[5]
Klebsiella pneumoniae		3		3								7
Pseudomonas aeruginosa				2	1		1	4				8

1. Only organisms with 5 or more reports are included in this table.
2. MRSA 1.
3. *Staphylococcus epidermidis* 13.
4. *Enterococcus faecalis* 5.
5. *Enterobacter cloacae* 3.

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

	15-24 years	55-64 years	65-74 years	Total
Staphylococcus aureus			1	1
Haemophilus parainfluenzae	1			1
Streptococcus pneumoniae		1		1

Group G, 2 *Streptococcus mitis*, 2 *Streptococcus* 'milleri', 3 *Streptococcus sanguis*, 1 *Streptococcus oralis*, 1 *Streptococcus mitior*, 1 *Streptococcus bovis* species, 1 Streptococcus 'viridans'.

Gram negative: 1 *Campylobacter jejuni* subspecies *jejuni* (4 year old from Northern Territory), 2 *Campylobacter jejuni* subspecies *doylei* (both one year old, Nothern Territory), 1 *Haemophilus influenzae* type b (septic arthritis in an 8 month old male, Western Australia), 1 *Salmonella* Typhi type A (27 year old male in Western Australia), 6 *Acinetobacter* species, 1 *Citrobacter diversus*, 1 *Enterobacter aerogenes*, 3 *Klebsiella oxytoca*, 3 *Klebsiella species*, 3 *Proteus mirabilis*, 1 *Proteus vulgaris*, 1 *Pseudomonas species*, 3 *Xanthomonas maltophilia*, 1 *Serratia marcescens*, 1 *Morganella morganii*.

Anaerobes: 3 *Bacteroides fragilis*, 1 *Bacteroides* species, 1 *Clostridium perfringens*.

Fungi: 1 *Candida albicans*, 1 *Candida* species.

Most reports were for patients over the age of 54 years (Figure 5).

CSF isolates and/or meningitis reports

There were 3 reports of CSF isolates and/or meningitis (Table 5).

Isolates from sites other than blood or CSF

Joint fluid: 5 *Staphylococcus aureus*, 1 *Streptococcus pneumoniae* (10 month old male).

Peritoneal dialysate: 1 *Staphylococcus aureus*, 1 coagulase negative *Staphylococcus*.

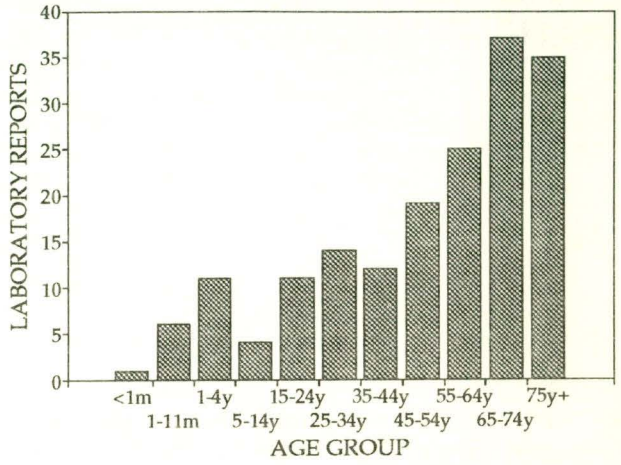
Other: 1 *Salmonella* Orion (paraspinal asbcess in a 25 year old woman originally from Tonga, no recent travel), 2 *Escherichia coli*, 1 *Staphylococcus aureus*, 1 *Streptococcus* 'milleri', 1 *Staphylococcus epidermidis*.

National Notifiable Diseases Surveillance System, 1 May to 14 May 1994

There were 1714 notifications received in the period (Tables 6, 7 and 8 and Figure 9).

