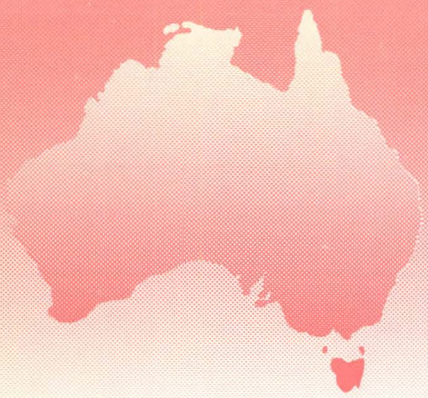

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COMMUNICABLE DISEASES NETWORK-AUSTRALIA
A National Network for Communicable Diseases Surveillance

SALMONELLA SURVEILLANCE, AUSTRALIA, 1992 ANNUAL REPORT

(Reproduced with acknowledgement from the National Salmonella Surveillance Scheme's Human Annual Report 1992, editor Joan Powling)

Summary

There were 5278 reports of salmonellae made to the National *Salmonella* Surveillance Scheme (NSSS) in 1992 (Table 1) and 4492 cases - 16% fewer than the total for 1991 (5334). The case rate of *Salmonella* infection decreased in all States and Territories except Queensland where there was an increase of 9%. The noteworthy decreases were recorded from Tasmania (43%), South Australia (31%), New South Wales (29%) and Victoria (25%).

There was a 23% decrease Australia-wide in the number of cases of *Shigella* infection, from 685 to 528. There was a marked drop in case rate in the two States with highest incidence of *Shigella* infections; in both the Northern Territory and Western Australia the case rates were at their lowest level since 1985 and represented decreases of 42% and 32% respectively.

Seven outbreaks and eight smaller incidents were associated with *Salmonella* infections and three with *Shigella* infections. The largest of these was the outbreak of *S.* Typhimurium RDNC+ in and around Perth between February and April (33 cases) and of *S.* Bovismorbificans phage type (PT) 7 from Hobart and Devonport in Tasmania in March (29 cases). Two further outbreaks which began in late 1992 and continued into 1993 were those of *S.* Hadar in Sydney (27 cases reported between October and December) and of *Sh. boydii* 1 from the north-west of Western Australia beginning in September (26 cases by the end of the year, *CDI* 1993;17:376-377).

S. Typhimurium heads the top ten *Salmonella* serovars for 1992, accounting for 30% of Australian acquired cases (29% in 1991). There were 1360 cases of *S.* Typhimurium Australia-wide compared with 1553 for 1991, a decrease of 12%. There was also a 43% decrease in the number of cases associated with outbreaks. The two most commonly reported phage types of *S.* Typhimurium were 9 and 135 and have been so since at least since 1985.

S. Muenchen returned to the top ten in 1992 and *S.* Hadar entered the list for the first time, otherwise the top ten *Salmonella* serovars remained unchanged from 1991. S. Hadar has become increasingly prevalent in Victoria, New South Wales, Tasmania and Western Australia in the past 12 months. There was one case in Alice Springs during the year but as yet there have been no cases reported from Darwin.

S. Enteritidis PT 4, with 36 cases, was the most common overseas-acquired *Salmonella* in 1992. It was acquired mostly by travellers to Asian countries, in particular Hong Kong, Thailand, Malaysia, Singapore and Chin[redacted] and also from Europe (United Kingdom, Romania, P[redacted]tugal) and Argentina. Between May and September four cases from the Cairns region were confirmed as Australian-acquired but the origin of the infection was not identified.

New *Salmonella* serovars reported to the NSSS during the year were *S.* Telelkebir (M/29 Tas ex Madagascar) and *S.* Larochelle (M/27, WA).

Rare serovars were *S.* Amsterdam var 15+ (F/44 Vic ex Bali); *S.* Bron (M/38 SA); *S.* Bonn (M/34 Vic, M/1 WA); *S.* Chailey (M/35 Qld); *S.* Duesseldorf (M/50 Vic ex Indonesia and mixed with *S.* Virchow); *S.* Emmastad (M/46 WA); *S.* Essen (F/54 NSW ex Malaysia); *S.* Kiambu (M/13 Qld); *S.* Kisangani (F/2, F/10, same family WA ex Africa) and *S.* Manhattan (F/41 Vic ex Hong Kong mixed with *S.* Enteritidis PT 4, and F/<1 NSW).

S. Montevideo (Qld 8, Vic 8, NSW 4, SA 1) is becoming more prevalent. It has been isolated frequently fro[redacted] meatmeals in the past year. *S.* Hadar replaces *S.* Be[redacted] as the most common serovar brought home by visitors to Bali; *S.* Emek and *S.* Blockley are also common from this popular tourist destination.

Table 1. Total reports received

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
Salmonella	39	1109	919	1656	322	722	134	377	5278
Shigella	4	80	92	70	55	197	3	157	658
Aeromonas	0	3	14	5	0	0	2	0	24
E. coli (EPEC)	0	1	3	4	0	0	0	0	8
Plesiomonas	0	3	6	0	0	0	0	10	19
Vibrio	2	2	2	1	0	0	0	0	7
Yersinia	1	95	28	94	9	0	0	7	234
Total	46	1293	1064	1830	386	919	139	551	6228

Yersinia bercovieri (F/17) and *Y. rhodei* (M/24) were isolated from Victoria and are first records for the NSSS.

New records for the NSSS of phage types of *S.* Typhimurium were 46 (Vic), 177 (NSW) and 182 (Vic). None of these were reported as having been acquired overseas. Uncommon Australian-acquired phage types were 3 (Qld 3), 32 (NSW), 36 (NSW), 38 (NSW), 38 var (Vic), 123 (NSW), 142 (Vic), 150 (SA) and 176 (SA).

Salmonella infections - case rates

The total number of cases acquired in Australia for the year ended 31 December 1992 was 4492 (Table 2). There were 413 follow-ups, 34 isolations from migrants and refugees and 339 cases reported as acquired overseas by travellers.

A total of 145 serovars was reported as Australian-acquired (Table 3). *S.* Typhimurium comprised 30% of the reports. There were 60 *S.* Typhimurium phage types reported and 13 for *S.* Bovismorbificans.

Typhoid and paratyphoid cases

S. Typhi

There were 74 reports during the year. Of these, one was from a visitor from Papua New Guinea (D2) and 18 were repeat isolations leaving a total of 55 cases (68 in 1991). Forty-two cases of infection were known to be acquired overseas, one (F/53 SA) reported no contact with typhoid or overseas travel since a cruise to Vanuatu between five and seven years ago. Twelve cases were reported without patient histories.

The most common Vi-phage types encountered were A with 11 cases (Indonesia, Philippines, Pakistan, Bangladesh and Vietnam) B1 and B1 var with seven cases (the Philippines and Thailand) and E1 with seven cases (India). The other Vi-phage types reported were: 38 (El Salvador); D var (Indonesia); D2 (Papua New Guinea); E1 degraded (Nauru); E2 (Philippines); E7 and E var (Western Samoa); J1 (not specified); M1 (Pakistan) and O (not specified). *S.* Typhi untypable j:z66 phase was isolated from a traveller to Indonesia.

Table 2. Case rates per 100,000 for *Salmonella* infection

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total cases
1985	55.3	21.4	12.0	43.1	28.6	59.7	18.5	311.9	4743
1986	19.2	17.1	12.7	50.4	25.6	52.9	13.3	264.8	4342
1987	21.4	16.0	12.3	52.4	23.2	50.2	28.2	236.8	4462
1988	17.6	19.6	18.0	62.6	25.8	53.0	25.4	226.6	5298
1989	32.1	24.4	26.8	55.6	35.1	49.8	37.4	268.6	5678
1990	20.0	25.0	20.0	59.6	39.5	46.3	30.7	235.1	5435
1991	20.4	24.8	21.4	53.3	30.5	48.8	47.4	258.3	5334
1992	13.2	17.6	16.1	58.4	21.2	44.1	27.0	210.5	4492

Table 3. Distribution of isolates of *Salmonella* by State and Territory

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
Cases	34	949	649	1510	285	621	118	326	4492
Serovars	16	60	56	101	44	74	19	55	145
S. Typhimurium phage types	8	36	28	32	25	21	8	8	60
S. Typhimurium cases	12	453	381	150	117	206	32	10	1360
S. Typhimurium as % of the total cases	35%	48%	58%	10%	41%	33%	27%	3%	30%
S. Bovismorbificans phage types	0	11	3	6	4	3	2	1	13
S. Bovismorbificans cases	0	34	37	12	7	18	23	1	132
Typhoid cases[1]	1	22	16	4	4	6	0	2	55
Paratyphoid cases[1]	1	7	12	1	1	1	1	0	24
S. Paratyphi B bv Java cases	0	11	7	17	2	16	0	18	71
S. subsp III (Arizonae) cases	0	0	1	22	0	1	0	7	31
Top ten as % of State or Territory total	79%	79%	84%	65%	76%	66%	92%	56%	64%

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

Three children from a family returning from a three month stay in the Lebanon (one parent a food handler) presented with *S.* Typhi degraded as did four adults returning from the Philippines and Indonesia. There were 8 cases of *S.* Typhi untypable (5 adults, 2 children, 1 not specified), from Afghanistan, Indonesia and Vietnam.

S. Paratyphi A

There were 22 reports and 18 cases compared with 30 cases in 1991. Overseas acquired infections or contact with overseas visitors accounted for 15 of these cases. The remaining three were reported without patient details.

There were eight cases of phage type 1, from Sri Lanka (3), India, Indonesia and Malaysia (1 each) and two not specified, three cases of phage type 2 (Sri Lanka, India and Pakistan), one each of phage types 4 (Turkey) and 5 (Bali). Five cases were typed as RDNC (Cambodia, Nepal and South-east Asia).

S. Paratyphi B

There were eight reports and six cases, of which two reported acquiring the infection overseas. These were phage types Dundee (F/66 ex Bali) and Beccles var (F/23 ex Indonesia and mixed with *Sh. sonnei*). Two cases were reported as acquired in Australia, one of phage type 3a var (F/77 Vic - patient on renal dialysis) and 3aI var (M/26 Vic - a diver at a sewage treatment works whose finger was injured on a wire).

Seventy-one cases of *S.* Paratyphi B biovar Java were reported from 27 adults and 33 children. Twenty-eight of the children were two years of age or under. Of these, eleven were from the Northern Territory and five each were from Queensland and the north-western region of Western Australia. Of the total Australian acquired cases, 89% were from these three regions. Three cases of phage type 3b var 3 were acquired in Bali and one case of 3b var in the Philippines.

Isolations from blood, urine and unusual sites

Bacteraemias, excluding enteric fever

There were 66 reports of bacteraemias in 1992 compared with 98 in 1991. Of these, 59 were isolates of *Salmonella*, three were of *Y. enterocolitica* O:3 Bio 4, two of *C. jejuni* and one each of *Aeromonas hydrophila* and *Sh. sonnei*.

From the 22 serovars of *Salmonella* the most common blood isolates were *S.* Typhimurium (15) (Table 4), including PT 9 (5), PT 126 (3), and one each from phage types 2, 6, 8, 38, 108, 141 and 170; *S.* Virchow (9); *S.* Enteritidis (4), including an isolate of PT 4 from a patient with an aortic aneurism in the United Kingdom two years prior; *S.* Bovismorbificans (4), including PT 7 and PT 21; *S.* Chester (3) and *S.* Heidelberg (3).

There were two isolates from each of *S.* Aberdeen, *S.* Abony, *S.* Dublin, *S.* Muenchen, *S.* Saintpaul and *S.* Waycross and single isolates of *S.* Adelaide, *S.* Berta (ex Bali), *S.* Birkenhead, *S.* Hadar, *S.* Hvittingfoss, *S.* Kinondoni, *S.* Ohlstedt, *S.* Potsdam, *S.* Telelkebir (ex Madagascar) and *S.* ser rough:e,h:1,6.

Isolations from urine

There were 63 isolates of *Salmonella* from urine in 1992 (70 in 1991) of which 45 were from females, 16 from males and 2 not specified. Sixteen of the females were over 50 years of age and eight were teenagers. There were no isolates from teenage males.

