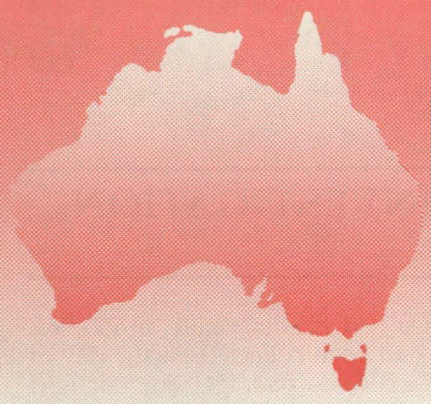

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CONTENTS

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DEPARTMENT OF HEALTH, HOUSING AND COMMUNITY SERVICES

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

WINTER RUBELLA OUTBREAK IN THE ACT: INVESTIGATION OF ONE PRIMARY SCHOOL

Introduction

An outbreak of rubella in a Canberra primary school occurred from 31 May 1991 to 4 September 1991. Notification of measles in a three year old vaccinated child led to the investigation. Two siblings of this child attended the primary school where students had been absent with assumed rubella and measles. The school outbreak occurred during widespread rubella activity in the ACT, with at least 168 rubella cases from other primary schools. The Medical Officer of Health issued a statement to the community to warn of the risk to susceptible pregnant women.

Methods

Questionnaires distributed to families of children attending the primary school and a neighbouring preschool identified the cases of rubella. Cases were defined according to the Canadian Communicable Disease Surveillance System case definitions[1]. A confirmed case included a child or adult with either rubella virus isolation, a 4-fold rise in titre of rubella antibodies, or rubella-specific IgM in the serum. A person was considered to have had clinical rubella if they had an illness comprised of fever and rash, with one or more of arthritis/arthralgia, lymphadenopathy, or conjunctivitis and they were epidemiologically linked to a confirmed case.

Results

Eighty-nine cases of rubella were identified in this school outbreak. Eleven cases were tested for rubella antibodies; eight were confirmed rubella. One serologically tested case had no detectable antibodies, however the serum had been collected on the day of onset of the rash. Two cases had IgG but not IgM antibodies, but the sera had been collected from these two children 44 days after the onset of rash.

Seventy-seven of these 89 cases of rubella occurred in children attending the school or preschool. The overall attack rate was 77/468 or 16% of the student population. Sixty percent of cases were female. The outbreak is continuing.

The epidemic curve (Figure 1) is difficult to interpret until separated into class groups. Eighty-seven cases are presented; parents could not recall the date of onset of illness for two school children. The almost flat curve shows this outbreak is of long duration , with sporadic low level incidence. The largest numbers of cases occurred on day 50, representing cases in 6 classes.

Figure 2 presents the school children epidemic curve by class. The children in Kindergarten were the first in the school to develop rubella. Initial school cases occurred on days 1,9,10. The epidemic curve is not consistent with a common source outbreak. The incubation period for rubella is 14 to 23 days, so children with illness onset on days 9 and 10 did not acquire the disease from the child with onset day 1. Parents of these three children do not recall any contact with a person with a rash illness, and no apparent link exists between the three families. A child in class 3/4A, the first non kindergarten child in the school to develop the illness, became unwell on day 20. This child is a sibling of the kindergarten case with illness onset on day 9.

Figure 1. Day of onset of 87 cases of rubella associated with a school, Canberra, May through September 1991.

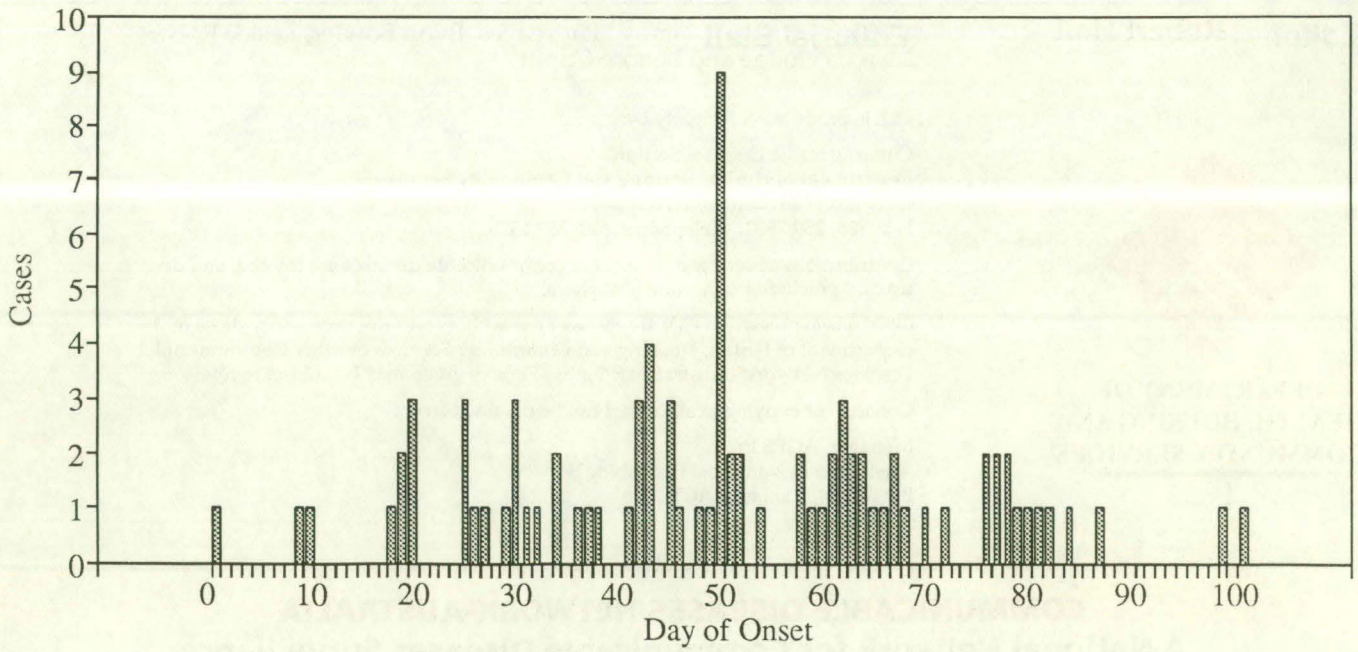


Figure 2. Day of onset of 75 cases of Rubella separated by class ,in a school in Canberra , May through September, 1991

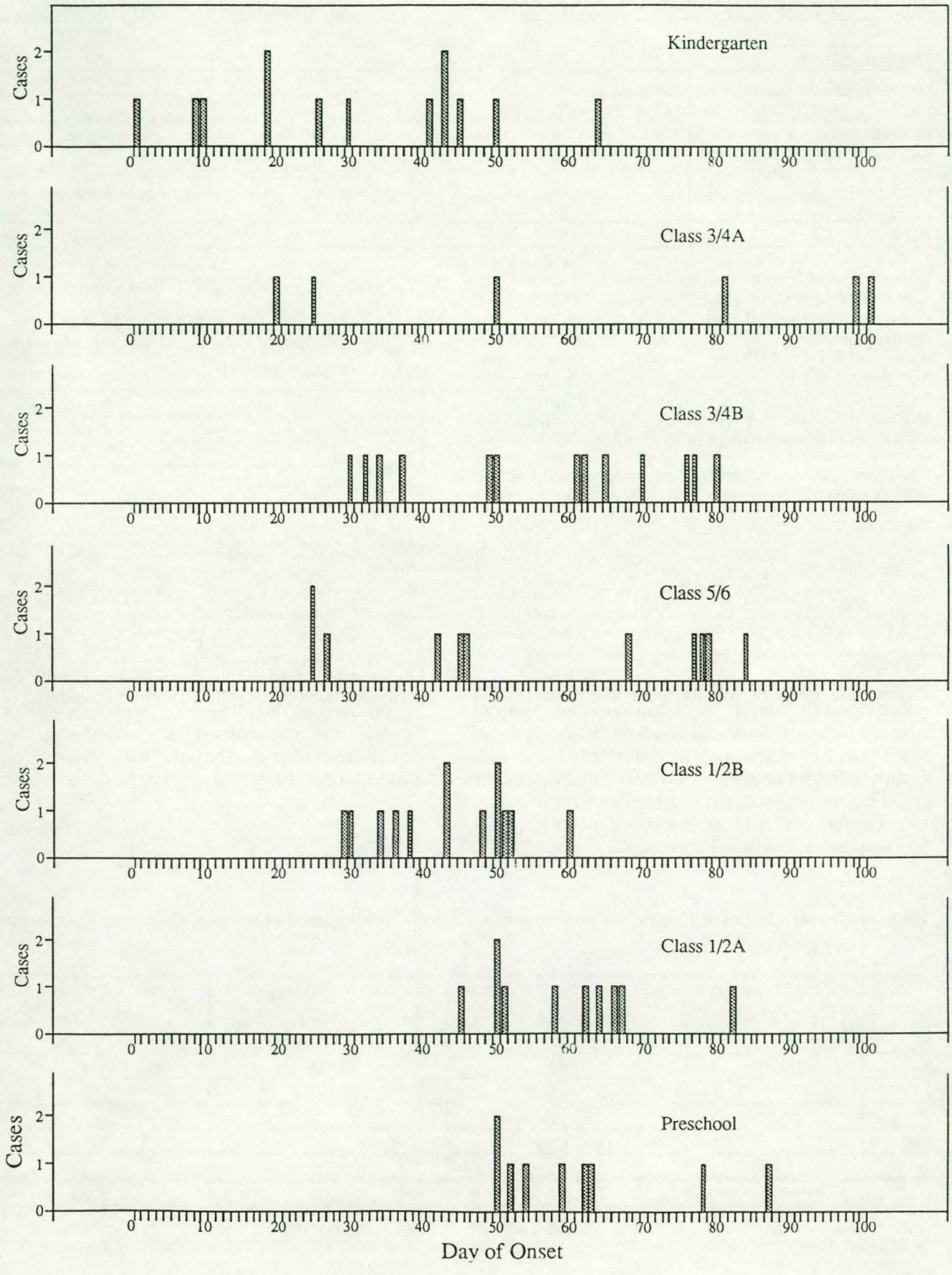


Table 1. Attack rates by classroom in 77 children with rubella in a Canberra school and preschool with 468 students May through September 1991.

CLASS	TOTAL	ILL	ATTACK RATE PER 100
Preschool	75	10	13
Kindergarten	51	13	25
1/2 B	64	13	20
1/2 A	64	10	16
3/4 A	60	6	10
3/4 B	62	13	21
5/6	92	12	13
Total	468	77	16

The school is of open plan design and function. Each class has between 50 and 92 students instructed by multiple teachers. The school has three separate classroom buildings, which accommodate combined classes 1st/2nd, 3rd/4th, 5th/6th respectively. Kindergarten students are taught in a demountable building at the rear of the class 3rd/4th block. The preschool is a separate building adjacent to the school.

The class specific attack rates are presented in Table 1. Attack rates did not vary markedly with age.

Twelve additional cases were linked to the school; five adults, one teenage sibling, five siblings under four years of age, and one seven year old sibling attending a nearby private school. This child is a sibling of a child in preschool. Three of the adult cases were fathers of children in the school. The remaining two adults were mothers, one known to be susceptible to rubella .

Symptom results from the questionnaire are summarised in Table 2. The mean duration of illness was six days. Few of the children had prodromal symptoms; 71% of parents gave the same date for onset of illness and onset of rash. Sixty-seven percent of the children consulted their general practitioner. Ninety-two per cent of the cases reported past vaccination for measles and mumps.

Table 2 Frequency of symptoms and signs in 89 cases of rubella , Canberra, May through September 1991.

SYMPTOM	% OF CASES
conjunctivitis	82
arthralgia	56
arthralgia in children	52
lymphadenopathy	22[1]
pruritus	9[1]

1 . Other symptoms included by parents as comments

Family clusters

Twenty-five families had more than one case in their household. The incubation periods were consistent with transmission from one family member to another in eighteen families. Table 3 summarises these data. The total number of subsequent / secondary infections was 29, from 18 cases. The index to contact ratio equals 1 : 1.61.

