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HAEMOLYTIC URAEMIC SYNDROME: A CLUSTER OF CASES IN EARLY 1999

Haemolytic uraemic syndrome (HUS), an illness with potentially serious sequelae, is reported infrequently in Australia. This article summarises the limited NSW data available describing cases of HUS and outlines an investigation into an apparent increase in incidence of HUS in NSW in the first quarter of 1999.

BACKGROUND

HUS is characterised by microangiopathic haemolytic anaemia, thrombocyotopaenia and renal failure. HUS can be precipitated by a variety of factors including pregnancy, certain drugs, and infections associated with Epstein Barr Virus, *Shigella dysenteriae* type 1 and, most commonly, verocytotoxin-producing *Echerichia coli* (VTEC).[1,2,3] There is also some evidence of a familial predisposition.[4,5]

HUS is usually seen in children under four years of age,[1] and is the most common cause of renal failure in children.[6] It follows a diarrhoeal illness in approximately 90 per cent of cases.[4]

VTEC-induced illness is characterised by bloody diarrhoea six to 48 hours after a non-specific gastrointestinal illness. Three to 10 days after the onset of disease, five to 15 per cent of infected persons may develop HUS.[7] Mortality from HUS is about five per cent,[6,7] and up to 50 per cent of survivors exhibit some degree of permanent renal damage.[6,8]

VTEC infections have an incubation period of one to 12 days (typically three to four days) and produce a Shiga-like toxin (Shiga-like toxin I and II, or verocytotoxin I and II). Transmission frequently occurs after ingestion of beef contaminated with infected cattle faeces.[6,9] The annual incidence of VTEC infection in industrialised countries ranges from one to 30 cases per 100,000 population.[8]

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TABLE 1

NOTIFICATIONS OF HAEMOLYTIC URAEMIC SYNDROME BY YEAR OF DISEASE, ONSET AND PLACE OF RESIDENCE BY PUBLIC HEALTH UNIT, NSW

Notifying Public Health Unit	Year of onset			
	1997	1998	1999*	Total
Central Sydney	–	–	1	1
Greater Murray	–	1	–	1
Hunter	–	2	–	2
Mid North Coast	1	–	–	1
New England	–	–	1	1
Northern Sydney	–	2	1	3
South Eastern Sydney	–	–	2	2
South Western Sydney	–	–	2	2
Total	1	5	7	13

* 1 January to 15 April 1999.
Source: Notifiable Diseases Database system, NSW Department of Health.

Only one outbreak of HUS has been reported in Australia. This involved 23 cases, all of whom were children under 14 years of age (mean age four years), and was linked to the consumption of mettwurst in South Australia in 1995. *E. coli* O111 was implicated in most of the cases and Shiga-like toxins were identified in the stools of 91 per cent of those affected.[10,11]

Laboratories in NSW have been required to notify cases of VTEC (serotypes O157 or O111) infections since December 1996. Similarly, hospitals are required to notify of all cases of HUS, irrespective of aetiology.[2] The purpose of HUS surveillance is to:

- identify whether the case may be a potential source of infection for other people
- identify outbreaks and potential sources or sites of ongoing transmission
- better understand the epidemiology of this condition.[2]

Routine weekly review of case reports by the Health Protection Branch, NSW Department of Health, indicated an increase in notifications of HUS in the early part of 1999. The subsequent investigation is described below.

METHODS

Consistent with routine practice, all notifications of HUS were followed up by the respective public health units. Standardised information on food history, exposure to other people with a gastrointestinal illness, exposure to children in nappies, travel outside the case's area of residence, contact with livestock, and swimming activities was gathered. Where not already collected, the treating clinician was asked to obtain sera, stool or rectal swabs from the case.

The Health Protection Branch collated information on cases with an onset date after 1 January 1999 and, on the basis of preliminary evidence, coordinated identification of the supplier and source abattoir of minced beef that had been consumed by the cases.

Historical data on reported HUS cases in NSW (1 January 1997 to 31 December 1998) were retrieved from the NSW Department of Health's Notifiable Diseases Database (NDD) system through the Health Outcomes Information & Statistical Toolkit (HOIST).

RESULTS

Case history and laboratory investigations

One HUS case was notified in NSW in 1997 and five in 1998. These cases lived predominantly in rural areas (67 per cent, n = 4).