From 32 serovars of *Salmonella* the most common urine isolates were *S.* Virchow (7) (Table 5), *S.* Birkenhead (5), *S.* Typhimurium (5), *S.* Infantis (4), and 3 isolates from *S.* Agona, *S.* Hadar, *S.* Potsdam and *S.* Havana. There were two cases from each of *S.* Bovismorbificans (PT 13, PT 21), *S.* Bredeney, *S.* Cerro, *S.* Derby, *S.* Dublin, *S.* Enteritidis (PT 6 acquired in Poland and RDNC), *S.* Give and *S.* Singapore (appendicectomy swab also).

Single cases were reported of *S.* ser 4,12:-:-, *S.* ser 4,12:d:-, *S.* Aberdeen, *S.* Adelaide, *S.* Chester, *S.* Heidelberg PT 1, *S.* Litchfield, *S.* Liverpool, *S.* Muenchen, *S.* Orion, *S.* Poona, *S.* Saintpaul, *S.* Stanley, *S.* Tennessee and *S.* Zanzibar.

Unusual sites of isolation

There were 27 cases involving isolates from sites other than faeces, blood and urine. *A. caviae* (bile, M/40, Vic) and *Y. enterocolitica* O:7,8 Bio 1A (sputum, F/1, NSW) were isolated in addition to 13 different serovars of *Salmonella*.

Some interesting sites of isolation were cerebrospinal fluid: *S.* Aberdeen, *S.* Chester, *S.* Saintpaul, *S.* Typhimurium PT 135 and *S.* Virchow, all of which were from infants, and *S.* Livingstone (F/29 ex Bali); hip

Table 4. *Salmonella* isolates from blood, 1992

Serovar	Blood cases (59)		Total cases (4492)	
	Number	% of total	Number	% of total
S. Typhimurium	15	25.4	1360	30.3
S. Virchow	9	15.2	316	7.0
S. Bovismorbificans	4	6.8	132	2.9
S. Enteritidis	4	6.8	93	2.1
S. Chester	3	5.1	148	3.3
S. Heidelberg	3	5.1	116	2.6
S. Dublin	2	3.4	7	0.2

Table 5. *Salmonella* isolates from urine, 1992

	Urine cases (63)		Total cases (4492)	
Serovar	Number	% of total	Number	% of total
S. Virchow	7	11.1	316	7.0
S. Birkenhead	5	7.9	149	3.3
S. Infantis	4	6.3	122	2.7
S. Agona	3	4.8	56	1.2
S. Hadar	3	4.8	121	2.7
S. Havana	3	4.8	61	1.4
S. Potsdam	3	4.8	41	0.9

wounds: *S.* Bovismorbificans PT 13 (M/59 SA) and *S.* Typhimurium PT 9 (F/83 Vic); cervical swabs: *S.* Cubana (F/41 Qld) and *S.* Saintpaul (F/14 NT); knee aspirates: *S.* Dublin (F/ with septic arthritis, NSW) and *S.* Virchow (M/77 also isolated from blood and faeces, Qld); appendicectomy swabs: *S.* Singapore (F/15 Vic and F/12 NSW - urine isolate also); ankle swab: *S.* Bovismorbificans PT 7 (M/10 with osteomyelitis, Tas) and, from perianal swabs, *S.* Bareilly, *S.* Bovismorbificans PT 7, *S.* Typhimurium PT 135. *S.* Typhimurium PT 135 was isolated from pustules on the arm of a veterinary surgeon who had delivered a stillborn calf.

Shigella infections

There were 658 reports of *Shigella* infections for 1992. Of these, 89 were acquired overseas, 17 were from migrants and refugees, and 24 were follow-up isolations leaving a total of 528 cases which were recorded as having been acquired in Australia. This was probably an over-estimation as not all reports were accompanied by comprehensive patient details.

The case rate in the Northern Territory fell in 1992 to the lowest level since 1985 as did the total number of Australian cases (Table 6).

Sh. flexneri 2a (26%), *Sh. flexneri* 6 (14%) and *Sh. sonnei* biotype a (23%) accounted for 63 percent of total cases in 1992. Twenty-two cases of *Sh. sonnei* biotype g were acquired overseas, the second most common such infection and probably a conservative figure due to incomplete patient histories.

Infections acquired overseas

These include migrants and refugees but exclude enteric fever. The 1991 figures are given in square brackets.

More than 10 cases:

S. Enteritidis - 43 [17] cases: PT 4 (36 cases) from Argentina, Bali, China, Hong Kong, India, Malaysia, Portugal, Romania, Singapore, Thailand, UK; PT 1 not stated (ns); PT 6 Poland; PT 7a Sri Lanka; PT 31 Hong Kong.
S. Typhimurium - 24 [23] cases: PT 12a Bali; PT 135 India and Thailand; PT 136 Sri Lanka; PT 145 Cambodia[1]; PT 170 Tonga; PT 21 Vietnam; PT 29 Israel; PT 68 Bali; PT 8 Yugoslavia; PT 9 Nepal; RDNC Bali; untypable Indonesia, Pakistan and the Philippines.
S. Blockley - 23 [14] cases: Bali (7), Thailand (4), Malaysia (3), Africa, Britain, Vietnam.
Sh. sonnei biotype g - 22 [29] cases: Africa, Lebanon, Turkey, India, Nepal, Indonesia incl. Bali, Malaysia, Papua New Guinea, Solomon Islands and Fiji.
S. Virchow - 21 [17] cases: Thailand (5), Bali (3), Fiji (2), Africa, India, Nepal, Indonesia, Vietnam[1], USA, Papua New Guinea.
S. Hadar - 22 [19] cases: Bali (9), Vietnam[1] (4), Indonesia (2), Thailand (2) and the Philippines.
S. Kentucky - 15 [2] cases: Bali (6), Indonesia (3), Vietnam[1] (3), Malaysia and Thailand.
Sh. sonnei - 14 [2] cases: Bali (4), Africa[1], Britain and New Caledonia.
S. Derby - 13 [9] cases: Vietnam[1] (6), Bali (2), Thailand (2), India and Hong Kong[1].

Table 6. Case rates per 100,000 for *Shigella* infections, and total cases reported, 1986 to 1992, by State or Territory

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

Sh. flexneri 2a -12 [12] cases: Bali, Cambodia, Indonesia, Turkey (Kurdistan[1]), Malaysia, New Caledonia, Solomon Islands.
Sh. flexneri 6 - 11 [12] cases: Vietnam[1] (4), Egypt, India, Nepal, Pakistan and Papua New Guinea.
S. Emek - 11 [1] cases: Bali (7), Thailand (2), unspecified (2).
S. Agona - 10 [15] cases: Bali (5), Hong Kong, Pakistan, Singapore, Thailand and Vietnam[1].

Between 5 and 9 cases:

S. Infantis (6): Egypt, Indonesia including Bali, Nepal.
S. Javiana (5): Indonesia including Bali, Thailand, Vietnam[1].
S. Paratyphi B var Java 3b var 3 (5): Bali, the Philippines;
S. Senftenberg (7): Bali, Mozambique, Vietnam[1].
S. Weltevreden (8): Bali, Solomon Islands, Vanuatu, Vietnam[1].
C. jejuni (6): Africa, Indonesia including Bali, Nepal, Thailand.
Sh. flexneri 3a (8): Afghanistan, Indonesia including Bali, Nepal, Vietnam[1].
Sh. sonnei biotype a (9): India, Indonesia, Tonga and Vietnam[1].

Between 2 and 4 cases:

Plesiomonas shigelloides (2): Bali, Thailand.
S. Adelaide (2): Bali.
S. Anatum (4): Thailand, Vietnam[1].
S. Bareilly (3): Sri Lanka, Vietnam[1].
S. Berta (3): Bali.
S. Bovismorbificans (3): Singapore, Thailand, Solomon Islands.
S. Braenderup (2): Indonesia.
S. Cerro (2): Thailand, Vietnam[1].
S. Chester (2): Thailand, Vietnam.
S. Heidelberg (3): Bali, unspecified.
S. Hvittingfoss (2): Philippines.
S. Isangi (4): Indonesia including Bali.
S. Livingstone (3): Indonesia including Bali.
S. Mbandaka (3): Africa, India, Singapore.
S. Mississippi (2): Vanuatu.
S. Montevideo (4): India, Bali, Fiji.
S. Newport (2): Indonesia, Philippines.
S. Potsdam (3): Indonesia.
S. Stanley (3): Bali, Thailand.
S. Tennessee (3): Thailand.
S. Thompson (3): Indonesia including Bali.
Sh. boydii 2 (2): Philippines.
Sh. boydii 4 (2): Thailand, Vietnam[1].
Sh. dysenteriae 2 (4): India, Nepal, Indonesia, Somalia.
Sh. flexneri 1a (3): Egypt, Indonesia, Thailand.
Sh. flexneri 1b (3): India, Thailand.
Sh. flexneri var Y (4): India, Vietnam[1].
Vibrio parahaemolyticus (2): Mexico.

One case only

A. caviae: unspecified.
C. coli: Cambodia.
S. ser 3,10:r:- Fiji.
S. ser 4,12:d:- Singapore.
S. Amsterdam var 15+: Bali.
S. Brandenburg: Nigeria.
S. Dublin: Europe.
S. Duesseldorf: Indonesia.
S. Essen: Malaysia.
S. Havana: Lebanon.
S. Krefeld: Thailand.
S. Lexington: Indonesia.
S. Manhattan: Hong Kong.
S. Muenchen: Africa.
S. Oslo: Singapore.
S. Panama: Thailand.
S. Paratyphi B biovar Java Dundee: Bali.
S. Reading: Papua New Guinea.
S. Richmond: unspecified.
S. Saintpaul: Philippines.
S. Singapore: unspecified.
S. Telelkebir: Madagascar.
Sh. boydii serotypes 1: Indonesia, 4: Thailand, and 17: Malaysia.
Sh. flexneri and serotype 2b: Sri Lanka.
Sh. flexneri 4a: Albania; 4a mann neg: unspecified; and Y: India.
Sh. sonnei biotypes d: unspecified; and e: Bali.
V. cholerae non O1: India.
Y. enterocolitica: Papua New Guinea.
Y. enterocolitica O:3 Bio 4: Thailand.

1. Migrant or refugee.

Suspected or confirmed outbreaks

Northern Territory

Beginning in mid-November and continuing into 1993, nine cases of *S.* Wandsworth were reported. Eight of these were infants from the communities of Milingimbi and Numbulwar in Eastern Arnhem Land.

Three cases of *S.* Ohio were reported from young children in communities near Alice Springs in mid-December; two were from Papunya.

The only other incident of note was that of *Sh. boydii* 1, concurrent with the larger outbreak in Western Australia. The first of the six Northern Territory cases for 1992 was reported from Darwin in September.

New South Wales

There were 47 cases of *S.* Hadar in 1992, 27 reported to the NSSS between October and December. This increased incidence continued into 1993.

Queensland

Six cases each of *S.* Zanzibar var 15+ (all 1 November) and *S.* Mgulani (mid- to late November) were reported from Cairns. Both incidents involved mostly adults. There was a family outbreak of *S.* Virchow in Mackay in August and two separate outbreaks of *Sh. sonnei* in Rockhampton, one in March and a second, larger incident, which originated among visitors to a caravan park in December.

South Australia

Thirteen cases of *S.* Agona were reported in the one week in July-August and three cases of *Sh. boydii* 1 in

November and December, coincident with the outbreak in Western Australia.

Tasmania

The major outbreak was of *S.* Bovismorbificans PT 7 in March during which 29 cases (20 adults) were reported. Twelve cases were from the north-western region but there were also cases from Hobart and Launceston.

Victoria

The largest incident was of *S.* Typhimurium PT 135 (12 cases) from Melbourne suburbs in mid-May. There was a family incident (5 cases) of PT 1 in July in Wangaratta. Four cases of PT 9 from a dairy farm in south-western Victoria in October coincided with an increased incidence of this phage type among dairy herds in the area. Early in May there was an increased incidence of *S.* Bovismorbificans PT 7 in Melbourne, Melton and Horsham. This coincided with the later stages of the outbreak in Tasmania.