Table 3. Characteristics of 18 families with secondary intrafamilial spread of rubella, Canberra, May through September 1991.

NUMBER OF CASES IN THE FAMILY	NUMBER OF FAMILIES	NUMBER OF SECONDARY CASES PER FAMILY	TOTAL SECONDARY CASES
2	13	1	13
3	2	2	4
4	1	3	3
5	1	4	4
6	1	5	5
Total	18	-	29

Discussion

The data suggest this rubella outbreak is continuing at high endemic level. Sixteen percent of the school population have acquired clinical disease over 101 days.

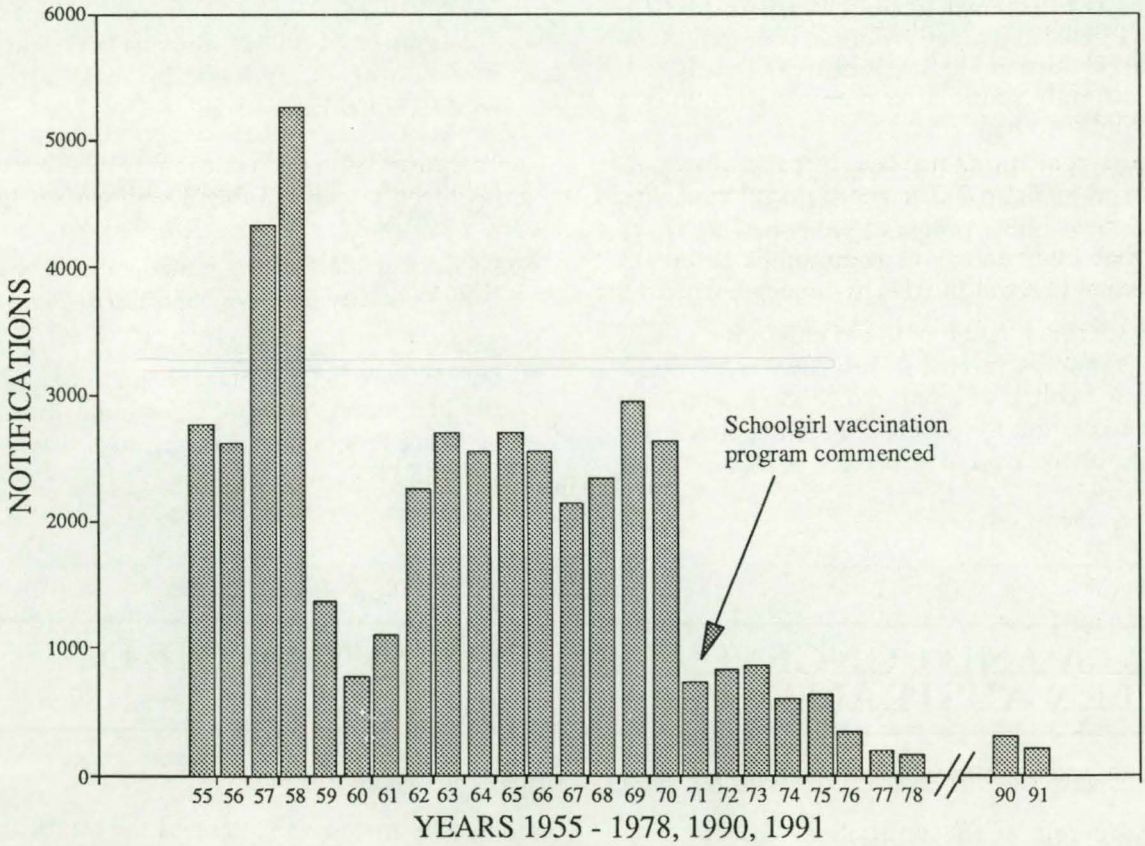
The morbidity associated with this outbreak is striking. Sixty-seven percent of children consulted their general practitioner, suggesting this was not mild disease. Fifty-two percent of the children, suffered from arthralgia. This is a surprisingly high frequency of arthralgia in children. All five adults with rubella reported joint pain. Classically, arthritis/arthralgia is reported in up to one third of adult women with rubella, but is less frequently reported in men and children [2,3,4]. Pruritus, which is occasionally reported in rubella infections[4], occurred in 9% of cases.

The control of rubella varies widely between countries. In the USA rubella vaccine was licensed in 1969, and a policy of universal immunisation of children was adopted. This strategy aims to control rubella infection in young children, reducing circulating virus, and thereby decreasing the risk of exposure to pregnant women. In the year of licensure in the USA the incidence of rubella cases notified was 28 per 100,000 population. In the prevaccine era rubella was predominantly a disease of school age children, with the highest rate in children aged 5 to 9 years. There was a dramatic decrease in numbers of cases of rubella and Congenital Rubella Syndrome (CRS) in the following 19 years. A rise in reported rubella and CRS occurred from 1988 to 1990. The incidence rate for rubella infection in the USA in 1990 was 0.4 per 100,000. USA outbreaks suggest that the recent rubella increase is from failure to vaccinate rather than vaccine failure. In February 1991 a *Morbidity Mortality Weekly Report* suggested several strategies may be required to improve rubella prevention and control, including initiating prompt and aggressive control measures whenever outbreaks are reported[5].

The approach to rubella control in the United Kingdom differed from the USA. Selective vaccination of schoolgirls was commenced in the UK in 1970. In 1988 this programme was augmented by mass vaccination of both sexes using measles-mumps-rubella vaccine (MMR) targeted at 1-2 year old children and 4-5 year old children.

Australia has also used a selective program of school girl vaccination which commenced in 1971. The Australian National Notifiable Disease data from 1955 to 1978, (Figure 3) show a decrease in rubella following vaccine introduction. The rapid fall of rubella cases in

Figure 3. Incidence of rubella, National Notifiable Diseases Data 1955 - 1978,1990,1991, Communicable Diseases Network Australia*



* New South Wales not included until 1991; Western Australia not included between 1964 and 1990; Tasmania not included between 1970 and 1990; CRS only in 1990-91 in Northern Territory, Tasmania and Western Australia.

1971 may have been in part an effect of vaccination as well as a natural decrease in cases. A continued decrease in rubella followed during the next seven years. Rubella was removed from the National Health and Medical Research Council recommended list of notifiable diseases in 1978 but the Communicable Diseases Network - Australia has reintroduced the collection of national rubella data this year.

Currently CRS is separately notifiable in Tasmania, South Australia, Victoria, Northern Territory and Western Australia. Case definitions for CRS are complex[6]. CRS remains a problem in Australia as may be seen in the *CDI* virus reporting scheme data for the last 10 years (p333, *CDI*, this issue). One case of rubella infection in the first trimester of pregnancy occurred in the Canberra region during the period of this school outbreak.

Rubella infections are notifiable in New South Wales, Queensland, South Australia, Victoria, and the Australian Capital Territory. Only one case of rubella infection has been notified in the ACT in 1991.

The Australian National Health and Medical Research Council recommended in November 1987, that the elimination or reduction of rubella in the community and further reduction of the incidence of CRS should be public health objectives. In 1987, it recommended that MMR vaccine be routinely used at 12 - 15 months of age, replacing the measles-mumps vaccine. The school girl rubella program is to be maintained indefinitely. This is in contrast to the UK where MMR is currently targeted at two age groups of young children. A National Health and Medical Research Council committee is currently considering the introduction of a two dose MMR strategy.

The incidence rate during this outbreak was at least 90 per 100,000 population ,which means considerable risk existed for susceptible pregnant women. This study suggests that intervention in community outbreaks may be needed to lower the risk to these women.

The MMR vaccine for 12 month old children replaced the measles mumps vaccine in July 1989 in the ACT. There is now a cohort of 2 year old children who have received vaccination for rubella. There remains a risk of school outbreaks over at least eight years until this cohort completes primary education. Prior to vaccination, rubella outbreaks in the USA occurred on a 6 - 9 year cycle[2] . In the UK an epidemic pattern of a 4 year cycle is described[7]. In the next eight years in Australia there may be outbreaks in school age children. In view of Australia's rubella public health policy, the role of intervention in outbreaks is worthy of debate. The Communicable Diseases Network provides the forum for national co-ordinated consideration of Australia's approach to rubella control.

The development of the Communicable Diseases Network, including the creation of positions of registrars in epidemiology, has enabled this outbreak to be investigated.

REFERENCES

1. Canadian Communicable Disease Surveillance System, *Disease Specific Case Definitions and Surveillance Methods* , Vol 1753. 1991.
2. Gershon AA. Rubella virus (German Measles) In *Principles and Practice of Infectious Diseases* (Eds GL Mandell, RG Douglas, JE Bennett). Curchill Livingstone. New York. 1990.
3. Landrigan PJ, Stoffels MA, Anderson E, Witte JJ. Epidemic rubella in adolescent boys. Clinical features and results of vaccination. *JAMA. 1974;***227**;1283-87.
4. Judelsohn RG, Wylls A. Rubella in Bermuda. Termination of an epidemic by mass vaccination. *JAMA* 1973;**223**:401-406.
5. CDC. Increase in rubella and congenital rubella syndrome - United States, 1988-1990. *MMWR* 1991; **40**:93-99.
6. CDC. Rubella and congenital rubella syndrome-New York City. *MMWR* 1986;**35**:770-779.
7. Miller E, Waight PA, Vurdien. JE *et al.* Rubella Surveillance to December 1990: a joint report from the PHLS and National Congenital Rubella Surveillance Programme. *Communicable Disease Report* 1991;**1**:R33-37.

RUBELLA AND CONGENITAL RUBELLA SYNDROME IN WESTERN AUSTRALIA

(Dr Robert Condon; NCEPH Epidemiology Registrar, Health Department of Western Australia)

An outbreak of rubella, affecting only teenage boys, has been reported from a Perth high school. The index case was a year 11 student who became ill shortly after returning from a geography camp in the South West. Twenty-three other cases have now been diagnosed among class mates who attended the camp, and their siblings and social contacts.

Sporadic cases of rubella are being reported from other schools south of the river in Perth, but the incidence in country areas remains low.

Two babies born with congenital rubella syndrome in 1990 have recently been reported to the WA Birth Defects Registry. Both their mothers had been immunised during adolescence.

One mother had immunity documented during a previous pregnancy. The mother of the other patient was a primigravida who developed a rash and low-grade fever early in the first trimester, before she commenced antenatal care. Blood taken for serology at her first antenatal visit showed immunity to rubella, and she was not investigated further.

CDI Editorial Comment

Vaccination of adolescent girls against rubella usually provides lifelong immunity, although there is evidence that vaccine-induced antibody levels fall with the passage of time. Low serum antibody levels several years after vaccination may not provide adequate protection against viraemia and fetal infection if a woman is exposed to wild virus during pregnancy.

Rubella reinfection in pregnancy has historically been considered not to present a significant risk to the fetus. However, the United Kingdom National Congenital Rubella Surveillance Programme has recently identified six cases of congenital rubella infection as a consequence of confirmed maternal reinfection in pregnancy. Five of these children had major congenital defects[1].

The NH&MRC, the RACOG and the RACGP recommend that rubella immunity be tested prior to conception or early in the course of every pregnancy, irrespective of previous vaccination or documented seroconversion. Seronegative women should be offered vaccine, provided they are not pregnant.

Rubella exposure or a history of a rash during pregnancy requires full serological investigation, regardless of serology results during previous pregnancies or a past history of immunisation.

If equivocal immunity is detected during the course of a pregnancy, rubella vaccination should be administered immediately post partum. Use of anti-D immunoglobulin in the post partum period does not interfere with the response to vaccination, but blood transfusion may do so in up to 50% of vaccinees. Tests for seroconversion should be made 3 months after vaccination and the vaccine readministered if necessary[2].

Despite the fact that congenital rubella syndrome (CRS) is serious and that it is the major target of the MMR and teenage girl rubella immunisation programs, data on its recent incidence in Australia are poor. There were 14 CRS cases notified through the national notifiable diseases reports during the 11 years 1980 to 1990. However, CRS only became notifiable in most States and Territories during this period: it was notifiable only in South Australia in 1980 but is now separately notifiable in all States and Territories apart from the ACT, New South Wales and Queensland. This year, CRS notifications are not recorded separately from other rubella notifications in the National Notifiable Disease reports. This, and the probable underreporting of CRS through the notifiable diseases scheme and to other agencies will make continued monitoring of the syndrome, and any effects of vaccination programs in its incidence, difficult, especially at the national level.