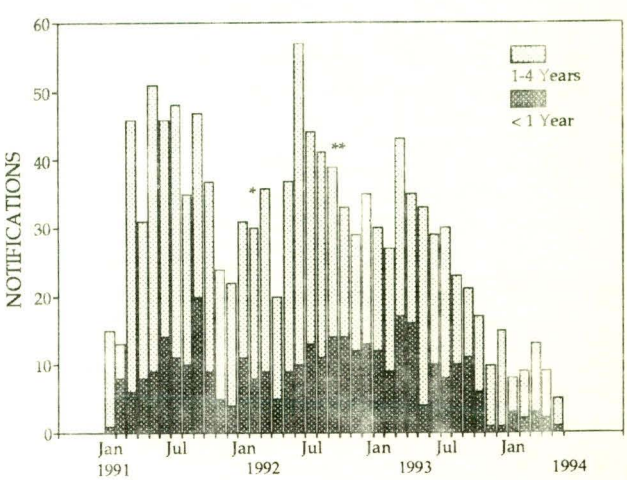
- One hundred and sixty-nine notifications of **Ross River virus infection** were received; 90 cases were male and 79 cases were female. Recorded ages ranged between the 5-9 and the 80-84 years age groups. Seventy-eight per cent of the cases were resident in Queensland. Recorded onset dates were March (20), April (142), and May (7).

Figure 5. LabDOSS reports of blood isolates, by age group



- Eighty-eight cases of **gonococcal infection** were reported; 61 cases were male, 26 cases were female, and the sex of one case was unrecorded. The cases were aged from the 15-19 to the 65-69 years age groups.
- There were 7 cases of ***Haemophilus influenzae* type b infection** notified.(Figure 6) Four of the cases were male and 3 were female. Five cases were in the 0-4 years age group and 2 cases were in the 5-9 years age group. Recorded onset dates were April (4) and May (3).
- Fifty-eight cases of **hepatitis A** were reported; 35 cases were male and 23 cases were female. Recorded ages ranged between the 0-4 to the 70-74 years age groups.
- There were 77 notifications of **hepatitis B** received in the period. In the States that report incident cases only, 8 cases were male, 11 cases were female, and sex was unrecorded for one case. The incident cases

Figure 6. *Haemophilus influenzae* type b infection notifications by age and month of onset, January 1991 to May 1994



ranged in age from the 5-9 to the 50-54 years age group.

- A single case of **hydatid infection** was reported for a female in the 10-14 year age group.
- Notifications of **legionellosis** for the last 2 months show the seasonal peak that has been documented in autumn of previous years (Figure 7) . An unusual peak of notifications occurred in November 1993. There were seven cases notified in the current reporting period. All cases were male and recorded ages ranged from the 30-34 years to the 80-84 years age group. Recorded onset dates were March (one), April (4) and May (2).
- A single case of **leprosy** was notified for a male in the 35-39 years age group. The case was resident in Victoria.
- Two cases of **leptospirosis** were notified for the period. One case was male and the sex of the remaining case was unrecorded. The cases were in the 20-24 years age group and the 25-29 years age group respectively. Recorded onset dates were in May.
- A single case of **listeriosis** was notified for a male resident in Victoria.
- There were 49 cases of **malaria** reported; 40 cases were male and 9 cases were female. Recorded ages ranged from the 5-9 to the 60-64 years age group. Onset dates were January (15), February (11), March (10), April (12), and May (one).
- Twenty-nine cases of **measles** were reported; 10 cases were male and 19 cases were female. Recorded ages ranged between the 0-4 to the 45-49 years age group, with a mean age of 12.2 years. There were 5 apparent clusters with 2 or more cases in the same postcode area. Apparent clusters were in New South Wales (one), Queensland (2), Western Australia (one) and the Northern Territory (one).
- There were 10 cases of **meningococcal infection** reported. Seven cases were male and 3 cases were female. Recorded ages ranged from the 0-4 to the 55-59 years age group with 7 cases in the 0-4 years age group. The high proportion of cases in the 0-4 years age group is similiar to that found in other periods (Figure 8). Recorded onset dates were April (4) and May (4). Onset date was not recorded for two cases. There were no apparent clusters.
- The **pertussis** epidemic continues with 139 cases reported in the period. Fifty-one cases were male, 85 were female, and sex was unrecorded for 3 cases. Cases were aged between the 0-4 and the 80-84 year age groups, with 20 cases occurring in the 0-4 year age group.
- Fourteen cases of **Q fever** were reported; 11 case were male and 3 cases were female. Recorded ages were between the 10-14 and the 60-64 years age groups.
- There were 27 notifications of **rubella** received. Ten cases were male and seventeen cases were female. Recorded ages ranged from the 0-4 to the 65-69 year age groups, with 9 cases occurring in females in the 15-44 years age group. The mean age of cases was 18.2 years.
- Fifty-nine notifications of **syphilis** were received; 37 cases were male, 20 cases were female, and sex was unrecorded for 2 cases. Recorded ages ranged from the 0-4 to the 70-74 years age group, with one case reported for a male aged less than one year.
- Twenty-six cases of **tuberculosis** were reported; 14 cases were male and 12 cases were female. Recorded ages were between the 0-4 and the 80-84 years age group. Onset dates were August (one), September (one), February (one), March (7), April (10), and May (6).
- Two cases of **typhoid** were notified; one case was male and one case was female. Recorded ages were in the 25-29 and the 30-34 years age groups. Both onset dates were in April.