Western Australia

There were three major outbreaks in 1992. Beginning in late February, 33 cases of *S.* Typhimurium RDNC+ were reported from Perth. Twenty of the cases were reported from children 12 years and under, with an average age of three years. In mid-June 17 cases of *S.* Typhimurium PT 9 were reported from one particular suburb of Perth. The most interesting feature of this outbreak was that, with the exception of one parent, all cases were from children between the ages of three and 10 years.

In mid-September the first cases of *Sh. boydii* 1 were reported from Halls Creek signalling the beginning of a large outbreak. By the end of December, 26 cases had been reported from several localities in the north-west. The outbreak continued well into 1993.

On a smaller scale, five cases of *S.* Tennessee, all children, were reported from Port Hedland on the same day in February.

Top ten *Salmonella* serovars

The top ten *Salmonella* serovars for 1992 comprised 63.6% of the total cases acquired in Australia (4492) (Table 7). Four of the listed serovars were associated with outbreaks. The top ten phage types of *S.* Typhimurium comprised 65% of the total *S.* Typhimurium cases (Table 8).

Table 7. Top ten *Salmonella* serovars, 1992

Serovar	Number of cases	Position in 1991	% of top ten	% of total	Origin/number of cases
S. Typhimurium	1360	1	47.5	30.2	NSW 453, Vic 381
S. Virchow	316	6	11.0	7.0	Qld 261, NSW 24
S. Saintpaul	266	4	9.3	5.9	Qld 149, NT 36, WA 34
S. Birkenhead	149	7	5.2	3.3	Qld 74, NSW 69
S. Chester	148	5	5.2	3.3	Qld 59, NT 26, WA 24
S. Bovismorbificans[1]	132	2	4.6	2.9	Vic 37, NSW 34, Tas 23
S. Muenchen	130	-	4.5	2.9	Qld 57, WA 34, NT 21
S. Infantis	122	8	4.3	2.7	NSW 30, Vic 25, NT 16
S. Hadar[1]	121	-	4.2	2.7	NSW 47, Vic 43, Tas 10
S. Heidelberg	116	3	4.1	2.6	Qld 69, NSW 31
Total	2860		99.9	63.5	

1. Associated with outbreaks.

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

Phage type	Number of cases	Position in 1991	% of top ten	% of total	Origin/number of cases
9[1]	276	1	31.3	20.3	Vic 123, NSW 86, WA 35
135[1]	163	2	18.5	12.0	Vic 54, NSW 44, WA 23
170	106	-	12.0	7.8	Vic 56, NSW 34
126	70	-	7.9	5.1	NSW 50, SA 9
108	56	-	6.3	4.1	NSW 24, Qld 13, SA 12
44	55	4	6.2	4.0	Vic 17, NSW 15, SA 13
8	43	9	4.9	3.2	NSW 24, Qld 9, SA 5
RDNC+[1]	40	-	4.5	2.9	WA 40
141	37	7	4.2	2.7	Vic 11, WA 11, NSW 9
12a	36	3	4.1	2.6	NSW 12, Qld 9, SA 7
Total	882		99.9	64.7	

1. Associated with outbreaks

S. Typhimurium was the most common *Salmonella* serovar in New South Wales, Victoria, Western Australia, South Australia, and the ACT. *S.* Saintpaul was the most common in the Northern Territory, *S.* Virchow in Queensland and *S.* Mississippi in Tasmania (Table 9).

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

New South Wales	949 cases			Northern Territory	326 cases		
Case rate	17.6 per 100,000			Case rate	210.5 per 100,000		
	Number	% of NSW	% of Australia		Number	% of NT	% of Australia
S. Typhimurium	453	47.7	33.3	*S.* Saintpaul	36	11.0	13.5
S. Birkenhead	69	7.3	46.3	*S.* Chester	26	8.0	17.6
S. Hadar	47	4.9	38.8	*S.* Muenchen	21	6.4	16.2
S. Bovismorbificans	34	3.6	25.8	*S.* Welikade	18	5.5	36.0
S. Heidelberg	32	3.4	27.6	*S.* Infantis	16	4.9	13.1
S. Infantis	30	3.2	24.6	*S.* Anatum	14	4.3	14.4
S. Virchow	24	2.5	7.6	*S.* Oranienburg	14	4.3	30.4
S. Singapore	21	2.2	35.6	*S.* Para B bv Java	13	4.0	24.1
S. Chester	20	2.1	13.5	*S.* Havana	12	3.7	19.7
S. Saintpaul	20	2.1	7.5	*S.* Litchfield/ *S.* Tennessee	11	3.4	32.4/ 19.3
Total	750	79.0%		Total	181	55.5%	
Victoria	649 cases			Western Australia	621 cases		
Case rate	16.1 per 100,000			Case rate	44.1 per 100,000		
	Number	% of Vic	% of Australia		Number	% of WA	% of Australia
S. Typhimurium	381	58.7	28.0	*S.* Typhimurium	206	33.2	15.0
S. Hadar	43	6.6	35.5	*S.* Muenchen	34	5.5	26.1
S. Bovismorbificans	37	5.7	28.0	*S.* Saintpaul	34	5.5	12.7
S. Infantis	25	3.8	20.5	*S.* Tennessee	30	4.8	52.6
S. Singapore	17	2.6	29.0	*S.* Chester	24	3.8	16.2
S. Virchow	15	2.3	4.7	*S.* Anatum	20	3.2	21.0
S. Agona	11	1.7	19.6	*S.* Infantis	19	3.0	15.6
S. Montevideo	8	1.2	36.0	*S.* Bovismorbificans	18	2.9	13.6
S. Chester	6	0.9	4.0	*S.* Adelaide	13	2.1	23.0
S. Saintpaul	6	0.9	2.2	*S.* Oranienburg/ *S.* Welikade	13	2.1	28.0/ 26.0
Total	549	84.6%		Total	411	66.2%	
South Australia	285 cases			Queensland	1510 cases		
Case rate	21.2 per 100,000			Case rate	58.4 per 100,000		
	Number	% of SA	% of Australia		Number	% of Qld	% of Australia
S. Typhimurium	117	41.1	8.6	*S.* Virchow	261	17.3	82.6
S. Agona	19	6.7	34.0	*S.* Typhimurium	150	9.9	11.0
S. Saintpaul	17	6.0	6.4	*S.* Saintpaul	149	9.9	56.0
S. Infantis	17	6.0	13.9	*S.* Birkenhead	74	4.9	49.7
S. Chester	10	3.5	6.7	*S.* Heidelberg	69	4.6	59.5
S. Muenchen	8	2.8	6.2	*S.* Chester	59	3.9	39.9
S. Enteritidis PT 4	8	2.8	36.0	*S.* Enteritidis	59	3.9	63.4
S. Hadar	7	2.4	5.8	*S.* Muenchen	57	3.8	43.8
S. Havana	7	2.4	11.5	*S.* Aberdeen	55	3.6	96.5
S. Bovismorbificans	7	2.4	5.3	*S.* Anatum	44	2.9	45.4
Total	217	76.1%		Total	977	64.7%	

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

Australian Capital Territory[1]	34 cases			Tasmania[1]	118 cases		
Case Rate	13.2 per 100,000			Case Rate	27.0 per 100,000		
	Number	% of ACT	% of Australia		Number	% of Tas	% of Australia
S. Typhimurium	12	35.3	0.9	*S.* Mississippi	32	27.1	91.4
S. Saintpaul	3	8.8	1.1	*S.* Typhimurium	32	27.1	2.3
S. Anatum	3	8.8	3.1	*S.* Bovismorbificans	23	19.5	17.4
S. Enteritidis	2	5.9	2.1	*S.* Hadar	10	8.5	8.3
S. Hadar	2	5.9	1.6	*S.* Give	4	3.4	17.4
Total	22	64.7%			101	85.6%	

1. Insufficient cases to compile a top ten.

Regional distribution of *Salmonella* serovars

Analysis of the NSSS data on the frequency and distribution of *Salmonella* infections has revealed a continuous pattern of specificity of some serovars to particular regions of Australia. These regions are mostly within State and Territory boundaries, for example the Kimberley and Pilbara regions of Western Australia and the Cape York region of Queensland and the serovar patterns are reflected in the State and Territory totals. However, one region in which case rates are abnormally high extends across the boundary between two States - the coastal strip between Lismore in northern New South Wales and the Sunshine Coast in Queensland.

Two of the most common State-specific serovars are *S.* Mississippi (94% of cases from Tasmania) and *S.* Virchow (81% of cases from Queensland). There are 27 other serovars which show a greater than 80% specificity to a particular State or Territory or region. The percentage occurrence of cases calculated on data collected between 1985 and 1992 is given in brackets.

Western Australia

S. Choleraesuis var Australia was first isolated from Western Australia in 1988 from samples of goats' milk. All human cases to date have been reported from Western Australia and the numbers, although low (eight in 1992), appear to be increasing.

Coastal region of northern New South Wales and southern Queensland

S. Birkenhead (86%) and *S.* Waycross (95%) are most frequently encountered from the coastal region which extends from Lismore in New South Wales to the Sunshine Coast in Queensland. Over 80% of isolates of these two serovars are reported from this region every year. All 1992 isolates of *S.* Waycross were from this region.

Queensland

S. Aberdeen has been specific to Queensland for many years and 95% of cases have been reported from this State since 1985. Most cases have originated in the region which extends north from Rockhampton and over half of these have been from the far north. In 1992 over 75% of cases were children aged one year and under. *S.* Zanzibar var 15+ (89%), *S.* Arizonae subsp IIIb ser 61:l,v:z35 (80%), *S.* Enteritidis PT 26 (85%) are also highly specific to Queensland.

In far north Queensland *S.* Mgulani (98%), *S.* Yarrabah (100%) and, to a lesser extent, *S.* ser 16:l,v:- (83%) are found almost exclusively in the Aboriginal communities of Cape York and around Cairns.

Tropical Australian region

There are several serovars which are found in the tropical region which extends across the boundaries of Queensland, the Northern Territory and Western Australia. *S.* ser 16:l,v:- (100%), *S.* Urbana (84%) and *S.* Welikade (83%) are found predominantly in Queensland and the Northern Territory; *S.* Abony (80%) occurs mostly in Queensland and Western Australia and *S.* Ball (94%) and *S.* Cubana (75%) in the Northern Territory and Western Australia.

S. Chester (79%); *S.* Eastbourne (84%); *S.* Hvittingfoss (88%), *S.* Jangwani (92%), *S.* Lansing (91%), *S.* Litchfield (87%), *S.* Ohlstedt (94%), *S.* Poona (93%), *S.* Rubislaw (94%), *S.* Saintpaul (84%), *S.* Wandsworth (95%) and *S.* Welikade (100%) are found throughout this northern region.

Microbiological Diagnostic Unit News
Antibiotic resistance of human *Salmonella* strains, 1992

At the Microbiological Diagnostic Unit, University of Melbourne, which conducts the NSSS, *Salmonella* are routinely tested for resistance to ampicillin (A), streptomycin (S), tetracycline (T), chloramphenicol (C), sulphonamide (Su), trimethropim (Tm), kanamycin (K), gentamicin (G), nalidixic acid (Na) and spectinomycin (Sp). The resistance markers are used for epidemiological purposes only.

In 1992 there were 120 *S.* Typhi, 19 *S.* Paratyphi A, 6 *S.* Paratyphi B, 64 *S.* Paratyphi B bv Java and 1640 other salmonellae tested. Resistance results were:

S. Typhi (37) - phage types: E1a, India (6) ASTCSuTm; E1a, Fiji (27) ASCSuTm; A, Bangladesh (1) ASTCSuTm;

M1, Pakistan (1) ASTCSuTm; untypable, Vietnam (1) ASTCTm. None of the strains were resistant to ciprofloxicin

S. Paratyphi B bv Java (4) - phage types: 3b var 3, Bali (1) S Su; 3b var (1) ASTCSu; 1 var (1) ASTCSuTm; BOAR (1) STSuTmSp.

Other salmonellae: 275 (16.8%) were resistant to one or more antibiotic. Percentage resistance to individual antibiotics was as follows: A 4.5; S 11.4; T 11.0; C 2.8; Su 7.2; Tm 3.0; K 2.1; Na 0.1; Sp 1.7; G 0.1. Forty-seven of the resistant strains (17.1%) were reported as acquired overseas. Some serotypes are noted for their multiple resistance. For example 10/10 strains of *S.* Kentucky and 12/13 strains of *S.* Blockley (both usually acquired in South-east Asia) and 61/63 strains of *S.* Hadar (also acquired in South-east Asia but now established in Australia) exhibited multiple resistance.