REFERENCE

1. Miller E, Waight PA, Vurdien. JE *et al.* Rubella Surveillance to December 1990: a joint report from the PHLS and National Congenital Rubella Surveillance Programme. *Communicable Disease Report* 1991;1:R33-37.

2. NH&MRC. *Immunisation Procedures*. 4th Edition. AGPS. Canberra. 1991.

RUBELLA - *CDI* LABORATORY REPORTING SCHEME DATA

On October 15 1991, it will be 50 years since the first report of congenital abnormalities caused by rubella infection during pregnancy[1]. Rubella had not been a notifiable disease prior to this discovery, but by 1954, it had been made notifiable in all States and Territories except New South Wales. It has remained notifiable in some areas since then, but several areas have de-listed the disease and it was not part of the National Notifiable Diseases scheme between 1979 and 1990 inclusive. Thus the notifiable diseases data on the incidence of rubella in recent years are incomplete. In addition, the early recognition of the dangers of rubella did not result in congenital rubella syndrome (CRS) becoming notifiable in most States and Territories until the 1980s, so most of the assessment of the efficacy of the schoolgirl rubella immunisation program has had to have been made using data such as those collected on deaf children by the National Acoustic Laboratories[2].

The *CDI* laboratory reporting schemes are the other major source of recent information on rubella in Australia. The schemes have been collecting data on rubella diagnoses since 1978 and over 5000 cases have been reported.

Figure 1. Rubella virus reports, 1978 - 1990, by year.

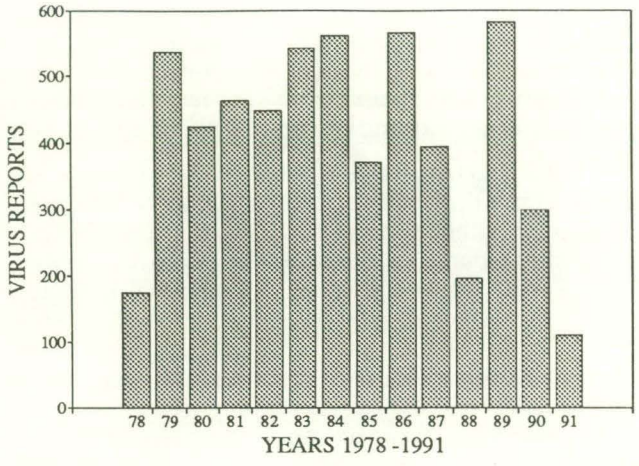


Figure 2. Rubella virus reports by month, average for January 1982 to June 1991.

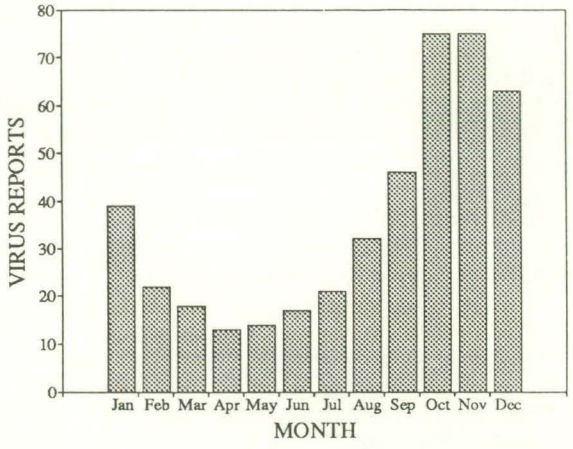
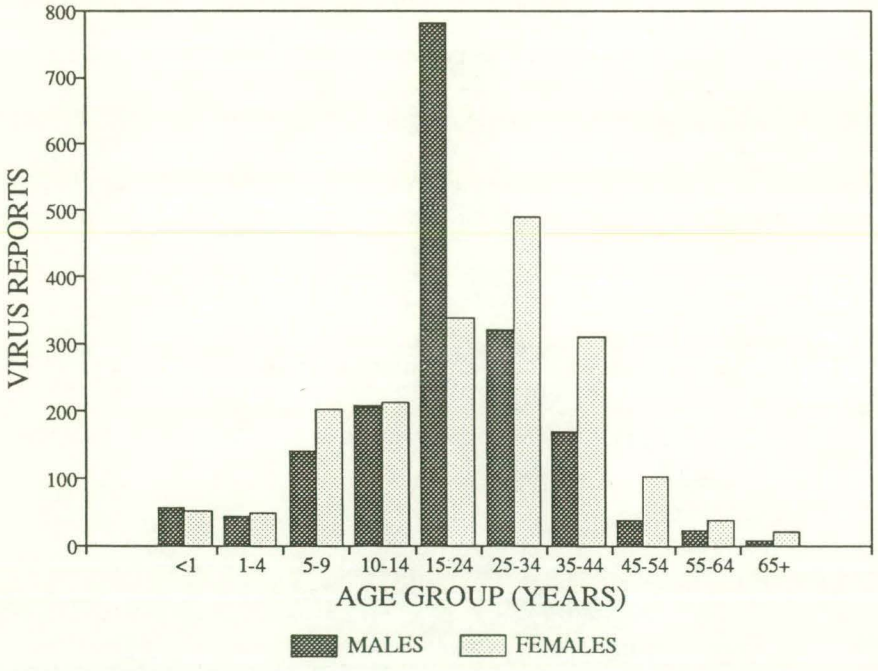


Figure 3. Rubella virus reports 1982 - 1991, by age group and sex.



There have been a total of between about 200 and 500 cases each year, with no apparent trend over the period (Figure 1). (The numbers for 1991 are incomplete and do not necessarily represent a decreased incidence this year.)

The reports have shown a distinct seasonal trend, with a peak in October or November most years (Figure 2). This spring peak in incidence of clinical cases is the normal pattern seen for rubella[3].

The age and sex distribution of the cases reported since 1982 shows that the group with the largest number of case reports is males aged 15-24 years (Figure 3). The incidence of clinical disease is traditionally recognised to be highest in children aged 5-9 years, but is now seen more often in older age groups because the widespread use of rubella vaccine has decreased the circulation of the virus in the community[3,4]. This, and the fact that in Australia school girls and not school boys have been immunised against rubella, makes it not unexpected that there is this differential in the number of cases in males and females in this age group. Indeed, outbreaks and sporadic cases in teenage males have recently been identified in Western Australia[5], and in Tasmania (*CDI* **15**:300, 321 and 340).

In the age groups 25 to 34 years, the number of cases in females is much greater than the number of cases in males. This probably does not mean that the incidence in females is higher but rather reflects a higher rate of detection of the infection in women of childbearing age, in connection with antenatal screening.

The *CDI* Laboratory Reporting Schemes have also collected some additional information which relates to the incidence of rubella infections which have, or which would have had the potential to cause cases of congenital rubella syndrome.

First, pregnant women have been identified as the patients in at least 105 cases during the period 1982 -1990 (Table 1). Twenty-three of these were known to be women in the first trimester of pregnancy, the period during which rubella infection results in 25% or more of infants developing CRS[4]. A further 16 women were known to be 14 - 20 weeks pregnant so their infections also posed a real, but lesser danger to the foetus.

Table 1. Rubella diagnoses in pregnant women, 1982-1991.*

Period of Gestation	Number of cases	Comments
4-8 weeks	11	
1st trimester	1	
9-13 weeks	11	4 had 4-fold titre change
2nd trimester	1	miscarriage
14-20 weeks	15	1 had 4-fold titre change
21-40 weeks	15	1 had 4-fold titre change, 2 had 'other' serological diagnosis.
not stated	46	2 had 4-fold titre change ,1 had virus isolated from serum, miscarriage (1), induced abortion (1), foetal death in utero (1)
assumed	5	'Congenital' listed as syndrome, but age appropriate for mother, not baby. These may include mothers of affected infants, post-partum
Total	105	Includes 4 'affected' foetuses.

* Rubella-specific IgM, unless otherwise specified

Table 2. Serological diagnoses of rubella in infants and products of conception 1982-1991.*

Age of Infant/Sample	Number of Cases	Comments
'Conception products'	1	
cord serum	5	early pregnancy (1), n/s (1), 13w(1), 14w (1), 18w (1)
infants, <1 month	13	'congenital' listed as syndrome (9), small for dates (2), deaf (1), osteopathy, congenital (1)
	8	after maternal rubella at 12w(1), 14w (2), 15w (1), 18w (1), 20w (1), n/s (2)
infants, 1 month	10	'congenital' listed as syndrome (10), small for dates (1), single high titre (1)
infants, 2 months	5	blind, meningitis (1), after maternal rubella at 15w (1), 'congenital' listed as syndrome (3)
infants, 3 months	3	hearing loss, single high titre (1), 'congenital' listed as syndrome (2)
infant, 4 months	1	'congenital' listed as syndrome
infants, 6 months	3	'congenital' listed as syndrome
infant, 11 months	1	'congenital' listed as syndrome
infants, 1 year	4	deaf, congenital heart defect (1), deaf, single high titre (1), 'congenital' listed as syndrome (2)
infant, 19 months	1	deaf, single high titre
infants, age n/s	6	'congenital' listed as syndrome (5), after maternal rubella (1)
child, 3 years	1	'congenital listed as syndrome
child, 4 years	1	deaf
Total	63	Includes 12 'affected' infants or foetuses

* Rubella-specific IgM unless otherwise specified.

Four foetuses are known to have been affected by the infections acquired by these women.

Second, during the same period, rubella has been diagnosed in at least 92 cases in products of conception and in infants. The infants were either identified as having CRS or a syndrome consistent with CRS, or the syndrome reported was 'congenital'.

Rubella was diagnosed serologically in infants and products of conception in 63 cases (Table 2). In at least 12 cases, the infants or foetuses are known to have been affected by the infection. Syndromes reported were deafness, blindness, meningitis, congenital heart disease, osteopathy and 'small for dates'.

The diagnosis of rubella was done by isolation of the virus from the foetus or the infant in 29 cases over the

Table 3. Diagnoses of rubella by virus isolation in infants and products of conception, 1982-1991.

Age of Infant/Sample	Number of Cases	Comments
cord leukocytes	1	
amniotic fluid	2	
foetus	7	14w (1), 19w (1), n/s (3), 'therapeutic abortion' (1),
		'suction currettage' (1)
placenta	2	14w (1), n/s (1)
infants, <1 month	8	suspected CRS (1) congenital cataracts (1), 'congenital', CSF
		isolate (1), 'congenital' listed as syndrome (2)
infants, 1 month	2	CRS (1), 'congenital' listed as syndrome (1)
infant, 2 months	1	'congenital' listed as syndrome
infant, 5 months	1	eye lens
infants, age n/s	5	unilateral cataracts (1), CRS (1), clinical congenital infection (1),
		maternal rubella 10w (1), maternal rubella 13w (1)
Total	29	Includes 17 'affected' infants or foetuses

n/s not stated
w Weeks of gestation

same period (Table 3). Seventeen of these infants or foetuses are known to have been affected by the infection. Syndromes reported were CRS, suspected CRS and congenital cataracts.

These Laboratory Reporting Schemes data thus provide evidence that rubella continues to cause congenital abnormalities in Australia. The schemes are only a sampling program, and not a comprehensive survey of the incidence of infection in Australia, and the information on pregnancy and CRS is only supplied as voluntary comments. Thus these data are necessarily incomplete, and it can be assumed that the total incidence of CRS is much higher than they indicate.

The data are useful in one further regard. Unlike the data collected by the National Acoustic Laboratories, they include information on the incidence of congenital rubella defects other than deafness, and information on terminations and miscarriages.

The information on the incidence of rubella infection in pregnant women and in women of child-bearing age is also useful, as it serves to highlight the fact that the level of rubella immunity in these groups is not high enough to prevent the occurrence of CRS. In 1989-90, it was estimated that 93% of women aged 15 to 24 years were immune, but that only 89% of women aged 25 to 34 years and only 70% of women aged 35 to 44 were immune[6]. Thus these data are consistent with the NH&MRC recommendation that women of child-bearing age be tested prior to pregnancy and vaccinated if not immune and not pregnant[7].