Seven cases were notified between 1 January and 15 April 1999 and, of these, six (86 per cent) lived in the greater Sydney area (Table 1).

Males and females were equally represented in the 1997 and 1998 cohorts and cases were predominantly under four years of age. On the other hand, the 1999 cases were more likely to be female, and older children or adults (Table 2). All cases survived the illness.

Five of the seven cases notified in 1999 had a history of a precedent gastrointestinal illness, three with bloody diarrhoea. One case (case number seven), who presented with ankle oedema and hypertension at 28 weeks gestation and anaemia, thrombocytopaenia and renal failure at 33 weeks, was considered by treating physicians to be experiencing complications of her pregnancy. No gastrointestinal illness was reported by this case. However, VTEC serology requested by the Health Protection Branch indicated a high positive titre for antibodies against *E. coli* O157.

Identifying VTEC from clinical specimens requires specialised procedures and must be specifically requested

TABLE 2

NOTIFICATIONS OF HAEMOLYTIC URAEMIC SYNDROME BY AGE, SEX AND YEAR OF DISEASE ONSET, NSW, 1997–98 AND 1999

Age group (years)	Sex			
	1997–1998		1999*	
	Male	Female	Male	Female
0 to < 2	–	2	–	2
2 to < 4	2	–	–	–
8 to < 14	–	–	1	1
20 to < 40	–	–	1	2
40 and over	1	1	–	–
Total	3	3	2	5

* 1 January to 15 April 1999.

Source: Notifiable Diseases Database system, NSW Department of Health.

by the clinician. Specimens taken at the onset of gastrointestinal illness generally were not examined for VTEC. Stool samples or rectal swabs taken after HUS diagnosis, where VTEC identification was requested, were collected on all but case number seven. A presumptive finding of VTEC was made on one specimen; however, serotyping identified the organism as *E. coli* O6H1 (non–Shiga toxin-producing).

Epidemiological investigation

The case histories and subsequent investigations failed to reveal a common exposure among cases. All except case seven had eaten minced beef in one form or another in the 12 days prior to the onset of symptoms.

Investigation of the source of the beef was completed for five of the six cases who consumed minced beef. A common supplier was identified in two cases (cases one and two, who experienced onset of symptoms in mid-January and early February). This supplier and another, linked to case two only, sourced beef from three abattoirs. No other commonalities were found.

DISCUSSION

The most obvious caveat in the interpretation of the figures presented in Tables 1 and 2 is the small numbers of cases. Statistical analysis of historical data was not attempted because of the small numbers.

However, accepting this limitation and using 1997 and 1998 NDD figures as a baseline, it appears that there was a cluster of cases, in time, in early 1999. The age and sex distribution of the recent cases differ somewhat from that predicted by the literature and those seen in NSW in 1997 and 1998. However, several overseas investigations have also found a predominance of HUS in females.[12] No epidemiological links were identified among the cases. The source tracing of the minced beef consumed by the majority of cases failed to identify strong common features.

Another possible explanation of the findings is that routine notification for HUS in NSW is incomplete. This cluster of cases may then be due to improved reporting rather than to an increase in actual cases. Further, because the diagnosis of HUS in this cluster of cases was primarily clinical, without confirmation of a causative organism, increased awareness of the disease may also have played a role through improved clinical diagnostic sensitivity for the condition.

Surveillance by the Australian Paediatric Surveillance Unit in 1994 and 1995, identified 12 cases of HUS in NSW, all in children aged less than 16 years.[4] If this figure is accepted as the true occurrence, rather than an aberration, the number of cases observed to April 1999 may indeed be an unremarkable seasonal occurrence.

Even when there is strong suspicion that VTEC is the causative agent, identifying the organism or Shiga-like toxins may be difficult. Recovery of *E. coli* O157 from the stools of infected persons has been observed to fall from 90 to 33 per cent over several days.[9] However, detection of these parameters (along with serology) must be included in strategies for diagnosis and therapy. It is also important in identifying clusters of cases for further investigation.[4,13] The falling likelihood, with time, of identifying a positive stool culture reinforces the importance of collecting specimens for VTEC identification as soon as HUS is suspected.

Difficulty in identifying the causative agent notwithstanding, the potential for preventing further cases necessitates a thorough investigation of all cases. Where possible, all cases should have blood taken for serological confirmation of VTEC infection and a stool sample or rectal

swab taken to identify VTEC or Shiga-like toxins. Routine investigation should include a detailed 12-day food history and identification of other relevant exposures.