Figure 7. Notifications of legionellosis, January 1991 to May 1994, by month of onset

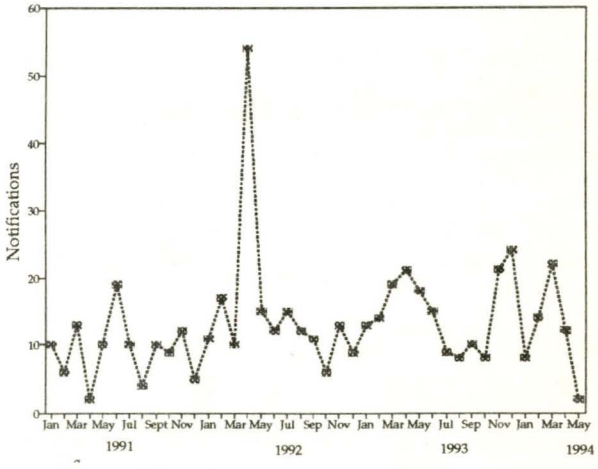


Figure 8. Meningococcal infection notifications for persons under 20 years, by age group and month of onset, January 1991 to May 1994

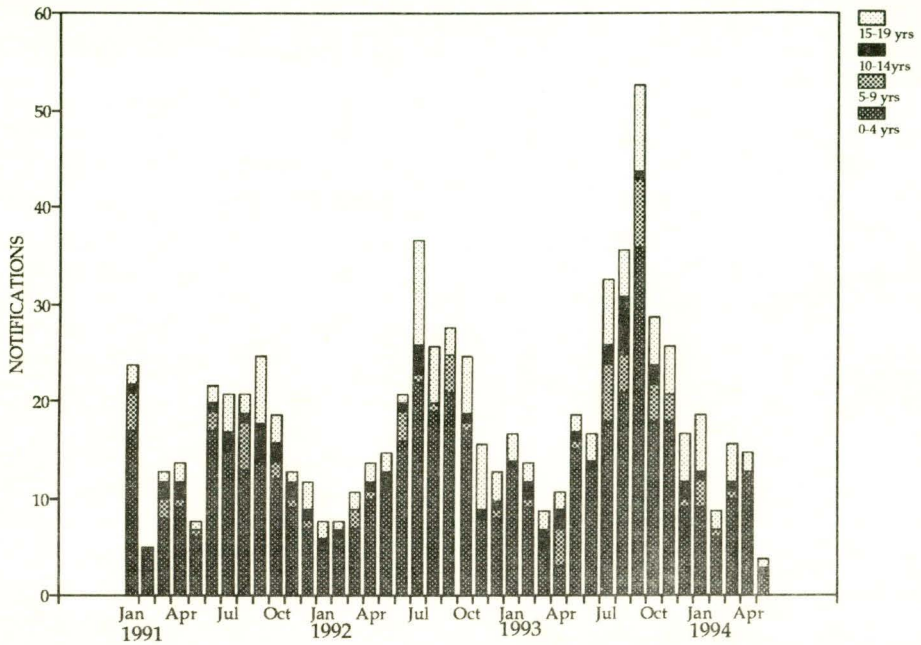
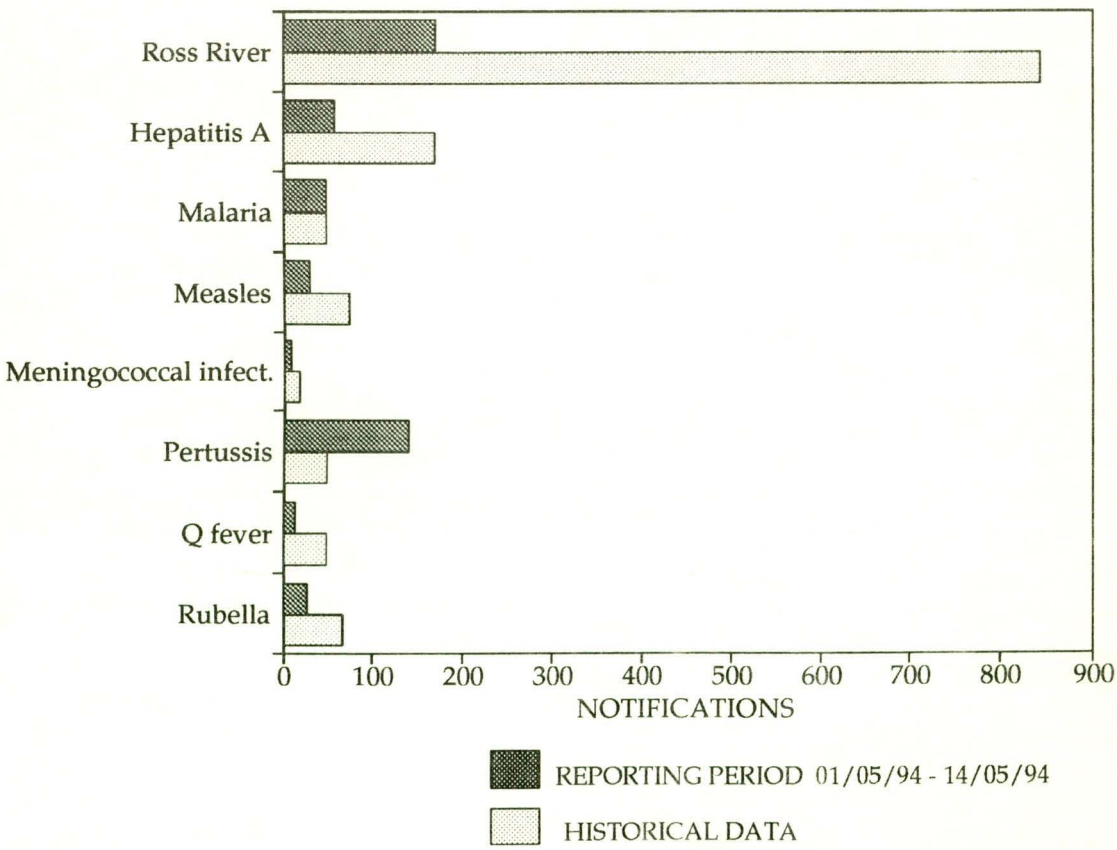


Figure 9. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



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 1 to14 May 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	2	20	12
Haemophilus influenzae b infection	0	2	0	1	1	0	2	1	7	17	71	175
Measles	1	7	1	12	0	1	3	4	29	52	1092	473
Mumps	0	0	NN	NN	0	NN	0	0	0	0	3	0
Pertussis	0	35	0	37	32	0	27	8	139	59	1802	578
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[2]	1	2	2	9	0	0	7	6	27	119	584	1216
Tetanus	0	0	0	NN	0	0	0	0	0	0	4	3

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 1 to 14 May 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	19	3	131	2	NN	3	11	169	324	2924	3970
Dengue	0	-	0	0	-	NN	0	NN	0	25	11	100
