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COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

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

HAEMOPHILUS PARAINFLUENZAE URINARY TRACT INFECTION

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Introduction

Case reports of *Haemophilus parainfluenzae* urinary tract infection (UTI) do not abound in the medical literature. The first case appears to have been described in the United States in 1980[1], the second in Sweden in 1981[2] and the third report (of two cases) was made by an Australian microbiologist, Dr C Golledge, in 1987[3]. A fourth report, from England, was described in 1990[4]. All the authors have stressed, and my own experience has confirmed, that diagnostic alertness is required to recognise these infections which are caused by an organism that grows poorly, if at all, on many of the bacteriological media conventionally used for urine culture.

I have been intrigued by the occurrence this year of two cases in Bundaberg (population 44,000) and of one case in Toowoomba (population 85,000), Queensland. A fourth case occurred in the practice in Brisbane in 1992.

Methods

H. parainfluenzae was identified by microscopic features, by cultural characteristics, by V factor dependence and a positive porphyrin test (δ aminolaevulinic acid substrate). Biotyping utilised indole, urease and ornithine decarboxlylase reactions[5]. Antibiotic susceptibility testing was done by the method of the National Committee for Clinical Laboratory Standards[6].

Case 1

A 44 year old Bundaberg man with syringomyelia and a previous history of resection of an intracranial chordoma, has significant neurological problems. Despite being confined to a wheelchair he has independent bladder control not requiring catheterisation. In March 1994, a few weeks after starting a heterosexual relationship, he suffered an acute episode of dysuria with frequency and urgency of micturition. There was no past history of UTI. A mid stream urine showed pyuria (leukocytes $10^3 \times 10^6$/L; normal <10 $\times 10^6$/L), significant bacteriuria (>10^8 CFU/L) with a pure growth of β lactamase negative *H. parainfluenzae* biotype II. A Gram stain of the urine had revealed abundant short slender Gram negative rods. Symptomatic relief and bacteriological cure followed five days of oral amoxycillin.

Orogenital transmission from the patient's sex partner was considered a possibility but *H. parainfluenzae* biotype II was not isolated from a throat swab of the partner.

Case 2

A 54 year old Toowoomba male, paraplegic since a car accident 20 years previously, had an indwelling urinary catheter with constant drainage. He had asymptomatic pyuria and bacteriuria with *Pseudomonas aeruginosa*. Antibiotics were not being given for this 'inevitable' bacteriuria profile.

He was not sexually actice and his renal function was assessed as normal. His medical history included two bladder neck resections and the presence of renal cysts. There was no history of urinary tract calculi.

In late March 1994 an episode of malaise and bladder discomfort, which were unusual symptoms for him, prompted urine examination. This disclosed a heavy growth (>10^8 CFU/L) of β lactamase negative *H. parainfluenzae* biotype I, as a new and additional pathogen. Symptomatic relief and eradication of *H. parainfluenzae* were associated with a course of amoxycillin.

Case 3

A 62 year old Bundaberg woman had a long history of periodic dysuria and frequency of micturation, the precise cause of which had defied extensive specialist urological investigation. The history suggested recurrent UTI. There was no history of urinary calculi. In May 1994 an acute episode of bladder pain and dysuria led to a urine examination which revealed pyuria (>$10^3 \times 10^6$/L), abundant small Gram negative rods, bacteriuria (>10^8 CFU/L) with a pure growth of β lactamase negative *H. parainfluenzae* biotype II. Symptomatic relief was associated with a 10 day course of oral amoxycillin and trimethoprim. There was no bacteriological follow up.

Case 4

In December 1992 a 79 year old diabetic Brisbane woman had an episode of acute dysuria with urinary frequency and incontinence. Urine examination showed modest pyuria (280 x 10^6/L), and bacteriuria (>10^8 CFU/L) with β lactamase negative *H. parainfluenzae*. Investigations for calculi were negative. Symptomatic cure was associated with a course of cotrimoxazole. There was no bacteriological follow up. Biotyping was not done.

Table. Features of *H. parainfluenzae* UTI reported in the literature and in this case series

Cases	Sex/age (years)	Pyuria	Biotype	Clinical course	Past history of UTI	Possible compilating host factors
Baylock and Baber 1980	F/38	Yes	II	Acute episode cured with cotrimoxazole	Yes	Diabetes mellitus, resected breast carcinoma, on chemotherapy
Back et al 1981	F/53	No	NR[1]	Acute spisode cured with amoxycillin	Yes	Pyelonephritic renal failure
Golledge 1987 Case 1	F/29	NR[1]	NR[1]	NR[1]	No	NR[1]
Golledge 1987 Case 2	F/42	NR[1]	NR[1]	Acute episode cured with amoxycillin	No	Increases sexual activity and possible orogenital transmission
Morgan and Hamilton-Miller 1990	M/69	Yes	NR[1]	Acute episode after lithotripsy for renal calculus, infection subsided	NR[1]	Renal calculus
This series Case 1	M/44	Yes	II	Acute episode cured with amoxycillin	No	Neurological disability, increased sexual activity and possible orogential transmission
This series Case 2	M/54	Yes	I	Acute episode complicating catheter associated UTI cured with amoxycillin	Yes	Paraplegic with indwelling urinary catheter
This series Case 3	F/62	Yes	II	Acute episode cured with amoxycillin and trimethoprim	Yes	None known
This series Case 4	F/79	Yes	NR[1]	Acute episode cured with cotrimoxazole	No	Diabetes mellitus

1. NR not recorded.

Comment

The salient features of the previously reported cases of *H. parainfluenzae* UTI and the cases reported in this series are summarised in the Table. The biotypes currently implicated (I, II) are all urease positive and this raises the issue of association with urinary calculi. Such an association has been the subject of a case report[4] and an anecdotal account[7]. However, in other cases including this series there was no evidence of calculi. Indeed most episodes to date have been acute ones with readily obtained remission.

H. parainfluenzae is an example of a fastidious and unconventional urinary tract pathogen. Current practice exhorts that more attention be paid to these types of infections[8] which may masquerade as sterile pyuria. Diagnosis of such infections is critically dependent on the knowledge, experience and alertness of the bench bacteriologist.

Cases of alleged sterile pyuria should have, in the first instance and at the very least, a microscopic check of their urine for visible bacteria and/or a Gram stain.

Acknowledgments

I acknowledge the perspicacity of the scientists who recognised the unusual nature of these cases: Allen Tripp (Case 1), Anne de Groot (Case 2) and Peter Bielenberg (Case 3). I thank my colleague Dr M Harrison for drawing my attention to Case 4. I thank Dr Denise Powell, Dr Peter Beeston, Dr Les Stark, and Dr Hung Lee Ho, general practitioners, for their courtesy and patience in providing clinical details.

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POLIOMYELITIS IN THE WORLD, 1993

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The initiative to eradicate poliomyelitis from the world by the year 2000 was launched by a resolution of the World Health Assembly in May 1988. The resolution specified that eradication was to be achieved in a manner that strengthened the Expanded Programme on Immunization (EPI) and promoted primary health care (PHC). Following apparent success in the Region of the Americas, a revised Global Plan of Action was endorsed by the World Health Assembly in 1993. The plan defined three basic strategies recommended by the World Health Organization (WHO) to eradiate wild polioviruses: maintaining high coverage with oral polio vaccines (OPV); improving surveillance systems to detect and investigate all possible poliomyelitis cases; and conducting supplementary immunisation to control the disease in high-risk populations. This report documents the progress achieved towards poliomyelitis eradication in 1993.

Immunisation coverage

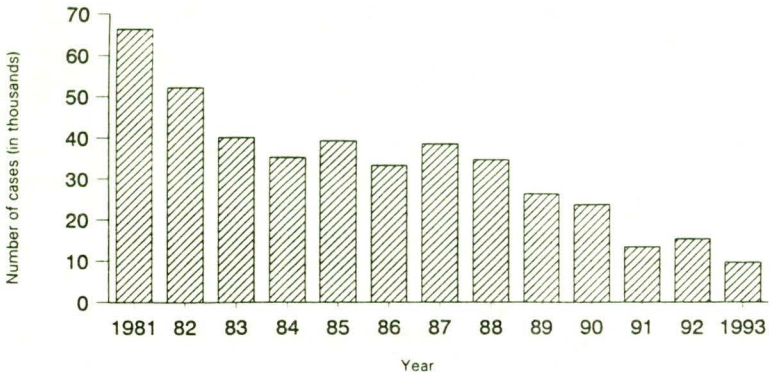
The estimated global immunisation coverage with three doses of oral live poliovirus vaccine (OPV3) was 81% in 1993. Immunisation coverage increased between 1984 and 1990, but has declined since 1990, when 85% coverage was achieved. Reasons for this decline include decreasing support for immunisation both by donors and countries. Immunisation coverage has fallen most severely in those countries which are most dependant on donor support to achieve their immunisation goals. Although declining imunisation coverage is a cause for general PHC concern, the trend has specific implications for the poliomyelitis eradication initiative, in that it results in a rapidly enlarging pool of unprotected children and increases the potential for future epidemics of poliomyelitis.

Incidence of poliomyelitis

As a consequence of high immunisation coverage and specific poliomyelitis eradication activities, the global incidence of poliomyelitis has fallen dramatically since the initiation of the poliomyelitis eradication initiative in 1988 (Figure). As of 20 April 1994, a total of 9665 cases of poliomyelitis had been reported for 1993. This represents a 72% decrease from the 34,762 cases reported in 1988, and a 37% decrease from the 15,261 cases reported in 1992.

Circulation of wild polioviruses is restricted to fewer and fewer countries each year. The number of countries reporting zero cases of poliomyelitis has been steadily increasing each year, reaching 145 in 1993. This represents an increase of 40 from 1988 and of 13 from 1992. Because surveillance systems are imperfect, countries reporting zero cases for one year may not be polio-free. The number of countries which have reported zero cases for three consecutive years may provide a more realistic estimate of the countries which are truly free of the disease. There has been a linear increase in the number of countries reporting zero cases for three years; 111 countries in 1993.

Figure. Reported global incidence of poliomyelitis, 1984 to 1993, by year



The process of developing a highly efficient surveillance system capable of detecting all cases of poliomyelitis is one of the critical steps leading to eradication. Currently, the efficiency of surveillance is highest in countries which low levels of poliomyelitis and is low in countries with high levels of disease. Thus, most cases of paralytic poliomyelitis are still not reported. WHO's current estimate is that 110,000 cases of poliomyelitis actually occurred in 1993. Reporting efficiency is, therefore, less than 10%.

Regional incidence

African Region

A total of 1,428 cases of poliomyelitis have been reported from 38 of the 47 countries and areas in the Region compared with 1,667 cases in 1992. At the same time, reporting of cases to the Regional Office from some countries remains incomplete and late. Namibia experienced an outbreak of poliomyelitis with 54 suspected and 27 laboratory-confirmed cases of type 1 poliomyelitis, the last case occurring in January 1994. Retrospective hospital record reviews documented ten unreported suspected cases in the period 1989-1993, prior to the outbreak.

Region of the Americas

The Region of the Americas has reported zero cases of paralytic poliomyelitis since September 1991. Wild poliomyelitis type 3, imported from the Netherlands, was detected in Canada in a religious community which refused immunisation. There were no paralytic cases. The virus apparently failed to spread to other susceptible religious communities in the United States and Canada.

Eastern Mediterranean Region

The Eastern Mediterranean Region reported 2404 cases of paralytic poliomyelitis in 1993, a 26% increase from the 1901 cases reported in 1992. Seventy-five per cent of the cases were reported by Pakistan which experienced large outbreaks in all four major provinces. Pakistan reported 1803 cases, a 72% increase over the 1046 cases reported in 1992. Sudan reported 243 poliomyelitis cases in 1993, that is 10% of the regional total. This type 1 outbreak occurred largely as a result of falling immunisation coverage. Egypt reported 150 cases of poliomyelitis (6% of the regional total), and a 74% reduction from the 584 cases recorded in 1992.

European Region

The European Region reported 196 cases of poliomyelitis in 1993. A total of 167 cases (85%) were reported from nine of the newly independent states of the former USSR. Azerbaijan and Uzbekistan reported outbreaks of 72 and 68 cases respectively. Both of these outbreaks resulted from vaccine shortages which developed following independence. The consequences of the inadequate vaccine supply for the newly independent states represent a continuing threat to the Region.

South-East Asia Region

The number of poliomyelitis cases reported from the South-East Asia Region declined by 54% in 1993: 4423 reported cases in 1993 compared with 9600 cases in 1992. This decline occurred primarily as a result of a 56% decline in India, which reported 4077 cases in 1993 compared with 9203 cases in 1992. Poliomyelitis cases remained at stable levels in other countries of the Region, with the exception of Indonesia which saw an 85% decline in reported cases, from 108 to 16.

Western Pacific Region

The Western Pacific Region recorded a 37% decline in reported cases of poliomyelitis: 1214 cases were recorded in 1993 and 1912 in 1992. Only six countries in the Region have reported cases in the past three years. Three countries, Cambodia, China and Vietnam, reported 99% of the cases in 1993. As a consequence of provincial immunisation campaigns beginning in 1989, the number of poliomyelitis cases in China fell to 653 in 1993. This represents an 87% reduction from the 5065 cases reported in 1990 and a 45% reduction from the 1191 cases reported in 1992.

Surveillance assessments

Since November 1992, the WHO African and Eastern Mediterranean Regions have introduced a new tool, the surveillance assessment, to advance the work of the EPI. By the end of 1993, assessments had been conducted in a total of 18 countries - primarily those countries in North Africa, in the Arabian Peninsula, and in Southern and Eastern Africa which had been reporting low levels of poliomyelitis. Surveillance systems were reviewed to determine the sensitivity of the system in detecting cases of poliomyelitis and the capacity of the system to confirm the diagnosis. In general, surveillance of acute flaccid paralysis (AFP) had not been implemented and existing surveillance systems were not sufficiently sensitive to detect any low level transmission that might be occurring. The assessment teams found, however, that few, if any, cases of poliomyelitis were actually occurring in these countries. Although poliomyelitis eradication could be quickly achieved in each of these countries, full implementation of AFP surveillance was recognised as the key element for documenting the occurrence of the few cases of poliomyelitis that might remain, targeting supplementary immunisatioin and providing the evidence needed for eventual certification.