CDI Editorial Comment

A detailed list of the 6228 reports made to the NSSS for 1992, tabulated by organism and State or Territory, was published with the *NSSS Human Annual Report 1992*. It has not been reproduced in this *CDI* report, but is available from *CDI* or from the NSSS.

SALMONELLA HADAR IN AUSTRALIA

(Reprinted with permission from the Australian Salmonella Reference Laboratory Monthly Report, May 1993, editors Chris Murray and Dianne Davos)

Isolations of *Salmonella* Hadar from humans and other sources have increased in frequency in Australia over recent years. An *S.* Hadar strain caused a large outbreak in the United Kingdom which peaked in 1979 and 1980. It was attributed to imported contaminated feed which was fed to turkeys. In Australia, most isolates have been from overseas travellers and the ages of those affected reflected the age group of travellers, particularly travellers to Asia. While the serovar was also isolated occasionally from Australian environmental sources such as sewage effluents, it was not isolated from food animals.

In November 1989, three isolates were made during routine monitoring by the broiler industry in two States. The strain spread within the poultry industry, which mounted an intensive control program. The organism persisted, however, the numbers did decline, with Tasmania being the last significant source of isolates from chickens.

Occasionally isolates have been received from other sources: one isolate from a bovine source and several isolates from raw red meats/pork used for smallgoods production have been recorded.

A selection of isolates from Australia in 1992 were phage typed at the Public Health Laboratory, Colindale, United Kingdom (Table).

Table. *Salmonella* Hadar isolates, by phage type, source and State or Territory

Phage type	Source	Age (years)	State or Territory	Comments
2	Human	12	SA	
	Human	1	SA	
	Human	81	Tas	
	Human	65	SA	isolated from urine
	Chicken		NSW	6 isolates
	Chicken		Tas	7 isolates
	Turkey		NSW	2 isolates
10	Human	37	NSW	
	Human	13	SA	acquired overseas
	Human	70	Qld	
	Human	28	Qld	acquired in Asia
15	Chicken		NSW	1 isolate
22	Chicken		Tas	1 isolate
	Chicken		NSW	1 isolate
26	Chicken		NSW	1 isolate
	Turkey		NSW	2 isolates
33	Raw beef/pork		Vic	2 isolates
47	Human	22	Qld	
Untypable	Human	26	SA	

The number of phage types from chickens suggests that some diversification of strains of the serovar has occurred. It is likely that the chicken strains are derived from one strain which originally colonised the chickens.

Phage type 10, isolated from humans, is probably exotic to Australia and acquired as a result of travel.

REVIEW OF NOTIFICATIONS OF INVASIVE *HAEMOPHILUS INFLUENZAE* TYPE B INFECTIONS IN QUEENSLAND, 1990 TO 1993

(John Scott, Communicable Diseases Branch, Queensland Health and National Centre for Epidemiology and Population Health, Canberra)

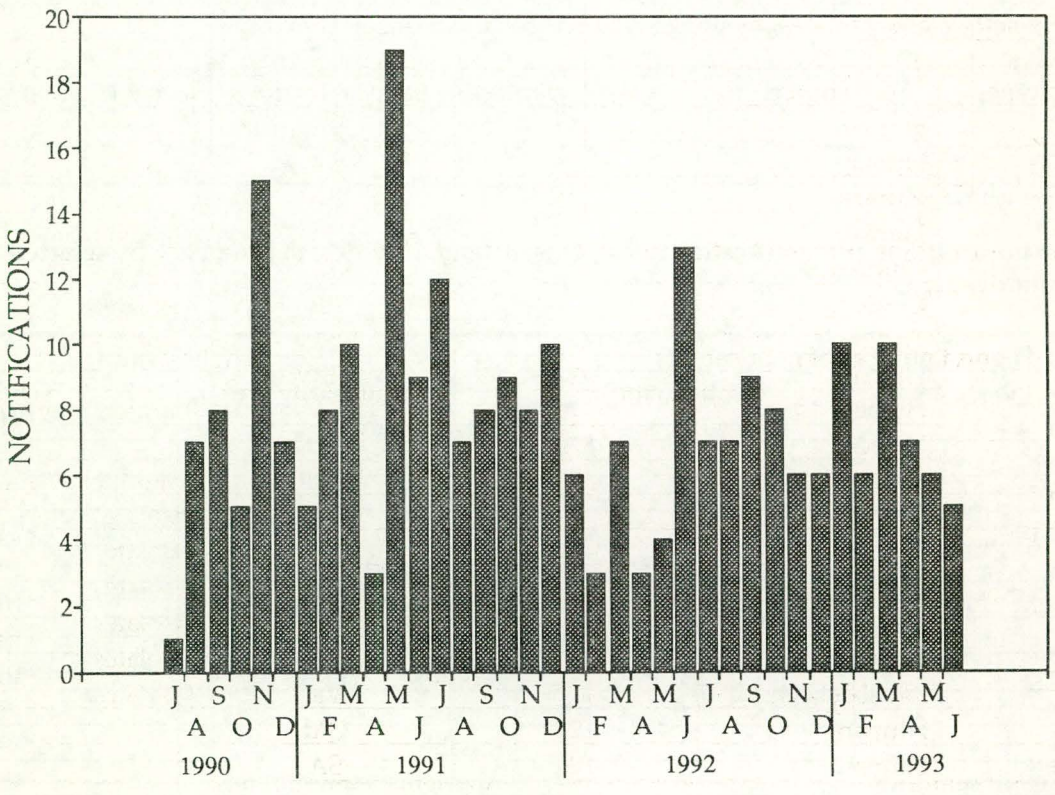
Introduction

There is ample evidence, beginning with the Finnish study of 1974[1], for the effectiveness of vaccination in the prevention of *Haemophilus influenzae* type b (Hib) disease. Assessment of the effectiveness of the recently formulated vaccination strategy for Hib disease will depend partly on epidemiological studies of the disease. It is timely therefore to review the experience of Hib disease in Queensland and to stress the importance of accuracy and consistency in the notifications on which these assessments are based.

Notification

Hib disease has been notifiable in Queensland since July 1990. Under the Health Act, notifications are required from laboratories following 'isolation of *H. influenzae* type b from blood or cerebrospinal fluid'. But in a general statement, the Act also states that 'a histological or cytological examination of a specimen which reveals any abnormality which may be regarded as diagnostic for a specific notifiable disease shall be indicative of that notifiable disease'. The site of isolation and the clinical status of the patient are not routinely recorded in the database. Analysis of a sample of Queensland notifications of Hib disease from 1992-1993 showed 53% were isolations from blood, 28% from CSF, 11% from swabs, and 8% were clinical notifications of epiglottitis. No routine active case surveillance nor contact screening is undertaken by the Communicable Diseases Branch.

Figure 1. Hib notifications, Queensland, July 1990 to June 1993, by month



Results

From 1 July 1990 to 30 June 1993, 276 cases of *Haemophilus influenzae* type b infection were notified to Queensland Health (Figure 1). This represented a mean annual incidence of 3.2 per 100,000 for the total Queensland population. There was no difference in monthly notifications to suggest a seasonal pattern of disease, nor was there an annual variation.

The number of notifications for each Queensland Health Region for each year ranged from 40 in Brisbane North in 1991 to none in several Regions in each year except 1991 (Table 1, Figure 2). The highest crude attack rate (10.1 per 100,000) was also recorded for the Brisbane North Region in 1991. Table 2 gives the three-year figures for the local authority areas with the highest raw number of notifications and crude attack rates respectively. In an attempt to address the difficulty associated with the small denominator

Figure 2. Queensland Health Regions[1]

1. Regions are named as detailed in Table 1.

Table 1. Hib notifications and crude attack rates[1], Queensland, July 1990 to June 1993, by Health Region

Region	Map reference number	1990		1991		1992		1993	
		Number	Rate[1]	Number	Rate[1]	Number	Rate[1]	Number	Rate[1]
Brisbane North	1	19	9.6	40	10.1	16	4.0	5	1.9
Brisbane South	2	0	0	19	3.0	26	4.1	6	2.5
Central	3	5	6.2	3	1.9	1	0.6	2	2.5
Darling Downs	4	3	3.0	11	5.6	4	2.0	3	3.0
Gold Coast	5	2	1.4	9	3.3	3	1.1	4	2.9
Mackay	6	3	5.6	4	3.8	1	0.9	1	1.8
Northern	7	4	3.8	11	5.2	5	2.4	4	3.8
Peninsula	8	2	2.2	3	1.7	9	5.0	2	2.2
Sunshine Coast	9	3	2.2	3	1.2	13	5.0	5	3.8
West Moreton	10	0	0	2	1.4	0	0	1	1.4
Wide Bay	11	1	1.3	2	1.3	1	0.7	0	0
South West	12	0	0	1	3.5	0	0	0	0
Central West	13	0	0	0	0	0	0	0	0

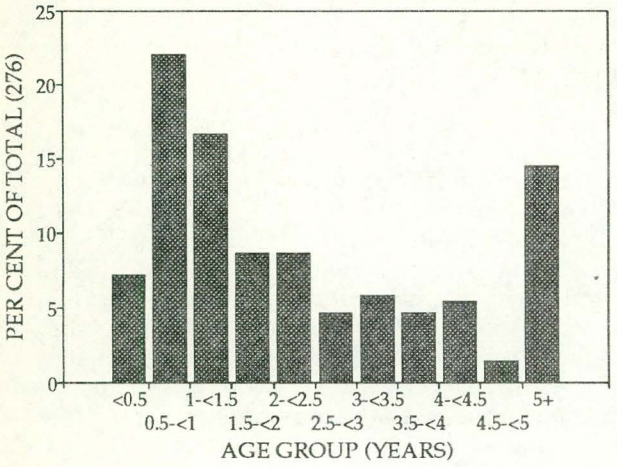
1. Rates: cases per 100,000 per year.

Table 2. Hib notifications and notification rates[1], Queensland, July 1990 to June 1993, by selected loal authority areas

Highest number of notifications		Highest rates[1]	
Local authority area	Notifications	Local authority area	Rate
Brisbane	117	Pormpuraaw	81.6
Townsville	14	Yarrabah	45.6
Gold Coast	13	Doomadgee	37.2
Toowoomba	13	Bamaga	24.0
Pine Rivers	11	Palm Island	19.2
Rockhampton	8	Goondiwindi	16.3
Maroochy	7	Weipa	13.5
Caboolture	7	Monto	10.8
Cairns	6	Torres	9.6
Caloundra	5	Rosalie	9.6
Aboriginal communities	6	Aboriginal communities	48.3

1. Rates: cases per 100,000 per year.

Figure 3. Hib notifications in children under five years of age, Queensland, July 1990 to June 1993, by age group



populations for the Aboriginal communities, these results are also presented for the communities as a whole.

The ages of patients ranged from three months to 89 years with a modal age of nine months and a mean age of 5.4 years. There was no difference in age groups stratified according to health region. For children aged under five years (the target population of the immunisation strategy), there were 231 notifications (Figure 3). This gives an adjusted annual incidence rate of 36.4 per 100,000 children under five years. For the Aboriginal communities the corresponding adjusted annual rate was 116.6 per 100,000.

The sex ratio of notifications was 0.92 females to every male. There was no difference between Health Regions.

Discussion

An analysis of notifications of disease can only be as valid as the data on which it is based. There are problems associated with the Communicable Diseases database for Hib disease. Patient addresses are not always accurately notified (less than 10% for some Regions), with the patient then being classified as being from the major centre where treatment was given. There is no indication from a laboratory-based system as to whether cases are primary or secondary. This information may be useful, given the epidemiological importance of issues like child-care and Hib disease. A laboratory-based notification system may not report disease where the diagnosis is missed due for example, to recent treatment with antibiotics, where no blood culture or lumbar puncture was done, or where there was no growth despite disease. Alternatively this form of notification may report findings which are incidental, particularly from swab results.