The NH&MRC also recomends that all children aged 12 months be vaccinated against rubella using the trivalent measles-mumps-rubella (MMR) vaccine, and that all girls aged 10-16 years should routinely be offered rubella vaccine, regardless of any history of rubella infection[7]. (Further details on the use of rubella vaccine and precautions and contraindications are detailed in reference 7, available from the Australian Government Publishing Service.)

The introduction of a second dose of MMR, possibly at school entry, or for boys and girls as a replacement for the rubella vaccine, is currently being considered by the NH&MRC. The use of a second dose may eventually help to increase the level of immunity in the population of child-bearing women, and may also have the effect of further reducing the level of virus in the community by reducing infection in the groups such as teenage boys and young men.

REFERENCES

1. Gregg NM. Congenital cataract following German measles in the mother. *Trans Ophthalmol Soc Aust* 1941; 3:35-46.
2. Menser MA, Hudson JR, Murphy AM and Upfold LJ. Epidemiology of congenital rubella and results of rubella vaccination in Australia. *Rev Infect Dis* 1985; 7:S37-41.
3. Gershon AA. Rubella virus (German Measles) In *Principles and Practice of Infectious Diseases* (Eds GL Mandell, RG Douglas, JE Bennett).Curchill Livingstone. New York. 1990.
4. Benenson AS (Ed) *Control of communicable diseases in man*. American Public Health Association. Washington. 1990.
5. Condon R. Rubella and congenital rubella syndrome in Western Australia. *Comm Dis Intell* 1991 **15**:XXX.
6. Anon. *1989-90 National Health Survey*. Australian Bureau of Statistics. Canberra. 1991.
7. NH&MRC. *Immunisation Procedures*. 4th Edition. AGPS. Canberra. 1991.

ROSS RIVER VIRUS DISEASE NOTIFICATIONS, VICTORIA, SUMMER 1990-91

(Nadia Marcon, Environmental Health Officer, Victorian Arbovirus Task Force, Health Department Victoria)

With the 1989-90 summer's dry weather and a drop in the mosquito population, there was only a small number of cases of Ross River virus disease reported to the Health Department Victoria that season (40 cases as at 9 April 1990).

The summer of 1990-91 showed a marked increase in the number of Ross River virus cases. A total of 443 cases were reported; 363 of these were in residents of Victoria and 79 were in residents of New South Wales. The fortnightly number of cases peaked in late January (Figure 1).

According to the Seasonal Climate Outlook published by the Bureau of Meteorology, rainfall totals over the 3-month period of November 1990 to January 1991 were well above average over Victoria. This increase in rainfall compared to the previous summer would help to explain the increase in number of cases.

While the number of cases in the 1990-91 summer period is not regarded as high, there was a marked increase of cases in Region 3 (Loddon/Campaspe/Mallee Region), particularly from the Mildura, Swan Hill and Echuca areas. This could be attributed to the flooding of the Darling Basin.

The geographical origin of infection was able to be identified for 405 of the cases. A total of 289 cases originated in Victoria, with 201 cases from Region 3, 42 cases from Region 4 (Goulburn/North Eastern Region) and 39 cases from Region 5 (Gippsland Region) (Table 1).

Ninety-five cases were acquired in New South Wales and 21 cases were acquired from areas other than Victoria and New South Wales (Table 2).

A summary of the number of cases of Ross River virus disease originating from Regions 1 to 5 and from the Metropolitan area over the past three summers highlights the moderate nature of the season for the State as a whole and the marked increase in cases from Region 3 (Table 3).

Figure 1. Ross River virus disease: IgM positive cases July 1990 to June 1991, by fortnight.

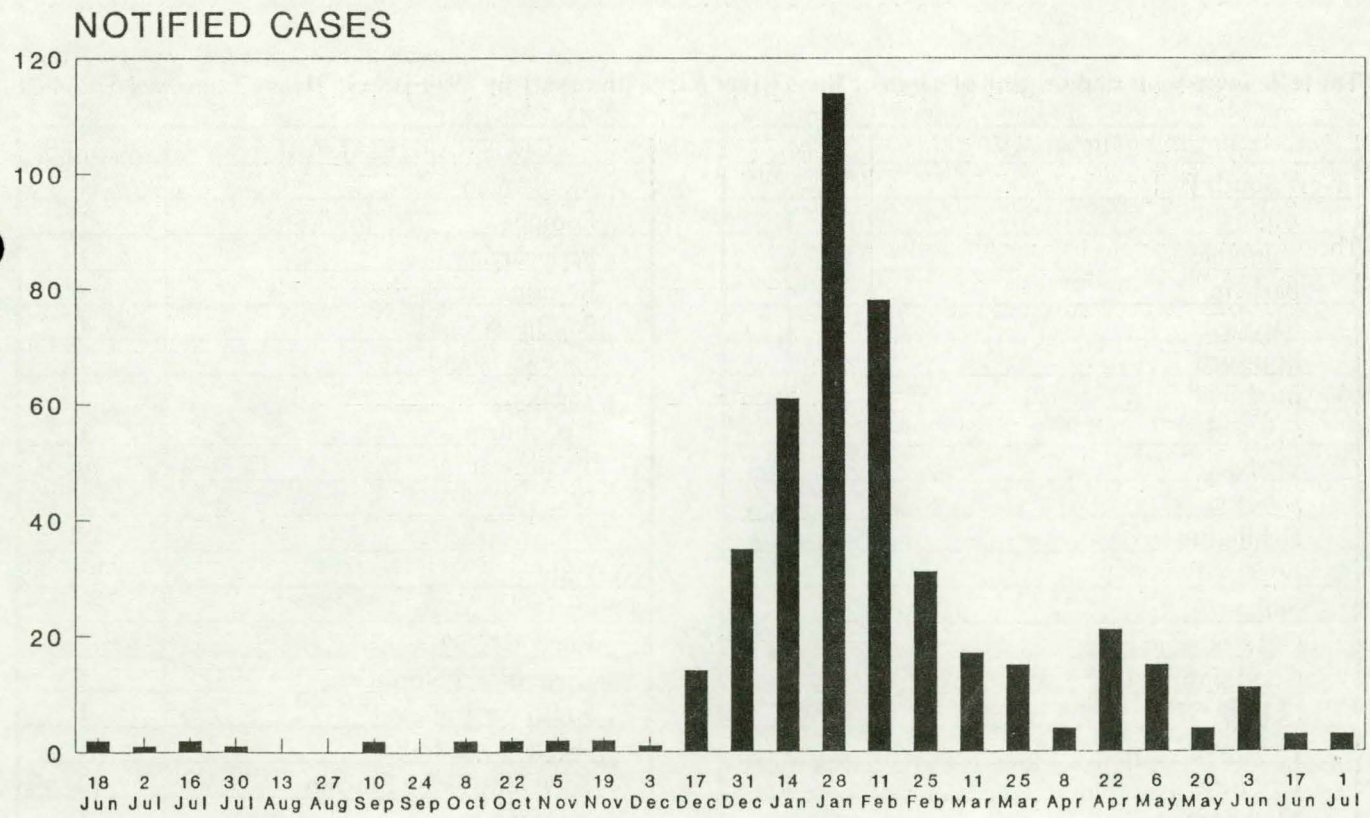


Table 1. Victorian Origins of cases of Ross River Virus disease, July 1990-June 1991.

GEOGRAPHICAL AREA	CASES	GEOGRAPHICAL AREA	CASES
Region 1 (Darwon/South Western)	0	Kyabram Borough	1
Region 2 (Central Highlands/Wimmera)		Cobram Shire	9
Horsham City	1	Rodney Shire	2
Kaniva Shire	1	Waranga Shire	1
Ballarat City	1	Wodonga Shire	2
TOTAL	3	Wangaratta Shire	3
Region 3 (Loddon/Campaspe/Mallee)		Shepparton City	3
Mildura Shire	118	Deakin Shire	1
Swan Hill City	18	**TOTAL**	42
Swan Hill Shire	27	**Region 5 (Gippsland)**	
Cohuna Shire	9	Bairnsdale Town	9
Gordon Shire	2	Bairnsdale Shire	7
Echuca City	15	Morwell Shire	1
Kerang Shire	8	Tambo Shire	11
East Loddon Shire	1	Rosedale Shire	5
Bendigo City	1	Orbost Shire	4
Walpeup Shire	2	Alberton Shire	1
TOTAL	201	Avon Shire	1
Region 4 (Goulburn/North Eastern)		**TOTAL**	39
Numurkah Shire	7	**Metropolitan**	
Bright Shire	2	Eltham Shire	1
Myrtleford Shire	1	Upper Yarra Shire	1
Yarrawonga Shire	2	Cranbourne Shire	1
Rutherglen Shire	4	Hastings Shire	1
Nathalia Shire	4	**TOTAL**	4

Table 2. Non-Victorian origins of cases of Ross River Virus disease, July 1990-June1991.

GEOGRAPHICAL AREA	CASES
New South Wales	
Albury	1
Balranald	6
Barham	4
Barooga	1
Bundure	1
Buronga	8
Corowa	3
Curlwaa	3
Dareton	10
Deniliquin	5
Euston	7
Finley	2
Gol Gol	3
Goodnight	1
Griffith	1
Howlong	1
Jerilderie	1
Mathoura	2
Moama	1

GEOGRAPHICAL AREA	CASES
Moulamein	4
Pomona	1
Pooncarrie	1
Riverina	2
Southeast Coast	1
Speewa Island	1
Terrigal	1
Tibooburra	1
Tocumwal	10
Wakool	2
Wentworth	16
TOTAL	95
Other	
Darwin	2
Queensland North	4
South Australia	1
Western Australia	1
Travelling along Murray	12
Peripatetic	1
TOTAL	21

Table 3. Ross River virus disease cases originating in Victoria 1988-89 to 1990-91.

REGION	SUMMER 1988-89 CASES	SUMMER 1989-90 CASES	SUMMER 1990-91 CASES
1 (Darwon/South Western)	26	1	0
2 (Central Highlands/Wimmera)	41	1	3
3 (Loddon/Campaspe/Mallee)	61	6	201
4 (Goulburn/North Eastern)	94	16	42
5 (Gippsland)	279	1	39
Metropolitan	207	1	4
TOTAL	708	26	289

CDI Editorial Comment

The number of Ross River virus reports received through *CDI* laboratory reporting schemes for the past three summers is shown in Figure 2. The reports show a similar pattern for the whole of Australia as that for Victoria, that is, a season of high activity in 1988-89 (2188 cases), followed by two seasons of much lower activity. The 1989-90 season had a total of 728 cases reported, with a broad peak of activity from January to June. The 1990-91 season had a sharper peak of activity from February to April, and a total of 884 cases. Fairfield laboratory in Melbourne reported 104 cases with a peak in January, the State Health Laboratory Perth reported 111 cases with a peak in February-March, the State Health Laboratory Brisbane reported 343 cases with a peak in February and Dr Lynch's laboratory in Rockhampton reported 118 cases, peaking in March.

The syndromes reported for cases during 1990-91 were muscle/joint disease (428 cases), skin disease (88 cases), general malaise/mild fever (75 cases), respiratory symptoms (10 cases), fever of unknown origin (9 cases), reticuloendothelial disease (3 cases), hepatic symptoms (2 cases), encephalitis (1 case) and meningitis (1 case).