Indicators of progress

In view of the demonstrated effectiveness of WHO's recommended strategies, the absolute number of reported cases is no longer the most important indicator of progress for the poliomyelitis eradication initiative. The key indicators have become the geographical distribution of the disease and the numbers and geographical location of countries conducting the recommended strategies. The two principal strategies to be monitored are AFP surveillance and supplementary immunisation campaigns (national immunisation days). The number of countries conducting AFP surveillance has been increasing steadily, and now stands at 60.

Laboratory network

Laboratory networks are fully functional in the Regions of the Americas and of the Western Pacific; they are at various stages of development in other Regions. The global network now consists of five specialised laboratories, 12 regional reference laboratories and 48

national laboratories. Staff from the regional reference laboratories have been trained in intratypic differentiation. Most national laboratories have been certified following staff training, provision of reagents and proficiency testing. Additional equipment and training is still needed for some national laboratories. However, laboratory networks cannot be fully functional until countries develop their surveillance systems and begin case investigation with collection of stool specimens.

Vaccine supply

The 1992 Global Plan of Action called for 10,000 million doses of OPV for routine and supplementary immunization for the period 1992 to the year 2000. The capacity to manufacture this quantity of vaccine currently exists, but the funds to purchase the entire quantity have not yet been identified. Several approaches are being used to maximise utilisation of currently available funds. Alternative approaches for vaccine purchase are being employed to reduce the cost of vaccine procured. These include purchase from local manufacturers for in-country use and production sharing. Lower age cut-offs for supplementary immunisation activities are being applied in large countries to reduce the amount of vaccine required. The progress in China has been achieved by vaccinating children less than four years old, instead of the more usual target of children less than five years old. In routine immunization clinics, thermosensitive vaccine vial indicators could be used to decrease vaccine wastage which may exceed 50%. Each of these compoments has reduced the total cost of vaccine needed for the initiative. Despite these savings, additional funds for vaccine purchase still need to be raised, from both governments and the private sector.

Improved vaccines

Research to develop more thermostable OPV continues. While the goal of stability for seven days at 45°C has not been met, stability for seven days at 37°C has nearly been achieved. Highly thermostable OPV will apparently significantly increase the cost of the vaccine. A compromise between cost and thermostability is being explored before the final vaccine formulation is recommended.

Conclusion

Now that the basis for the poliomyelitis eradication has been established, 1993 and 1994 will be years of acceleration for the global eradication initiative. Poliovirus is disappearing from several highly endemic countries. National immunisation days are being conducted in an increasing number of the remaining polio-endemic countries. AFP surveillance with laboratory confirmation is being implemented in an expanding group of countries with low levels of disease. This, in turn, allows 'mopping up' campaigns to eliminate the remaining reservoirs of infection. The same surveillance system will eventually provide the data needed to certify eradication. While success may seem inevitable, it is far from assured. Poliomyelitis is widespread on the Indian subcontinent, which contributes three of every four poliomyelitis cases reported in the world. Declining immunisation coverage presages epidemics even in low-incidence countries. The threat of importation looms over countries that are currently polio-free. If the political will is found to provide the personnel, vaccine and logistical support needed in future years, the world can look forward to the day when parents need no longer fear that their child will be affected forever by poliomyelitis.

CDI editorial comment

The last case of polio notified in Australia occurred in 1986. There were no other cases in the 1980s, and only 14 cases occurred in the 1970s.

Polio vaccine coverage was last estimated for Australia in the Australian Bureau of Statistics' 1989-90 National Health Survey. Overall, 72.1% of children aged 0 to 6 years were fully immunised against polio, 15.9% were partly immunised, 5.8% were not immunised and the immunisation status was not known for 6.1%.

Australia is included in the Western Pacific Region of the WHO, which has undertaken to achieve eradication of poliomyelitis by 1995. The laboratory network for the region includes two Regional Reference Laboratories, the Victorian Infectious Diseases Reference Laboratory at Fairfield Hospital, Melbourne, and the National Institute of Health in Tokyo, Japan. The Melbourne laboratory investigates poliovirus isolates associated with cases of acute flaccid paralysis to determine whether or not they are wild type polio strains.

Travellers to areas of the world where poliomyelitis still occurs and whose last dose of polio vaccine was more then ten years previously, are advised to have a booster dose of vaccine.

NATIONAL *SALMONELLA* SURVEILLANCE SCHEME ANNUAL REPORT 1993

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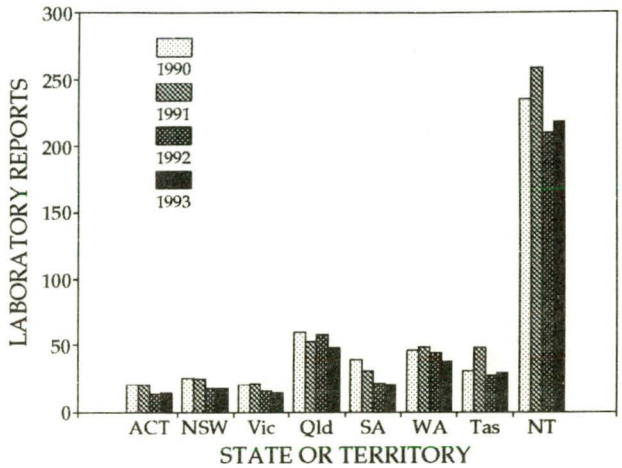
Summary

There were 5395 reports of salmonellas and 4587 Australian acquired cases reported to the National *Salmonella* Surveillance Scheme (NSSS) for 1993, an increase in cases of only 3% over the total for 1992 (4451) (Table 1). The case rate of *Salmonella* infection was higher than for the previous year in all States and Territories except Victoria and Queensland but the differences were slight (Figure, Table 2). (Rates have been calculated using the Australian Bureau of Statistics' 1986 Census data for reports to 1992 and 1993 population estimates for 1993 reports.)

The number of cases of *Shigella* infection remained steady with 520 cases Australia-wide compared to 528 in 1992. There was a further drop in case rates in both the Northern Territory and Western Australia taking them to their lowest level since the NSSS began collecting records.

Figure. *Salmonella* reports per 100,000 population, 1990 to 1993, by State or Territory[1] and year



1. Rates based on the Australian Bureau of Statistics' 1986 Census data for reports to 1992, and 1993 population estimates for 1993 reports.

Table 1. Total reports received, 1993

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
Salmonella species	59	1188	838	1659	333	759	151	408	5395
Aeromonas species	0	4	30	10	1	0	2	0	47
Campylobacter species	0	0	232	7	1	0	0	0	240
E. coli (EPEC)	0	2	5	5	0	0	0	0	12
Plesiomonas species	0	0	6	0	0	0	0	0	6
Shigella species	4	86	97	108	63	194	1	89	642
Vibrio species	0	5	2	1	1	0	0	0	9
Yersinia species	0	49	25	145	3	1	0	2	225
Total	63	1334	1235	1935	402	954	154	499	6576

Table 2. Case rates per 100,000 for *Salmonella* infections acquired in Australia and total cases, 1985 to 1993, by State or Territory

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total cases
1993	17.2	18.9	15.7	56.4	22.1	44.8	30.9	235.7	4587
1992	13.2	17.3	16.0	57.7	21.1	44.1	27.0	209.9	4451
1991	20.4	24.8	21.4	53.3	30.5	48.8	47.4	258.3	5334
1990	20.0	25.0	20.0	59.6	39.5	46.3	30.7	235.1	5435
1989	32.1	24.4	26.8	55.6	35.1	49.8	37.4	268.6	5678
1988	17.6	19.6	18.0	62.6	25.8	53.0	25.4	226.6	5298
1987	21.4	16.0	12.3	52.4	23.2	50.2	28.2	236.8	4462
1986	19.2	17.1	12.7	50.4	25.6	52.9	13.3	264.8	4342
1985	55.3	21.4	12.0	43.1	28.6	59.7	18.5	311.9	4743

There were eight *Salmonella* outbreaks and sixteen smaller incidents associated with *Salmonella* infections and four outbreaks or incidents involving *Shigella* infections. There was also an outbreak of *Campylobacter* affecting 43 children at a school camp in Victoria in February.

The largest of the *Salmonella* outbreaks was an outbreak of *S.* Newport in and around Perth between March and August (99 cases) and there were further outbreaks of this serovar in October and November in New South Wales (36 cases) and Queensland (8 cases). An increase in reports of *S.* Hadar from Sydney between January and May (38 cases) followed on from the 27 cases which were reported between October and December 1992.

The *Sh. boydii* 1 outbreak from the north-west of Western Australia continued until mid-March with a further 23 cases, following on from the 26 cases reported between September and December 1992. Sporadic cases were also reported from isolated communities in South Australia, central Australia and north Queensland.

An incident of food poisoning associated with the consumption of fish in the Solomon Islands in April was caused by *S.* Weltevreden.

S. Typhimurium headed the list of the top ten *Salmonella* serovars for 1993 accounting for 29% of Australian acquired cases (30% in 1992). There were 1339 cases of *S.* Typhimurium Australia-wide compared with 1553 for 1992, a decrease of 14%. The two most commonly reported phage types of *S.* Typhimurium were 9 and 135. *S.* Newport was the only newcomer to the list of the top ten serovars for 1993 displacing *S.* Bovismorbificans. The order of the top three serovars (*S.* Typhimurium, *S.* Virchow and *S.* Saintpaul) also remained unchanged from 1992. These three serovars accounted for 41% of all Australian acquired cases (43% in 1992).

S. Enteritidis ,with 68 cases (44 cases of phage type (PT) 4), was again the most common overseas acquired *Salmonella* in 1993 and is becoming more prevalent. It was acquired mostly by travellers to Asian countries (particularly Singapore, Hong Kong and Thailand), and also Europe (United Kingdom, Italy, Germany and Cyprus). *Sh. sonnei* biotype g was the most common overseas acquired *Shigella* with 26 cases acquired in Fiji, Bali and Thailand. In 1993 three cases of *Sh. sonnei* biotype g were reported as acquired on the Australian mainland, near Gove in the Northern Territory. Two cases (F/75, M/<1) were reported in September and a third (F/21) in November.

New *Salmonella* serovars reported to the NSSS during the year were *S.* Abortusovis (F/2 and F/5 sisters on a sheep property in rural New South Wales); *S.* Boecker (M/1 Queensland); *S.* Friedenau (M/42 Victoria ex India); *S.* Gnesta (no details, Victoria); *S.* Istanbul (M/35 New South Wales ex Malaysia, M/34 Western Australia ex 'tropics'); *S.* Kedougou (M/<1 Western Australia); *S.* Lagos (F/1 New South Wales ex overseas); *S.* Marseille (F/24 Western Australia) and *S.* Mishmarhaemek (F/37 Western Australia), both immigrants ex Ethiopia; and *S.* Yolo (M/25 Australian Capital Territory ex Egypt).

Rare serovars were *S.* Breukelen (F/36 New South Wales ex Queensland); *S.* Brisbane (M/4 Western Australia); *S.* Gaminara (F/2 Queensland); *S.* Jubilee (F/9 Northern Territory); *S.* Lindern (F/3 Queensland); *S.* Matopeni (F/73 Western Australia); *S.* Muenster (F/ Victoria); and *S.* Zehlendorf (F/<1 Victoria).

New records for the NSSS of phage types of *S.* Typhimurium were PT 181 (Western Australia 2) and PT 191 (Northern Territory 2). Neither of these were reported as having been acquired overseas. Uncommon Australian acquired phage types were PT 23 (Queensland), PT 53 (Northern Territory), PT 72 (Queensland), PT 86 (Queensland), PT 92 (South Australia), PT 125 (Victoria), PT 131 (New South Wales), PT 149 (South Australia ex Asia, ate raw pig's liver), PT 153 (Queensland) and PT 177 (New South Wales).

Thirteen cases of enteric pathogens were reported from HIV infected patients in 1993. This has been the average number of such cases reported since 1989. The most common infections have been *Sh. flexneri* 1b (nine cases), *Sh. flexneri* 3a (six cases), *C. jejuni* (six cases) and *Yersinia enterocolitica* O:5 Bio 1A (three cases). In addition, there have been 28 isolates of *Salmonella* of 10 different serovars. Sixteen were *S.* Typhimurium, of seven phage types.

There were 99 reports of *S.* Paratyphi B biovar Java in 1993. Of these, six were follow-up isolations and 15 were reported as acquired overseas leaving a total of 78 new infections assumed to have been acquired in Australia. Of the 45 cases of phage type Battersea (seven adults, 35 children, three not specified) 27 were from the Northern Territory and 16 were from outbreaks in Katherine and Elliott in September and October. There were 12 cases of phage type Dundee (all adults), nine of which were from Queensland. Of the overseas acquired infections, two cases each of phage types 3b var 3 and Dundee were acquired in Bali and one case of 3b var in each of Indonesia, Singapore and Thailand. One case of phage type Dundee was acquired in Vietnam.

Salmonella infections - case rates

The total number of cases acquired in Australia for 1993 was 4587. In addition, there were reports of 394 follow-ups, six isolations from migrants and refugees and 408 cases reported as acquired overseas by travellers. This latter figure represents an increase of 20% from 1992.

A total of 158 serovars was reported as acquired in Australia (Table 3). *S.* Typhimurium comprised 29% of the reports. There were 60 *S.* Typhimurium phage types reported and 10 *S.* Bovismorbificans phage types.