NEC[3]	0	2	1	9	0	1	0	0	13	22	286	274
Campylobacteriosis[4]	13	-	6	62	67	9	112	37	306	315	3555	3052
Chlamydial infection (NEC)[5]	1	NN	4	54	38	10	37	27	171	352	2320	2530
Donovanosis	0	NN	0	1	NN	NN	0	1	2	2	36	19
Gonococcal infection[6]	0	9	7	29	8	0	2	33	88	139	1114	1192
Hepatitis A	0	18	0	22	1	0	5	12	58	92	680	763
Hepatitis B[7]	12	4	1	21	2	1	11	1	53	100	619	912
Hepatitis C	18	1	1	42	0	4	122	73	261	258	3180	2217
Hepatitis (NEC)	0	0	0	0	0	0	1	NN	1	3	17	32
Legionellosis	0	0	0	1	1	0	4	1	7	10	74	70
Leptospirosis	0	0	0	0	0	0	2	0	2	5	71	73
Listeriosis	0	0	NN	0	0	0	1	0	1	1	13	19
Malaria	0	43	0	0	1	0	5	0	49	8	250	261
Meningococcal infection	0	4	0	1	1	1	2	1	10	8	101	81
Ornithosis	0	NN	0	0	0	1	0	0	1	3	38	37
Q fever	0	7	0	7	0	0	0	0	14	44	194	288
Salmonellosis (NEC)	3	35	9	46	15	4	34	33	179	232	2633	2174
Shigellosis[4]	0	-	2	4	5	0	5	14	30	20	349	358
Syphilis	0	37	3	9	3	0	4	3	59	108	779	869
Tuberculosis	1	8	2	3	3	1	7	1	26	38	324	308
Typhoid[8]	0	1	0	0	0	0	0	1	2	2	16	23
Yersiniosis (NEC)[4]	0	-	0	5	2	0	0	1	8	22	193	184

