# Emergence of further serotypes of multiple drug-resistant *Streptococcus pneumoniae* in Queensland

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## Abstract

**We describe 27 cases of multiple drug-resistant pneumococcal infection in Queensland children (7 cases) and adults (20 cases), between February 1995 and October 1996. Seven patients had invasive disease. Serotypes were those commonly associated with paediatric infections and included types 19F (15 strains), 14 (6), 23F (4), 6A (1) and 19A (1). No rifampicin or vancomycin resistance was encountered. However, pneumococci fully resistant to cotrimoxazole, erythromycin and tetracycline were isolated from 25 of 27 cases (93%). Strains with high level resistance to penicillin and chloramphenicol were also recovered from 16 (59%) and 19 (70%) patients respectively. Twelve of 16 penicillin-resistant isolates showed intermediate resistance to ceftriaxone and two strains were fully resistant to this antibiotic. Clones of types 19F and 14 pneumococci, each with two distinctive resistance patterns, appear to be established in south-east Queensland. *Comm Dis Intell* 1997;21:133-136.**

## *Introduction*

Multiple drug resistance in pneumococci is defined as resistance to at least three classes of antibiotics[1]. The phenomenon was first recognised in 1977 in South Africa when a type 19A pneumococcus resistant to penicillin, chloramphenicol, cotrimoxazole, erythromycin, tetracycline and clindamycin was isolated from the sputum of a child with pneumonia[2].

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## Contents

Multiple drug-resistant pneumococci were subsequently documented in Spain, the United Kingdom, other European countries, the United States of America and Canada[3]. In Australia, untyped multiple drug-resistant pneumococci have been reported by both Western Australian and Queensland laboratories[4, 5, 6, 7]. In 1992 a multiple drug-resistant clone of type 6B pneumococcus was identified in the upper respiratory tract of Aboriginal infants from a remote community in the Top End of the Northern Territory. These isolates were resistant to penicillin, chloramphenicol, cotrimoxazole, erythromycin and tetracycline[8]. In February 1995 a multiple drug-resistant type 6B pneumococcus (with an antibiogram similar to the Top End strains) caused septic arthritis in a seven month old child resident in Cairns[9]. Further multiple drug-resistant type 6B strains have been identified in north Queensland[10].

Since February 1995, 27 cases of infection caused by multiple drug-resistant non-type 6B pneumococci have been identified in Queensland and are described here.

## *Methods*

A pneumococcal surveillance program began in Queensland in 1989 and is based at the Acute Respiratory Infections Unit, Centre for Public Health Sciences, Queensland Health, Brisbane. Queensland laboratories were encouraged to refer to this unit any pneumococci isolated from normally sterile sites, as well as strains from any site which showed reduced susceptibility to one or more antibiotics. A pneumococcal transport system and referral guidelines were distributed.

All isolates were sero and factor typed with antisera from the Statens Seruminstitut, Copenhagen, Denmark. The minimal inhibitory concentrations (MIC) of eight antibiotics (penicillin, chloramphenicol, cotrimoxazole, erythromycin, tetracycline, ceftriaxone, rifampicin and vancomycin) were determined by the Etest (AB Biodisk, Sweden). MIC values were interpreted according to National Committee for Clinical Laboratory Standards (NCCLS) performance standards[11].

## *Results*

Between February 1995 and October 1996, 430 pneumococcal isolates were referred to the Acute Respiratory Infections Unit from 14 Queensland laboratories. Of these, 286 (67%) were invasive isolates, and 144 (34%) were from non-sterile sites.

Multiple drug-resistant pneumococci were isolated from 20 adults aged 21 to 90 years and seven children aged two to 55 months. Seven patients had invasive disease; six were identified in two hospitals in south-east Queensland and one in north Queensland. Their isolates represented 3.9 per cent of 181 invasive pneumococci referred from the three hospitals during the study period. Six patients were bacteraemic and one had bacteraemic meningitis. Five were adults aged between 30 and 80 years and two were children aged less than two years. All survived.

Other samples or sites from which multiple drug-resistant pneumococci were isolated included sputum (14), upper respiratory tract secretions (4), bronchial washings (1) and conjunctivae (2). The same organism was recovered from two patients on separate occasions; from blood and CSF in one case and twice from sputum in the other.

Multiple drug-resistant pneumococci are detailed in the Table. No resistance to rifampicin and vancomycin was encountered. However, isolates from all cases were either fully (25 strains) or intermediately resistant (2) to cotrimoxazole. Nineteen strains (70%) were fully resistant to chloramphenicol, 25 (93%) to erythromycin and 25 (93%) to tetracycline. Penicillin-resistant pneumococci (MIC $\geq$ 2.0 mg/L) were isolated from 16 patients (59%) and intermediately resistant strains (MIC = 0.1 - 1.0 mg/L) from a further two cases. Twelve of 16 penicillin-resistant isolates showed intermediate resistance to ceftriaxone (MIC = 1.0 mg/L) and two strains were fully resistant to this antibiotic (MIC = 2.0 mg/L).

The type distribution of multiple drug-resistant pneumococci included type 19F (15 isolates), type 14 (6), type 23F (4), type 6A (1) and type 19A (1). Twelve type 19F strains from south-east Queensland possessed two distinctive resistance antibiograms which differed from those of three isolates from north Queensland. Of five type 14 isolates identified in south-east Queensland, one of two resistance patterns resembled that of the single north Queensland isolate. Each of the four type 23F pneumococci exhibited unique resistance profiles, with two differing only in the MIC of erythromycin (= 2.0 mg/L versus $\geq$ 256 mg/L).