Table 3. *Salmonella* isolates acquired in Australia, by State or Territory

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
Cases	43	1024	630	1462	297	631	135	365	4587
Serovars	15	84	67	88	40	81	22	62	158
S. Typhimurium phage types	10	32	25	33	24	20	8	14	60
S. Typhimurium cases	15	410	367	178	145	141	58	25	1339
S. Typhimurium as % of total cases	35	40	58	12	49	22	43	7	29
S. Bovismorbificans phage types	1	8	2	6	3	2	0	1	10
S. Bovismorbificans cases	1	41	23	12	5	11	0	1	94
Typhoid cases[1]	1	24	17	3	0	4	1	1	51
Paratyphoid cases[1]	0	7	11	3	1	4	1	1	28
S. Paratyphi B by Java cases	2	10	3	15	2	11	1	33	77
S. subsp III (*S.* Arizonae) cases	1	6	3	28	2	1	0	1	42
Top ten as % of State or Territory total	72	72	79	67	82	66	86	55	62

1. These figures include overseas acquired infections. This is to avoid the assumption that all cases have been acquired in Australia when in fact the relevant patient details have not been provided.

Isolations from blood, urine and unusual sites

Bacteraemias, excluding enteric fever

There were 94 cases of bacteraemia in 1993 compared with 66 in 1992. A *Salmonella* serovar was isolated for 80, *Y. enterocolitica* O:3 Bio 4 for eight, *Sh. flexneri* (1a, 1b, 6 and var X) for four and there was one isolate each of *Sh. boydii* 1 and *C. jejuni* subspecies *jejuni*.

Twenty-two serovars of *Salmonella* were reported as blood isolates, with the most common being *S.* Typhimurium (25) (Table 4) including PT 9 (nine), PT 135 (five), PT 44 (four) and PTs 8, 27, 29, 101 and 179 (one each); *S.* Virchow (12); *S.* Heidelberg (10); *S.* Enteritidis (five); *S.* Bovismorbificans PT 7, PT 13 ex Botswana, PT 23; and *S.* Saintpaul (three).

There were two isolates each of *S.* Aberdeen, *S.* Bredeney, *S.* Chester, *S.* Dublin and *S.* Muenchen and single isolates of *S.* Ball, S Birkenhead, *S.* Cerro, *S.* Derby (ex Thailand), *S.* Javiana, *S.* Kottbus, *S.* Mississippi, *S.* Panama, *S.* Stanley, *S.* Welikade, *S.* Zehlendorf and *S.* subsp I ser rough:c:1,2.

Table 4. *Salmonella* serovars isolated from blood and totals for those serovars, 1993

	Blood cases (80)		Total cases (4587)	
Serovar	Number	% of total	Number	% of total
S. Typhimurium	25	31.3	1339	29.2
S. Virchow	12	15.0	277	6.0
S. Heidelberg	10	12.5	138	3.0
S. Enteritidis	5	6.3	90	1.9
S. Saintpaul	3	3.8	261	5.7

Isolations from urine

There were 76 isolations from urine in 1993 (63 in 1992), all of which were *Salmonella* serovars. There were 60 isolates (79%) from females, 15 from males and one not specified. Eighteen of the females were over 50 and four were teenagers. Of the males, eight were over 50 and two were teenagers.

From 36 serovars of *Salmonella* the most common isolates were *S.* Typhimurium (nine) (Table 5) including PT 135 (four), PT 44 and PT 55; *S.* Virchow (six), *S.* Cerro (four); *S.* Infantis (four), *S.* Anatum (three); *S.* Hadar (three); *S.* Heidelberg (three) and *S.* Saintpaul (three). There were two cases from each of *S.* Birkenhead, *S.* Bovismorbificans (PT 13, PT 21), *S.* Chester, *S.* Enteritidis PT 4, *S.* Litchfield, *S.* Mississippi, *S.* Muenchen, *S.* Newport and *S.* Tennessee. Single cases were reported for *S.* Aberdeen, *S.* Abony, *S.* Adelaide, *S.* Berta, *S.* Brandenburg, *S.* Choleraesuis, *S.* Give, *S.* Havana, *S.* Javiana, *S.* Meleagridis var 15+, *S.* Ohlstedt, *S.* Oranienburg, *S.* Orion, *S.* Senftenberg, *S.* Stanley, *S.* Waycross, *S.* Weltevreden, *S.* subsp I ser rough:c:1,6 and *S.* subsp IIIb ser 38:l,v:z53.

Unusual sites of isolation

There were 33 cases involving isolates from sites other than faeces, blood and urine. *Aeromonas caviae* (bile, M/not stated, Victoria), *A. hydrophila* (wrist aspirate, M/65 Victoria), *A. veronii* bv *sobria* (ascitic fluid, M/54 Victoria), *Sh. sonnei* biotype a (pus, ruptured appendix, M/18 Queensland) and *Vibrio cholerae* non O1 (ear, F/8, New South Wales) were isolated.

Fifteen different serovars of *Salmonella* were also isolated. Sites of isolation included cerebrospinal fluid (CSF): *S.*

Table 5. *Salmonella* serovars isolated from urine and totals for those serovars, 1993

Serovar	Urine cases (76)		Total cases (4587)	
	Number	% of total	Number	% of total
S. Typhimurium	9	11.8	1339	29.2
S. Virchow	6	7.9	277	6.0
S. Cerro	4	5.2	47	1.0
S. Infantis	4	5.2	114	2.5
S. Anatum	3	3.9	83	1.8
S. Hadar	3	3.9	108	2.4
S. Heidelberg	3	3.9	138	3.0
S. Saintpaul	3	3.9	261	5.7

Aberdeen; and *S.* Typhimurium PT 101 (mixed with *S.* Tennessee in blood and CSF from a child (M/<1 Northern Territory) with meningitis); peritoneal fluid: *S.* Agona (M/60), *S.* Typhimurium PT 9 (F/71, M/34); colostomy fluid: *S.* Saintpaul (M/76); elbow fluid: *S.* Heidelberg (M/14); ankle wounds: *S.* Bredeney (M/7), *S.* Enteritidis PT 4 (M/60); neck abscess: *S.* Potsdam (M/2), *S.* Rubislaw (M/44); spinal abscess: *S.* Newport (F/16); groin abscess: *S.* Typhimurium PT 44 (M/61); appendix swab: *S.* Cerro (F/9), *S.* Typhimurium PT 179 (M/27); tibia swab: *S.* Bredeney (M/9); skin swab: *S.* Chester (F/<1 suspected thrush); fallopian tubes: *S.* Saintpaul (F/23); vaginal swab: *S.* Saintpaul (F/37), *S.* Typhimurium PT 141 (F/17); abdominal cyst: *S.* Virchow (M/23); gallbladder swab: *S.* Waycross (F/48); ileum tissue: *S.* Enteritidis (M/15); perianal swab: *S.* Typhimurium PT 4 (M/55); urethra: *S.* Brandenburg (M/33).

Typhoid and paratyphoid cases in 1993

S. Typhi

There were 67 reports during the year. Of these, eight were reported from transient visitors including a patient transferred to Sydney from Noumea (Vi phage type 46), a crewman on a cargo ship ex India and Sri Lanka (D2), a passenger on a cruise ship (untypable) and visitors to Australia from Papua New Guinea (D2), Indonesia (E1 and E7), the Philippines (E2) and India (degraded). There were eight repeat isolations leaving a total of 51 new cases (55 in 1992). Thirty-six of these cases of infection were reported as acquired overseas.

The remaining 15 cases included one Vi phage type 46 (F/49 Victoria) with previous typhoid but no contact or travel reported since clearance three years ago. There were six cases of Vi-phage type A: F/not stated, New South Wales who had contact with a F/3 New South Wales with typhoid; a laboratory acquired infection (F/24 New South Wales) acquired from a traveller to the Lebanon, F/59, New South Wales who had shared a meal with another (unspecified) typhoid case and two members of a family of Lebanese origin (F/12, M/5) with no recent travel history. There were four cases of E1a, three from a family in which there was contact with grandparents with a history of typhoid, and one carrier (F/65 New South Wales). Four cases were reported without patient histories.

The most common Vi-phage types acquired overseas were A with seven cases (India, Nepal, Lebanon) and D2 with four cases (Papua New Guinea, Bangladesh and Indonesia). There were two cases each of E1 (India and Pakistan) and M1 (Indonesia and Peru) and single cases of 51 (Lebanon), 56 (Vietnam), D6 (Indonesia), M3 (South-East Asia) and E1a (unspecified). Four cases of *S.* Typhi untypable j:z66 phase were reported from travellers to Indonesia including Bali.

Three children from a family returning from a visit to Nepal presented with *S.* Typhi degraded as did a child returning from Indonesia. There were eight cases of *S.* Typhi untypable (six adults, one child, one not specified) acquired in Indonesia (five), India and Chile.

S. Paratyphi A

There were 31 reports and 24 cases compared with 18 cases in 1992. All cases bar one were reported as acquired overseas; one PT 5 (F/22 Queensland) was reported without further details.

Nine cases of phage type 1 (India, Nepal, Pakistan and Indonesia, including Bali) were reported, four cases of PT 5 (Indonesia and not specified), two cases of PT 2 (Thailand/Singapore and Pakistan) and one case of PT 4 (Indonesia). Five cases were typed as RDNC (India, Bangladesh, Thailand and Burma) and one as untypable (India).

S. Paratyphi B

There were six reports and four cases, only one of which reported acquiring the infection overseas (3a var 3 in Indonesia or Singapore). One was a carrier, phage type Taunton (M/53 New South Wales) and the other two were reported without further details. These were phage types 3aI var 1 (F/21 New South Wales) and 3a var 2 (M/20 Queensland).

Suspected or confirmed outbreaks

Northern Territory

The largest outbreak for 1993 was of *S.* Paratyphi B biovar Java Battersea. Sixteen cases were reported between September and October, centred around Katherine. There were only two adult cases; the remainder were small children.

Two smaller incidents were five adult cases of *S.* Eastbourne from Katherine in mid-December (continued into 1994 with six more cases reported in January) and four adult cases of *S.* Newport from Gove on the one day in mid-June. Cases of *Sh. boydii* 1 continued to be reported until May 1993.

New South Wales

Twenty-seven cases of *S.* Hadar were reported to the NSSS between October and December 1992 and this increased incidence continued until May 1993 with a further 38 cases. Fourteen of the 1993 cases were infants and young children and 19 were adults including three elderly persons in a nursing home.

In the Hunter region in January and February there was a small outbreak of *S.* Bovismorbificans PT 14 with 10 cases reported from three adults and seven children. Non-human isolates from the region at the same time included one sample of minced meat with the same phage type. *S.* Heidelberg was prevalent also around Sydney in February and March with 24 cases reported from six adults, 14 children, two teenagers and two not specified. In March and April 16 cases (8 children) of *S.* Typhimurium PT 135 were reported from Sydney.

Between mid and late November 36 cases of *S.* Newport were reported from Sydney suburbs particularly from the southern region. The ages were evenly divided between adults and young children with only one case from an infant.

Smaller incidents included four cases of *S.* Eastbourne from a Sydney nursing home in February; four cases of *S.* Infantis from the Hunter region in four days in early March; two families in Moree in mid-January with *Sh. sonnei* biotype a; and, in December, the first case of a cluster of cases of *S.* Kottbus to be reported from the Brewarrina region in the first weeks of 1994.

Queensland

The largest outbreak was of *Sh. sonnei* in Rockhampton in February and March when 16 cases were reported from 13 children and three adults.

Smaller incidents were: five cases of *S.* Aberdeen, associated with a retail poultry outlet in Rockhampton in February; six cases of *S.* Typhimurium PT 135 in one week in early February from Rockhampton (three adults, three children); five cases of *Sh flexneri* 3 (three adults) from the Torres Strait region in mid-February; three adult cases of *S.* Chester following a shearers' break up party near Charleville in early June; eight adult cases of *S.* Newport reported between mid-October and mid-November from central Queensland (two mixed infections with *Aeromonas* species) from members of an oil exploration camp; three adult cases of *S.* Anatum reported on the one day in November from Townsville.

South Australia

Only two small incidents were reported from South Australia in 1993 and both were from Adelaide. The first was five cases of *S.* Infantis (four infants, one adult) which were reported over four days in April. The second was nine cases of *S.* Typhimurium PT 9 in one week in August, mostly children from one particular ethnic group. Sporadic cases of *Sh. boydii* 1 continued to be reported from remote communities.

Tasmania

Twelve cases of *S.* Typhimurium PT 9 were reported from a Hobart nursing home in mid-October, including eight elderly residents.

Victoria

There were 43 cases of *C. jejuni* subspecies *jejuni* reported from a school camp in mid-February, some of which were mixed with *Escherichia coli* (EPEC) and others with *Plesiomonas shigelloides*. In January and February 12 cases of *S.* Bovismorbificans PT 23 were reported, seven from Melbourne suburbs and five from Gippsland and affecting adults and young children. In December, 30 cases (12 adults, 16 children, no infants) of *S.* Typhimurium PT 135 were reported and 15 of these were from around the township of Melton. Three adult cases of *S.* Infantis were reported from a food poisoning incident associated with takeaway food in late December.

Western Australia

The largest outbreak was of *S.* Newport from Perth and the south-west between March and August. Ninety-nine cases were reported from 36 adults and 58 children including 19 infants. Non-human isolations of *S.* Newport at the same time indicated the possibility of smallgoods as the source of the infection.

A further 23 cases of *Sh. boydii* 1 were reported from the north-west of the State following on from the 26 cases reported between September and December 1992. There were only five adult cases and eleven of the children were aged two years or under.

Nine cases of *S.* Choleraesuis var Australia (four adults, five children) were reported from Perth in January and February.

Infections acquired overseas

These include migrants or refugees but exclude enteric fever. The 1992 figures are given in square brackets. The asterisks (*) denote migrants or refugees.