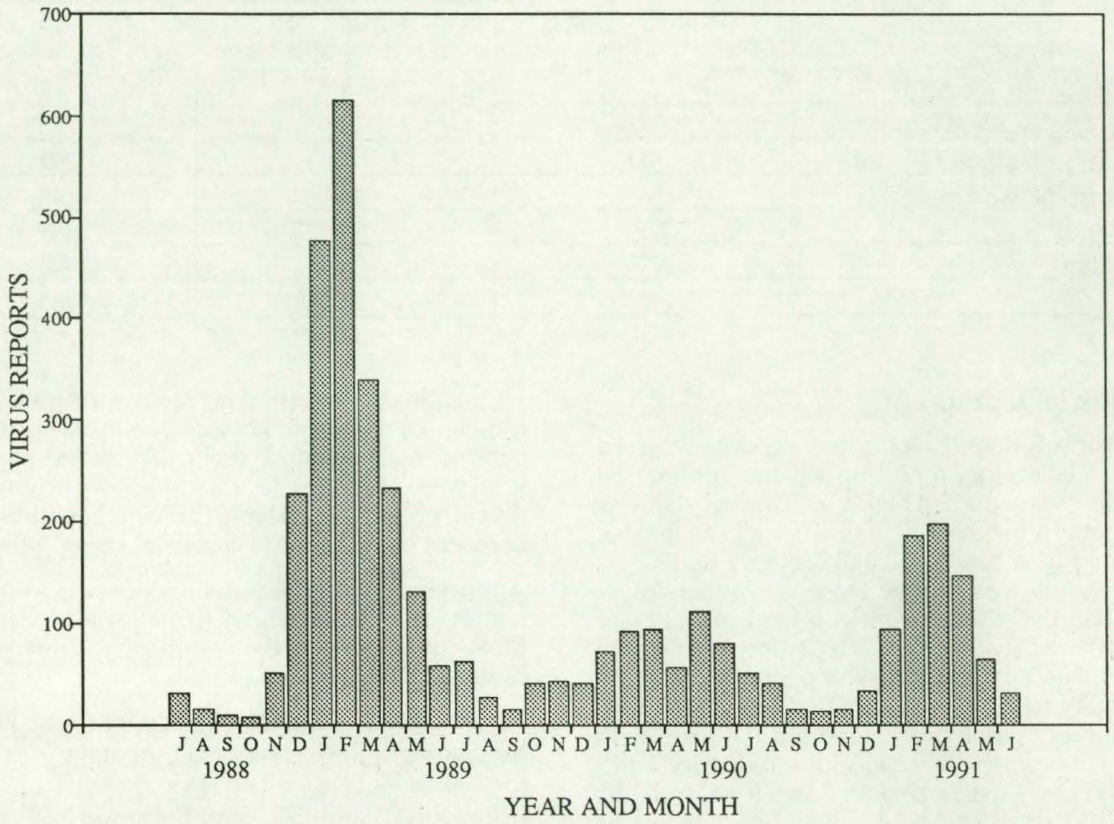
Approximately equal numbers of cases in males and females were reported: 415 in males and 467 in females. Most cases were in the age groups 25-64 years (651 cases) and 10-24 years (145 cases).

Information on the location of either the acquisition of the disease or the residence of the patient was provided for 720 cases (81%). The large majority of cases was from Queensland (506) and there were 69 cases from Western Australia, 49 cases from New South Wales and 46 cases from Victoria (Table 4).

Table 4. Location information for Ross River virus reports, July 1990-June 1991

Location		Number of Cases
Queensland -	Townsville	169
	Rockhampton	54
	Cairns	48
	Brisbane	42
	Toowoomba	38
	Middlemount	19
	Western Queensland	15
	Mackay	10
	Other	111
Western Australia -	Broome	19
	Kununurra	13
	Other	37
New South Wales		49
Victoria		46
Northern Territory		31
South Australia		9
Tasmania		7
Papua New Guinea		2
Solomon Islands		1

Figure 2. Ross River virus reports, July 1988 to June 1990, by month of specimen collection.



OVERSEAS BRIEFS

In the last two weeks, the following information regarding cholera cases and recently infected areas has been supplied by the World Health Organization.

Cholera in Africa Update

Cameroon has reported that as of 8 August, there had been a total of 1454 cases and 318 deaths. Newly infected areas are the Diamare, Mayo-Sava and Mayo-Tsawaga Departments.

As at 28 August, **Chad** had had a total of 11460 cases and 1215 deaths since the beginning of the epidemic on 15 May. Twelve of the country's 14 prefectures have been affected.

Cholera in the Americas Update

Bolivia has reported a further 13 cases and 2 deaths for the period 29 August to 5 September.

Colombia has reported 214 cases and 3 deaths for the period 21 August to 3 September, and 279 cases and 5 deaths for the period 31 August to 10 September.

There were 15 cases (no deaths) in **El Salvador** from 22 to 28 August and 26 cases from 29 August to 7 September. The Metropolitan and Paracentral regions have been declared infected.

Ecuador reported 1464 cases and 10 deaths from 4 to 17 August.

Guatemala reported 79 cases (no deaths) up to 17 August, and 36 cases with 2 deaths for the period 17 to 24 August. The Escuintla, Guatemala, Retalhuleu, Guetzaltenango, San Marcos, Solala and Suchitepequez Departments are newly infected.

There have been 297 cases and 4 deaths from 7 to 31 August in **Mexico**. Campeche State, Tabasco State and the Distrito Federal are newly infected.

Cholera in Asia Update

Hong Kong reported 1 local case and 1 imported cases for the period 2 August to 2 September.

The Inchon, Okgu and Yeo Cheon areas of **South Korea** have been declared infected.

There were 53 cases in **Iraq** from 7 July to 13 August.

Cholera in Europe Update

As of 2 September, **Romania** had reported a total of 77 cases and 1 death. The Tulcea, Braila and Costantsa Districts have been declared infected.

The **Ukrainian SSR** has reported 39 cases from 19 August to 2 September in the Odesskaya region.

COMMUNICABLE DISEASES SURVEILLANCE

Of the 50 reports of influenza received, 49 were **influenza B** and one was **influenza A**. Syndromes were respiratory (37 cases), CNS symptoms (2 cases) and general malaise/mild fever (1 case). Laboratories in Melbourne, Sydney and Adelaide reported most of the cases this period.

The number of rotavirus reports received this season is much higher than the average for recent years (Figure 1). This period there were 313 reports, bringing the total for the year to 1492. Victoria and Western Australia seem to have passed the peak for rotavirus reports for this year, but August saw a dramatic increase in reports from New South Wales and the ACT, Queensland and South Australia (Figures 2, and 3).

Figure 1. Rotavirus reports by month, 1986-90 average and 1991.

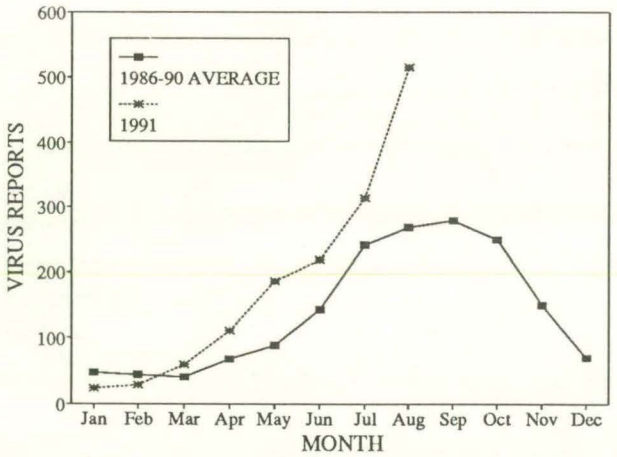
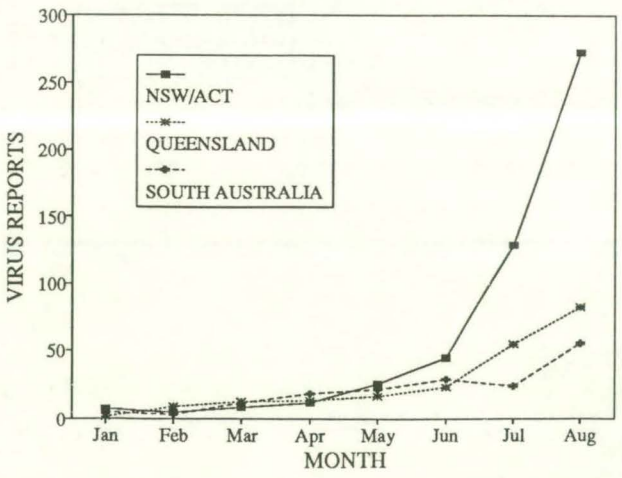


Figure 2. Rotavirus reports from laboratories in New South Wales and the ACT, Queensland and South Australia, by month 1991..



Reports of **varicella-zoster virus** (chicken pox) have been received at a greater rate that usual this year. A total of 302 cases has been reported. This period, there were 32 reports, with 12 from Western Australia and 10 from New South Wales. Two were unusual: a male aged 72 years who suffered encephalitis and paralysis, and a 6 year old girl who had varicella cerebellitis.

A report has also been received of an increased incidence of chicken pox in Miles, a town northeast of Toowoomba in Queensland. Over 30 cases have been identified there in the last 2 months.

There were 11 reports of **Q fever** this fortnight. One patient was described as a meatworker and two had not been vaccinated against the disease.

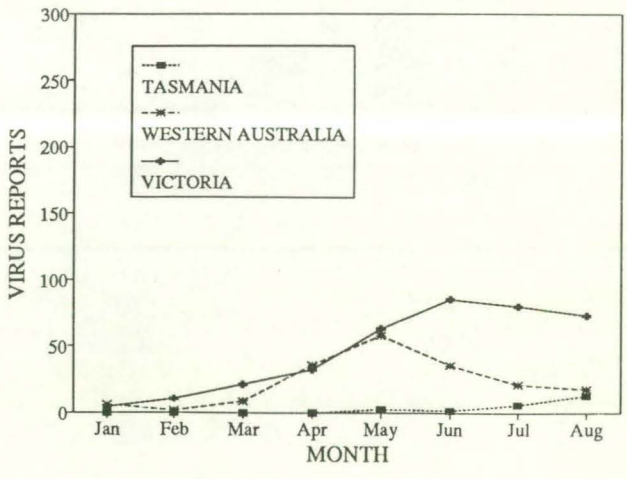
A further 4 reports of **echovirus type 17** were received from New South Wales laboratories. The patients were a 20 year old male from whose CSF the virus was isolated, a 1 month old girl who suffered respiratory symptoms, a 1 month old boy who had general malaise/mild fever and a 2 month old girl who had fever of unknown origin.

Measles was reported in a further 9 patients, bringing the total for the year to 170 reports.

There were 75 reports of **hepatitis C**. The patients included two haemophiliac males aged 6 years and 11 years.

Hepatitis A continues to be reported at a greater rate than usual and there have now been more reports for 1991 than for any full year since 1988. Twenty-eight cases were reported this fortnight. Sixteen of these were in adult males.