## *Discussion*

This report describes the emergence of a further five multiple drug-resistant pneumococcal serotypes (6A, 14, 19F, 19A and 23F) in Queensland. Multiple drug-resistant type 6B infections have been previously reported[9,10]. Because the surveillance of non-invasive pneumococci in Queensland is currently limited to strains showing antibiotic resistance, the overall incidence of resistant pneumococcal infections is unknown. Although one-quarter of our multiple drug-resistant isolates came from patients with invasive disease in three hospitals, these strains represented less than 4% of invasive pneumococci referred from these hospitals during the study period.

Since the first report of a multiple drug-resistant pneumococcus in South Africa in 1977, broad spectrum antibiotic resistance among pneumococci has become a global problem[1]. Multiple drug-resistant pneumococci are confined largely to paediatric groups and types such as 6, 14, 19 and 23 which colonise the upper respiratory tract of young children and cause invasive disease in both children and adults. A study of upper respiratory tract carriage in young Aboriginal children hospitalised in Alice Springs with acute lower respiratory infection showed that 64% of 136 colonised subjects carried pneumococcal types 6A, 6B, 14, 19F, 19A and 23F[12]. More recently, 17% of 95 adults in north Queensland and 46% of 89 Aboriginal children in central Australia with invasive disease were infected with pneumococcal types normally associated with paediatric infection[13, 14]. Immunisation of young children with conjugate pneumococcal vaccine may not only

**Table. Multiple drug-resistant *Streptococcus pneumoniae* serotypes by resistance pattern, region and isolation site/source**

| Serotype (number) | Resistance pattern | South-east Queensland (n=21) | | | North Queensland (n=6) | | | Site/source |
|---|---|---|---|---|---|---|---|---|
| | | PAH | GCH | PCH | TGH | CP | QML | |
| 19F(15) | Cotrimoxazole, Erythromycin, Tetracycline. | 2 | | | | | | Upper respiratory tract |
| | Chloramphenicol, Cotrimoxazole, Erythromycin , Tetracycline. | 6 | | | | | | Blood (2), conjunctivae, Sputum (2), upper respiratory tract |
| | Penicillin, Chloramphenicol, Cotrimoxazole, Erythromycin, Tetracycline. | 2 | 2 | | | | | Sputum |
| | Penicillin, Chloramphenicol, Cotrimoxazole, Tetracycline. | | | | | 1 | | Upper respiratory tract |
| | Penicillin, Cotrimoxazole, Erythromycin, Tetracycline. | | | | 1 | 1 | | Blood and cerebrospinal fluid, sputum |
| 14(6) | Penicillin, Cotrimoxazole, Tetracycline. | 1 | | | | | | Blood |
| | Penicillin, Chloramphenicol, Cotrimoxazole, Erythromycin, Tetracycline. | 3 | | 1 | | | 1 | Blood (2), sputum (2), upper respiratory tract |
| 23F(4) | Cotrimoxazole, Erythromycin, Tetracycline. | 1 | | | | | | Blood |
| | Penicillin, Chloramphenicol, Cotrimoxazole, Erythromycin. | 1 | | | | | | Conjunctivae |
| | Penicillin, Chloramphenicol, Cotrimoxazole, Erythromycin[1], Tetracycline. | 1 | | | | | | Sputum |
| | Penicillin, Chloramphenicol, Cotrimoxazole, Erythromycin[2], Tetracycline. | | | | | | 1 | Bronchial washing |
| 6A(1) | Penicillin, Cotrimoxazole, Erythromycin, Tetracycline. | | | | 1 | | | Sputum |
| 19A(1) | Penicillin, Cotrimoxazole, Erythromycin. | 1 | | | | | | Sputum |

PAH Princess Alexandra Hospital
GCH Gold Coast Hospital
PCH Prince Charles Hospital
TGH Townsville General Hospital
CP Cairns Pathology
QML Queensland Medical Laboratory

1. Erythromycin MIC = 2.0 mg/L
2. Erythromycin MIC ≥ 256 mg/L

reduce invasive disease, but also eradicate upper respiratory tract carriage of serotypes associated with antibiotic resistance[15,16].

The epidemiology of multiple drug-resistant pneumococci has been associated with hospitalised children and adults receiving antibiotics[1]. In our study only two of five cases of bacteraemia diagnosed at Princess Alexandra Hospital were nosocomial infections. In the wider community however, the carriage and transmission of multiple drug-resistant pneumococci among young children may increase the distribution of multiple drug-resistant types in adults. Two American studies of community acquired multiple drug-resistant pneumococcal infection in day care centres found that, in addition to children occupying the same room as the index cases, staff and parents also became colonised with the multiple drug-resistant strain[17,18].

The most common resistance patterns encountered in the current study included those of strains resistant to four or more antibiotics. Fifteen of 17 such isolates belonged to types 19F (10 strains) and 14 (5). Analysis of resistance patterns suggests that several clones, distinct from those in north Queensland, exist in south-east Queensland and that one has caused two cases of bacteraemia. Two clones of multiple drug-resistant type 14 pneumococci, both responsible for invasive disease, have also been identified. The resistance profiles of four type 23F isolates differ significantly. The genomic DNA of all multiple drug-resistant pneumococci will be examined to determine their type-specific genetic relatedness.

The emergence of multiple drug-resistant pneumococcal clones in Queensland is in keeping with a recently published national survey and further highlights the need for increased awareness and vigilance by diagnostic laboratories and clinicians[19]. The occurrence of multiple drug-resistant strains with high level resistance to both penicillin and third generation cephalosporins in invasive infection, particularly meningitis, will create a real dilemma in the choice of antibiotic therapy for these conditions.