More than 10 cases:

S. Enteritidis - 66 [43] cases: PT 1 Nepal, Lebanon, Philippines, Thailand, Malaysia; PT 4 (44 cases): Singapore (8), Hong Kong (5), Thailand (5), United Kingdom (4), Malaysia (4), Europe (3), Bali (2), Cyprus (2), Philippines (2), Sri Lanka (2), Nepal, South-east Asia, unspecified (5); PT 4a: Bali, India; PT 5a: Thailand; PT 6a: Singapore, unspecified*; PT 7: Malaysia; PT 9: Philippines; PT 9a: China; PT 11a: Thailand; PT 13a: Hong Kong; PT 14b: Hong Kong; PT 28: India; RDNC Hong Kong (2), Thailand, unspecified; untypable: Singapore; not typed Italy.
S. Hadar - 33 [22] cases: Bali (21), Indonesia (3), Africa, Asia, Malaysia, Singapore, South-east Asia (mixed with *S.* Kentucky).
S. Typhimurium - 27 [24] cases: PT 1: unspecified; PT 9 unspecified; PT 12a: Bali (2), Indonesia, Philippines, France, unspecified (2); PT 44: Indonesia, Bali; PT 104: Bali, unspecified; PT 108: Bali; PT 135: Singapore; PT

141: Bali; PT 149: Asia; PT 170: unspecified; RDNC Malaysia, Indonesia, Lebanon, Ghana; untypable: Indonesia, Singapore, unspecified.
Sh. sonnei biotype g - 26 [22] cases: Fiji (8), Bali (4), Thailand (4), India (2), Nepal (2), Vietnam (2), Africa, Lebanon, Mexico.
Sh. sonnei biotype a - 19 [7] cases: India, Indonesia, Tonga and Vietnam*.
S. Agona - 17 [10] cases: Bali (5), Hong Kong, Pakistan, Singapore, Thailand and Vietnam*.
S. Blockley - 16 [23] cases: Bali (4), South-east Asia (3), Malaysia (3), Thailand (2), India, China, Hong Kong, unspecified.
S. Para B biovar Java - 14 [5] cases: PT Dundee: Bali (2), Vietnam; PT 3b var: Indonesia, Singapore, Thailand, unspecified; PT 3b var 3: Bali (2); PT Battersea: Indonesia; PT 1 var: Europe; RDNC: Bali, Thailand; untypable: Thailand.
Sh. sonnei (not typed) 12 [12] cases: Bali (3), India (2), Thailand (2), Indonesia, Nepal, Myanmar*, unspecified* (2).
S. Stanley - 11 [3] cases: Bali (2), India (2), Nepal, Philippines, Thailand, Hong Kong, Greece, unspecified (2).
S. Emek - 10 [11] cases: Bali (6), Indonesia (2), unspecified (2).

Between five and nine cases:

C. jejuni subsp *jejuni*: Indonesia, Bali, Thailand, Turkey, unspecified.
S. Anatum: Thailand (5) unspecified (2).
S. Bovismorbificans PT 7: not stated; PT 23: Nepal, not stated; untypable: Malaysia, Thailand.
S. Derby: Malaysia (2), Thailand (2), not stated.
S. Javiana: Bali (2), Indonesia, Asia, Vietnam*.

S. Kentucky: Indonesia (3), Bali (2), South-East Asia (2), unspecified.
S. Montevideo: Thailand (2), Indonesia, Asia, unspecified.
S. Newport: Thailand, Indonesia, India, Nepal, South-east Asia, unspecified* (3).
S. Virchow: Thailand (2), India (2), Canada, Western Samoa, unspecified (2).
Sh. flexneri 2a: Bali (2), Fiji (2), Indonesia, Thailand.
Sh. flexneri 6: India (2), Bali (2), Egypt, Thailand, Africa*.
Sh. flexneri 2: Africa, Bali, India, Burma*, Vietnam*.
Sh. flexneri 3a: Egypt, Hong Kong, unspecified (3).

Between two and four cases:

S. subsp I ser 4,5:i:-: Cambodia, Malaysia, Singapore, unspecified.
S. Adelaide: Bali, Malaysia.
S. Amsterdam var 15+: Bali (2).
S. Bareilly: Thailand, Vietnam, unspecified.
S. Braenderup: India (2).
S. Infantis: Bali (3), Thailand.
S. Isangi: Bali (3).
S. Istanbul: Malaysia (2).
S. Krefeld: Cambodia, Thailand, unspecified (2).
S. Lexington: Bali, Malaysia*.
S. Litchfield: Bali (2).
S. Mbandaka: Bali, Maldives, Thailand.
S. Oslo: Bali, India, Malaysia, Vietnam*.
S. Panama: Bali, Thailand.
S. Rissen: Indonesia, Singapore.
S. Saintpaul: Philippines, Nepal, unspecified.
S. Senftenberg: Thailand, Mexico.
S. Singapore: Nepal, Thailand.
S. Worthington: India (3).
Sh. boydii 4: Bali, India, Uzbekistan.
Sh. flexneri 1b: India, unspecified.
Sh. flexneri 2b: Nepal, Maldives.
Sh. flexneri 3c: Russia, India.
Sh. flexneri 4: Malaysia, Africa.
Sh. flexneri E 1037: Thailand, Africa.
Y. enterocolitica: Bali, France.

One case only:

A. caviae: Malaysia.
E. coli O125:K70:B15: not stated.
S. subsp I ser 3,10:e,h:-: Thailand.
S. subsp I ser 3,10:r:-: Fiji.
S. subsp I ser 4,5,12:i:-: Asia.
S. subsp I ser 9,12:-:1,5: not stated.
S. Albany: Bali.
S. Amsterdam: Bali.
S. Anatum var 15+: Fiji.
S. Cerro: Thailand.
S. Chester: Bali.
S. Eastbourne: Thailand.
S. Friedenau: India.
S. Give: New Caledonia.
S. Haardt: Bali.
S. Lagos: not stated.
S. Lansing: Asia.
S. London: Bali.
*S. Marseille: Ethiopia**.
S. Matopeni: Malaysia.
S. Meleagridis var 15+: China.
S. Mishmarhaemek: Ethiopia*.
S. Muenchen: Fiji.
S. Ohio: India.
S. Poona: Thailand.
S. Potsdam: Bali.
S. Thompson: Bali.
S. Uganda: not stated.
S. Wandsbek subsp II: Cambodia.
S. Yolo: Egypt.
Sh. boydii 1: India.
Sh. boydii 12: Indonesia.
Sh. boydii 8: India.
Sh dysenteriae 1: Africa.
Sh. dysenteriae 2: Malaysia.
Sh. flexneri 1: India.
Sh. flexneri 4a: India.
Sh. sonnei biotype f: Asia.
V. cholerae non O1: Bali.
V. parahaemolyticus: unspecified.

Shigella infections

There were 642 reports of *Shigella* infections for 1993. Of these, 95 were acquired overseas, six were from migrants and refugees, and 21 were follow-up isolations leaving a total of 520 new cases which were reported as having been acquired in Australia. This is

an over-estimation as not all reports were accompanied by comprehensive patient details.

The total number of Australian cases was the lowest recorded since 1985. The case rate in the Northern Territory fell by 37% in 1993 compared with 1992 (Table 5), also to the lowest level since 1985.

Sh. flexneri 2 (14%), *Sh. flexneri* 2a (12%), *Sh. sonnei* (20%), *Sh. sonnei* biotype a (21.5%) and *Sh. boydii* 1 (11%) were the predominant agents of shigellosis in 1993. There was a considerable decrease (69%) in the number of cases of *Sh. flexneri* 6, from 93 cases in 1992 to 29 in 1993. Twenty-six cases of *Sh. sonnei* biotype g were reported as acquired overseas. This was probably a conservative figure as 18 cases of this biotype were reported with no patient details. Three cases were reported as acquired in the Northern Territory.

Table 6. Case rates per 100,000 for *Shigella* infection acquired in Australia, and total cases reported, 1986 to 1993, by State or Territory

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total cases
1993	0.8	1.2	1.0	4.0	4.0	11.9	0.0	56.8	520
1992	0.8	1.2	0.9	2.5	3.5	12.2	0.7	91.1	528
1991	1.6	1.2	0.9	1.3	4.0	17.8	0.2	157.6	685
1990	1.2	1.5	0.9	2.0	2.8	24.5	0.2	129.8	759
1989	0.0	1.4	1.2	1.9	3.2	23.4	0.5	93.6	692
1988	0.4	1.1	0.8	3.8	2.1	14.6	0.9	124.5	656
1987	0.0	1.3	0.6	2.2	3.2	19.8	0.4	120.0	687
1986	0.4	2.3	0.8	2.0	3.2	32.8	0.5	164.7	970

Table 7. Top ten *Salmonella* serovars, 1993

Serovar	Number of cases	Position in 1992	% of top ten	% of total	Origin/number of cases
S. Typhimurium[1]	1339	1	47.4	29.2	NSW 410, Vic 367
S. Virchow	277	2	9.8	6.0	Qld 243, NSW 21
S. Saintpaul	261	3	9.2	5.7	Qld 141, NSW 36, NT 32, WA 25
S. Newport[1]	177	-	6.3	3.9	WA 109, NSW 37
S. Chester	145	5	5.1	3.2	Qld 67, WA 25, NT 20
S. Birkenhead	143	4	5.1	3.1	Qld 91, NSW 39
S. Heidelberg[1]	138	10	4.9	3.0	Qld 65, NSW 50
S. Muenchen	123	7	4.4	2.7	WA 41, Qld 30
S. Infantis[1]	114	8	4.0	2.5	SA 36, Vic 27, NSW 20
S. Hadar[1]	108	9	3.8	2.3	NSW 56
Total	2825		100.0	61.6	

1. Associated with outbreaks.

Table 8. Top ten phage types of *S.* Typhimurium

Phage type	Number of cases	Position in 1992	% of top ten	% of total	Origin/number of cases
135[1]	248	2	26.9	18.5	NSW 93, Vic 50, WA 42, Qld 41
9[1]	222	1	24.1	16.6	Vic 78, NSW 65, Tas 37
44	135	6	14.6	10.1	Vic 74, SA 27, NSW 16
170	76	3	8.2	5.7	NSW 34, Vic 28
12a	75	10	8.1	5.6	NSW 28, SA 21
64	46	-	5.0	3.4	NSW 12, Qld 10
179	37	-	4.0	2.8	Vic 14, NSW 12
126	29	4	3.1	2.2	NSW 11, Vic 6
108	28	5	3.0	2.1	Qld 10, NSW 9
141	26	9	2.8	1.9	Qld 7, NSW 6, WA 5
Total	922			68.9	

1. Associated with outbreaks.

Table 9. Top ten[1] *Salmonella* serovars by State and Territory, 1993

New South Wales	1024 cases			Northern Territory	365 cases		
Case rate	18.9 per 100,000			Case rate	235.7 per 100,000		
	Cases	% of NSW	% of Australia		Cases	% of NT	% of Australia
S. Typhimurium[2]	410	40.0	30.6	*S.* Paratyphi B Java[2]	33	9.0	42.8
S. Hadar[2]	56	5.5	51.8	*S.* Saintpaul	32	8.7	12.3
S. Heidelberg[2]	50	4.9	36.2	*S.* Muenchen	25	6.8	20.3
S. Bovismorbificans[2]	41	4.0	41.6	*S.* Typhimurium	25	6.8	1.8
S. Birkenhead	39	3.8	27.3	*S.* Chester	20	5.5	13.8
S. Newport[2]	37	3.6	20.9	*S.* Havana	16	4.4	25.8
S. Saintpaul	36	3.5	13.8	*S.* Oranienburg	14	3.8	24.5
S. Enteritidis	24	2.3	26.7	*S.* Tennessee	12	3.3	22.6
S. Chester	23	2.2	15.9	*S.* Wandsworth	12	3.3	85.7
S. Virchow	21	2.0	7.6	*S.* Welikade	12	3.3	23.1
Total	737	71.8			201	54.9	
South Australia	297 cases			Queensland	1462 cases		
Case rate	22.1 per 100,000			Case rate	56.4 per 100,000		
	Cases	% of SA	% of Australia		Cases	% of Qld	% of Australia
S. Typhimurium	145	48.8	10.8	*S.* Virchow	243	16.6	87.7
S. Infantis	36	12.1	31.6	*S.* Typhimurium[2]	178	12.2	13.3
S. Oranienburg	16	5.4	28.1	*S.* Saintpaul	141	9.6	54.0
S. Saintpaul	9	3.0	3.4	*S.* Birkenhead	91	6.2	63.6
S. Newport	8	2.7	4.5	*S.* Aberdeen[2]	72	4.9	92.3
S. Muenchen	7	2.4	5.7	*S.* Chester	67	4.6	46.2
S. Chester	6	2.0	4.1	*S.* Heidelberg	65	4.4	47.1
S. Enteritidis	6	2.0	6.6	*S.* Anatum[2]	46	3.1	55.4
S. Kottbus	6	2.0	19.4	*S.* Enteritidis	38	2.6	42.2
S. Singapore	6	2.0	13.6	*S.* Potsdam	34	2.3	60.7
Total	245	82.4			975	66.6	
Victoria	630 cases			Western Australia	631 cases		
Case rate	15.7 per 100,000			Case rate	44.8 per 100,000		
	Cases	% of Vic	% of Australia		Cases	% of WA	% of Australia
S. Typhimurium[2]	367	58.2	27.4	*S.* Typhimurium	141	22.3	10.5
S. Infantis	27	4.3	23.7	*S.* Newport[2]	109	17.2	61.6
S. Bovismorbificans[2]	23	3.7	24.5	*S.* Muenchen	41	6.5	33.3
S. Saintpaul	18	2.8	6.9	*S.* Saintpaul	25	3.9	9.6
S. Stanley	15	2.4	60.0	*S.* Chester	25	3.9	17.2
S. Cerro	12	1.9	25.5	*S.* Tennessee	22	3.5	41.5
S. Hadar	11	1.7	10.2	*S.* Adelaide	17	2.7	47.2
S. Enteritidis	9	1.4	10.0	*S.* Infantis	14	2.2	12.3
S. Virchow	8	1.3	2.9	*S.* Anatum	12	1.9	14.5
S. Singapore/	7	1.1	15.9	*S.* Welikade	12	1.9	23.1
S. Birkenhead			4.9				
Total	497	78.8			418	66.0	

Table 9. Top ten[1] *Salmonella* serovars by State and Territory, 1993, continued

Australian Capital Territory[1]	43 cases			Tasmania[1]	135 cases		
Case rate	17.2 per 100,000			Case rate	30.9 per 100,000		
	Cases	% of ACT	% of Australia		Cases	% of Tas	% of Australia
S. Typhimurium	15	34.9	1.1	*S.* Typhimurium[2]	58	42.9	4.3
S. Hadar	7	16.3	6.5	*S.* Mississippi	46	34.1	93.9
S. Enteritidis	5	11.6	5.5	*S.* Hadar	7	5.2	6.5
S. Paratyphi B Java	2	4.6	2.6	*S.* Kottbus	3	2.2	9.7
S. Havana/	2	4.6	1.6	*S.* Havana	2	1.5	1.6
S. Heidelberg			1.4				
Total	31	72.0			116	85.9	

1. Insufficient cases to compile a top ten.
2. Associated with an outbreak or incident of salmonellosis.

Top ten *Salmonella* serovars

The top ten *Salmonella* serovars for 1993 comprised 61.6% of the total cases acquired in Australia (4587) (Table 7). Five of the top ten serovars were associated with outbreaks.