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. Acute cases only are reported by NSW, NT, SA, Tas and WA.
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 1 to 14 May 1994

DISEASES	Total this period	Reporting States or Territories	Year to date 1994
Botulism	0		0
Brucellosis	0		4
Chancroid	0		0
Cholera	0		2
Hydatid infection	1	Vic	17
Leprosy	1	Vic	3
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 5 to 18 May 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		10			1		12	5.8	514
Mumps virus							1		1	1.7	33
Rubella virus				7				4	11	11.0	270
HEPATITIS VIRUSES											
Hepatitis A virus		2		5			1	2	10	14.5	136
Hepatitis B virus	7	16		17		1	7	31	79	80.8	1,013
Hepatitis C virus	18	56	2	31		5	6	78	196	115.3	2,229
ARBOVIRUSES											
Ross River virus		6	2	90			1	8	107	151.2	1,247
Barmah Forest virus		1		9					10	18.2	131
Dengue not typed			1						1	4.7	16
ADENOVIRUSES											
Adenovirus type 1						1			1	1.8	32
Adenovirus type 3							2		2	5.2	20
Adenovirus type 8							3		3	.8	58
Adenovirus not typed/pending		2		5			13	2	22	37.2	546
HERPES VIRUSES											
Herpes simplex virus type 1		5		72		4	34	40	155	132.7	2,000
Herpes simplex virus type 2	1	3		78	1		40	43	166	166.7	2,204
Herpes simplex not typed/pending	14	7		1				7	29	26.8	294
Cytomegalovirus	2	8		32		1	18	8	69	61.5	664
Varicella-zoster virus	1	4		18			7	10	40	31.2	438
Epstein-Barr virus	1	4		13		2	12	6	38	54.0	665
Herpes virus group - not typed							1		1	1.0	9
OTHER DNA VIRUSES											
Molluscum contagiosum							1		1	.5	2

Table 9. Virology and serology laboratory reports by State or Territory[1] for the reporting period 5 to 18 May 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			
PICORNA VIRUS FAMILY											
Coxsackievirus A16							1		1	.5	27
Coxsackievirus B5							1		1	1.0	10
Echovirus type 6		1					1		2	6.5	22
Echovirus type 11		2							2	2.2	32
Echovirus type 22							1		1	.8	4
Echovirus type 30	1	3					8		12	1.2	206
Poliovirus not typed/pending		5							5	1.7	16
Rhinovirus (all types)		3		3		1	19	6	32	22.7	389
Enterovirus not typed/pending		10		28			7	6	51	27.8	620
ORTHO/PARAMYXOVIRUSES											
Influenza A virus							1	2	3	25.3	144
Influenza B virus			1						1	6.0	90
Parainfluenza virus type 1				26			25	3	54	14.8	196
Parainfluenza virus type 2							3	1	4	5.5	31
Parainfluenza virus type 3		2					5	1	8	15.2	100
Parainfluenza virus typing pending							8		8	4.2	22
Respiratory syncytial virus		33		24			5	27	89	117.8	399
OTHER RNA VIRUSES											
HIV-1				2				4	6	1.5	44
Rotavirus		6				2	11	20	39	35.2	384
Norwalk agent							2		2	.7	7
Coronavirus		1							1	.2	2
Small virus (like) particle								1	1	2.5	7
OTHER											
Chlamydia trachomatis not typed	7	3		39				36	85	109.7	1,138
Mycoplasma pneumoniae		2	1	16			11		30	45.2	458
Coxiella burnetii (Q fever)		1		3			2		6	16.2	150
Streptococcus group A		1		7					8	5.0	111
Yersinia enterocolitica		2							2	.2	4
Bordetella pertussis		2		6			9	9	26	2.5	258
Cryptococcus species		1							1	.2	7
Leptospira species		1							1	.3	11
Treponema pallidum		26							26	12.3	154
Toxoplasma gondii		5					1		6	1.2	17
TOTAL	52	225	7	542	1	17	269	355	1,468	1,408.3	17,581