The true prevalence of multiple drug-resistant pneumococci in Queensland is unknown since a number of hospitals in central and south-east Queensland are not linked to the surveillance network. A laboratory-based monitoring system is required which ensures that all pneumococci isolated from normally sterile sites are submitted for typing and antibiotic susceptibility testing. In addition, cross sectional studies incorporating longitudinal upper respiratory tract sampling of at-risk populations such as children in day care centres, inpatients of paediatric wards and children residing in Aboriginal communities are needed to determine the prevalence of, and increase in, drug-resistant pneumococci in upper respiratory sites.

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# Meningitis in New South Wales

Fifteen cases of meningococcal disease were reported from western Sydney between January and May 1997. Seven cases were aged under five years and five were aged 15 - 24 years. Of the 15 cases, six were due to serogroup C, four serogroup B (two untypable, one B:4:P1.4 and one B:2b:P1.10) and five were based on a clinical diagnosis. The Western Sector Public Health Unit has not established an epidemiological link between cases, however five isolates were phenotype C:2a:P1.5, which was the phenotype identified in a western Sydney outbreak in 1996. Thirty-six cases of meningococcal disease have been reported in New South Wales during 1997. A total of 165 cases was reported during 1996.

# *Legionellosis*

*Legionella pneumophila* was first discovered in 1977 after an outbreak of pneumonia occurred at a Philadelphia hotel hosting the American Legion Convention. There were 221 cases of pneumonia and 34 people died. The illness became known as Legionnaires' disease. Pontiac fever, an acute febrile illness without pneumonia, has also been serologically linked to *L. pneumophila* and other *Legionella* species. There have now been 34 *Legionella* species and over 50 serogroups identified[1].

Legionellosis includes all infections caused by *Legionella* species. Risk factors for infection include cigarette smoking, chronic lung disease, advanced age and immunosuppression. The family Legionellaceae is widely distributed in aquatic environments and soil[1]. Outbreaks have been linked to aerosols from cooling towers, evaporative condensers, air conditioners and spa pools[1,2]. In Australia, *L. longbeachae* has been associated with potting mix[1].

There have been 1,041 notifications of legionellosis in Australia since 1991. Similar numbers of cases were reported each year (Figure 1). The male:female ratio over this period was 2.3:1, with 60% of cases in males aged 40 years or older (Figure 2).

*L. pneumophila* has been reported to be responsible for about 90% of legionellosis infections[1], however this does not appear to be the case in Australia. Since 1995, 255 notifications (65%) have provided species identification (Figure 3). Of those where species identification was provided, the majority were *L. pneumophila* but a substantial proportion (34%) were *L. longbeachae*. Even if all of those that have not been speciated were *L. pneumophila*, 22% of legionellosis notifications would still be attributed to *L. longbeachae*. While this may be a reporting bias, it may also reflect an epidemiological difference in the incidence of legionellosis in Australia.

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

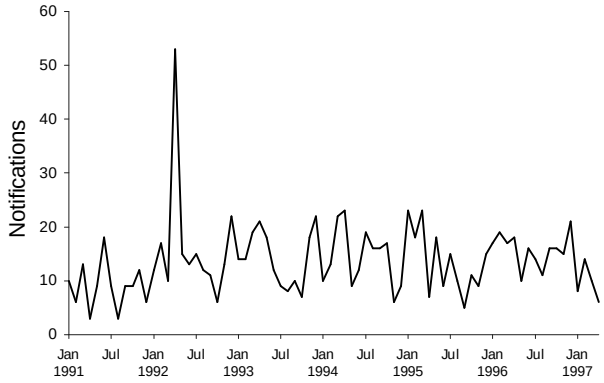



**Figure 2. Legionellosis notifications by age group and sex, 1991 to 1997**

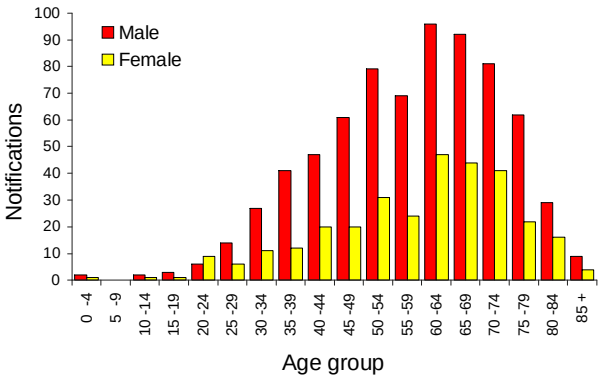
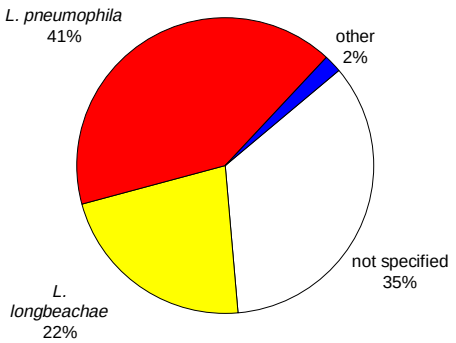



**Figure 3. Legionellosis notifications by species, January 1995 to April 1997**

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# *National Notifiable Diseases Surveillance System*