The top ten phage types of S Typhimurium comprised 69% of the total number of *S.* Typhimurium cases (Table 8).

S. Typhimurium headed the top ten lists for all the States and Territories except the Northern Territory and Queensland (Table 9). In the Northern Territory, *S.* Paratyphi biovar Java was the most commonly reported serovar. In Queensland, *S.* Virchow was the most commonly reported, as for 1992.

CDI editorial comment

A detailed list of all 6576 human reports received by the NSSS for 1993, tabulated by organism and State or Territory, was published with the *NSSS Human Annual Report 1993*. It has not been reproduced in this *CDI* report, but is available from *CDI* or from the NSSS.

The National Notifiable Diseases Surveillance System received reports of 4692 salmonellosis notifications, 41 typhoid notifications and 706 shigellosis notifications for 1993. The corresponding figures for 1992 were 4614, 50 and 694. Overseas acquired cases are included in this dataset.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization and the New Zealand ESR:Health Communicable Disease Centre.

Cholera update

Further areas of the Philippines have been declared cholera infected - Davao City and General Santos City on Region 11 and Cotabato City in Region 12. A total of 1564 cases and 76 deaths had been reported from the Philippines this year to 27 June.

Cases have been reported for June, July and August from Afghanistan, Azerbaijan, Bolivia, Burundi, Cambodia, Cote d'Ivoire, Dagestan, El Salvador, Guinea, Hong Kong, Kenya, Malawi, Nepal, Niger, Philippines, Rwanda-Zaire, Somalia, Singapore and Uganda.

Influenza update

Influenza A H_3N_2 (A/Beijing/32/92-like) is predominating in New Zealand this winter, although a few influenza B (B/Panama/45/90) have also been isolated. Both influenza A and influenza B were diagnosed in Brazil in June. In South Africa, influenza B has been predominating, and school absenteeism increased starting in the last week of June. Switzerland has reported a few sporadic isolates of Influenza A H_3N_2 since the end of the northern winter. The most recent isolate was obtained from a specimen collected in June.

Mumps in New Zealand

New Zealand has experienced a marked increase in the incidence of mumps in recent months, with the Northland, Auckland, Waikato and Wellington regions affected. Increases have been detected in laboratory confirmed cases and in mumps hospital discharges.

CDI NOTICES TO READERS

CDI availability on Bulletin Boards

Parts of *CDI* are now available for access via Internet and AARNet through site 'FTP.VIFP.MONASH.EDU.AU' using id 'ANONYMOUS' and directory 'PUB/ADMIN/CDI'. The files available are in the format:

TOPIC1.* Text of the *CDI* articles and the Communicable Diseases Surveillance section

TOPIC2.* Virology and Serology Reporting Scheme tables

TOPIC3.* National Notifiable Diseases Surveillance System tables

TOPIC6.* ASPREN table.

The * indicates the 1994 day number of the *CDI* issue, for example, TOPIC1.052 is the text from *CDI* for the issue dated 21 February 1994, and TOPIC1.066 is the text from *CDI* for the issue dated 7 March 1994. (Because the information is copied to the Bulletin Board (BBS) every week and *CDI* is produced only once per fortnight, there will usually be two files for each topic, for example, TOPIC1.059 represents the text for 28 February 1994, however, because *CDI* is not produced on that date, it would be the same as TOPIC1.052.)

The above site can also be accessed by direct modem link by dialling (03) 682 1332 (VIFT-BBS, Melbourne).

Other sites where *CDI* is available are:

- Melbourne, Victoria (ADMIN) (03) 684 6627
- Mt Macedon, Victoria (ADMIX) (054) 262 594
- Canberra, Australian Capital Territory (*CDI*-BBS) (06) 281 6695
- Perth, Western Australia (Health Department of Western Australia) (09) 222 4403
- Sydney, New South Wales (New South Wales SES BBS) (02) 477 5551
- Adelaide, South Australia (SASES BBS) (08) 410 4910

A registration form is required for the Perth site. It can be obtained from Gaye Sweeney on (09) 222 4305, or from the Manager, Information Services, Health Department of Western Australia, 189 Royal Street, East Perth, WA 6004. A fee is required.

Both Sydney and Adelaide sites are on-line. *CDI* has not yet been transferred to these sites but will be in the near future.

Steps to access the above Bulletin Boards (BBS) are:

1. Set up a dial-up service in your own communications software.
2. Dial the relevant BBS.
3. Answer the 'logon' questions as either a new or existing user.
4. At the Main Menu, select 'F' for File Areas (and use 'Area change', if necessary, to move to *Communicable Diseases Intelligence* (*CDI*). On the Canberra BBS 'B' can also be selected for the latest bulletins.)
5. Select 'File titles', and press * for new bulletins or to view all files.
6. Select 'View files' to view the contents of a bulletin.
7. Select 'Download (receive)' to transfer a file to your PC. (Select the appropriate protocol, for example, Z for Z-modem, and type in the name of the required file, then press <enter> twice to begin the download. If using X-modem, use your communications software to choose an appropriate file to 'receive' the *CDI* bulletin.)
8. To 'Logoff', select 'G' for Goodbye. Then answer 'Y' to disconnect, and 'N' to leave a message, or 'Y' if you need to leave a message.

Modem/communications software settings used are:

Speed up to 9600 baud
Data size 8
Parity none
Stop bits 1

For further information, contact David Evans on (06) 289 7155.

Annual Scientific Meeting of the Australasian Society for Infectious Diseases

The Annual Scientific Meeting of the Australasian Society for Infectious Diseases is to be held from 21 to 24 May 1995 in Darwin, Northern Territory.

Venue: Beaufort Hotel, Darwin, Australia

Major theme: Infections in the tropics

Contact: ASID Conference
Dr Bart Currie
Menzies School of Health Research
PO Box 41096
CASUARINA NT 0811
AUSTRALIA
Fax (089) 275 187
International 61 89 275187

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 2281 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 7, 8 and 9).

- Fifty-one reports of **measles** were received this period, 25 males and 26 females, 8 under the age of 4 years. The number of reports remains above those received for 1992 (Figure 1). Diagnosis was by IgM detection (50) and fourfold rise in titre (one).
- **Mumps** virus was reported for 7 patients this fortnight, all diagnosed by IgM detection. Included was a 34 year old male with epididymitis and a 21 year old female with severe throat and neck pain.
- **Rubella** was reported for 40 patients this fortnight, 15 females (8 in the 15 to 44 year age group) and 25 males in the 14 to 43 year age group.
- Sixteen reports **hepatitis A** were received, 12 males and 4 females, age range 5 to 74 years.
- Positive **hepatitis B** serology was reported for 85 patients this fortnight, 46 males and 31 females (8 sex not stated). Forty-six patients were in the 25 to 44 year age group, and 22 in the 15 to 24 year age group. Included were 2 injecting drug users and 6 pregnant females.
- Positive **hepatitis C** serology was reported for 326 patients this fortnight, 200 males and 102 females (24 sex not stated). Two hundred and thirty-seven reports were for the 25 to 44 year age group, and 42 for the 15 to 24 year age group. Included were 45 injecting drug users, 2 blood transfusion recipients and one patient with a malignancy. This virus was also reported for a 49 year old female renal patient, an 81 year old female, the index case in a needlestick injury and a 34 year old male with acute cholecystitis.
- Positive **hepatitis D** serology was reported for a 38 year old Victorian male.
- Sixty-five reports of **adenovirus** were received this fortnight, 52 virus isolations, 11 antigen detections and 2 single high titres. Included was an **untyped adenovirus** isolated from the ear of a 5 month old female who had died of SIDS.
- **Herpes simplex virus type 1** was reported for 203 patients this fortnight, 198 isolations and 5 antigen detections. Included was virus isolated from a nipple swab from a 21 year old female and from the eye of a 7 month old male.
- There were 86 reports of **cytomegalovirus** infection this fortnight, 47 virus isolations, 3 antigen detections, 35 IgM detections and one single high titre. Included was virus isolation from the urine of a 35 year old pregnant female (first trimester), and from the nasopharynx of a 7 month old male with a rash. Also included was one HIV positive patient, one transplant recipient, and 2 patients with malignancies.
- **Varicella-zoster virus** was reported for 43 patients this fortnight, 19 virus isolations, 8 antigen detections, 15 IgM detections and one fourfold rise in titre.
- **Coxsackievirus type B3** was isolated from the nasopharynx of a 2 year old female with malaise and skin disease.
- **Echovirus type 22** was isolate from the nasopharynx of a 6 month old male with a respiratory tract infection.
- **Rhinovirus** was reported for 72 patients this fortnight 55 of whom were under the age of 4 years. An increased number of reports was received for the month of July (Figure 2).

Figure 1. Measles laboratory reports, 1992 to 1994, by month and year of specimen collection

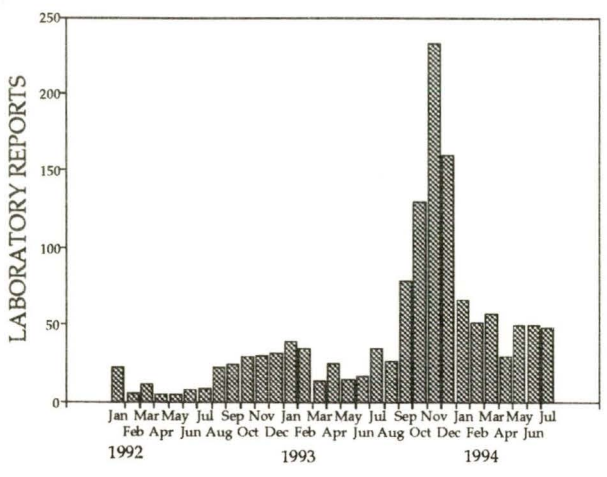


Figure 2. Rinovirus laboratory reports, 1989-93 average and 1994, by month of specimen collection

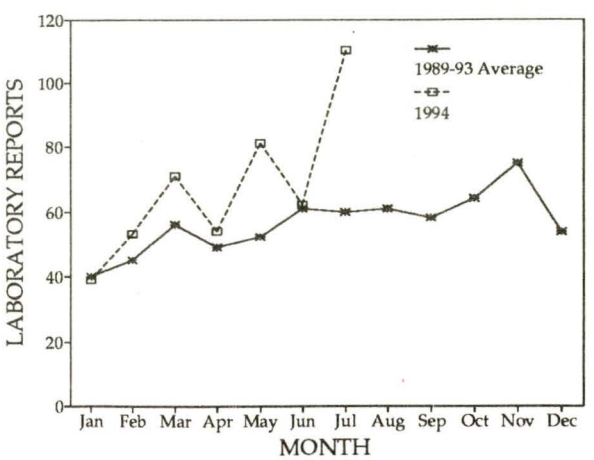
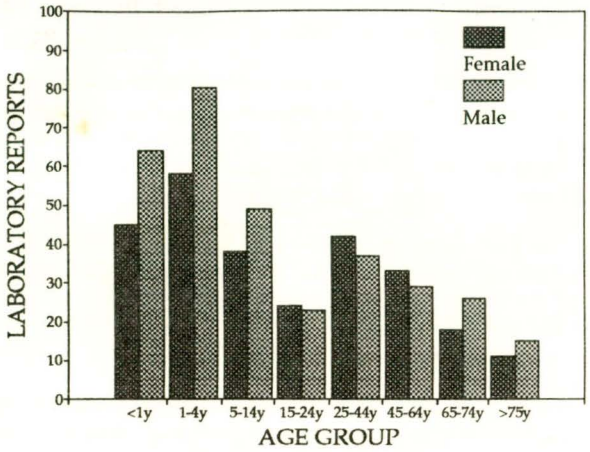
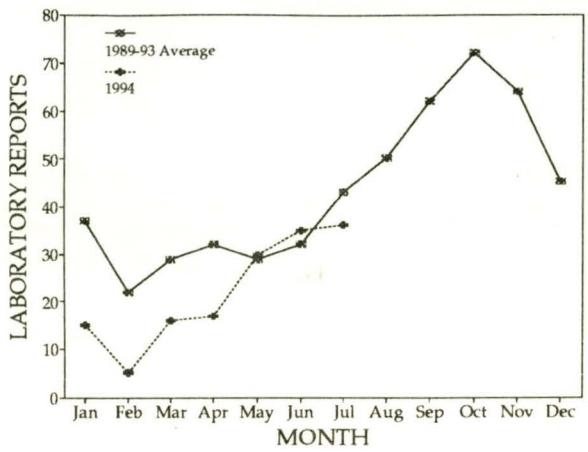


Figure 3. Influenza A laboratory reports, 1994, by age group and sex



- **Influenza A** was reported for 167 patients this fortnight including 13 H_3N_2 strains. Forty-three diagnoses were by antigen detection, 59 by virus isolation, 12 by fourfold rise in titre, 52 by single high titre and one by IgM detection. Included were 88 males and 76 females (3 sex not stated), 34 in the over 65 year age group. Reports were received from Victoria (48), Western Australia (28), Queensland (23), New South Wales (16) South Australia (46), the ACT (3) and the Northern Territory (3). Included was virus isolation from the nasopharynx of a one year old male reported as having received a paracetamol overdose. The number of reports received for the month of July is equal to those of 1992. For the year to date most reports have been for the under 5 year age group (Figure 3).
- Two reports of **influenza B virus** were received this period. Diagnosis was by antigen detection (one) and single high titre (one).
- A single report of **untyped influenza virus** was received this period.
- **Parainfluenza virus type 1** was reported for 14 patients this period, all under the age of 4 years. Nine diagnoses were by virus isolation and 5 by antigen detection. The number of reports peaked in May.
- Nine reports of **parainfluenza virus type 3** were received this fortnight, 8 for patients under the age of 4 years. Diagnosis was by virus isolation (5), antigen detection (3) and single high titre (one). The number of reports has risen over the winter months but remains average for the time of year (Figure 4).
- Three hundred and twenty-nine reports of **respiratory syncytial virus (RSV)** were received this fortnight, 218 for patients under one year of age and a total of 304 under the age of 4 years. Diagnosis was by virus isolation (132), antigen detection (190) and single high titre (7).