Where VTEC identification is required, clinicians are advised to forward clinical specimens (stool, rectal swab, and serum) to their local pathology laboratory, emphasising the diagnosis of HUS.

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Articles, news and comments should be 1000 words or less in length and include a summary of the key points to be made in the first paragraph. References should be set out in the Vancouver style, described in the *New England Journal of Medicine*, 1997; 336: 309–315. Send submitted articles on paper and in electronic form, either on disc (Word for Windows is preferred), or by email. The article must be accompanied by a letter signed by all authors. Full instructions for authors are available on request from the editor.

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1999 NSW OLDER PEOPLE'S HEALTH SURVEY: AN OPPORTUNITY TO MONITOR THE HEALTH AND WELLBEING OF OLDER PEOPLE IN THE COMMUNITY

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1999 is the United Nations International Year of Older Persons, a year that highlights the need to give priority attention to the situation of older persons in our community to ensure that they can maintain their independence, participation, care, self-fulfilment and dignity. The rapid growth of the generation of older people living into their eighties demands attention to their distinctive health needs, and to their increasing need for health and aged care services.

The document *NSW Strategic Directions for Health 1998–2003* has underscored the importance of achieving health gains and preventing ill health throughout life for all people in NSW.[1] Moreover, positive action requires not only delivery of service, but also extends to providing supportive physical and social environments and enabling individuals to take responsibility for their own health. Similarly, the overall goal of the *NSW Healthy Ageing Framework 1998–2003* is to 'improve the opportunities for all older people to remain as independent and healthy as possible and able to participate in community life'.[2] This framework emphasises the importance of appreciating the diversity of ageing people in terms of their gender, disability, and cultural background.

Research evidence increasingly indicates that individuals and governments can contribute significantly to maintaining health and wellbeing in aged populations. Information describing the experiences of older people can provide a basis for effective and positive action by individuals themselves, health professionals, and governments.

In partnership with the NSW Ageing and Disability Department and the 17 NSW Area Health Services, the NSW Department of Health is conducting the *1999 Older People's Health Survey*. The survey will enhance our knowledge about the health and wellbeing of older people, the personal and social factors that influence them, and their need for health and aged care services. The emphasis of the survey is on health outcomes that are important to older people themselves, and which have reasonable prospects for improvement and prevention; and which can contribute to cost-effective health and aged care services.

ABOUT THE 1999 OLDER PEOPLE'S HEALTH SURVEY

Interviewing for the survey began in August 1999 and will continue until November 1999. About 500 people aged 65 years and older will be interviewed by telephone in each of the 17 NSW Area Health Services. Telephone numbers have been chosen at random from the NSW White Pages directories.

Priority topics in the survey include:

- independence
- contributions to the community
- physical and mental health
- physical and social environmental influences on health
- behaviours that influence better health, such as exercise and diet
- use of and need for health and community services.

The survey takes 25 to 30 minutes for most people to complete. Participation is voluntary and those people who are interviewed are free to withdraw from the interview at any time. Any information provided by participants is held in complete confidence.

The survey questionnaire has been translated into Chinese, Greek, Italian and Arabic, and bilingual interviewers are available to conduct interviews in these languages.

It is anticipated that results will be available in June 2000 and that they will provide a basis for evaluating current strategies and developing new programs to improve the health and wellbeing of older people across the state.

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Further information about the survey can be obtained from the Departmental Web site at **www.health.nsw.gov.au/public-health/survey/ophs99.html**, by emailing Margaret Williamson at **mwill@doh.health.nsw.gov.au**, or by telephoning 1800 620 277.

YEAR IN REVIEW: INFECTIOUS DISEASE SURVEILLANCE, 1998

In this edition of the *Bulletin*, we review the trends in reports of notifiable diseases received by the NSW Department of Health for 1998. Readers interested in the details of specific diseases should peruse Tables 3 to 6 for breakdowns of the disease reports by year, month, area of residence, age group and sex. Due to a recent extensive review of the data, which led to the removal of duplicated information, case numbers for some conditions may be lower than those reported in previous publications.