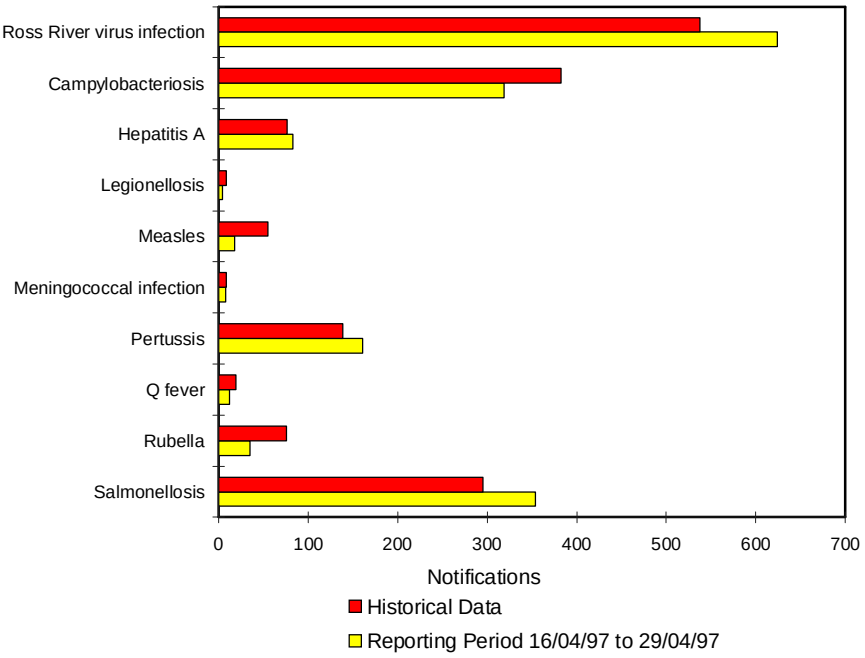
*The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The system coordinates the national surveillance of more than 40 communicable diseases or disease groups endorsed by the National Health and Medical Research Council (NHMRC). Notifications of these diseases are made to State and Territory health authorities under the provisions of their respective public health legislations. De-identified core unit data are supplied fortnightly for collation, analysis and dissemination. For further information, see CDI 1997;21:5.*

**Reporting period 16 to 29 April 1997**

There were 2,694 notifications received for this two week period (Tables 1, 2 and 3). The numbers of reports for selected diseases have been compared with historical data for corresponding periods in the previous three years (Figure 4).

There were 161 reports of pertussis infection received in this reporting period. The majority of notifications were received from New South Wales (54) and Victoria (33). Fifty-three per cent of reports were for the 0 - 14 years age range and females represented 58 per cent of all cases. Although reports continue to trend downwards from a peak reached in December 1996, pertussis notifications continued at a high level in the first three months of 1997 (Figure 5).

**Figure 4. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]**




1. The historical data are the averages of the number of notifications in 9 previous 2-week reporting periods: the corresponding periods of the last 3 years and the periods immediately preceding and following those.

**Table 1. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 16 to 29 April 1997**

| Disease[1,2] | ACT | NSW | NT | Qld | SA | Tas | Vic | WA | This period 1997 | This period 1996 | Year to date 1997 | Year to date 1996 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphtheria | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Haemophilus influenzae* type B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 18 | 18 |
| Measles | 3 | 2 | 0 | 3 | 0 | 0 | 9 | 1 | 18 | 23 | 151 | 170 |
| Mumps | 0 | 1 | 0 | NN | 1 | 0 | 1 | 1 | 4 | 5 | 59 | 44 |
| Pertussis | 0 | 54 | 0 | 19 | 27 | 3 | 33 | 25 | 161 | 90 | 2696 | 1098 |
| Rubella | 1 | 0 | 0 | 18 | 0 | 1 | 13 | 2 | 35 | 78 | 510 | 1011 |
| Tetanus | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 3 | 1 |

NN Not Notifiable.

1. No notifications of poliomyelitis have been reported since 1986.

2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.

**Table 2. Notifications of other diseases received by State and Territory health authorities in the period 16 to 29 April 1997**

| Disease[1,2] | ACT | NSW | NT | Qld | SA | Tas | Vic | WA | This period 1997 | This period 1996 | Year to date 1997 | Year to date 1996 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arbovirus Infection (NEC)[3,4] | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 6 | 13 | 6 | 125 | 60 |
| Barmah Forest virus infection | 0 | 10 | 0 | 26 | 0 | 0 | 10 | - | 46 | 71 | 282 | 419 |
| Campylobacteriosis[5] | 13 | - | 3 | 113 | 73 | 7 | 67 | 43 | 319 | 403 | 3789 | 3910 |
| Chlamydial infection (NEC)[6] | 7 | NN | 12 | 158 | 0 | 6 | 83 | 40 | 306 | 274 | 2708 | 2284 |
| Dengue | 1 | 2 | 0 | 10 | 0 | - | 0 | 1 | 15 | 2 | 185 | 19 |
| Donovanosis | 0 | NN | 0 | 0 | NN | 0 | 0 | 0 | 0 | 2 | 9 | 19 |
| Gonococcal infection[7] | 0 | 22 | 20 | 92 | 0 | 0 | 12 | 50 | 196 | 101 | 1441 | 1155 |
| Hepatitis A | 0 | 31 | 0 | 30 | 2 | 0 | 16 | 4 | 83 | 113 | 1352 | 895 |
| Hepatitis B incident | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 7 | 11 | 9 | 111 | 76 |
| Hepatitis C incident | 0 | 0 | 0 | - | 0 | 0 | - | - | 0 | 1 | 5 | 12 |
| Hepatitis C unspecified | 9 | NN | 9 | 119 | NN | 1 | 2 | 17 | 157 | 349 | 2582 | 2995 |
| Hepatitis (NEC) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NN | 0 | 2 | 8 | 10 |
| Legionellosis | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 11 | 55 | 68 |
| Leptospirosis | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 5 | 16 | 44 | 85 |
| Listeriosis | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 1 | 38 | 17 |
| Malaria | 1 | 6 | 0 | 36 | 0 | 0 | 0 | 1 | 44 | 41 | 250 | 265 |
| Meningococcal infection | 0 | 5 | 1 | 3 | 1 | 0 | 2 | 1 | 13 | 10 | 108 | 82 |
| Ornithosis | 0 | NN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 22 | 29 |
| Q Fever | 0 | 4 | 0 | 8 | 0 | 0 | 0 | 0 | 12 | 18 | 178 | 154 |
| Ross River virus infection | 2 | 174 | 10 | 261 | 65 | 1 | 69 | 42 | 624 | 778 | 4254 | 6000 |
| Salmonellosis (NEC) | 2 | 54 | 6 | 103 | 32 | 1 | 120 | 36 | 354 | 236 | 3466 | 2364 |
| Shigellosis[5] | 0 | - | 2 | 10 | 10 | 0 | 4 | 3 | 29 | 20 | 334 | 227 |
| Syphilis | 0 | 10 | 0 | 9 | 0 | 0 | 1 | 1 | 21 | 48 | 410 | 486 |
| Tuberculosis | 0 | 8 | 2 | 6 | 1 | 0 | 10 | 7 | 34 | 41 | 325 | 384 |
| Typhoid[8] | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 32 | 45 |
| Yersiniosis (NEC)[5] | 0 | - | 1 | 7 | 0 | 0 | 1 | 0 | 9 | 8 | 119 | 96 |