The annual incidence of 3.2 per 100,000 total population may reflect a low level of case ascertainment as it is lower than comparable rates from Australian and overseas studies[2,3]. Data for hospital separations for Hib disease in Queensland are only available for the calendar year 1990. These show 52 separations for epiglottitis and 47 for meningitis, giving a total of 99 for these two serious manifestations of Hib infection. Extrapolating from these figures, using the reported relative incidence of various forms of Hib disease[5], it appears that the incidence reflected in the Queensland notifications is lower than expected. The lack of a seasonal trend is contrary to some reports[3,4,5] and supported by others[6], but the database is not robust.

The higher attack rates in the Aboriginal communities support the findings of other studies in Australia and overseas[3,7], where indigenous populations are at least three times as likely to experience disease as non-indigenous populations. The rates most commonly quoted are those for children under five years. Our annual incidence rate of 36.4 per 100,000 children aged under five years is a little lower than expected[3,4,8] from some studies, but is comparable with rates in Sydney[5]. The annual incidence rate of 116.6 per 100,000 for Aboriginal children is lower than the rates reported for American Indians[3] and is much lower than the rates reported by Hanna for Aboriginal children in the Northern Territory[7].

The age distribution underscores the importance of timely immunisation. Comparable to reports from other series[3], about 87% of notifications of Hib disease are in children aged less than five years and 55% of notifications are children aged less than two years. All (6) notifications from Aboriginal communities were in children aged one year or less. From the Queensland hospital separation data of 1990, 72% of children with Hib meningitis were under two years and 94% were under five years respectively. In contrast 20% of children with epiglottitis were under two years and 75% were under five years. These results reflect similar experience in Australia and overseas[3,4,5] and form the epidemiological basis for the recently-announced extensions to the Hib vaccination program. Given the reservations regarding the notification system, a note should be made of the notifications reported from persons over five years, and of the possibility of disease in older susceptible individuals.

The sex ratio of notifications reflects the sex ratio of the general population. Contrary to reports from the Australian Capital Territory region, Victoria and the Northern Territory[9], no female preponderance was seen in patient separations for meningitis.

The Queensland experience of Hib disease reinforces the appropriateness of the newly-announced vaccination initiatives. Experience of the notification of Hib disease in Queensland emphasises the need for accurate, complete and consistent notification of both clinical and laboratory evidence of disease. It is to be hoped that those notifying disease will understand and value the importance of their task. It is imperative then that those in the central agencies charged with the collation of these data, will respond by ensuring the timely return of useful analyses.

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CDI Editorial Comment

The National Hib Immunisation Program began on 1 April 1993 and initially provided for free immunisation for all infants born on or after 1 February 1993. On 1 September 1993, the Program was extended to include free 'catch-up' immunisation for all children born since 1 April 1988.

The vaccine used in the Program for all non-Aboriginal children is HibTITRE. The NHMRC recommended schedule for this vaccine is for doses at the ages of 2, 4, 6 and 18 months. Older children required fewer doses (Table). Aboriginal and Torres Strait Islander children are being supplied with PedvaxHIB (PRP-OMP) through Aboriginal health services and immunisation clinics. Aboriginal children are at risk of infection at an earlier age than children in the general population and PRP-OMP has been shown to produce a higher early immune response and thus greater early protection following the initial dose of the vaccine. The schedule recommended by the NHMRC for this vaccine is the same as for HibTITRE, except that children commencing the series between the ages of 2 and 6 months require only 2 initial doses, and a booster at 12, rather than 18 months (Table). Further information on the National Hib Immunisation Program is available on 008 02 0103.

Hib disease notifications will play an important role in the assessment of the effectiveness of the Program, as will information on vaccine failures, which will also be collected by the States and Territories.

Hib disease notifications have been compiled in the National Notifiable Diseases Surveillance System (NNDSS) since January 1991. At that time, the disease was only fully notifiable in Queensland, and partly notifiable in South Australia, Victoria and Tasmania. In South Australia it has been notifiable as 'bacterial meningitis' since 1987 and became fully notifiable in July this year. In Victoria, *Haemophilus influenzae* epiglotittis and meningitis only have been notifiable since May 1990, although notifications of other forms of invasive Hib disease are encouraged and accepted. In Tasmania, it has been notifiable as 'non-meningococcal meningitis' since September 1989, but Hib meningitis cases are separated from the others and

Table. NHMRC recommended Hib immunisation schedule

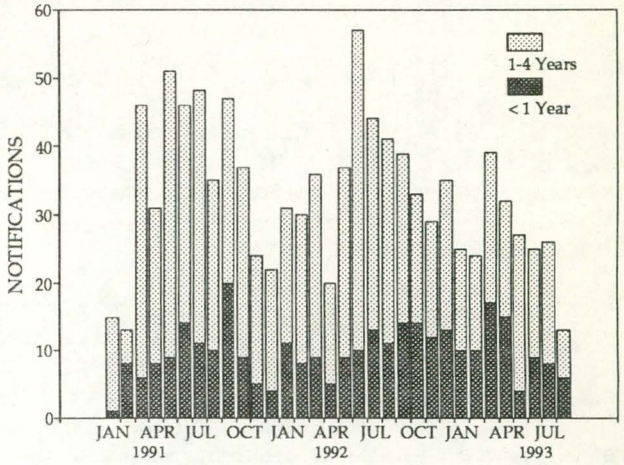
Vaccine	Recommended population	Age at first dose (months)	Primary series	Age at booster dose (months)
PRP-OMP (PedvaxHIB)	Aboriginal and Torres Strait Islanders	2-6	Two doses, two months apart	12
		7-11	Two doses, two months apart	18
		12-14	One dose	18
		15-59	One dose	-
HbOC (HibTITRE)	All others	2-6	Three doses, two months apart	18
		7-11	Two doses, two months apart	18
		12-14	One dose	18
		15-59	One dose	-

reported to the NNDSS, as are other cases of invasive Hib disease reported. Hib disease became notifiable in New South Wales in November 1991, the ACT in June 1992 and Western Australia in February 1993. It is not yet notifiable in the Northern Territory, but active surveillance is conducted and all known cases are reported to the NNDSS.

As for the Queensland Hib notifications, nationally-compiled notifications of Hib reinforce the appropriateness of an immunisation program targetting children under five years of age. In 1992, 501 cases of Hib were notified in Australia. Of these, 497 had age reported, 129 of these (26.0%) were aged less than one year, 257 (51.7%) were aged less than 2 years and 432 (86.9%) were less than five years old (Figure). The rate of notification in children aged less than five years was 33.3 per 100,000 per year (based on Australian Bureau of Statistics 1991 Census population data).

So far this year, there have been 297 Hib notifications. Eighty-one of these (27.3%) have been in children aged less than one year and 217 (73.3%) in children aged less than five years.

Figure. Hib notifications in children aged less than five years, January 1991 to August 1993, by month of onset



BRUCELLA MELITENSIS IN HUMANS

(Roy E Everett, Senior Regulatory Officer, Division of Animal Industries, NSW Agriculture, Orange)

Case reports

Cases of *Brucella melitensis* infection have been diagnosed in three women in Sydney during the period 1991 to 1993.

Case 1

A 25 year old Turkish-born woman travelled to Turkey in 1990 where she resided for 11 months. In that time she consumed unpasteurised goat dairy products. In July 1990, after a non-specific illness, a diagnosis of brucellosis was made, presumably based on serology. Her symptoms apparently resolved without therapy. Late in 1990 she suffered a miscarriage at 20 weeks gestation.

She returned to Australia in February 1991.

During March 1991, the patient presented to casualty at a hospital in Sydney with a number of health problems including a vaginal discharge. On one occasion she was admitted to hospital for a venogram because of fever and pain in her left calf. Venous thrombosis was excluded but blood cultures yielded *Brucella melitensis* biotype 1 confirmed by Australian Animal Health Laboratory (AAHL), Geelong. She had a serum agglutination titre of 640 to *B. melitensis* antigen.

She was recalled to hospital and admitted and treated for brucellosis with a six week course of rifampicin 600mg per day and doxycycline 200mg per day.

The patient did not attend follow up appointments for 6 months. She was admitted to hospital again in September 1991 where her titre to *B. melitensis* had risen to 2560. Tests showed that she had a moderately severe aortic incompetence with a 1cm vegetation on the aortic valve. The patient was treated for mild heart failure and given intensive antibiotic therapy. She progressed satisfactorily in hospital for 24 days but then her cardiac function started to deteriorate. On day 65 she was given a porcine aortic valve replacement.

Brucella-like organisms were cultured from blood in September and later from valve material but identification was not completed because of the risk involved to laboratory staff.

The patient made gradual progress and was discharged on day 98 with further antibiotic treatment. Nine months later she was reported to be making good progress[1].

Case 2

At the microbiology laboratory where the Case 1 culture of *B. melitensis* was made, staff were scanned for *Brucella* infection. One member, who was asymptomatic, was positive on blood culture. This young woman subsequently miscarried and *B. melitensis* biotype 1 (confirmed by AAHL) was cultured from placental material. She has recovered well after antibiotic therapy.

Case 3

A 67 year old woman of Italian origin, very much an urban person, was overseas for six months. The first five months were spent in an urban area of Italy then

she spent one month as a tourist in Spain. It was presumed by her doctors that she became infected in Spain.

She had spondylitis and *Brucella* species was cultured from a spinal abscess and from blood. She has responded well to antibiotic treatment.

The organism was submitted to AAHL for identification and was subsequently sent to Central Veterinary Laboratory, Ministry of Agriculture, Food and Fisheries, Weybridge, England for confirmation and biotyping as *Brucella melitensis* biotype 3.

Discussion

Brucella melitensis is exotic to Australia as far as sheep and goats are concerned and human infections are not acquired here. The endemic areas are the Mediterranean countries, south-east and eastern Europe, the Middle East, south-west Africa, Somalia, Asia and Latin America. Australian residents who visit these endemic areas are at risk of becoming infected.

B. melitensis is regarded as the most dangerous of the *Brucella* species to humans, and can cause severe complications, such as those described in this report.

Brucellosis is highly communicable. Transmission can be through direct or indirect contact with infected tissues, dust or aerosols. The organisms penetrate the skin, conjunctivae and respiratory and gastrointestinal tracts. The risk of laboratory acquired infection is therefore high. The highest standard of facilities and procedures are required when culturing *Brucella* species.

Reference

Chan C, Hardiman RP. Endocarditis caused by *Brucella melitensis*. *Med J Aust* 1993;**158**:631-632.

CDI Editorial Comment

Brucellosis, caused by any species of *Brucella*, has been a notifiable disease in Australia since 1937. Prior to the 1970 commencement of the national campaign to eradicate brucellosis in cattle, human brucellosis (caused mainly by *B. abortus*) occurred in all States, with a higher prevalence among persons from dairy farming areas, particularly in New South Wales and Victoria. Notifications peaked in 1969-1970 at 154, but then fell during the 1970s and 1980s to 20 cases or fewer each year during the late 1980s.

Since the beginning of 1990, there have been 114 notifications, 46 in 1990, 28 in 1991, 29 in 1992 and 11 so far this year. Most (96) of these cases have been from Queensland. The peak of cases in 1990 reflected the changed epidemiology of brucellosis in that State[1,2]; all cases for which the infecting species was determined were caused by *B. suis* and most were thought to have been acquired through contact with feral pigs, a reservoir for this organism.

B. melitensis infection has remained only rarely reported in Australia, as there is no animal reservoir for this organism. Only seven cases have been diagnosed by the National Brucellosis Reference Laboratory at the Australian Animal Health Laboratory since the beginning of 1990. In 1990, one *B. melitensis* biotype 1 was diagnosed, in 1991, one *B. melitensis* biotype 3 and three *B. melitensis* biotype 1, in 1992, one *B. melitensis* biotype 1 and in 1993, one *B. melitensis* biotype 3 (T. Foreman, personal communication). These include the three patients in this report.

References

1. Robson J. Brucellosis: preliminary communication on the changing epidemiology in Queensland. *Comm Dis Intell* 1991;**15**:376-78.
2. Neville G, Pearce M. Brucellosis - Queensland [published erratum appears in *Comm Dis Intell* 1992;**16**:195]. *Comm Dis Intell* 1991;**15**:378-381.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization.