CONDITIONS NOTIFIED

There were 27,767 cases of notifiable diseases reported by doctors, hospital staff and laboratories in 1998. The following are highlights from those notifications:

- **most frequently reported condition**: hepatitis C (7689 cases);
- **least frequently reported conditions**: botulism, chancroid, diphtheria, lymphogranuloma venereum (LGV), donovanosis, plague, polio, rabies, typhus, viral haemorrhagic fevers and yellow fever (0 cases);
- **condition for which reporting increased most over the previous year**: cryptosporidiosis (1130 cases), due largely to a large outbreak of illness linked to swimming in contaminated pools;
- **condition for which reporting decreased most over the previous year**: apart from hepatitis D (which is rarely reported), large declines (>50%) were recorded for Ross River virus infection (581 cases) and measles (119 cases, only 19 of which were lab-confirmed);
- **condition that caused the most concern**: cryptosporidiosis, due firstly to contaminated swimming pools and, later in the year, the Sydney water crisis;
- **condition most notable by its absence during the Sydney water crisis**: cryptosporidiosis (0 cases attributable to drinking Sydney water).

TRENDS

Other notable trends in 1998 included:

- a continued decline in reported cases of **AIDS** (149) most likely due to the effectiveness of combined antiretroviral therapies. In contrast, there was only a modest decline in reports of newly diagnosed **HIV infections** (371);
- a continued increase in reports of **gonorrhoea**, particularly among young inner-Sydney men (1052)
- a steady decline in reported **hepatitis A** cases toward background levels (926) after a large outbreak among young inner-Sydney men;
- an increase in reports of **acute hepatitis C** cases (106) most likely due to improved case investigation in some Public Health Unit areas;
- an increase in reports of **leptospirosis** (50), many linked to occupational exposure to infected animals;
- a decrease to nearly half of reported **pertussis** cases over the previous year (2313);
- few reported **rubella** cases (78);
- a continued increase in reported **salmonellosis** cases (1815);
- a modest decline in reported **tuberculosis** cases (394).

CONDITIONS NOT NOTIFIED

The accompanying tables of notifiable diseases do not capture all those illnesses **prevented** by routine public health measures. Some examples include:

- **water catchment protection and drinking water treatment** prevented cases of enteric illnesses (both notifiable and non-notifiable), such as Norwalk virus, hepatitis A, salmonellosis, cholera, typhoid, giardiasis, cryptosporidiosis and *E. coli* infections;
- **food laws, regulations and education** prevented a wide range of enteric illnesses;
- **immunisation programs** prevented many thousands of cases of measles, mumps, rubella, tetanus, diphtheria, pertussis, meningitis, epiglottitis, polio, hepatitis B, Q fever and influenza;
- **education programs and needle and syringe programs** prevented HIV, hepatitis B and hepatitis C infections;
- **rapid diagnosis, contact tracing and treatment** prevented the spread of tuberculosis, meningococcal disease and a variety of sexually transmitted infections;
- **animal disease eradication programs** have reduced the risk of bovine tuberculosis and brucellosis;
- **environmental and occupational health programs** (including lead remediation programs) have reduced lead poisoning in adults and children;
- **cooling tower regulations** may have reduced outbreaks of legionnaires disease.

The year also saw the implementation of some **additional programs** aimed at further preventing illness, including:

- the massive school-based **Measles Control Program** in which more than 460,000 NSW primary school children received measles, mumps and rubella vaccines (that likely helped avert an expected Australia-wide outbreak);[1]
- a massive **boil-water alert** for Sydney residents following the identification of cryptosporidiosis and giardia parasites in treated drinking water;[2]
- the addition of five **new conditions** to the list that laboratories are required to notify (chancroid, chlamydia trachomatis infections, donovanosis, LGV and giardiasis);[3]
- establishment of a **pilot hospital infection surveillance**