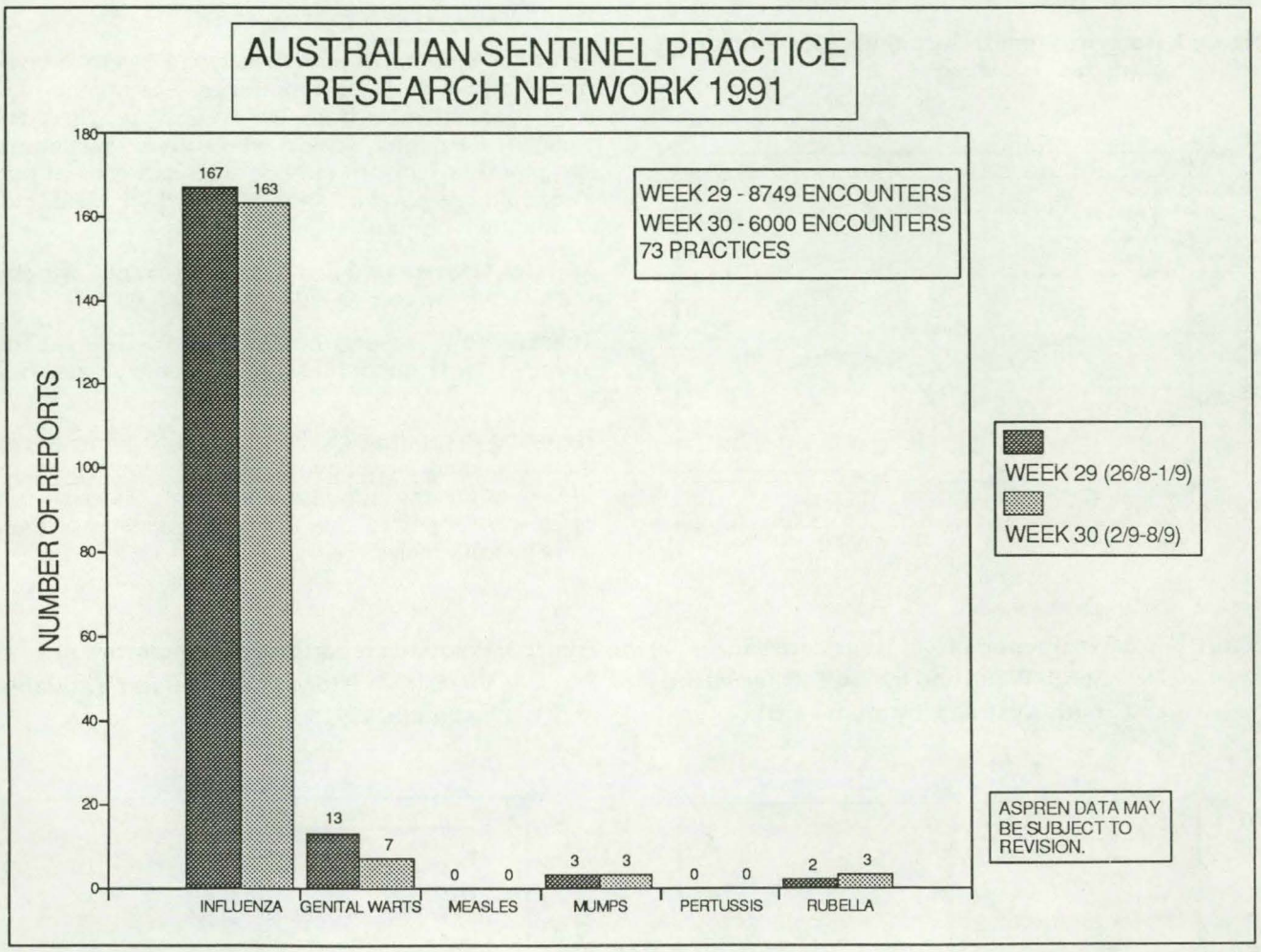
Figure 3. Rotavirus reports from laboratories in Victoria, Western Australia and Tasmania, by month, 1991.

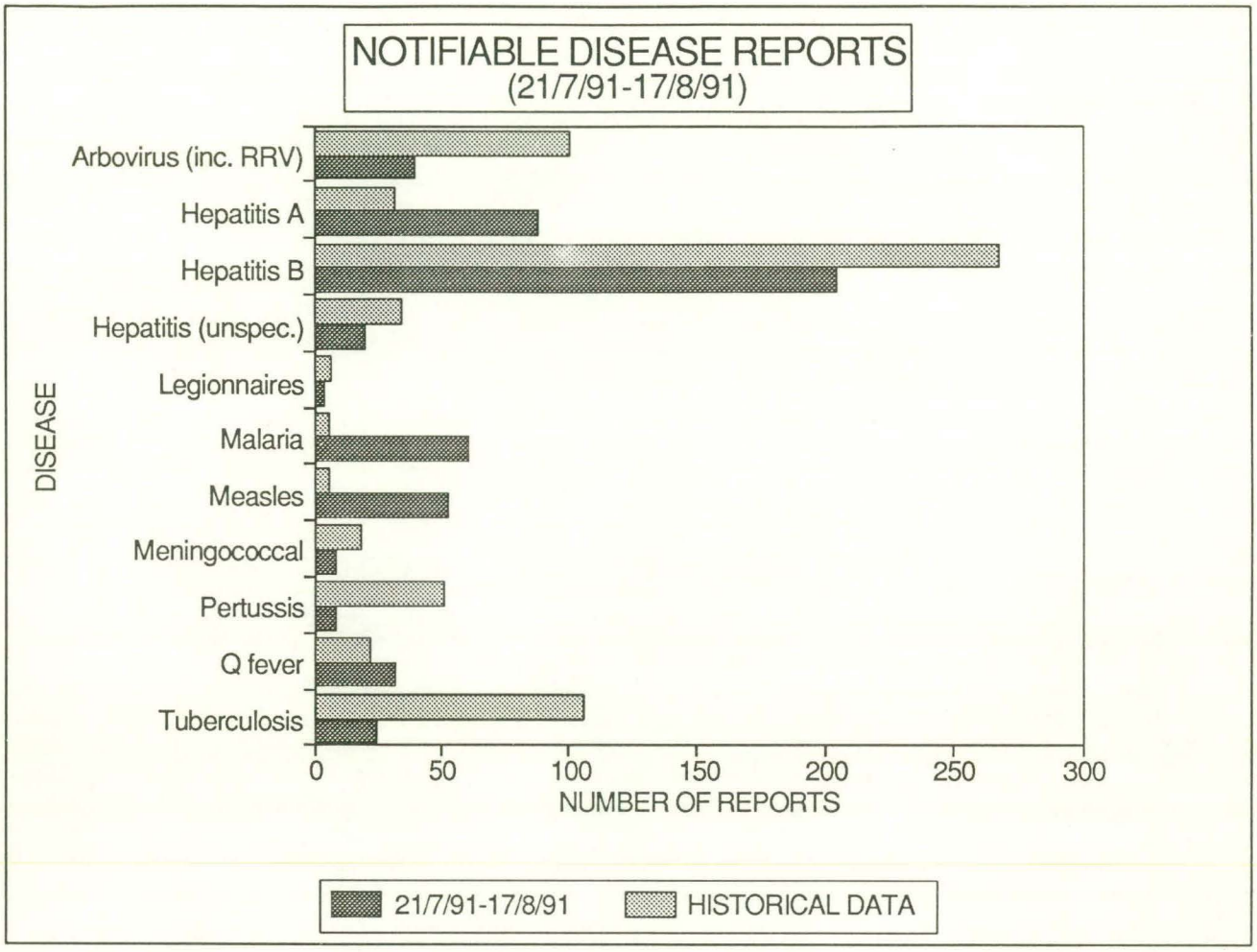


A further 282 cases of **respiratory syncytial virus** were reported this period, bringing the total for the year to 1731. Laboratories in Melbourne and Adelaide reported the most cases this fortnight. The year's total for laboratories from Sydney is now 520, Melbourne 515, Brisbane 253, Adelaide 191, Perth 172 and Canberra 59.

A total of 21 cases of **rubella** was reported. Ten were reported from a Rockhampton laboratory and five were from Tasmania (including males aged 22 years and 17 years). Nine were in women of child-bearing age (20 years, 3 at 21 years, 25 years, 29 years, 2 at 35 years, 37 years).

The National Notifiable Diseases Reports for the latest available reporting periods are on page 344 of this issue. On page 345 there is a blank Reports table, which updates the diseases which are currently notifiable in each of the States and Territories. This has been included to enable easy use of this information. The 'Total' column of this table refers to the number of States and Territories (of the total 8), in which the disease is notifiable.




NOTIFIABLE DISEASE REPORTS
(21/7/91-17/8/91)
Arbovirus (inc. RRV)
Hepatitis A
Hepatitis B
Hepatitis (unspec.)
Legionnaires
Malaria
Measles
Meningococcal
Pertussis
Q fever
Tuberculosis
DISEASE
0
50
100
150
200
250
300
NUMBER OF REPORTS
21/7/91-17/8/91
HISTORICAL DATA

National Notifiable Diseases Reports 21/7/91-17/8/91

DISEASES	ACT	NSW*	NT	QLD	SA	TAS	VIC	WA ***	TOTAL
Arbovirus Infections (ns)	0	5	NN	0	0[12]	0	0	0	5
Ross River Virus	NN	NN	8	24	NN	NN	2	0	34
Dengue fever	NN	NN	0	0	NN	NN	NN	NN	0
Brucellosis	0	0	0	1	0	0	0	0	1
Campylobacter	3	NN	17	158	100	43	22	26	369
Chancroid	0	NN	0	0	NN	NN	0	0	0
Chlamydia	3[1]	NN	34	102	75**[1]	17	134	0	365
Cholera	0	0	0	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0	0	0	0
Donovanosis	0	NN	0	1	NN	NN	0	0	1
Gonococcal diseases[2]	2	12	70	20	10**	NN	23	0	137
Haemophilus influenzae b	3	10	NN	7	0[5]	4[8]	3[10]	NN	27
HIV infection	2[3]	0	0	0	0[6]	0	NN	0[6]	2
Hydatid disease	0	0	0	0	0	0	0	0	0
Legionnaires disease	NN	1	0	1	1	0	0	1	4
Leprosy	0	0	0	0	0	0	0	0	0
Leptospirosis	0	1	0	4	0	0	0	0	5
Listeriosis	NN	1	NN	1	NN	0	1	0	3
Lymphogranuloma venereum	0	NN	0	0	NN	NN	0	NN	0
Malaria	0	2	0	55	2	0	2	0	61
Measles	3	5	1	14	6	3	18	3	53
Meningococcal infections	0	3	0	0	2	1	1	1	8
Ornithosis	1	NN	0	0	0	0	8	0	9
Pertussis	NN	0	0	7	0	0	0	1	8
Plague	0	0	0	0	0	NN	0	0	0
Poliomyelitis	0	0	0	0	0	0	0	0	0
Q fever	1	6	0	23	1	0	0	0	31
Rabies	NN	NN	0	0	0	0	0	0	0
Rubella[4]	0	5	0[4B]	6	3[4A]	0[4B]	4[4A]	0[4B]	18
Salmonella	0	19	25	126	21	12	2	17	222
Shigella	0	NN	30	1	2	0	0	0	33
Syphilis	1	21	26	13	1**	NN	10	1	73
Tetanus	0	0	0	NN	0	0	0	0	0
Tuberculosis	0	0	0	8	4	3	0	9	24
Typhoid	0	0	0	3	0	0	0	1	4
Viral haemorrhagic fever	NN	0	0	0	0	0	0	0	0
Viral hepatitis (unspecified)	NN	17	0	2	0	1	0	NN	20
Hepatitis A	2	9	5	19	8	1	33	11	88
Hepatitis B	2	18	3	117	1	1	29	34	205
Hepatitis C	3	1	1	92	NN	0	46	NN	143
Yellow fever	0	0	0	0	0	0	0	0	0
Yersiniosis	NN	NN	0	11	7	0	0	0	18

1. Trachoma only
2. In NT, Qld, SA and Vic, gonococcal ophthalmia neonatorum is also notifiable; numbers may include both
3. AIDS only, 4. Rubella only unless otherwise specified, 4A. Rubella and CRS
4B. CRS only
5. Only as 'bacterial meningitis'; meningococcal infection is separately notified
6. AIDS, ARC and LAS only
7. Marburg, Ebola and Lassa fevers only
8. Only as 'non-meningococcal meningitis'
9. Marburg, Ebola, Crimean-Congo and Lassa fevers only
10. Epiglottitis and meningitis only
11. Typhoid and paratyphoid included.
12. includes Ross River Virus infections

NN Not notifiable
* data for July 1991
** data to 20 August 1991
*** July 29 to August 18

National Notifiable Diseases , by State or Territory

DISEASES	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL (of 8)
Arbovirus Infections (ns)			NN		12				7
Ross River Virus	NN	NN			NN	NN	NN		3
Dengue fever	NN	NN			NN	NN	NN	NN	2
Brucellosis									8
Campylobacter	NN	NN							6
Chancroid		NN			NN	NN			5
Chlamydia	1	NN			1			1	7*
Cholera									8
Diphtheria									8
Donovanosis		NN			NN	NN			5
Gonococcal diseases[2]									8*
Haemophilus influenzae b	NN		NN		5	8	10	NN	5*
HIV infection	3				6		NN	6	7*
Hydatid disease									8
Legionnaires disease	NN								7
Leprosy									8
Leptospirosis									8
Listeriosis	NN		NN		NN				5
Lymphogranuloma venereum		NN			NN	NN		NN	4
Malaria									8
Measles	NN								7
Meningococcal infections									8
Ornithosis		NN							7
Pertussis	NN								7
Plague						NN			7
Poliomyelitis									8
Q fever									8
Rabies	NN	NN							6
Rubella[4]			4B		4A	4B	4A	4B	8*
Salmonella									8
Shigella		NN							7
Syphilis									8
Tetanus				NN					7
Tuberculosis									8
Typhoid							11		8
Viral haemorrhagic fever	NN				7	9		7	7*
Viral hepatitis (unspecified)	NN							NN	6
Hepatitis A									8
Hepatitis B									8
Hepatitis C	NN		NN		NN			NN	4
Yellow fever									8
Yersiniosis	NN	NN							6