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 5 to 18 May 1994

	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA											
Measles virus						3				9	12
Mumps virus										1	1
Rubella virus						3		3		5	11
HEPATITIS VIRUSES											
Hepatitis A virus					5					5	10
Hepatitis B virus					11					68	79
Hepatitis C virus				1	13			1		181	196
ARBOVIRUSES											
Ross River virus						8		45		54	107
Barmah Forest virus						2		5		3	10
Dengue not typed										1	1
ADENOVIRUSES											
Adenovirus type 1			1								1
Adenovirus type 3			2								2
Adenovirus type 8							3				3
Adenovirus not typed/pending		1	7	9			2			3	22
HERPES VIRUSES											
Herpes simplex virus type 1			5			99	9		26	16	155
Herpes simplex virus type 2				1		48			105	12	166
Herpes simplex not typed/pending			2			7			7	13	29
Cytomegalovirus			24	1	2		1			41	69
Varicella-zoster virus						31				9	40
Epstein-Barr virus			4		1	1				32	38
Herpes virus group - not typed										1	1
OTHER DNA VIRUSES											
Molluscum contagiosum						1					1
PICORNA VIRUS FAMILY											
Coxsackievirus A16										1	1
Coxsackievirus B5	1										1
Echovirus type 6	1									1	2
Echovirus type 11										2	2
Echovirus type 22			1								1
Echovirus type 30	8									4	12
Poliovirus not typed/pending										5	5
Rhinovirus (all types)			27							5	32
Enterovirus not typed/pending	3	7	15	6			1			19	51

Table 10. Virology and serology laboratory reports by clinical information for the reporting period 5 to 18 May 1994, continued

	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ORTHO/PARAMYXOVIRUSES											
Influenza A virus			2							1	3
Influenza B virus			1								1
Parainfluenza virus type 1			53							1	54
Parainfluenza virus type 2			4								4
Parainfluenza virus type 3			6							2	8
Parainfluenza virus typing pending			8								8
Respiratory syncytial virus			81							8	89
OTHER RNA VIRUSES											
HIV-1										6	6
Rotavirus				36						3	39
Norwalk agent				2							2
Coronavirus				1							1
Small virus (like) particle				1							1
OTHER											
Chlamydia trachomatis not typed							1		65	19	85
Mycoplasma pneumoniae			23							7	30
Coxiella burnetii (Q fever)					2					4	6
Streptococcus group A			2							6	8
Yersinia enterocolitica										2	2
Bordetella pertussis			23							3	26
Cryptococcus species										1	1
Leptospira species										1	1
Treponema pallidum										26	26
Toxoplasma gondii										6	6
TOTAL	13	8	291	58	34	203	17	54	203	587	1468

Table 11. Virology and serology laboratory reports by contributing laboratories for the reporting period 5 to 18 May 1994

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	57
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	6
	Prince Henry/Prince of Wales Hospitals, Sydney	112
	Royal Alexandra Hospital for Children, Camperdown	30
	South West Area Pathology Service, Liverpool	48
Queensland	Nambour Hospital	5
	Queensland Medical Laboratory, West End	415
	State Health Laboratory, Brisbane	147
Tasmania	Northern Tasmanian Pathology Service, Launceston	6
	Royal Hobart Hospital, Hobart	11
Victoria	Commonwealth Serum Laboratories, Melbourne	1
	Royal Children's Hospital, Melbourne	123
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	146
Western Australia	Princess Margaret Hospital, Perth	76
	State Health Laboratory Services, Perth	285
TOTAL		1468