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



- **Rotavirus** was reported for 186 patients this period, 102 males and 74 females (10 sex not stated). One hundred and forty-seven patients were less than 4 years of age, 41 being in the under one year age group. Included was a 26 day old female with gastroenteritis. The number of reports is about average for the time of year (Figure 5).
- A **small round virus** (like) particle was detected by electron microscopy in the faeces of a 14 month old female with gastroenteritis.
- Eighty-eight reports of ***Chlamydia trachomatis*** were received this fortnight. Eighty-one patients were in the 15 to 44 year age group. Diagnosis was by culture (64) and antigen detection (24).
- Fifty-eight reports of ***Mycoplasma pneumoniae*** were received, 39 females and 19 males, 33 under the age of 14 years.

Figure 5. Rotavirus laboratory reports, 1989-93 average and 1994, by month of specimen collection

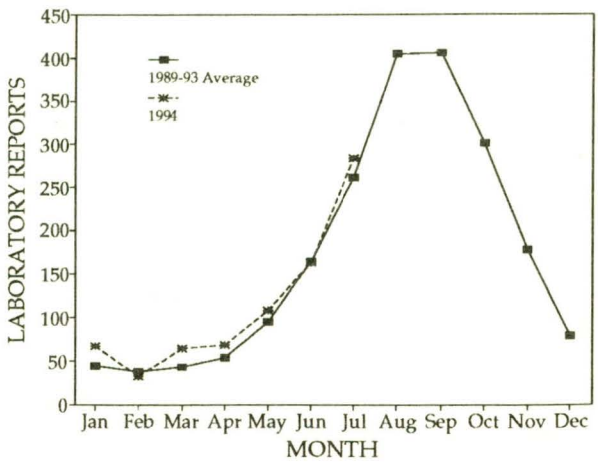


Table 1. Australian Sentinel Practice Research Network, weeks 31, 32 and 33 1994

Condition	Week 31, to 7 August 1994		Week 32, to 14 August 1994		Week 33, to 21 August 1994	
	Reports	Rate per 1000 counters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 counters
Influenza	389	34.8	369	33.5	253	26.4
Measles	2	0.2	1	0.1	4	0.4
Chickenpox	16	1.4	15	1.4	8	0.8
Pertussis	3	0.3	2	0.2	5	0.5
Gastroenteritis	120	10.7	117	10.6	111	11.6

- **Q fever** was reported for 11 patients this period, 9 males in the age range 17 to 66 years and 2 females aged 21 and 27 years. Included was an unimmunised abattoir worker and a meat worker. Diagnosis was by fourfold rise in titre (5), IgM detection (5) and single high titre (one).

- Thirty-four reports of ***Bordetella*** were received this reporting period, 25 ***Bordetella pertussis*** and 9 ***Bordetella*** species. Fifteen patients were male and 19 female, age range one month to 64 years.

- Positive **syphilis** serology was reported for 32 patients this period, 19 males and 11 females (2 sex not stated). Twenty-one patients were in the 15 to 44 year age group.

Australian Sentinel Practice Research Network

Data for weeks 31, 32 and 33 are included in this issue of *CDI* (Table 1). There were 11,196 consultations reported for week 31, 11021 for week 32 and 9593 for week 33. The rate of influenza reporting has plateaued recently at about 30 cases per 1000 consultations. Of the 253 reports in week 33, 123 were for persons in the 15 to 44 year age group, 65 males and 58 females. There were 7 measles cases reported in this 3 week period, after none in the previous 3 weeks. Gastroenteritis continues to be reported at between 10 and 15 cases per 1000 consultations.

National Influenza Surveillance 1994

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

Overall this fortnight, there has been a slight decline in the number of laboratory reports of influenza A, although they were received form all parts of the country. The rate of influenza reporting from sentinel general practitioner surveillance has also slightly declined, except in Victoria. Absenteeism rates remained static.

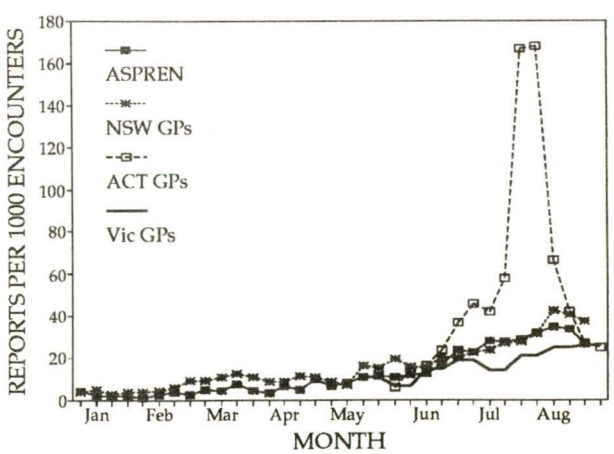
Sentinel general practitioner surveillance (Figure 5)

- The **Australian Sentinel Practice Research Network** reported for weeks 31, 32 and 33 this fortnight. There were 11,196 consultations reported for week 31, 11021 for week 32 and 9593 for week 33. The rate of influenza reporting has plateaued recently at about 30 cases per 1000 consultations. Of the 253 reports in week 33, 123 were for persons in the 15 to 44 year age group, 65 males and 58 females.

- The **Australian Capital Territory Sentinel General Practitioner Scheme** reported 23 influenza consultations for the week ending 20 August (27 per 1000 consultations) and 22 for the week ending 27 August (25 per 10000 consultations). Influenza reporting rates have declined over the last few weeks.

- **New South Wales** sentinel general practitioners reported influenza at rates of 40.8 per 1000 consultations in the week ending 14 August and 37.3 in the week ending 21 August. The influenza reporting rates have declined slightly in the last 2 weeks, as have the rates reported by ASPREN and the ACT Scheme.

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



- The **Victorian Sentinel Practitioner Scheme** reported 141 cases of influenza in the fortnight ending 5 August (25 per 1000 consultations) and 166 cases in the fortnight ending 19 August (26 per 1000 consultations). The rate of reporting has increased slightly over the last few weeks.

Absenteeism surveillance (Figure 6)

- **Telecom Australia Absenteeism Surveillance** reported absenteeism rates of 1.1% on 17 August and 0.4% on 24 August. There are reporting delays in the Telecom absenteeism surveillance system such that recent data do not reflect total absenteeism. More complete data have been obtained for the period March to June (Figure 6) and show no changes in absenteeism rates for that period.
- The **Australian Capital Territory Schools Absenteeism Surveillance** reported absenteeism rates of 7.0% on Tuesday 23 August and 6.6% on Tuesday 16 August. The absenteeism reported by this scheme has been between about 6% and 8% throughout the season.
- **New South Wales schools absenteeism surveillance** reported absenteeism of 5.0% in the week ending 14 August and 4.5% in the week ending 21 August. The rates reported in this scheme have fluctuated throughout the season.

Laboratory surveillance

- The ***CDI* Virology and Serology Reporting Scheme** has received 603 reports of **influenza A** so far this year, 451 other than single high titres. The number of reports fell during the month of August (Figure 7). **Influenza A** was reported for 167 patients this fortnight including 13 H_3N_2 strains. Forty-three diagnoses were by antigen detection, 59 by virus isolation, 12 by fourfold rise in titre, 52 by single high titre and one by IgM detection. Included were 88 males and 76 females (3 sex not stated), 34 in the over 65 year age group. Reports were received from Victoria (48), Western Australia (28), Queensland (23), New South Wales (16) South Australia (46), the ACT (3) and the Northern Territory (3). Included was virus isolation from the nasopharynx of a one year old male reported as having received a paracetamol overdose.
- There have been 38 reports of **influenza B** so far this year, 18 with diagnoses other than single high titre (Figure 8). Two reports of **influenza B virus** were received this period. Diagnosis was by antigen detection (one) and single high titre (one). Few reports of influenza B have been received this year (Figure 8).

Other surveillance

- **Victorian total deaths surveillance**: there were 1321 deaths reported in Victoria in the fortnight ending 5 August and 1414 in the fortnight ending 19 August. These were rates of 2.9 and 3.1 per 10,000, respectively, about the same as rates reported earlier in the year.

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

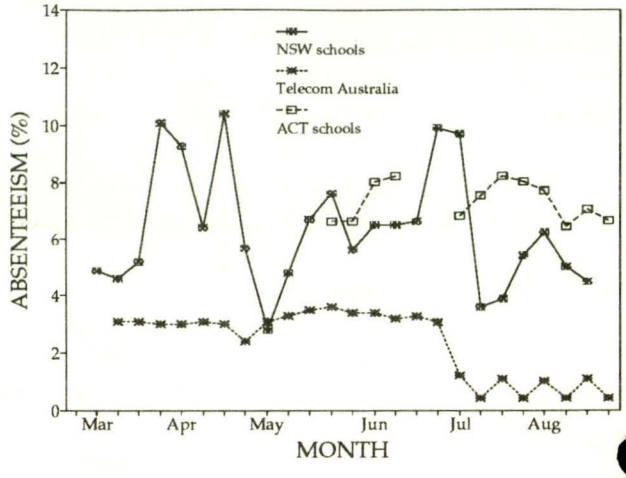


Figure 7. Influenza A laboratory reports, 1994, by method of diagnosis and week of specimen collection

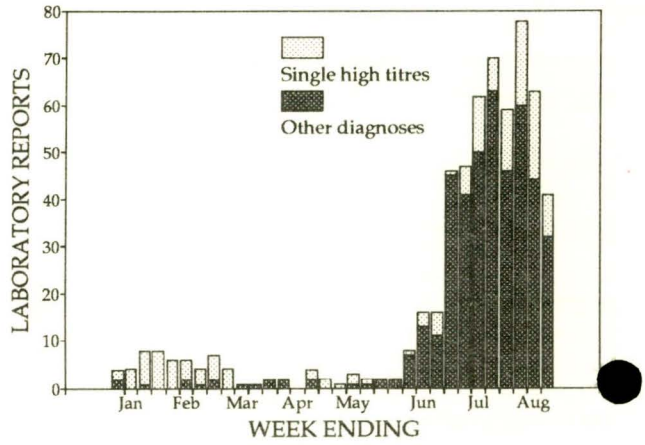
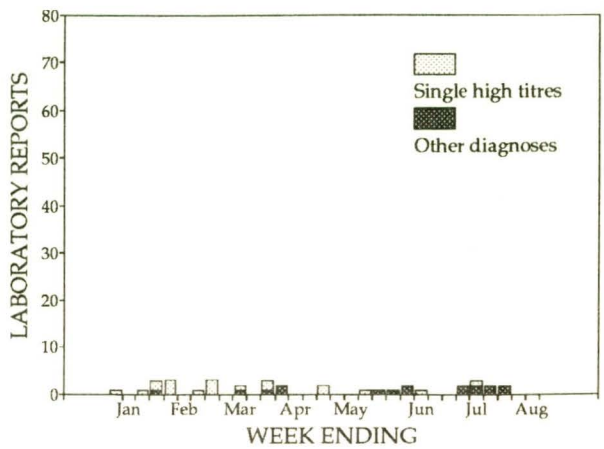


Figure 8. Influenza B laboratory reports, 1994, by method of diagnosis and week of specimen collection



- **Victorian hospital admissions**: there were 29 admissions for influenza or pneumonia in the fortnight ending 5 August, and 56 in the fortnight ending 19 August. For both fortnights, this was a rate of 0.9 per 100 patients admitted, about the same as reported for recent fortnights.

Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 14 laboratories. *CDI* welcomes Prince of Wales Hospital, Sydney, New South Wales to the LabDOSS scheme. There were 326 reports of recent significant sepsis:

New South Wales: Prince of Wales Hospital 11, South West Area Pathology Health Service, Liverpool 29, Royal North Shore Hospital 40, ICPMR Westmead 29, John Hunter Hospital, Newcastle 30, Royal Prince Alfred Hospital 59.
Queensland: Sullivan Nicolaides and Partners 7, Central Queensland Pathology Laboratory Mackay 3, Toowoomba Pathology Laboratory 16, Ipswich General Hospital 18.
Western Australia: Sir Charles Gairdner Hospital, Perth 29.
Northern Territory: Alice Springs Hospital 14.
Tasmania : Royal Hobart Hospital 20.
ACT: Woden Valley Hospital 21.