* Fully or Partly

1. Trachoma only
2. In NT, Qld, SA and Vic, gonococcal ophthalmia neonatorum is also notifiable; numbers may include both
3. AIDS only, 4. Rubella only unless otherwise specified, 4A. Rubella and CRS. 4B. CRS only
5. Only as 'bacterial meningitis'; meningococcal infection is separately notified
6. AIDS, ARC and LAS only
7. Marburg, Ebola and Lassa fevers only
8. Only as 'non-meningococcal meningitis
9. Marburg, Ebola, Crimean-Congo and Lassa fevers only
10. Epiglottitis and meningitis only
11. Typhoid and paratyphoid included.
12. Includes Ross River Virus infections

NN Not notifiable

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

VIRAL IDENTIFICATIONS FROM CONTRIBUTING LABORATORIES
BASED ON DATE OF REPORTING

PERIOD 28/08/91 TO 10/09/91

CODE 019 - FAIRFIELD HOSPITAL, MELBOURNE (VIC)
CODE 065 - STATE HEALTH LABORATORY SERVICES, PERTH (WA)
CODE 066 - PRINCESS MARGARET HOSPITAL, PERTH (WA)
CODE 110 - INSTITUTE OF MEDICAL & VETERINARY SCIENCE, ADELAIDE (SA)
CODE 111 - ROYAL CHIDLDRENS HOSPITAL, MELBOURNE (VIC)
CODE 112 - INSTITUTE OF CLINICAL PATHOLOGY & MEDICAL RESEARCH, WESTMEAD (NSW)
CODE 113 - PRINCE HENRY/PRINCE OF WALES HOSPITALS, SYDNEY (NSW)
CODE 114 - ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, CAMPERDOWN (NSW)
CODE 115 - STATE HEALTH LABORATORY, BRISBANE (QLD)
CODE 116 - WODEN VALLEY HOSPITAL, GARRAN (ACT)
CODE 400 - DR TB LYNCH, PATHOLOGIST, ROCKHAMPTON (QLD)
CODE HOB - HOBART PATHOLOGY LABORATORY (TAS)
CODE RHH - ROYAL HOBART HOSPITAL (TAS)
CODE TPL - TOOWOOMBA PATHOLOGY LABORATORY (QLD)

	019	065	066	110	111	112	113	114	115	116	400	HOB	RHH	TPL	TOTAL
0100 ADENOVIRUS NOT TYPED	1	5	7	10	12	1	5	1	10	0	0	0	0	0	52
0101 ADENOVIRUS TYPE 1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0102 ADENOVIRUS TYPE 2	2	0	0	0	0	2	1	2	0	0	0	0	0	0	7
0103 ADENOVIRUS TYPE 3	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
0105 ADENOVIRUS TYPE 5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
0108 ADENOVIRUS TYPE 8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0111 ADENOVIRUS TYPE 11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0126 ADENOVIRUS TYPE 26	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0199 ADENOVIRUS TYPING PENDING	0	0	0	1	6	0	0	1	0	0	0	0	0	0	8
0201 INFLUENZA A VIRUS	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0203 INFLUENZA B VIRUS	7	1	0	21	4	8	2	6	0	0	0	0	0	0	49
0301 PARAINFLUENZA VIRUS TYPE 1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
0302 PARAINFLUENZA VIRUS TYPE 2	0	0	3	6	0	0	0	0	0	0	0	0	0	0	9
0303 PARAINFLUENZA VIRUS TYPE 3	2	0	1	4	2	3	1	3	6	0	0	0	0	0	22
0400 RESPIRATORY SYNCYTIAL VIRUS (R	49	3	45	61	44	7	7	12	47	5	0	0	2	0	282
0500 RHINOVIRUS (ALL TYPES)	7	0	0	4	11	3	0	1	6	0	0	0	1	0	33
0600 MYCOPLASMA PNEUMONIAE	3	3	0	1	6	2	3	0	0	0	0	0	0	0	18
0700 ORNITHOSIS-PSITTACOSIS	1	0	0	1	0	1	0	0	0	0	0	0	0	0	3
0902 COXSACKIEVIRUS B2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
0904 COXSACKIEVIRUS B4	0	2	0	0	0	1	0	2	0	0	0	0	0	0	5
0905 COXSACKIEVIRUS B5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1017 ECHOVIRUS TYPE 17	0	0	0	0	0	3	0	1	0	0	0	0	0	0	4
1021 ECHOVIRUS TYPE 21	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1102 POLIOVIRUS TYPE 2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
1103 POLIOVIRUS TYPE 3	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2
1300 HERPES VIRUS GROUP - NOT TYPED	1	4	0	0	0	0	0	0	1	0	0	0	0	0	6
1301 HERPES SIMPLEX VIRUS - NOT TYP	2	0	0	0	0	24	3	3	0	5	0	0	0	0	37
1302 EPSTEIN-BARR VIRUS (EB VIRUS)	4	10	0	4	1	2	3	2	0	0	41	0	0	0	67
1303 VARICELLA-ZOSTER VIRUS	5	11	1	3	0	6	3	1	1	1	0	0	0	0	32
1306 HERPES SIMPLEX TYPE 1	31	25	0	16	8	3	0	0	58	0	0	0	2	1	144
1307 HERPES SIMPLEX TYPE 2	31	50	0	17	0	13	1	0	35	0	0	0	4	0	151
1399 HERPES VIRUS TYPING PENDING	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1401 COXIELLA BURNETII	1	3	0	4	0	2	0	0	0	0	1	0	0	0	11
1502 PICORNA VIRUS - NOT TYPED = EN	0	7	0	0	0	1	5	0	1	0	0	0	0	0	14
1514 MOLLUSCUM CONTAGIOSUM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
1521 MEASLES VIRUS	5	0	0	2	1	0	1	0	0	0	0	0	0	0	9
1522 RUBELLA VIRUS	5	0	0	0	0	4	2	0	0	0	10	0	0	0	21
1532 HEPATITIS B ANTIGEN	11	11	0	1	0	34	4	1	24	0	1	15	2	0	104
1535 HEPATITIS A ANTIBODY	3	5	0	2	0	8	2	1	6	0	0	1	0	0	28
1536 HEPATITIS C VIRUS	0	29	0	26	0	0	0	2	0	6	5	0	7	0	75
1537 HEPATITIS, DELTA	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
1541 CHLAMYDIA TRACHOMATIS - UNSPEC	0	27	0	21	0	9	0	0	0	1	0	0	5	7	70
1542 CHLAMYDIA TRACHOMATIS - A-K	0	0	0	0	0	0	0	0	0	0	7	0	0	0	7
1543 CHLAMYDIA L1-L3 - (LGV TYPE)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
1556 CMV - CYTOMEGALOVIRUS	30	2	7	3	4	4	3	3	17	0	8	0	0	0	81
1564 ROTAVIRUS	4	1	6	28	26	45	49	22	0	20	78	3	14	17	313
1571 ENTEROVIRUS TYPE 71 (BCR)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
1599 ENTEROVIRUS TYPING PENDING	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4
1760 PARVOVIRUS	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
9903 NON-A, NON-B HEPATITIS (OTHER)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
9992 ROSS RIVER VIRUS	0	2	0	0	0	1	0	0	0	0	1	0	0	0	4
9994 SMALL VIRUS (LIKE) PARTICLE	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
TOTAL	214	201	71	238	130	192	95	68	214	38	157	19	38	25	1700

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

VIRAL IDENTIFICATIONS FROM CONTRIBUTING LABORATORIES BY STATE OF CONTRIBUTING LABORATORY

PERIOD 28/08/91 TO 10/09/91

NSW: ICPMR; PHH/POW; RACH; ST GEORGE HOSP, KOGARAH; ROYAL NEWCASTLE HOSP; TAMWRTH LAB.
VIC: FAIRFIELD; RCH; MDU, UNI MELB.
QLD: STATE LAB, BRIS; TOOWOOMBA PATH LAB; ROYAL BRIS HOSP; DR TB LYNCH, PATHOLOGIST, ROCKHAMPTON.
WA: STATE LAB, PERTH; PMH.
SA: IMVS.
TAS: ROYAL HOBART HOSP; DIAGNOSTIC SERVICES, LAUNCESTON; LAUNCESTON GEN HOSP; DIAGNOSTIC SERVICES, HOBART; HOBART PATH; MERSEY GEN HOSP, LATROBE.
ACT: WVH.

		NSW	VIC	QLD	WA	SA	TAS	ACT	TOTAL
0100	ADENOVIRUS NOT TYPED	7	13	10	12	10	0	0	52
0101	ADENOVIRUS TYPE 1	1	0	0	0	0	0	0	1
0102	ADENOVIRUS TYPE 2	5	2	0	0	0	0	0	7
0103	ADENOVIRUS TYPE 3	1	1	0	0	0	0	0	2
0105	ADENOVIRUS TYPE 5	1	0	0	0	0	0	0	1
0108	ADENOVIRUS TYPE 8	0	1	0	0	0	0	0	1
0111	ADENOVIRUS TYPE 11	0	1	0	0	0	0	0	1
0126	ADENOVIRUS TYPE 26	0	1	0	0	0	0	0	1
0199	ADENOVIRUS TYPING PENDING	1	6	0	0	1	0	0	8
0201	INFLUENZA A VIRUS	1	0	0	0	0	0	0	1
0203	INFLUENZA B VIRUS	16	11	0	1	21	0	0	49
0301	PARAINFLUENZA VIRUS TYPE 1	0	1	0	1	0	0	0	2
0302	PARAINFLUENZA VIRUS TYPE 2	0	0	0	3	6	0	0	9
0303	PARAINFLUENZA VIRUS TYPE 3	7	4	6	1	4	0	0	22
0400	RESPIRATORY SYNCYTIAL VIRUS (R	26	93	47	48	61	2	5	282
0500	RHINOVIRUS (ALL TYPES)	4	18	6	0	4	1	0	33
0600	MYCOPLASMA PNEUMONIAE	5	9	0	3	1	0	0	18
0700	ORNITHOSIS-PSITTACOSIS	1	1	0	0	1	0	0	3
0902	COXSACKIEVIRUS B2	0	1	0	0	1	0	0	2
0904	COXSACKIEVIRUS B4	3	0	0	2	0	0	0	5
0905	COXSACKIEVIRUS B5	0	1	0	0	0	0	0	1
1017	ECHOVIRUS TYPE 17	4	0	0	0	0	0	0	4
1021	ECHOVIRUS TYPE 21	0	0	0	0	1	0	0	1
1102	POLIOVIRUS TYPE 2	1	0	0	0	0	0	0	1
1103	POLIOVIRUS TYPE 3	1	1	0	0	0	0	0	2
1300	HERPES VIRUS GROUP - NOT TYPED	0	1	1	4	0	0	0	6
1301	HERPES SIMPLEX VIRUS - NOT TYP	30	2	0	0	0	0	5	37
1302	EPSTEIN-BARR VIRUS (EB VIRUS)	7	5	41	10	4	0	0	67
1303	VARICELLA-ZOSTER VIRUS	10	5	1	12	3	0	1	32
1306	HERPES SIMPLEX TYPE 1	3	39	59	25	16	2	0	144
1307	HERPES SIMPLEX TYPE 2	14	31	35	50	17	4	0	151
1399	HERPES VIRUS TYPING PENDING	0	2	0	0	0	0	0	2
1401	COXIELLA BURNETII	2	1	1	3	4	0	0	11
1502	PICORNA VIRUS - NOT TYPED = EN	6	0	1	7	0	0	0	14
1514	MOLLUSCUM CONTAGIOSUM	0	0	3	0	0	0	0	3
1521	MEASLES VIRUS	1	6	0	0	2	0	0	9
1522	RUBELLA VIRUS	6	5	10	0	0	0	0	21
1532	HEPATITIS B ANTIGEN	39	11	25	11	1	17	0	104
1535	HEPATITIS A ANTIBODY	11	3	6	5	2	1	0	28
1536	HEPATITIS C VIRUS	2	0	5	29	26	7	6	75
1537	HEPATITIS, DELTA	0	0	2	0	0	0	0	2
1541	CHLAMYDIA TRACHOMATIS - UNSPEC	9	0	7	27	21	5	1	70
1542	CHLAMYDIA TRACHOMATIS - A-K	0	0	7	0	0	0	0	7
1543	CHLAMYDIA L1-L3 - (LGV TYPE)	0	0	1	0	0	0	0	1
1556	CMV - CYTOMEGALOVIRUS	10	34	25	9	3	0	0	81
1564	ROTAVIRUS	116	30	95	7	28	17	20	313
1571	ENTEROVIRUS TYPE 71 (BCR)	1	0	0	0	0	0	0	1
1599	ENTEROVIRUS TYPING PENDING	0	4	0	0	0	0	0	4
1700	PARVOVIRUS	0	0	1	0	0	0	0	1
9903	NON-A, NON-B HEPATITIS (OTHER)	0	0	0	0	0	1	0	1
9992	ROSS RIVER VIRUS	1	0	1	2	0	0	0	4
9994	SMALL VIRUS (LIKE) PARTICLE	2	0	0	0	0	0	0	2
TOTAL		355	344	396	272	238	57	38	1700