Cholera Update

Chemba and Gorongosa Districts in Sofala Province in Mozambique have been declared cholera infected. Other areas within Inhambane, Manica and Sofala Provinces have been removed from the list of infected areas.

Cases of cholera have been reported for June and July from Afghanistan, Belize, Bolivia, Brazil, Costa Rica, Djibouti, El Salvador, Ghana, Guatemala, Honduras, Iran, Malawi, Mexico, Mozambique, Nicaragua, Peru, Tajikistan, Tanzania, Venezuela and Zimbabwe.

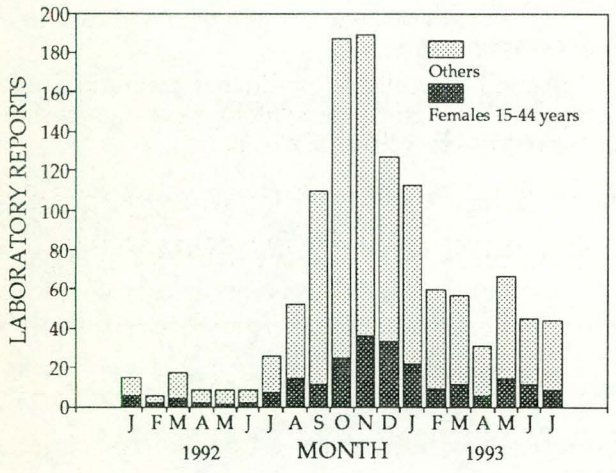
COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1916 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 8, 9 and 10).

- **Measles** was reported for 11 patients, 2 from Tasmania, 3 from Queensland, 3 from New South Wales and 3 from Victoria. Ages ranged from 9 months to 18 years. A total of 180 reports of measles has been received so far this year. Fifty have been from Queensland, 36 from New South Wales, 33 from Victoria, 32 from South Australia, 24 from Tasmania, 3 from Western Australia and one each from the Northern Territory and the ACT.
- There were 13 **rubella** reports this fortnight, including one female aged 17 years. The rubella reports have not declined to the levels prior to the epidemic last spring (Figure 1). A total of 223 of the reports since the beginning of 1992 have been in females aged between 15 and 44 years, 142 in 1992 and 81 in 1993.

Figure 1. Rubella laboratory reports, January 1992 to July 1993, by month of specimen collection and patient type



- **Hepatitis C** was reported for 192 patients. Six were goal inmates (4 also with a history of injecting drug use), one was a haemophiliac, one had Von Willebrand's Disease, one was an infant with antibody on its day of birth (mother also positive), one had end stage renal disease and 39 others had a history of injecting drug use.
- There were 6 reports of **Ross River virus** infection this fortnight, bringing the total for the year to 1521. All were presumptive (IgM) and all were from Queensland. Specimen collection dates were in July for 3 and in August for 3. The peak in reports this year was in March.
- The one report of **Barmah Forest virus** infection was also a presumptive case from Queensland. The specimen collection date was in July.
- **Cytomegalovirus** infection was reported for 69 patients. Included were a 8 week premature neonate with viral embryopathy. She had cataracts, petechiae and enlarged liver; the virus was isolated from urine and postmortem liver, lung and spleen. Other patients this fortnight included 3 with congenital infection, 7 transplant patients, 3 HIV positive patients and 2 with other immunocompromisation.
- There were 7 reports of **coxsackievirus type A9**. The patients ranged in age from 3 days to 32 years. Three reported meningitis, one encephalitis, one respiratory tract disease and 2 gastrointestinal disease. Five were from the ACT region and had specimen collection dates in July.
- **Echovirus type 30** was reported for 6 patients. This virus has been reported for 32 patients since the beginning of the year, more than for any year since the large outbreak involving 456 cases in 1988-89. Most have been reports of CSF isolates and/or meningitis.
- There were 77 reports of **influenza**, 23 of **untyped influenza A** (14 antigen detections, 1 IgM, 5 fourfold changes, 3 single high titres), 3 **influenza A H_3N_2** isolations (one reported as A/Beijing/353/89-like) and 51 reports of **influenza B** (12 isolations, 15 antigen detections, 6 fourfold changes, 4 IgM, 14 single high titres). Four influ-

Table 1. Influenza laboratory reports, 1993, by type and detection method

	Isolated	Antigen detection	IgM	Fourfold change	Other serological	Total
Influenza A untyped	11	26	6	9	95	147
Influenza A H_3N_2	12					12
Influenza B	69	43	11	10	94	227
Influenza untyped	3					3
Total	95	69	17	19	189	389

Figure 2. Influenza A (untyped and H_3N_2) laboratory reports, 1992 and 1993, by month of specimen collection

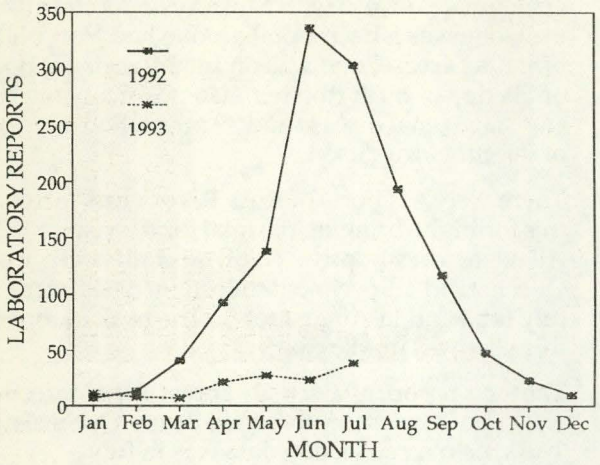
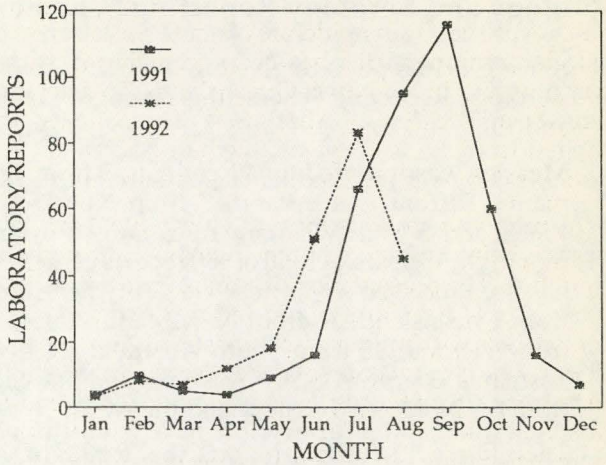


Figure 3. Influenza B laboratory reports, 1991 and 1993, by month of specimen collection



enza A reports and 4 influenza B reports were for patients aged over 65 years. The influenza B reports included a death in a 6 year old intellectually handicapped male who was admitted with neck stiffness and fitting (lung tissue isolate), cases in 2 patients with malignancies, a case of meningitis in a 40 year old male and a case reported from Christmas Island.

There have been 389 reports of influenza so far this year. The pattern has been more like the last year in which influenza B predominated (1991; Figures 2 and 3), although there have been 159 influenza A reports (Table 1). Most type A reports have been from Queensland, South Australia, Victoria and Western Australia. Queensland, South Australia and Western Australia have also reported most influenza B.

- Respiratory syncytial virus infection was reported for 395 patients this fortnight, bringing the total for the year to 2717, more than the average recorded for the last 5 years. Two this fortnight were from a set of one year old triplets and one was a 12 year old male heart transplant patient.
- There were 158 **rotavirus** reports this fortnight, bringing the total for the year to 1149, higher than the average recorded for the last 5 years. Two were triplets from the same set with respiratory syncytial virus infection. (One triplet had both infections and the others had one each.)
- There were 10 cases of **Q fever** reported this fortnight, bringing the total for the year to 291, more than for any year since 1987. All were males in the age range 18 to 52 years.
- ***Treponema pallidum*** infection was reported for 5 patients. Included were a 16 year old female with PID, a 16 year old male with active chancres and a 15 year old female for whom the risk 'unsafe sex' was reported.

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network collected data from 6600 patient encounters in Week 34 and from 4632 patient encounters in Week 35 (Table 2). This fortnight, influenza was reported at the highest rates for this year so far; 260 reports were received. Pertussis was reported for 5 patients.

Table 2. Australian Sentinel Practice Research Network, Weeks 34 and 35 1993

Condition	Week 34, to 22 August 1993		Week 35, to 29 August 1993	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	149	22.6	111	24.0
Measles	0	0	1	0.2
Rubella	2	0.3	2	0.4
Pertussis	5	0.8	0	0
Genital herpes	1	0.2	2	0.4
Gastroenteritis	59	8.9	49	10.6

An outbreak of acute poststreptococcal glomerulonephritis in Far North Queensland

Since April 1993, an epidemic of acute poststreptococcal glomerulonephritis has been occurring in several communities in Far North Queensland. To date, there have been 31 cases, all Aboriginal. The patients' ages ranged from 1.5 to 39 years, median 7.5 years. Male patients (17) outnumbered female patients (14).

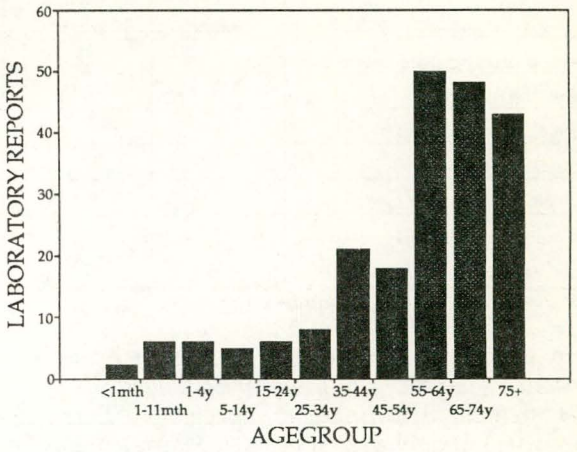
Screening and investigation of children aged 2 to 14 years is being conducted in the two most affected communities. The presentation of patients has ranged from macroscopic haematuria and facial oedema (77%), to individuals with milder disease identified on screening (23%). The clinical course of the disease has been mild in the majority of those affected, although 84% required hospitalisation and a further 16% have had complications including hypertensive encephalopathy and renal failure. Clinical, bacteriological and serological studies of the patients have established that the nephritis was preceded by a cutaneous streptococcal infection. Strains of streptococci that are recognised as being nephritogenic have been isolated from a number of the children.

(C. Streeton, National Centre for Epidemiology and Population Health, Canberra, and Centre for Disease Control, Cairns)

Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 8 laboratories. A total of 235 reports have been included: Gosford Central Coast Hospital Services 25, Liverpool Hospital 62, Nambour Hospital 5, Royal Hobart Hospital 14, Royal North Shore Hospital 30, Royal Prince Alfred Hospital 58, Sullivan and Nicolaides Partners, Brisbane 13, Woden Valley Hospital, ACT 28.

Figure 4. LabDOSS reports of blood isolates by age group



Organisms reported 5 or more times from blood are detailed in Table 3. Other blood isolates not included in Table 3 were:

Gram positive: *Bacillus* species 1, *Corynebacterium* species 1, *Enterococcus faecalis* 3, *Enterococcus faecium* 1, *Streptococcus bovis* 1, *Streptococcus* group A 3, *Streptococcus* group B 4 (2 neonates), *Streptococcus* group G 1, *Streptococcus sanguis* 3, *Streptococcus viridans* 3, *Streptococcus salivarius* 1, *Streptococcus mitis* 2, *Streptococcus* species 3, *Lactococcus lactis* 1, *Micrococcus* species 1.