1. For HIV and AIDS, see *CDI* 1997;21:97. For rarely notified diseases, see Table 3 .
2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
3. Tas: includes Ross River virus and dengue.
4. NT, Vic and WA: includes Barmah Forest virus.
5. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
6. WA: genital only.
7. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
8. NSW, Vic: includes paratyphoid.

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

**Table 3. Notifications of rare[1] diseases received by State and Territory health authorities in the period 16 to 29 April 1997**

| Disease[2] | Total this period | Reporting States or Territories | Total notifications 1997 |
|---|---|---|---|
| Brucellosis | 2 | Qld | 14 |
| Chancroid | | | 1 |
| Cholera | | | 1 |
| Hydatid infection | 1 | NSW | 8 |
| Leprosy | 1 | Qld | 7 |

1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1996.
2. No notifications have been received during 1997 for the following rare diseases: botulism, lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.

Notifications of rubella infection continue to decline, with 35 cases in this reporting period compared with 78 in the same period in 1996. The majority of cases occurred in Victoria (13) and Queensland (18), with males representing 71% of all cases. Total notifications to date in 1997 are 510 compared with 1,011 notifications in the same period in 1996. Figure 6 illustrates the seasonal nature of the peaks in rubella infection and also the comparatively small peak for the second half of 1996.

Reports of Ross River virus infection remain at a high level, with 624 reports received this period. The majority of reports in this period were from Queensland (261) and New South Wales (174). Fifty-eight per cent of reports were for the 25 - 49 years age range. Total notifications so far for 1997 remain below the total for the corresponding period in 1996.

# *Influenza Surveillance 1997*

*Three types of data are included in National Influenza Surveillance, 1997. These are Sentinel General Practitioner Surveillance conducted by the Australian Sentinel Practice Research Network (ASPREN), the Department of Human Services, Victoria, the Department of Health, New South Wales and the Department of Health and Community Services, Northern Territory; Laboratory surveillance data from the Communicable Diseases Intelligence Virology and Serology Laboratory Reporting Scheme, LabVISE and the World Health Organization Collaborating Centre for Influenza Reference and Research; and absenteeism data from Australia Post. For further information see CDI 1997;21:126.*

**Sentinel general practitioner surveillance**

The ASPREN consultation rate rose slightly this fortnight (Figure 7). However Tropical Influenza Surveillance in the Northern Territory has recorded a marked decline in consultation rate in recent weeks.

No data were available from Victoria and New South Wales this fortnight.

**Laboratory surveillance**

Laboratory reports of influenza rose in early April (Figure 8), with 213 laboratory reports received so far for 1997. Of these, 17% were for influenza A, 35% for influenza B and 48% were untyped. The male:female ratio was 1:1 and 43% of reports were for adults over the age of 65 years.