An additional 43 reports of sepsis in June were reported including 6 cases of *Streptococcus pneumoniae* infection. Reports with specimen collection dates prior to the first day of the previous month are not reported fortnightly in *CDI* however are added to the annual data.

Table 2. 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	4	1	3	2		16	5	11	11	13	2	44[2]
Staphylococcus epidermidis		5	1	1				7	10	7		28
Staphylococcus coagulase negative		1		1		1	2	2	2	8		22[3]
Enterococcus species				1	1		1	3	1	3		7[4]
Streptococcus pneumoniae	1	33		2		1		3	2	1		43
Escherichia coli	1			5	23		4			7		51
Enterobacter species		1		2				4		1		8[5]
Serratia species				1	1	1	2			4		5[6]
Klebsiella pneumoniae				1	2	1	1			5		12
Proteus species				1			1			1		7[7]
Pseudomonas aeruginosa		1	1	3	1		2			7		14

1. Only organisms with 5 or more reports are included in this table.
2. MRSA 12.
3. *Staphylococcus capitis* 2, *S. warneri* 1.
4. *Enterococcus faecalis* 5, *E. faecium* 1.
5. *Enterobacter aerogenes* 4, *E. cloacae* 3.
6. *Serratia marcescens* 4, *S. fonticola* 1.
7. *Proteus mirabilis* 5, *P. penneri* 1.

Table 3. LabDOSS reports of meningitis and/or CSF isolates, by organism and age group

	1-4 years	5-14 years	25-34 years	45-54 years	55-64 years	65-74 years	Total
Staphylococcus aureus		1		1			2
Streptococcus pneumoniae						1	1
Staphylococcus coagulase negative	1				1	1	3
Group B *Streptococcus*					1		1
Enterococcus faecalis						1	1
Neisseria meningitidis group B			1				1
Escherichia coli						1	1
Klebsiella pneumoniae						1	1
Xanthomonas maltophilia		1					1

Organisms reported 5 or more times from blood are detailed in Table 2. There were 12 reports of meningitis and/or CSF isolates (Table 3). Blood isolates not included in Table 2 were:

Gram positive: 1 *Bacillus* species, 2 Group A *Streptococcus*, 3 Group B *Streptococcus*, 2 Group G *Streptococcus*, 1 Group *D Streptococcus*, 2 *Streptococcus* mitis, 1 *Streptococcus* mitior, 2 *Streptococcus* sanguis, 1 *Streptococcus viridans*, 2 *Streptococcus* species.

Gram negative: 2 *Neisseria meningitidis* (1 group B in a 17 year old male from Western Australia, 1 group C in a 15 year old male from Tasmania), 1 *Salmonella* Typhi (9 year old female from Queensland with a history of recent travel to the Philippines), 2 *Haemophilus influenzae* type b (4 year old male with epiglottitis in Queensland and a 2 month old male with septicaemia in New South Wales), 1 *Acinetobacter* species, 1 *Acinetobacter lwoffii*, 1 *Branhamella cattarrhalis*, 1 *Citrobacter diversus*, 1 *Comomonas acidovorans*, 1 *Flavobacterium indologenes*, 1 *Flavobacterium* species, 1 *Gardnerella vaginalis*, 2 *Klebsiella oxytoca*, 1 *Klebsiella* species, 1 *Morganella morganii*, 3 *Xanthomonas maltophilia.*

Anaerobes: 1 *Bacteroides thetaiotaomicron*, 2 *Bacteroides fragilis*, 3 *Bacteroides* species.

Fungi: 3 *Candida albicans*, 1 *Candida species*, 1 *Crypcococcus neoformans* var *neoformans.*

Most reports were for elderly persons (Figure 10).

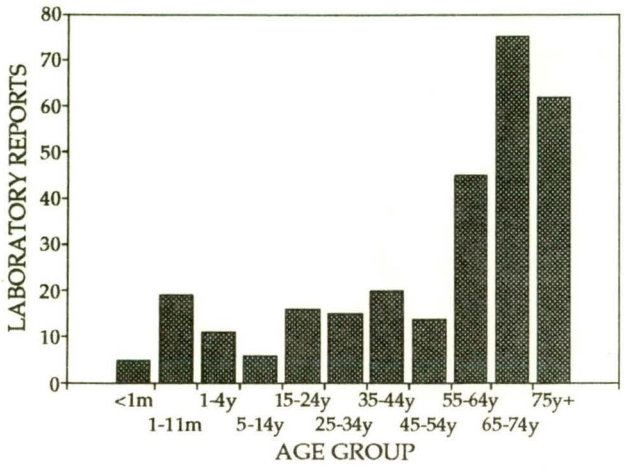
Isolates from sites other than blood or CSF

Joint fluid: 1 *Neisseria gonorrhoeae* type W1 (6 year old male from the Northern Territory), 1 *Pseudomonas aeruginosa*, 3 *Staphylococcus aureus*, 1 coagulase negative *Staphylococcus*, 1 Group A *Streptococcus*, 1 *Streptococcus pneumoniae.*

Peritoneal fluid: 2 *Staphylococcus aureus*, 2 coagulase negative *Staphylococcus*, 1 *Streptococcus* species.

Other: 3 *Escherichia coli*, 2 *Staphylococcus aureus*, 2 coagulase negative *Staphylococcus*, 1 *Citrobacter* species, 1 *Klebsiella oxytoca*, 1 *Citrobacter* species, 1 *Proteus* species, 1 *Streptococcus pneumoniae.*

Figure 10. LabDOSS reports of blood isolates, by age group

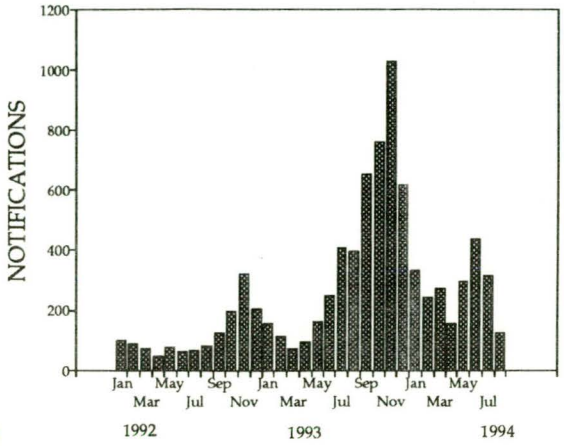


National Notifiable Diseases Surveillance System, 7 August to 20 August 1994

There were 2098 notifications received in the period. (Figure 14 and Tables 4, 5 and 6).

- There were 37 notifications of **Ross River virus infection** received in the period; 9 cases were male, 25 cases were female and the sex of 3 cases was unrecorded. Recorded ages were between the 15-19 to the 75-79 years age group. Onset dates were February (3), March (one), April (one), May (4), June (2), July (13), and August (13).
- Two cases of **brucellosis** were reported; one case was male and the sex of one case was unrecorded. The cases were in the 40-44 and the 45-49 years age group respectively. Recorded onset dates were in July and August.
- Ninety-four notifications of **gonococcal infection** were received; 66 cases were male, 27 were female and the sex of was case was unrecorded. Cases were aged between the 15-19 and the 60-64 years age group.
- Eight cases of ***Haemophilus influenzae* type b infection** were reported; 3 cases were male and 5 were female. Cases were aged between the 0-4 and the 5-9 year age group with 6 cases aged less than 5 years and 3 cases aged less than one year. Recorded onset dates were in May (2) and August (6). There were no apparent clusters.
- Sixty-seven cases of **hepatitis A** were reported; 41 cases were male, 23 were female, and the sex of 3 cases was unrecorded. Recorded ages were between the 0-4 and the 70-74 years age group with 72% of cases aged less than 35 years. The highest proportion of cases were resident in the Statistical Division of Brisbane (24%) and the Statistical Division of Far North Queensland (19%).
- There were 24 cases of **hepatitis B** reported with 1[illegible] cases reported from States and Territories that report incident cases only. Seven incident cases were male and 10 were female and they were aged between the 10-14 and the 55-59 years age group.
- A single notification of **hydatid infection** was received for a male in the 55-59 years age group who was resident in the Statistical Division of Melbourne.
- Seven cases of **legionellosis** were reported in the period. Four cases were male and three were female. Recorded ages were between the 40-44 and the 70-74 years age group. Onset dates were July (4) and August (3).
- Two cases of **leprosy** were reported; both cases were female. Recorded ages were in the 40-44 and the 70-74 years age group.
- There were 2 notifications of **leptospirosis** received. Both cases were male and recorded ages were in the 20-24 and the 35-39 years age group.

Figure 11. Measles notifications, January 1991 to August 1994, by month of onset



Cases were resident in the Statistical Division of Richmond-Tweed in New South Wales.

- A single cases of **listeriosis** was reported for a female in the 80-84 years age group resident in Sydney.
- Ten cases of **malaria** were reported; 8 cases were male and 2 cases were female. Recorded ages were between the 5-9 and the 55-59 years age group. Onset dates were in April (one), June (one), July (one), and August (7).
- The **measles** epidemic continues with 213 notifications received for the period (Figure 11). One hundred and five cases were male and 108 were female. Recorded ages were between the 0-4 and the 75-79 years age group. Fifty-three cases (25%) were aged between 0-4 years and the mean age of cases was 11.9 years. There were 25 apparent clusters of between 2 and 32 cases each in the same postcode area. Apparent clusters were in the Northern Territory (one), South Australia (one), Queensland (20), Victoria (one), and New South Wales (2).
- Notifications of **meningococcal infection** continue to show a seasonal peak in the winter months (Figure 12). There were 26 cases of reported in the period; 7 cases were male and 19 were female. Cases were aged between the 0-4 and the 50-54 years age group with 10 cases (38%) in the 0-4 years age group. Onset dates were in July (6) and August (20). There was one apparent cluster of 2 cases resident in the same postcode area with onset dates 6 days apart.
- One hundred and forty-nine notifications of **pertussis** were received; 61 cases were male and 88 were female. Recorded ages were between the 0-4 and the 70-75 years age group with 16 cases in the 0-4 years age group.
- There were 33 cases of **Q fever** reported; 27 cases were male and 6 cases were female. Recorded ages were between the 15-19 and the 65-69 years age group. Forty-six per cent of the cases were resident in the Statistical Division of Central West New South Wales. The proportion of notifications from Queensland and New South Wales compared to all other States remains high (Figure 13).
- Seventy-two notifications of **rubella** were received; 47 cases were male, 21 cases were female and the sex of 4 cases was unrecorded. Cases ranged in age from the 0-4 to the 55-59 years age group with a mean age of 22.2 years. There were 13 cases in females in the 15-44 years age group.
- There were 73 cases of **syphilis** reported; 39 cases were male and 34 were female. Recorded ages were between the 5-9 and the 70-74 years age group.
- A single cases of **tetanus** was reported for a male in the 50-54 years age group who was resident in the Statistical Division of Perth.

Figure 12. Meningococcal infection notifications, January 1991 to August 1994, by month of onset

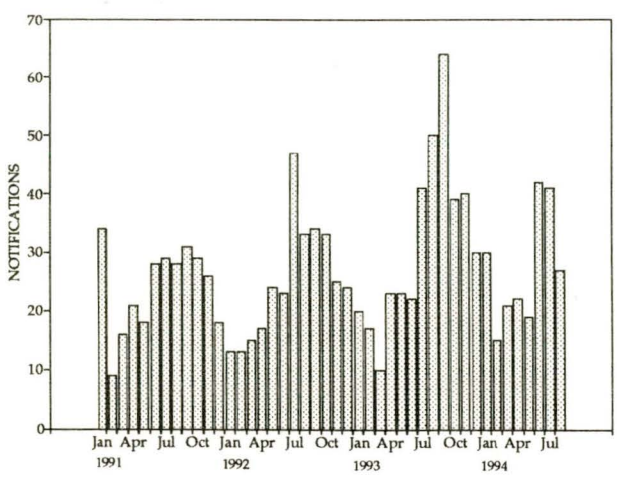
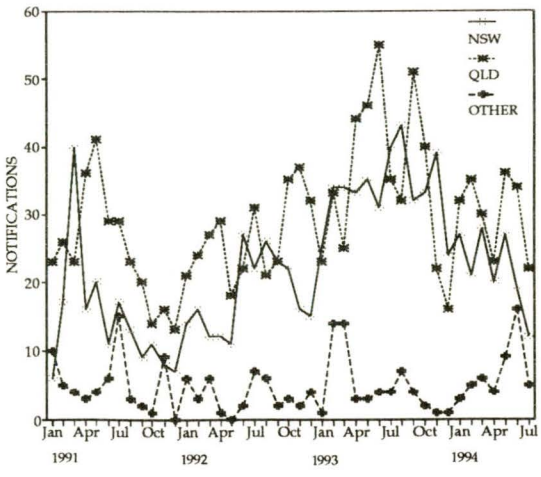
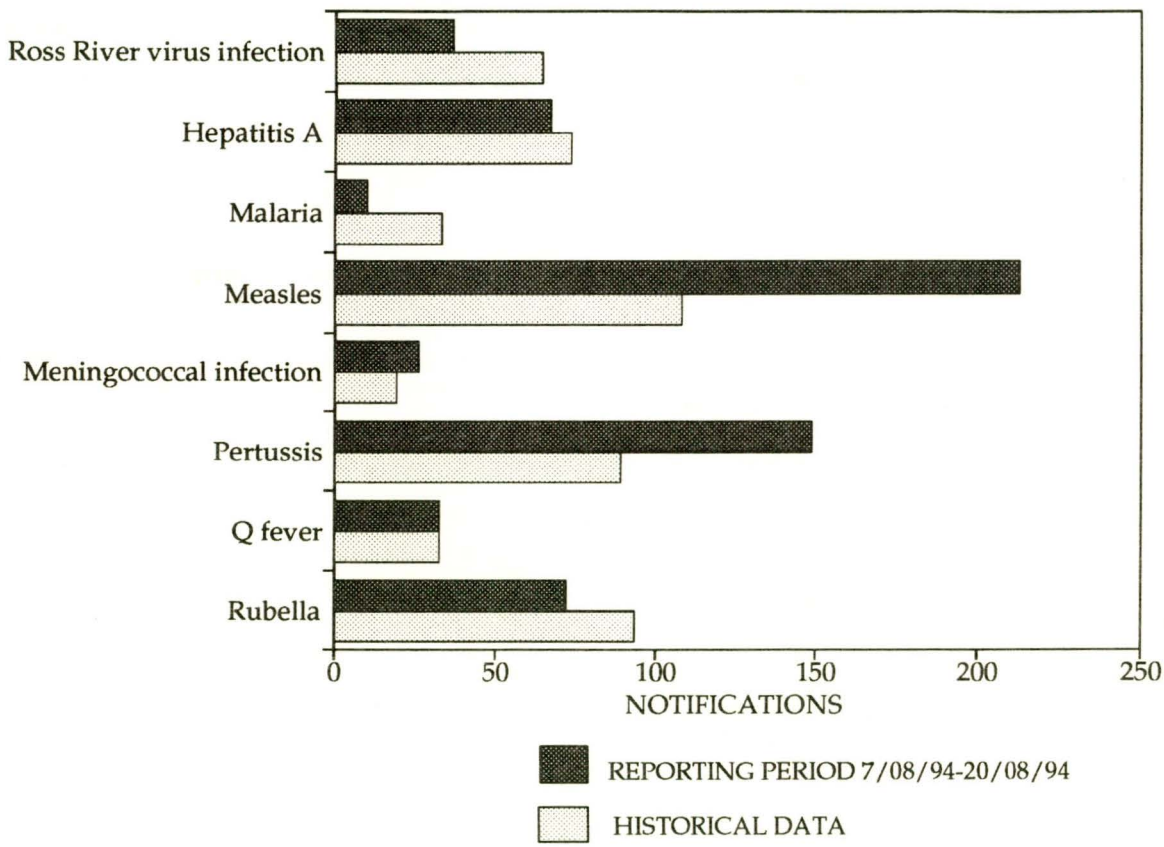