Table 3. LabDOSS reports of blood isolates, by organism and clinical information

Organism	Clinical Information						Risk Factors					Total[1]	Total reported this year
	Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary Tract	Skin	Surgery	Immunosuppressed	IV line	Hospital acquired	Neonatal		
Staphylococcus aureus	5			1		7	5	7	10			49[2]	459[3]
Staphylococcus epidermidis							1	1	3			7	135
Staphylococcus coagulase negative			1				1	1	2	1		9	171
Streptococcus pneumoniae	1	9		2				2				17	100
Escherichia coli				5	10	2	4	9	1		1	36	518
Enterobacter cloacae				1			1	2	1			5	53
Klebsiella oxytoca					1		1	1				5	31
Klebsiella pneumoniae					3			4				8	92
Pseudomonas aeruginosa		1		2		1	2	7				12	118

1. Only organisms with 5 or more reports are included in this table.
2. MRSA 5.
3. MRSA 24.

Table 4. LabDOSS meningitis reports, by organism and age group

	1-4 years	5-14 years	15-24 years	25-34 years	35-44 years	75+ years	Total	Total reported this year
Neisseria meningitidis group B	1		1				2	20*
Staphylococcus aureus						1	1	5
Staphylococcus epidermidis			1				1	2
Streptococcus group A			1				1	3
Haemophilus influenzae type b	2						2	26
Cryptococcus neoformans var *neoformans*				1 HIV	1 HIV		2	22

* includes all Neisseria meningitidis serogroups.

Gram negative: *Acinetobacter* species 2, *Acinetobacter calcoaceticus* var *lwoffii* 1, *Branhamella catarrhalis* 1, *Citrobacter freundii* 1, *Citrobacter* species 1, *Enterobacter aerogenes* 1, *Enterobacter* species 1, *Flavobacterium multivorum* 1, *Haemophilus influenzae* 3 (one type b epiglottitis age 2, 2 no type ages 5 and 36), *Klebsiella* species 2, *Morganella morganii* 1, *Proteus mirabilis* 1, *Providencia* species 1, *Pseudomonas fluorescens* 1, *Pseudomonas paucimobilis* 2, *Pseudomonas stutzeri* 1, *Pseudomonas pseudomallei* 1 (diabetic recent travel to Borneo), *Pseudomonas* species 1, *Salmonella* Typhi 1, *Serratia marcescens* 1.

Anaerobes: *Bacteroides fragilis* 3, *Clostridium perfringens* 2, *Clostridium* species 2, *Fusobacterium* species 1, *Propionibacterium acnes* 1.

Fungi: *Candida albicans* 2.

Most patients were over the age of 55 years (Figure 4).

CSF isolates and meningitis reports

There were 9 reports of CSF isolates and/or meningitis (Table 4).

Isolates from sites other than blood or CSF

Joint fluid: *Escherichia coli* 2, *Staphylococcus aureus* 1.

Peritoneal dialysate: *Enterococcus faecalis* 1, *Pseudomonas fluorescens* 1, *Staphylococcus epidermidis* 1.

Other: *Bacteroides fragilis* 1, *Peptostreptococcus* species 1, *Staphylococcus aureus* 1, *Propionibacterium acnes* 1, *Proteus mirabilis* 1, *Staphylococcus aureus* 1, *Streptococcus group* A 1.

National Notifiable Diseases Surveillance System, 8 to 21 August 1993

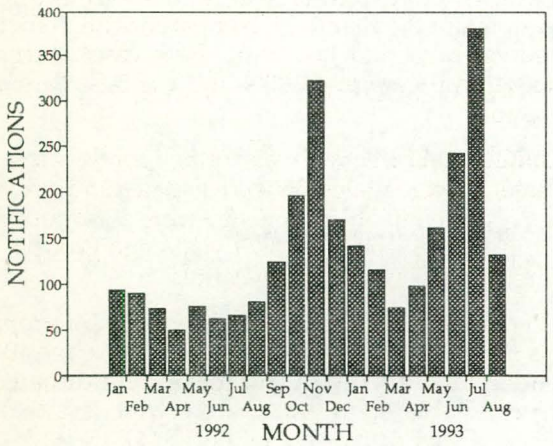
There were 2122 reports received this period (Tables 5, 6 and 7, and Figure 8).

- **Ross River virus infection** was notified for 69 cases this period. There were 30 males and 39 females. Recorded ages were between the 15-19 years and the 85-89 years age groups. Onset dates were recorded as February (one), March (one), April (2), May (3), June (4), July (35) and August (21). Cases were reported from statistical divisions in much of rural Queensland, New South Wales, parts of rural Victoria, the Kimberley and Pilbara in Western Australia.
- There were 23 cases of **dengue** notified. These reports comprised cases in 11 males and 12 females. Recorded ages ranged from the 0-4 to the 70-74 years age groups. All cases were in residents of Townsville and had recorded onset dates in April (1) and May (22).
- There was a single case of **brucellosis** in a female from rural New South Wales in the 25-29 years age group.
- Two cases of **diphtheria** were reported, bringing the total for the year to 37, compared with 11 for the equivalent period last year. Both cases were females and were in the 0-4 and the 5-9 years age groups.
- **Gonococcal infection** was notified for 94 cases. Of these, 57 were males, 36 were females and sex was not reported in one case. They were aged between the 0-4 years and the 75-79 years age groups. A single case was aged one year old.
- There were notifications of 18 cases of ***Haemophilus influenzae* type b infection** (Figure, page 406). There were 10 males and 8 females. Five cases were aged less than one year and 11 were less than 5 years. Other cases were in the 5-9 (4), 15-19, 35-39, and 50-54 (one case each) years age groups. There were no apparent clusters of cases. One case occurred in July and 10 in August.
- There were 74 notifications of **hepatitis A** this period. They were for 43 males and 31 females. Ages ranged from the 0-4 to the 90-94 years age groups. Peak ages were in the 20-24 (13 cases) and the 30-34 (15 cases) age groups.
- There were 3 notifications of **legionellosis** received. One was female (in the 35-39 years age group) and 2 were males (in the 40-44 years age group). There were no apparent clusters of cases.
- A single case of **leprosy** was reported, in a male in the 40-44 years age group.

- Seven cases of **leptospirosis** were reported this period. They were all males, in the 20-24 (one case), 30-34 (2 cases), 40-44 (2 cases), 45-49 and 60-64 (one case each) years age groups. They were from rural New South Wales, Brisbane, northern Queensland and rural Victoria.
- A total of 26 cases of **malaria** was notified. Sixteen were males, 9 were females and sex was not recorded in one case. Ages ranged between the 0-4 and the 50-54 years age groups. Eleven were in the 'malaria receptive zone'.
- **Measles** activity is continuing, with 131 cases notified. The total for the year is now 1356, compared with 571 for the equivalent period last year (Figure 5).

  Of these cases, 68 were males and 63 were females. Nine of the cases were aged less than one year, and the mean age was 13.9 years. There were 23 apparent clusters with up to 9 cases each in separate postcode areas. Apparent clusters were in New South Wales and the Australian Capital Territory (7), Queensland (one), Victoria (one) and Tasmania (14).

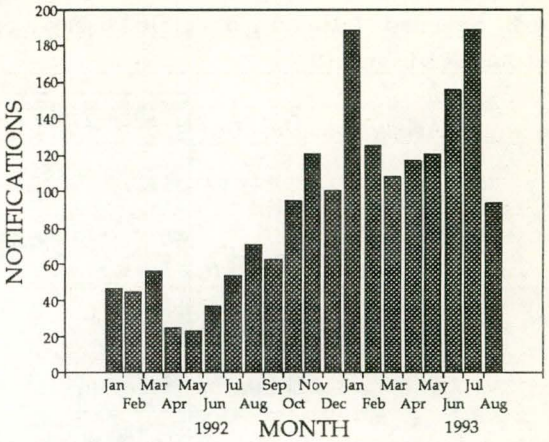
Figure 5. Measles notifications, January 1992 to August 1993, by month of onset



- There were 22 notifications of **meningococcal infection**, with equal numbers of males and females. Nine cases had recorded ages in the 0-4 years age group and the oldest case was in the 90-94 years age group. There was one apparent cluster of 2 cases. The apparent secondary case occurred 3 days after the apparent index case.
- **Pertussis** was notified for 152 cases to bring the total for the year to 1169, compared with 280 for the equivalent period last year (Figure6).

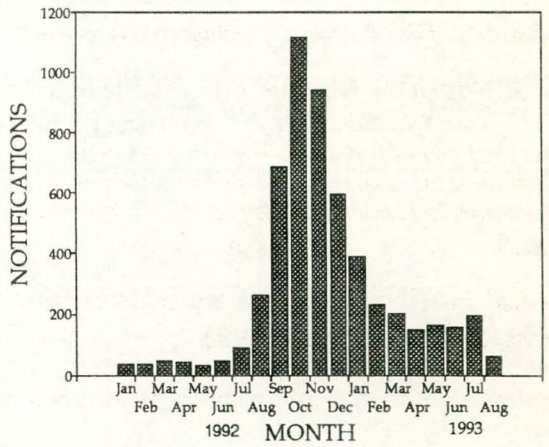
  Nine of these cases were aged less than one year, 26 were aged less than 5 years and ages ranged up to the 85-89 years age group. There were 26 apparent clusters with 2 to 4 cases each in separate postcode areas.

Figure 6. Pertussis notifications, January 1992 to August 1993, by month of onset



- There were 26 notifications of **Q fever**. Twenty-two were recorded as males, 3 as females and sex was not recorded in one case. Ages ranged from the 15-19 to the 65-69 years age groups. All except one (from Brisbane) were from rural areas of New South Wales, Queensland or South Australia
- Increased **rubella** activity continues into the second year. There were 102 notified cases this period, 62 males and 40 females (Figure 7). The mean age of cases was 17.7 years and there were 23 reports for females in the 15-44 years age group. There were 20 apparent clusters of 2 to 5 cases each in separate postcode areas.

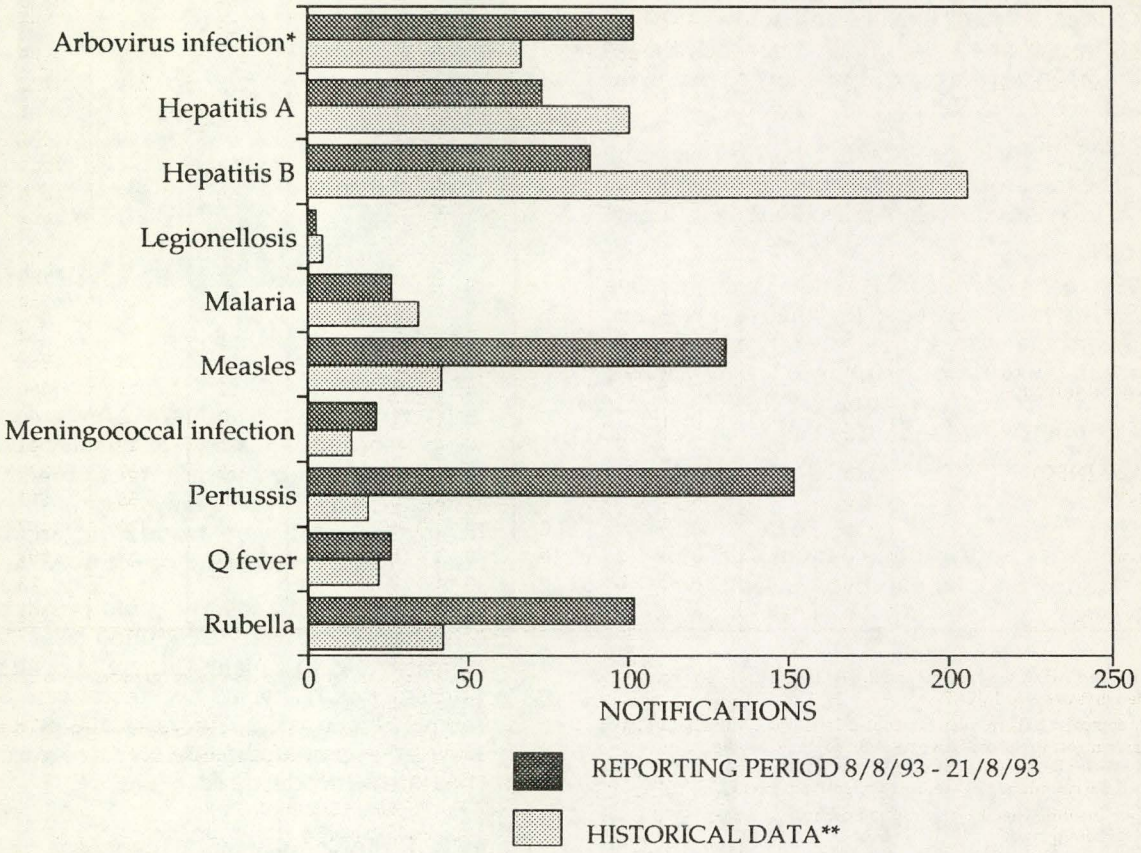
Figure 7. Rubella notifications, January 1992 to August 1993, by month of onset



- There were 95 notifications of **syphilis** received this period. Of these, 57 were males, 37 were females and sex was not recorded in one case. Five cases were aged less than one year.