**Figure 5. Pertussis notifications, 1994 to 1997, by month of onset**

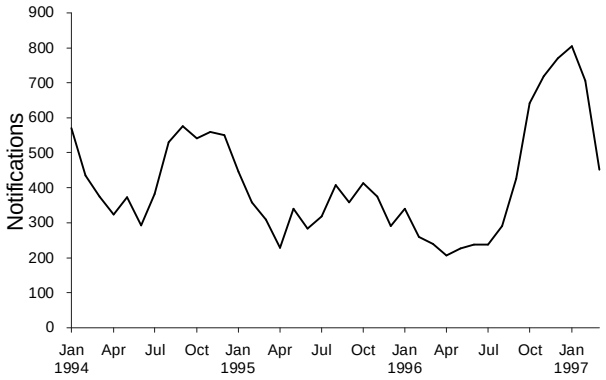



**Figure 6. Rubella notifications, 1991 to 1997, by month of onset**

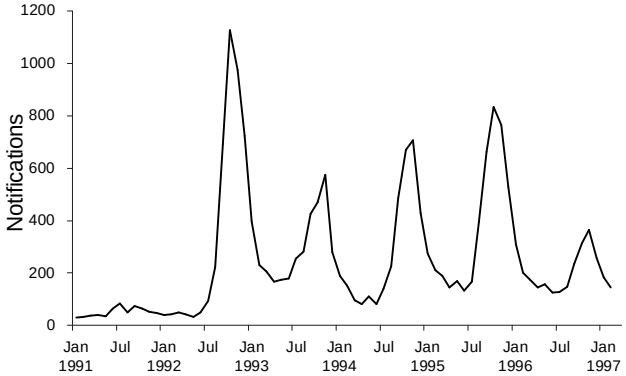



**Figure 7. Sentinel general practitioner influenza consultation rates, 1997, by week and scheme**

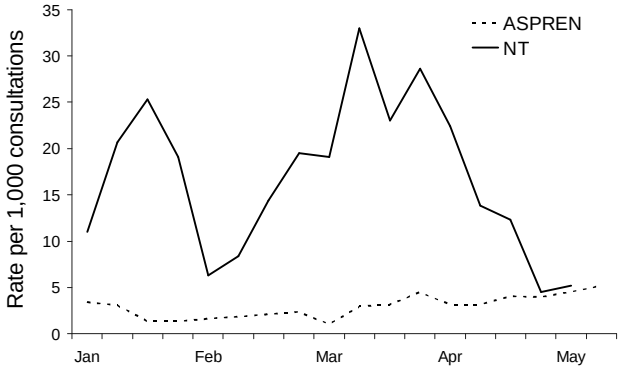
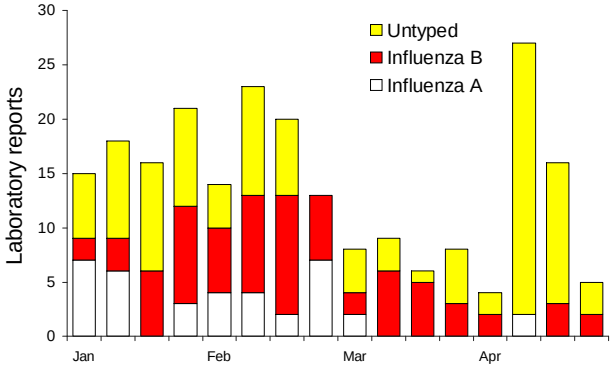



**Figure 8. Laboratory reports of influenza, 1997, by week and type**



**Absenteeism surveillance**

Australia Post recorded national absenteeism rates of 2.8% and 2.2% for the most recent two weeks, similar to previous weeks.

## *Australian Sentinel Practice Research Network*

*The Australian Sentinel Practice Research Network (ASPREN) comprises 99 sentinel general practitioners from throughout the country. Approximately 9,000 consultations are recorded each week for 12 conditions. Of these, CDI reports the consultation rates for chickenpox, gastroenteritis, HIV testing (doctor initiated), HIV testing (patient initiated), influenza, measles, pertussis, Ross River virus infection and rubella. For further information including case definitions see CDI 1997;21:6.*

Data for weeks 16 and 17 ending 20 and 27 April respectively are included in this issue of *CDI* (Table 4). The consultation rates for gastroenteritis have continued at the relatively low levels experienced during the last 3 months. The consultation rates for chickenpox, after rising during the summer period, have remained low, similar to the autumns of 1995 and 1996. Consultation rates for HIV testing (both patient- and doctor-initiated) have remained steady over recent weeks. Consultation rates for Ross River virus infection, measles, rubella and pertussis have remained low during 1997.

## *LabVISE*

*The Virology and Serology Laboratory Reporting Scheme, LabVISE, is a sentinel reporting scheme. Twenty-one laboratories contribute data on the laboratory identification of viruses and other organisms. Data are collated and published in Communicable Diseases Intelligence each fortnight. These data should be interpreted with caution as the number and type of reports received is subject to a number of biases. For further information, see CDI 1997;21:8-9.*

There were 1,256 reports received in the *CDI* Virology and Serology Laboratory Reporting Scheme this period (Tables 5 and 6).

Laboratory reports of Barmah Forest virus appear to be declining, although further reports are expected for April (Figure 9). There were 35 reports received this period, the majority were from Queensland (29) and the Northern Territory (4).

**Figure 9. Barmah Forest virus laboratory reports, 1995 to 1997, by month of specimen collection**

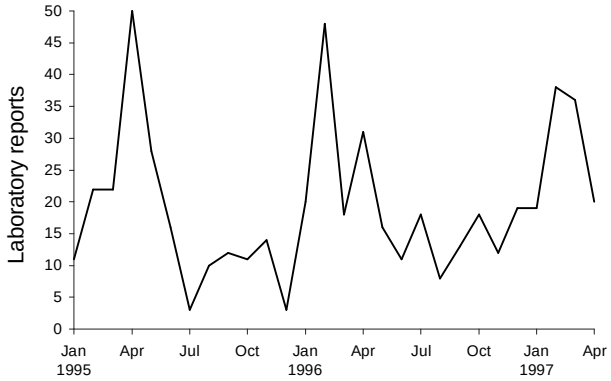
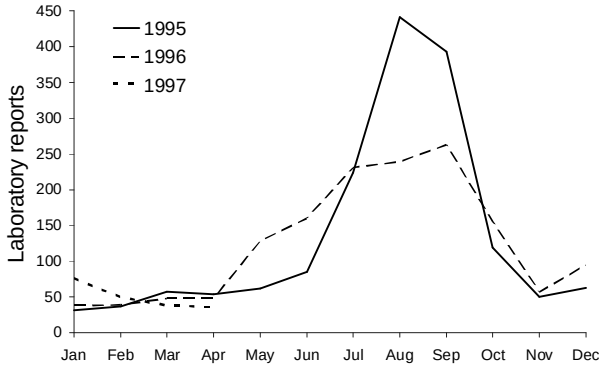



**Figure 10. Rotavirus laboratory reports, 1995 to 1997, by month of specimen collection**




Laboratory reports of rotavirus remain low but are expected to increase in the coming months (Figure 10). There were 32 reports received this period, with the majority from Western Australia (21) and South Australia (8). Eighty-one per cent of reports were for children under five years of age.