Figure 13. Q Fever notifications, January 1991 to July 1994, by State and month of onset



- Thirty-three notifications of **tuberculosis** were received in the period; 17 cases were male and 16 were female. Cases were aged between the 5-9 and the 90-94 years age group. Onset dates were January (2), April (one), June (3), July (12), and August (15).
- A single case of **typhoid** was reported for a female in the 5-9 years age group resident in rural Queensland.
- Thirteen cases of **yersinosis** were reported; 6 cases were male and 7 were female. Recorded ages were between the 0-4 and the 85-89 years age group. Onset dates were July (3) and August (10). There were two apparent clusters.

Figure 14. 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 4. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 7 to 20 August 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	0	23	0
Haemophilus influenzae b infection	1	2	0	1	0	0	2	2	8	17	141	296
Measles	6	13	32	139	13	1	8	1	213	151	2423	1423
Mumps	0	0	NN	NN	0	NN	0	0	0	0	12	7
Pertussis	3	30	1	76	14	0	11	14	149	165	3300	1218
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[2]	1	1	0	53	1	0	8	8	72	130	998	1940
Tetanus	0	0	0	NN	0	0	0	1	1	1	11	10

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 5. Notifications of other diseases[1] received by State and Territory health authorities in the period 7 to 20 August 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	12	0	25	0	NN	0	0	37	70	3692	4851
Dengue	0	-	0	0	-	NN	0	0	0	22	14	574
NEC[3]	0	1	0	2	0	0	2	0	5	10	464	421
Campylobacteriosis[4]	10	-	9	75	97	13	164	23	391	278	6164	4876
Chlamydial infection (NEC)[5]	12	NN	55	81	29	22	50	18	267	284	4174	4284
Donovanosis	0	NN	1	0	NN	NN	0	0	1	6	65	38
Gonococcal infection[6]	0	14	33	18	6	2	10	11	94	113	1900	1884
Hepatitis A	0	15	5	36	2	1	5	3	67	81	1285	1299
Hepatitis B incident[7]	-	1	1	4	3	0	6	2	17	-	258	-
Hepatitis B unspecified[7]	7								7	91	129	1656
Hepatitis C incident[7]	-	4	0	-	0	0	-	-	4	-	19	-
Hepatitis C unspecified[7]	24			142			167	71	404	417	5929	4525
Hepatitis (NEC)	0	1	0	0	0	0	0	NN	1		31	45
Legionellosis	0	3	0	1	0	0	2	1	7	3	144	123
Leptospirosis	0	2	0	0	0	0	0	0	2	7	98	118
Listeriosis	0	1	0	0	0	0	0	0	1		21	32
Malaria	1	4	1	0	1	1	1	1	10	31	481	414
Meningococcal infection	0	12	1	3	1	0	6	3	26	21	225	187
Ornithosis	0	NN	0	0	0	0	5	0	5	1	64	57
Q fever	0	22	0	7	1	0	3	0	33	28	452	561
Salmonellosis (NEC)	2	20	18	26	16	1	40	15	138	156	3943	3253
Shigellosis[4]	0	-	4	2	2	1	4	1	14	28	507	508
Syphilis	0	29	18	22	0	0	1	3	73	101	1384	1496
Tuberculosis	0	5	1	4	2	2	16	3	33	28	681	680
Typhoid[8]	0	0	0	1	0	0	0	0	1	0	27	34
Yersiniosis (NEC)[4]	0	-	0	3	3	0	6	1	13	25	297	294

1. For HIV and AIDS, see Tables 2 and 3 *CDI* 1994;18:409-410. For rarely notified diseases, see Table 6.
2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
3. SA, Tas: includes Ross River virus and dengue.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. WA: genital only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. Comparative totals for 1993 comprise incident and unspecified cases.
8. NSW and Vic includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Table 6. Notifications of rare[1] diseases received by State and Territory health authorities in the period 7 to 20 August 1994

DISEASES	Total this period	Reporting States or Territories	Year to date 1994
Botulism	0		0
Brucellosis	2	Qld 1, Vic 1	12
Chancroid	0		0
Cholera	0		3
Hydatid infection	1	Vic	29
Leprosy	2	NT 1, WA 1	7
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 7. Virology and serology laboratory reports by State or Territory[1] for the reporting period 11 to 24 August 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	18	20		1	1	51	11.8	693
Mumps virus				2	1		4		7	3.5	63
Rubella virus		2		31	3			4	40	19.7	362
HEPATITIS VIRUSES											
Hepatitis A virus		2		9			2	3	16	15.5	247
Hepatitis B virus	1	34		23		3	10	14	85	101.8	1,643
Hepatitis C virus	13	91	1	33	50	14	9	115	326	152.0	4,004
Hepatitis D virus				1			1		2	2.2	15
ARBOVIRUSES											
Ross River virus				3				1	4	25.8	1,426
Barmah Forest virus				1					1	7.3	184
ADENOVIRUSES											
Adenovirus type 1							2		2	3.7	45
Adenovirus type 2							1		1	6.7	41
Adenovirus type 3							1		1	5.5	35
Adenovirus type 5							1		1	1.5	10
Adenovirus type 8							1		1	1.7	65
Adenovirus not typed/pending		10		28	4	1	12	4	59	52.2	844
HERPES VIRUSES											
Herpes simplex virus type 1		14	2	59	41		52	35	203	135.5	3,231
Herpes simplex virus type 2		19		60	44	1	30	52	206	184.2	3,544
Herpes simplex not typed/pending	7	7		1	1		2		18	31.7	460
Cytomegalovirus		14		49	2	1	19	1	86	82.3	1,156
Varicella-zoster virus		2		17	9		3	12	43	32.2	697
Epstein-Barr virus	2	3	1	8	8		3	8	33	63.7	936
OTHER DNA VIRUSES											
Parvovirus	1								1	6.3	49

Table 7. Virology and serology laboratory reports by State or Territory[1] for the reporting period 11 to 24 August 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							2		2	.7	45
Coxsackievirus B1							1		1	1.0	20
Coxsackievirus B3							1		1	.7	4
Coxsackievirus B5							1		1	.7	12
Echovirus type 6		1					1		2	1.3	48
Echovirus type 11		1							1	3.5	40
Echovirus type 22						1			1	.3	7
Echovirus type 30	1				1	1	1		4	3.3	253
Rhinovirus (all types)		6		37	1		26	2	72	24.3	671
Enterovirus not typed/pending		2		20			3	14	39	30.0	947
ORTHO/PARAMYXOVIRUSES											
Influenza A virus	1	16	3	23	46		37	28	154	70.2	641
Influenza A virus H_3N_2	2						11		13	6.7	43
Influenza B virus		1					1		2	35.8	107
Influenza virus - not typed							1		1	.0	2
Parainfluenza virus type 1				4	6		1	3	14	5.0	520
Parainfluenza virus type 2				4					4	5.2	51
Parainfluenza virus type 3				4	3		1	1	9	23.0	209
Parainfluenza virus not typed							3		3	2.0	56
Respiratory syncytial virus	30	33		76	75	3	93	19	329	310.3	2,572
OTHER RNA VIRUSES											
HIV-1				2				2	4	1.0	61
Rotavirus	74	45			29		36	2	186	175.2	1,073
Norwalk agent							1		1	.5	8
Small virus (like) particle		1						1	2	1.7	16
OTHER											
Chlamydia trachomatis not typed	10	2		28	22	3	2	21	88	108.5	1,734
Chlamydia psittaci				1	1			1	3	1.7	56
Chlamydia species					1				1	.2	5
Mycoplasma pneumoniae	1	4		37	4		12		58	82.5	671
Coxiella burnetii (Q fever)		2		2	3		1	3	11	22.3	212
Streptococcus group A				15					15	11.0	190
Yersinia enterocolitica		4							4	.2	15
Brucella species		1							1	.7	2
Bordetella pertussis		4		1			7	13	25	9.7	389
Bordetella species				9					9	7.8	182
Treponema pallidum		31		1					32	21.7	278
Toxoplasma gondii		1							1	1.8	55
TOTAL	144	353	17	607	375	28	397	360	2,281	1,917.0	30,947

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 8. Virology and serology laboratory reports by clinical information for the reporting period 11 to 24 August 1994

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus					2			18		1		30	51
Mumps virus					1							6	7
Rubella virus								14		3		23	40
HEPATITIS VIRUSES													
Hepatitis A virus							7					9	16
Hepatitis B virus							14			1		70	85
Hepatitis C virus							21					305	326
Hepatitis D virus							1					1	2
ARBOVIRUSES													
Ross River virus										1		3	4
Barmah Forest virus												1	1
ADENOVIRUSES													
Adenovirus type 1					1							1	2
Adenovirus type 2					1								1
Adenovirus type 3												1	1
Adenovirus type 5												1	1
Adenovirus type 8									1				1
Adenovirus not typed/pending					33	15						11	59
HERPES VIRUSES													
Herpes simplex virus type 1					12			108	13		50	20	203
Herpes simplex virus type 2								56			125	25	206
Herpes simplex not typed/pending								6			7	5	18
Cytomegalovirus			1	1	26	1	2	3	1	1		50	86
Varicella-zoster virus					1			28			1	13	43
Epstein-Barr virus							1	1				31	33
OTHER DNA VIRUSES													
Parvovirus												1	1
PICORNA VIRUS FAMILY													
Coxsackievirus A16								2					2
Coxsackievirus B1												1	1
Coxsackievirus B3												1	1
Coxsackievirus B5		1											1
Echovirus type 6		1										1	2
Echovirus type 11												1	1
Echovirus type 22					1								1
Echovirus type 30		3			1								4
Rhinovirus (all types)					70							2	72
Enterovirus not typed/pending		1	1		21	3		1				12	39

Table 8. Virology and serology laboratory reports by clinical information for the reporting period 11 to 24 August 1994, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					110							44	154
Influenza A virus H_3N_2					13								13
Influenza B virus					1							1	2
Influenza virus not typed												1	1
Parainfluenza virus type 1					11							3	14
Parainfluenza virus type 2					4								4
Parainfluenza virus type 3					9								9
Parainfluenza virus not typed					3								3
Respiratory syncytial virus					298			3				28	329
OTHER RNA VIRUSES													
HIV-1												4	4
Rotavirus						180						6	186
Norwalk agent						1							1
Small virus (like) particle						2							2
OTHER													
Chlamydia trachomatis not typed					2			3	1		77	5	88
Chlamydia psittaci					1							2	3
Chlamydia species					1								1
Mycoplasma pneumoniae	1				28					2		27	58
Coxiella burnetii (Q fever)					1							10	11
Streptococcus group A					4			1				10	15
Yersinia enterocolitica												4	4
Brucella species												1	1
Bordetella pertussis					20							5	25
Bordetella species					5							4	9
Treponema pallidum												32	32
Toxoplasma gondii												1	1
TOTAL	1	6	2	1	682	202	46	244	16	9	260	813	2281

Table 9. Virology and serology laboratory reports by contributing laboratories for the reporting period 11 to 24 August 1994

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	151
New South Wales	Prince Henry/Prince of Wales Hospitals, Sydney	199
	Royal Alexandra Hospital for Children, Camperdown	51
	South West Area Pathology Service, Liverpool	77
Queensland	Queensland Medical Laboratory, West End	379
	State Health Laboratory, Brisbane	251
South Australia	Institute of Medical and Veterinary Science, Adelaide	375
Tasmania	Royal Hobart Hospital, Hobart	28
Victoria	Commonwealth Serum Laboratories, Melbourne	14
	Microbiological Diagnostic Unit, University of Melbourne	3
	Monash Medical Centre, Melbourne	26
	Royal Children's Hospital, Melbourne	188
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	162
Western Australia	Princess Margaret Hospital, Perth	39
	State Health Laboratory Services, Perth	339
TOTAL		2281