- There was a single case of **tetanus** reported, in a male from rural New South Wales in the 55-59 years age group.
- There were 21 notifications of **tuberculosis**, 8 males and 13 females. Ages ranged from the 0-4 to the 90-94 years age groups.

Figure 8. Selected National Notifiable Diseases Surveillance System reports, and historical data **



* Includes Ross River virus and Dengue

** 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 5. Notifiable Diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation for the reporting period 8 to 21 August 1993

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1] This Period 1993	This Period 1992	Year to Date 1993	Year to Date 1992
Diphtheria	0	0	2	0	0	0	0	0	2	0	37	11
Haemophilus influenzae b infection[2]	0	6	2	2	4	0	4	0	18	27	297	328
Measles	5	43	1	9	1	61	9	2	131	36	1356	571
Mumps	0	0	NN	NN	NN	NN	0	0	0	0	5	16
Pertussis	5	28	1	20	71	2	18	7	152	24	1169	280
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[3]	0	6	0	73	6	0	11	6	102	82	1767	386
Tetanus	0	1	0	NN	0	0	0	0	1	0	6	8

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; ACT, NSW, Qld: rubella only.

NN Not Notifiable.

Table 6. Other Notifiable Diseases[1], for the reporting period 8 to 21 August 1993

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This Period 1993	This Period 1992	Year to Date 1993	Year to Date 1992
Arbovirus infection (NEC)[3]	0	0	1	9	0	0	0	0	10	11	432	211
Ross River virus infection	0	6	4	47	1	NN	9	2	69	52	4836	4951
Dengue	0	-	0	23	-	NN	0	NN	23	38	580	227
Campylobacteriosis[4]	4	-	12	84	83	10	52	32	277	340	4979	5100
Chlamydial infection (NEC)[5]	2	NN	35	117	0	4	57	22	237	231	4222	4219
Donovanosis	0	NN	5	1	NN	NN	0	0	6	4	41	54
Gonococcal infection[6]	0	7	32	26	0	1	8	20	94	96	1901	1878
Hepatitis A	2	14	4	38	1	0	11	4	74	81	1245	1305
Hepatitis B	4	4	2	57	4	1	1	16	89	197	1475	3315
Hepatitis C	7	3	13	200	0	6	123	59	411	307	4313	5325
Hepatitis (NEC)	0	0	0	0	0	0	0	NN	0	4	44	42
Legionellosis	0	0	0	1	1	0	1	0	3	4	109	137
Leptospirosis	0	1	0	3	0	0	3	0	7	7	106	73
Listeriosis	0	0	NN	0	NN	0	0	0	0	1	32	26
Malaria	1	0	1	18	0	0	5	1	26	58	369	529
Meningococcal infection	1	11	0	3	0	0	1	6	22	15	180	168
Ornithosis	0	NN	0	0	0	0	1	0	1	2	56	61
Q fever	0	16	0	9	1	0	0	0	26	29	541	324
Salmonellosis (NEC)	5	23	22	44	20	3	22	18	157	137	3230	3388
Shigellosis[4]	0	-	6	3	2	0	4	12	27	35	511	412
Syphilis	0	22	50	19	0	0	1	3	95	130	1487	1713
Tuberculosis	0	11	0	3	0	0	6	1	21	59	591	528
Typhoid[7]	0	0	0	0	0	0	0	0	0	1	23	38
Yersiniosis (NEC)[4]	0	-	0	17	5	0	3	0	25	17	294	422

1. For HIV and AIDS, see Tables 2 and 3, *CDI* 1993;17:362-363. For rarely notified diseases, see Table 7.
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.
   WA: includes 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. NSW and Vic: includes paratyphoid.

NN Not Notifiable.
NEC Not Elsewhere Classified.
- Elsewhere Classified.

Table 7. Rarely Notified Diseases[1] for the reporting period 8 to 21 August 1993

DISEASES	Total This Period	Reporting States or Territories	Year to Date 1993
Botulism	0		0
Brucellosis	1	NSW	14
Chancroid	0		1
Cholera	0		2
Hydatid infection	0		18
Leprosy	1	NSW	8
Lymphogranuloma venereum	0		1
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 1987 to 1992.

Table 8. Laboratory reports by State or Territory[1] for the reporting period 12 to 25 August 1993, 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		3		3		2	3		11	12.2	231
Mumps virus				2			2		4	1.3	48
Rubella virus		1		9	1			2	13	14.3	670
HEPATITIS VIRUSES											
Hepatitis A virus	1	1		7			3	1	13	20.3	405
Hepatitis B virus	2	12		21	1	1	14	19	70	106.3	1,782
Hepatitis C virus	7	9		32	64	15	5	60	192	105.3	2,823
ARBOVIRUSES											
Ross River virus				6					6	29.0	1,619
Barmah Forest virus				1					1	7.8	163
ADENOVIRUSES											
Adenovirus type 1					1				1	3.0	57
Adenovirus type 2	1	3			1				5	7.7	86
Adenovirus type 3		3			5				8	3.5	172
Adenovirus type 5							1		1	1.7	25
Adenovirus type 8							2		2	1.5	16
Adenovirus not typed/pending		4	1	12	8		8	8	41	54.3	847
HERPES VIRUSES											
Herpes simplex virus type 1	1	4	1	58	25	1	28	22	140	142.7	2,888
Herpes simplex virus type 2		9		62	18	3	32	46	170	187.7	3,488
Herpes simplex not typed/pending	8	7		2	1	1	3		22	39.0	464
Cytomegalovirus	1	14		14	2	3	26	9	69	84.2	1,146
Varicella-zoster virus		2		8	2		14	11	37	26.2	687
Epstein-Barr virus		29		7	9		7	4	56	71.2	1,262
Herpes virus group - not typed				1				1	2	2.3	22
OTHER DNA VIRUSES											
Parvovirus		3					3	1	7	4.5	89
PICORNA VIRUS FAMILY											
Coxsackievirus A9	3	3					1		7	1.0	42
Coxsackievirus B1		1							1	.7	69
Coxsackievirus B5	1								1	1.3	37
Echovirus type 7								1	1	.0	95
Echovirus type 11		2					1		3	.7	66
Echovirus type 30							6		6	.0	34
Poliovirus type 2 (uncharacterised)		1							1	3.7	26
Poliovirus type 3 (uncharacterised)		2							2	2.7	24
Rhinovirus (all types)		5		5		2	8	4	24	33.7	513
Enterovirus not typed/pending		3	1	27			4	6	41	28.7	543
ORTHO/PARAMYXOVIRUSES											
Influenza A virus		4			4		12	3	23	55.2	167
Influenza A virus H_3N_2							3		3	5.0	12
Influenza B virus				8	11	5	6	21	51	21.5	232
Parainfluenza virus type 1					1		2		3	4.2	24
Parainfluenza virus type 2					2		1		3	3.7	102
Parainfluenza virus type 3		2		2	4		5	13	26	23.2	356
Parainfluenza virus typing pending							3	1	4	2.0	36
Respiratory syncytial virus	3	19		86	69	39	134	45	395	296.5	2,738

Table 8. Laboratory reports by State or Territory[1] for the reporting period 12 to 25 August 1993, 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			
OTHER RNA VIRUSES											
HIV-1								1	1	1.8	50
Rotavirus	37	34		1	19	3	49	15	158	206.0	1,315
Calici virus		1							1	1.3	8
Coronavirus		2							2	1.0	11
Small virus (like) particle		1							1	2.3	33
OTHER											
Chlamydia trachomatis not typed	2	17		42	6	1	8	34	110	105.3	2,101
Chlamydia pneumoniae					1				1	.3	1
Chlamydia psittaci							1		1	2.3	58
Mycoplasma pneumoniae		8		40	8	2	38		96	47.0	1,384
Coxiella burnetii (Q fever)		7		2	1				10	17.2	342
Streptococcus group A		1		10					11	5.2	200
Bordetella pertussis						1	15		16	.7	150
Bordetella species		4		32					36	.8	156
Treponema pallidum		1		4					5	9.2	444
Toxoplasma gondii				1					1	1.2	43
TOTAL	67	222	3	505	264	79	448	328	1,916	1,811.2	30,402

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 9. Laboratory reports by clinical information for the reporting period 12 to 25 August 1993

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus								4				7	11
Mumps virus												4	4
Rubella virus								4				9	13
HEPATITIS VIRUSES													
Hepatitis A virus							8					5	13
Hepatitis B virus							12					58	70
Hepatitis C virus						1	5					186	192
ARBOVIRUSES													
Ross River virus										2		4	6
Barmah Forest virus												1	1

Table 9. Laboratory reports by clinical information for the reporting period 12 to 25 August 1993

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ADENOVIRUSES													
Adenovirus type 1					1								1
Adenovirus type 2					2	2						1	5
Adenovirus type 3					5				2			1	8
Adenovirus type 5					1								1
Adenovirus type 8					1				1				2
Adenovirus not typed/pending					25	8			5			3	41
HERPES VIRUSES													
Herpes simplex virus type 1					11			70	8		35	15	139
Herpes simplex virus type 2								59	1		103	7	170
Herpes simplex not typed/pending								9			4	9	22
Cytomegalovirus	1			3	23		5	1	2	1		33	69
Varicella-zoster virus	1							33				3	37
Epstein-Barr virus					1		3	1				51	56
Herpes virus group - not typed									1		1		2
OTHER DNA VIRUSES													
Parvovirus								1		1		5	7
PICORNA VIRUS FAMILY													
Coxsackievirus A9	1	3			1	2							7
Coxsackievirus B1						1							1
Coxsackievirus B5					1								1
Echovirus type 7		1											1
Echovirus type 11		1			1	1							3
Echovirus type 30		5										1	6
Poliovirus type 2 (uncharacterised)						1							1
Poliovirus type 3 (uncharacterised)						1						1	2
Rhinovirus (all types)					22							2	24
Enterovirus not typed/pending		1			17	5	1	3				14	41
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					16							7	23
Influenza A virus H_3N_2					3								3
Influenza B virus		1	1		39					2		8	51
Parainfluenza virus type 1					3								3
Parainfluenza virus type 2					3								3
Parainfluenza virus type 3		1			22	1						2	26
Parainfluenza virus typing pending					4								4
Respiratory syncytial virus		1			381							13	395
OTHER RNA VIRUSES													
HIV-1												1	1
Rotavirus					1	146						11	158
Calici virus												1	1
Coronavirus												2	2
Small virus (like) particle						1							1

Table 9. Laboratory reports by clinical information for the reporting period 12 to 25 August 1993, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
OTHER													
Chlamydia trachomatis not typed									3		56	51	110
Chlamydia pneumoniae					1								1
Chlamydia psittaci					1								1
Mycoplasma pneumoniae	1				48			1		1		45	96
Coxiella burnetii (Q fever)												10	10
Streptococcus group A					1					2		8	11
Bordetella pertussis					15							1	16
Bordetella species					10							26	36
Treponema pallidum											1	4	5
Toxoplasma gondii										1			1
TOTAL	4	14	1	3	660	170	34	186	23	10	200	611	1916

Table 10. Laboratory reports by contributing laboratories for the reporting period 12 to 25 August 1993

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	72
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	136
	Prince Henry/Prince of Wales Hospitals, Sydney	8
	Royal Alexandra Hospital for Children, Camperdown	42
Queensland	Queensland Medical Laboratory, West End	350
	State Health Laboratory, Brisbane	184
South Australia	Institute of Medical & Veterinary Science, Adelaide	263
Tasmania	Northern Tasmanian Pathology Service, Launceston	11
	Royal Hobart Hospital, Hobart	59
Victoria	Microbiological Diagnostic Unit, University of Melbourne	6
	Monash Medical Centre, Melbourne	26
	Royal Children's Hospital, Melbourne	185
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	240
Western Australia	Princess Margaret Hospital, Perth	95
	State Health Laboratory Services, Perth	239
TOTAL		1916