**Table 4. Australian Sentinel Practice Research Network reports, weeks 14 and 15, 1997**

| Condition | *Week 16, to 20 April 1997* Reports | *Week 16, to 20 April 1997* Rate per 1,000 encounters | *Week 17, to 27 April 1997* Reports | *Week 17, to 27 April 1997* Rate per 1,000 encounters |
|---|---|---|---|---|
| Chickenpox | 8 | 1.3 | 13 | 2.1 |
| Gastroenteritis | 74 | 11.6 | 78 | 12.7 |
| HIV testing (doctor initiated) | 5 | 0.8 | 7 | 1.1 |
| HIV testing (patient initiated) | 10 | 1.6 | 10 | 1.6 |
| Influenza | 29 | 4.5 | 32 | 5.2 |
| Measles | 2 | 0.3 | 0 | 0.0 |
| Pertussis | 0 | 0.0 | 0 | 0.0 |
| Ross River virus infection | 4 | 0.6 | 1 | 0.2 |
| Rubella | 1 | 0.2 | 1 | 0.2 |

**Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 10 to 23 April 1997, historical data[2], and total reports for the year**

| | State or Territory[1] | | | | | | | Total this fortnight | Historical data[2] | Total reported in *CDI* in 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| | NSW | NT | Qld | SA | Tas | Vic | WA | | | |
| **Measles, mumps, rubella** | | | | | | | | | | |
| Measles virus | | | | | | 1 | | 1 | 2.7 | 25 |
| Mumps virus | | | | 1 | | | 1 | 2 | 2.3 | 17 |
| Rubella virus | | 1 | 24 | | | | | 25 | 14.5 | 364 |
| **Hepatitis viruses** | | | | | | | | | | |
| Hepatitis A virus | | 2 | 27 | 1 | | 2 | 2 | 34 | 15.3 | 382 |
| **Arboviruses** | | | | | | | | | | |
| Ross River virus | 13 | 13 | 143 | 63 | | 9 | 26 | 267 | 196.0 | 1,517 |
| Barmah Forest virus | 1 | 4 | 29 | | | | 1 | 35 | 10.8 | 148 |
| Dengue not typed | | 1 | | | | | | 1 | 0.3 | 38 |
| Flavivirus (unspecified) | | | 6 | | | | | 6 | 2.8 | 19 |
| **Adenoviruses** | | | | | | | | | | |
| Adenovirus type 3 | | | | 1 | | | | 1 | 2.3 | 14 |
| Adenovirus type 5 | | | | 1 | | | | 1 | 0.2 | 3 |
| Adenovirus type 40 | | | | | | | 2 | 2 | 1.5 | 8 |
| Adenovirus type 41 | | | | | | | 1 | 1 | 0.2 | 1 |
| Adenovirus not typed/pending | 4 | | 6 | 6 | 1 | 1 | 5 | 23 | 39.5 | 371 |
| **Herpes viruses** | | | | | | | | | | |
| Cytomegalovirus | 5 | | 48 | 3 | | 6 | 8 | 70 | 62.8 | 494 |
| Varicella-zoster virus | 6 | 1 | 29 | 7 | | 8 | 5 | 56 | 46.0 | 607 |
| Epstein-Barr virus | 11 | 1 | 79 | 22 | | 4 | 5 | 122 | 73.0 | 1,232 |
| **Other DNA viruses** | | | | | | | | | | |
| Parvovirus | 1 | | | 1 | | 12 | 1 | 15 | 3.3 | 171 |
| **Picornavirus family** | | | | | | | | | | |
| Coxsackievirus B4 | 1 | | | | | | | 1 | 0.0 | 3 |
| Echovirus type 7 | | | | | 1 | | | 1 | 0.2 | 16 |
| Rhinovirus (all types) | 5 | | 16 | 1 | | 2 | | 24 | 25.5 | 261 |
| Enterovirus not typed/pending | 2 | | 22 | | | | 2 | 26 | 34.7 | 282 |
| **Ortho/paramyxoviruses** | | | | | | | | | | |
| Influenza A virus | | | 1 | | | 1 | | 2 | 11.3 | 147 |
| Influenza B virus | 1 | | | | | 1 | 3 | 5 | 2.3 | 117 |
| Influenza virus - typing pending | | | | 22 | | | | 22 | 0.0 | 127 |
| Parainfluenza virus type 1 | | | | 1 | | | | 1 | 14.5 | 38 |
| Parainfluenza virus type 2 | | | 5 | | | 1 | | 6 | 13.7 | 31 |
| Parainfluenza virus type 3 | 3 | | | 1 | | 1 | 1 | 6 | 15.7 | 340 |
| Parainfluenza virus typing pending | | | | 25 | | | | 25 | 0.3 | 160 |
| Respiratory syncytial virus | 18 | | 18 | 2 | | 10 | 8 | 56 | 77.8 | 362 |
| **Other RNA viruses** | | | | | | | | | | |
| Rotavirus | 2 | | 1 | 8 | | | 21 | 32 | 23.7 | 346 |
| Astrovirus | | | | | | 1 | | 1 | 0.2 | 6 |
| Norwalk agent | | | | | | 4 | | 4 | 1.7 | 53 |
| **Other** | | | | | | | | | | |
| *Chlamydia trachomatis* not typed | 15 | 6 | 134 | 20 | 3 | 15 | 24 | 217 | 122.8 | 1,982 |
| *Chlamydia psittaci* | | | | | | 3 | | 3 | 3.7 | 36 |
| *Chlamydia* species | 1 | | 3 | | | 1 | | 5 | 3.7 | 16 |
| *Mycoplasma pneumoniae* | 24 | 3 | 44 | 1 | | 9 | 3 | 84 | 18.5 | 746 |
| *Coxiella burnetii* (Q fever) | 8 | | 18 | | | | | 26 | 5.2 | 130 |
| *Rickettsia tsutsugamushi* | | | 1 | | | | | 1 | 0.0 | 5 |
| *Bordetella pertussis* | 2 | | 21 | | | 8 | 8 | 39 | 14.3 | 914 |
| *Legionella pneumophila* | | | 4 | | | | | 4 | 0.7 | 7 |
| *Legionella* species | | 1 | 2 | | | | | 3 | 0.0 | 8 |
| TOTAL | 123 | 33 | 681 | 187 | 5 | 100 | 127 | 1,256 | 864.0 | 11,544 |