NOTE: DIRECT COMPARISION BETWEEN STATES IS NOT POSSIBLE SINCE:
- SOME STATES HAVE MORE THAN ONE CONTRIBUTING LABORATORY; AND
- INTERSTATE REFERRRALS OCCUR REGULARLY.

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

VIRAL IDENTIFICATIONS BY CLINICAL INFORMATION TABLE 1

PERIOD 28/08/91 TO 10/09/91

1. CODE 00, 99 ..... - NO ILL OR DATA
2. CODE 01, 02, 11, 12 - RESPIRATORY
3. CODE E3 ..... - ENCEPHALITIS
4. CODE M3 ..... - MENINGITIS
5. CODE 04 ..... - PARALYSIS
6. CODE 05, 13 ..... - CNS OTHER UNSPEC
7. CODE 07, 49 - GASTRO INTESTINAL
8. CODE 17, 47 - HEPATIC
9. CODE 19 ... - CVS
10. CODE 89 ... - URINARY TRACCT
11. CODE 06 ... - SKIN MUCOUS

		1	2	3	4	6	7	8	9	10	11	TOTAL
0100	ADENOVIRUS NOT TYPED	1	15	0	1	1	28	0	0	0	0	46
0101	ADENOVIRUS TYPE 1	0	1	0	0	0	0	0	0	0	0	1
0102	ADENOVIRUS TYPE 2	1	3	0	0	0	3	0	0	0	0	7
0103	ADENOVIRUS TYPE 3	0	1	0	0	0	0	0	0	0	0	1
0105	ADENOVIRUS TYPE 5	0	1	0	0	0	0	0	0	0	0	1
0126	ADENOVIRUS TYPE 26	1	0	0	0	0	0	0	0	0	0	1
0199	ADENOVIRUS TYPING PENDING	0	7	0	0	0	1	0	0	0	0	8
0201	INFLUENZA A VIRUS	0	0	0	0	0	0	0	1	0	0	1
0203	INFLUENZA B VIRUS	4	37	0	0	2	0	0	0	0	0	43
0301	PARAINFLUENZA VIRUS TYPE 1	0	2	0	0	0	0	0	0	0	0	2
0302	PARAINFLUENZA VIRUS TYPE 2	0	9	0	0	0	0	0	0	0	0	9
0303	PARAINFLUENZA VIRUS TYPE 3	0	20	0	0	0	0	0	0	0	0	20
0400	RESPIRATORY SYNCYTIAL VIRUS (R	2	269	1	0	0	0	0	0	0	0	272
0500	RHINOVIRUS (ALL TYPES)	1	30	0	0	0	1	0	0	0	0	32
0600	MYCOPLASMA PNEUMONIAE	0	13	0	0	0	0	0	0	0	0	13
0700	ORNITHOSIS-PSITTACOSIS	1	1	0	0	0	0	0	0	0	0	2
0902	COXSACKIEVIRUS B2	0	0	0	1	0	0	0	0	0	0	1
0904	COXSACKIEVIRUS B4	0	1	0	0	0	2	0	1	0	0	4
0905	COXSACKIEVIRUS B5	0	1	0	0	0	0	0	0	0	0	1
1017	ECHOVIRUS TYPE 17	1	1	0	0	0	0	0	0	0	0	2
1102	POLIOVIRUS TYPE 2	1	0	0	0	0	0	0	0	0	0	1
1103	POLIOVIRUS TYPE 3	0	1	0	0	0	1	0	0	0	0	2
1300	HERPES VIRUS GROUP - NOT TYPED	1	0	0	0	1	0	0	0	0	3	5
1301	HERPES SIMPLEX VIRUS - NOT TYP	7	1	0	0	1	0	0	0	0	10	19
1302	EPSTEIN-BARR VIRUS (EB VIRUS)	11	19	0	0	0	0	5	0	0	3	38
1303	VARICELLA-ZOSTER VIRUS	1	1	1	0	1	0	0	0	0	26	30
1306	HERPES SIMPLEX TYPE 1	0	9	0	0	0	0	0	0	0	96	105
1307	HERPES SIMPLEX TYPE 2	0	0	0	0	0	0	0	0	0	87	87
1399	HERPES VIRUS TYPING PENDING	0	0	0	0	0	0	0	0	0	1	1
1401	COXIELLA BURNETII	4	0	0	0	0	0	0	0	0	0	4
1502	PICORNA VIRUS - NOT TYPED = EN	4	2	0	1	0	5	0	0	0	2	14
1514	MOLLUSCUM CONTAGIOSUM	0	0	0	0	0	0	0	0	0	2	2
1521	MEASLES VIRUS	3	0	0	0	0	0	0	0	0	4	7
1522	RUBELLA VIRUS	7	3	0	0	0	0	0	0	0	1	11
1532	HEPATITIS B ANTIGEN	60	0	0	0	0	0	43	0	0	0	103
1535	HEPATITIS A ANTIBODY	7	0	0	0	0	0	20	0	0	0	27
1536	HEPATITIS C VIRUS	52	0	0	0	0	1	17	0	0	0	70
1537	HEPATITIS, DELTA	0	0	0	0	0	0	2	0	0	0	2
1541	CHLAMYDIA TRACHOMATIS - UNSPEC	6	0	0	0	0	0	0	0	0	0	6
1542	CHLAMYDIA TRACHOMATIS - A-K	2	0	0	0	0	1	0	0	0	0	3
1556	CMV - CYTOMEGALOVIRUS	6	28	0	0	0	2	2	0	2	1	41
1564	ROTAVIRUS	31	0	0	0	0	278	0	0	0	0	309
1571	ENTEROVIRUS TYPE 71 (BCR)	0	0	0	1	0	0	0	0	0	0	1
1599	ENTEROVIRUS TYPING PENDING	0	2	0	1	1	0	0	0	0	0	4
9903	NON-A, NON-B HEPATITIS (OTHER)	0	0	0	0	0	0	1	0	0	0	1
9992	ROSS RIVER VIRUS	0	0	0	0	0	0	0	0	0	1	1
9994	SMALL VIRUS (LIKE) PARTICLE	0	0	0	0	0	2	0	0	0	0	2
TOTAL		215	478	2	5	7	325	90	2	2	237	1363

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

VIRAL IDENTIFICATIONS BY CLINICAL INFORMATION TABLE 2

PERIOD 28/08/91 TO 10/09/91

12. CODE 10 - EYE
13. CODE 59 - GENITAL
14. CODE 39 - ENDOCRINE/SALIVARY GL.
15. CODE 38 - RETICULO-ENDOTHELIAL
16. CODE 29 - MUSCLE/JOINT
17. CODE 69 - CONGENTIAL
18. CODE P8 - PUO
19. CODE G8 - FEVER/MALAISE
20. CODE 09 - OTHER
21. CODE A1 - SIDS

		12	13	14	15	16	17	18	19	20	21	TOTAL
0100	ADENOVIRUS NOT TYPED	2	0	0	0	0	0	3	1	0	0	6
0103	ADENOVIRUS TYPE 3	1	0	0	0	0	0	0	0	0	0	1
0108	ADENOVIRUS TYPE 8	1	0	0	0	0	0	0	0	0	0	1
0111	ADENOVIRUS TYPE 11	0	0	0	0	0	0	0	0	1	0	1
0203	INFLUENZA B VIRUS	0	0	0	0	0	0	0	1	5	0	6
0303	PARAINFLUENZA VIRUS TYPE 3	0	0	0	0	0	0	0	1	1	0	2
0400	RESPIRATORY SYNCYTIAL VIRUS (R	1	0	0	0	0	0	4	1	4	0	10
0500	RHINOVIRUS (ALL TYPES)	0	0	0	0	0	0	1	0	0	0	1
0600	MYCOPLASMA PNEUMONIAE	0	0	0	0	0	0	2	1	2	0	5
0700	ORNITHOSIS-PSITTACOSIS	0	0	0	0	0	0	1	0	0	0	1
0902	COXSACKIEVIRUS B2	0	0	0	0	0	0	0	0	1	0	1
0904	COXSACKIEVIRUS B4	0	0	0	0	0	0	0	0	1	0	1
1017	ECHOVIRUS TYPE 17	0	0	0	0	0	0	1	1	0	0	2
1021	ECHOVIRUS TYPE 21	0	0	0	0	0	0	0	0	0	1	1
1300	HERPES VIRUS GROUP - NOT TYPED	0	1	0	0	0	0	0	0	0	0	1
1301	HERPES SIMPLEX VIRUS - NOT TYP	0	17	0	0	0	0	0	0	1	0	18
1302	EPSTEIN-BARR VIRUS (EB VIRUS)	0	0	10	7	2	0	2	7	1	0	29
1303	VARICELLA-ZOSTER VIRUS	0	0	0	0	0	0	0	0	2	0	2
1306	HERPES SIMPLEX TYPE 1	10	23	0	1	0	0	1	0	4	0	39
1307	HERPES SIMPLEX TYPE 2	0	62	0	0	0	0	0	0	2	0	64
1399	HERPES VIRUS TYPING PENDING	0	1	0	0	0	0	0	0	0	0	1
1401	COXIELLA BURNETII	0	0	0	0	0	0	3	2	2	0	7
1514	MOLLUSCUM CONTAGIOSUM	0	0	0	0	0	0	0	0	1	0	1
1521	MEASLES VIRUS	0	0	0	0	0	0	0	1	1	0	2
1522	RUBELLA VIRUS	0	0	0	1	1	0	0	3	5	0	10
1532	HEPATITIS B ANTIGEN	0	0	0	0	0	0	0	0	1	0	1
1535	HEPATITIS A ANTIBODY	0	0	0	0	0	0	0	1	0	0	1
1536	HEPATITIS C VIRUS	0	0	0	0	0	0	0	0	4	0	4
1541	CHLAMYDIA TRACHOMATIS - UNSPEC	0	63	0	0	0	0	0	0	0	0	63
1542	CHLAMYDIA TRACHOMATIS - A-K	0	4	0	0	0	0	0	0	0	0	4
1543	CHLAMYDIA L1-L3 - (LGV TYPE)	0	1	0	0	0	0	0	0	0	0	1
1556	CMV - CYTOMEGALOVIRUS	0	2	1	0	0	4	5	3	25	0	40
1564	ROTAVIRUS	0	0	0	1	0	0	2	0	1	0	4
1700	PARVOVIRUS	0	0	0	0	1	0	0	0	0	0	1
9992	ROSS RIVER VIRUS	0	0	1	0	2	0	0	0	0	0	3
TOTAL		15	174	12	10	6	4	25	23	65	1	335