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

**Table 6. Virology and serology laboratory reports by contributing laboratories for the reporting period 10 to 23 April 1997**

| State or Territory | Laboratory | Reports |
|---|---|---|
| New South Wales | Institute of Clinical Pathology and Medical Research, Westmead | 34 |
| | The New Children's Hospital, Westmead | 19 |
| | Royal Prince Alfred Hospital, Camperdown | 10 |
| | South West Area Pathology Service, Liverpool | 22 |
| Queensland | Queensland Medical Laboratory, West End | 698 |
| | State Health Laboratory, Brisbane | 54 |
| South Australia | Institute of Medical and Veterinary Science, Adelaide | 186 |
| Tasmania | Royal Hobart Hospital, Hobart | 5 |
| Victoria | Microbiological Diagnostic Unit, University of Melbourne | 15 |
| | Monash Medical Centre, Melbourne | 19 |
| | Royal Children's Hospital, Melbourne | 12 |
| | Victorian Infectious Diseases Reference Laboratory, Fairfield | 53 |
| Western Australia | PathCentre Virology, Perth | 88 |
| | Princess Margaret Hospital, Perth | 41 |
| TOTAL | | 1,256 |

# Overseas briefs

*Source: World Health Organization (WHO)*

## *Lassa fever, Sierra Leone*

Lassa fever re-emerged as a public health problem in Kenema in eastern Sierra Leone during 1996. From 1 January to 19 April 1996, 799 cases with 148 deaths (case fatality rate 18.5%) were reported. An annual average of 40 to 50 cases normally occurred in this region. An elevated number of Lassa fever cases has continued to occur in 1997 with 45 cases reported in January, 75 in February and 147 in March. The increased occurrence is closely related to massive population movements with subsequent crowding, poor sanitation, unsafe food handling and storage practices, combined with an increase in the rat population. With the improving political and security situation in Sierra Leone, the populace is moving about more freely to access health care facilities, resulting in increased case reporting.

## *Louse-borne typhus, Burundi*

Nearly 24,000 cases of louse-borne typhus have been reported since the beginning of the year in Burundi in an outbreak which is the largest reported in over 50 years. Cases have been reported in six provinces but most occurred in the rural part of Bujumbura. New foci have been detected in Mutambu (Bujumbura Province), particularly in the districts of Karama, Burina, Gifugwe, Gasi, Rutovu, Ntabo and Kabezi. During April, 216 new cases were reported in a prison in Gitega Province, 890 new cases in Muramvya Province and 137 new cases in Bujumbura bringing the total number of cases in 1997 to 23,889.

The World Health Organization joined teams investigating the foci in Gitega, Muramvya and Bujumbura in April. In Mutambu, the teams developed a case definition for diagnosis and instituted treatment with a single dose of doxycyline. A committee for control of the outbreak in the most affected localities has been established in Mutambu.

## *Cholera*

**United Republic of Tanzania.** Since the end of January, a cholera outbreak with increasing numbers of cases and deaths has occurred. The first cases reported were in Dar es Salaam, with spread to seven other areas. *Vibrio cholerae* El Tor Ogawa has been confirmed. As of 30 April 1997, nearly 3,000 cases with over 100 deaths had been reported. These reports were only cases which were admitted to hospitals. Cholera cases were also reported in Zanzibar, where there were 30 cases with 2 deaths since the end of March.

The Tanzanian Government, WHO and UNICEF are organising an emergency strategy to combat cholera. WHO will also provide US$15 000 to assist the government to implement control activities (health education, training etc.) and to purchase supplies and equipment.

**Somalia.** A total of 4,437 cholera cases with 146 deaths was reported between the end of November 1996 and 7 May 1997. The actual number of cases is believed to be higher due to difficulties in the collection of data. Weekly reports have been made by non-government organisations working in the country, as well as by the local authorities.

A total of over 2,000 cases with 74 deaths has been recorded in the epidemic in Mogadishu. It appears that the epidemic has now passed its peak, although high case numbers are still being reported. Intensified efforts are still necessary to guarantee sufficient supplies to all non-government organisations involved, and continued vigilance is needed, especially in areas not yet affected by this epidemic. WHO is supporting the non-government organisations and local authorities by providing technical support and supplies.



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