TABLE 3

DISEASE NOTIFICATIONS IN NSW, 1991 TO 1998

Condition	Year of onset 1991	1992	1993	1994	1995	1996	1997	1998
Adverse event after immunisation	NN	31	24	27	28	23	50	94
AIDS	436	422	470	528	454	345	185	149
Arboviral infections (total)*	413	342	655	382	537	1,227	1,804	777
Arboviral: Barmah Forest virus infections*	6	6	25	40	273	172	186	133
Arboviral: Ross River virus infections*	299	324	597	330	237	1,031	1,597	581
Arboviral: NOS*	108	12	33	12	27	24	21	63
Blood lead level ≥ 15ug/dl*	not notifiable until December 1996						722	889
Brucellosis*	2	2	4	4	2	1	3	3
Chlamydia trachomatis infections*	not notifiable until August 1998							560
Cholera*	1	0	1	0	1	3	1	1
Cryptospordiosis*	not notifiable until December 1996					23	157	1,130
Food-borne illness (NOS)	2,762	253	107	213	270	211	257	201
Gastroenteritis (in an institution)	153	405	426	296	1,359	554	939	739
Giardiasis*	not notifiable until August 1998							404
Gonorrhoea*	390	494	382	357	427	523	636	1,052
Invasive *H. Influenzae* type b infections (total)	211	219	124	61	29	14	17	11
H. influenzae type b epiglottitis	15	57	32	21	6	2	5	1
H. influenzae type b infection (NOS)	138	32	15	11	4	5	8	3
H. influenzae type b meningitis	47	104	53	17	11	4	3	3
H. influenzae type b septicaemia	11	26	24	12	8	3	1	4
Haemolytic uraemic syndrome	not notifiable until December 1996					0	3	6
Hepatitis A*	1,128	904	580	586	616	958	1,432	926
Hepatitis B: acute viral*	416	118	98	75	64	43	50	52
Hepatitis B: other*	1,113	3,283	3,740	4,193	4,276	3,715	3,351	3,242
Hepatitis C: acute viral*	22	28	24	23	33	20	19	106
Hepatitis C: other*	859	4,104	6,189	8,237	7,181	7,366	7,349	7,583
Hepatitis D: acute*	0	0	0	1	2	1	2	0
Hepatitis D: other*	0	8	12	18	17	8	9	4
Hepatitis E*	0	0	1	2	0	3	6	4
Hepatitis: acute viral (NOS)	58	16	6	2	2	3	1	2
HIV infection*	788	638	518	431	438	412	398	371
Legionnaires' disease (total)	37	104	66	60	75	74	33	46
Legionnaires' disease: *L. longbeachae**	0	14	13	8	16	30	9	19
Legionnaires' disease: *L. pneumophila**	16	80	34	30	35	34	18	22
Legionnaires' disease: NOS	21	10	19	22	24	10	6	5
Leprosy	0	5	3	3	3	2	0	1
Leptospirosis*	29	21	16	14	6	33	33	50
Listeriosis*	11	13	12	10	14	22	23	28
Malaria*	202	164	164	187	206	233	192	161
Measles infections (total)	494	807	2,350	1,485	596	191	273	119
Measles: lab confirmed cases*	20	76	460	303	138	35	98	19
Measles: other	474	731	1,890	1,182	458	156	175	100
Meningococcal disease (total)	130	122	153	142	113	161	219	185
Meningococcal meningitis	53	94	98	80	72	98	108	52
Meningococcal septicaemia	17	18	43	41	26	40	65	76
Meningococcal infection (NOS)	60	10	12	21	15	23	46	57
Mumps*	8	23	13	11	14	27	29	39
Mycobacterial infection: other than TB*	307	400	453	522	469	413	353	306
Pertussis	49	217	1,534	1,408	1,370	1,158	4,252	2,313
Q Fever*	166	213	405	267	203	287	258	236
Rubella (total)*	61	326	1,186	233	2,377	635	153	78
Rubella*	60	326	1,184	229	2,376	630	153	78
Rubella (Congenital)*	1	0	2	4	1	5	0	0
Salmonella infections (total)*	1,176	805	980	1,101	1,366	1,224	1,698	1,815
Salmonella bovis morbificans infections*	19	21	32	24	15	13	25	41
Salmonella typhimurium infections*	196	232	291	457	547	581	934	858
Salmonella infections (NOS)*	961	552	657	620	804	630	739	916
Syphilis*	595	889	745	990	845	670	525	627
Tetanus	5	2	5	4	0	1	3	3
Tuberculosis*	461	394	396	393	443	411	441	394
Typhoid and paratyphoid*	59	28	37	35	39	45	33	27
Verotoxin-producing *Escherichia coli**	not notifiable until December 1996						0	2

* Laboratory-confirmed cases only NOS = Not otherwise Specified NN = Not notifiable

The following diseases have not been notified since before 1991: Botulism*, Chancroid*, Diphtheria*, Granuloma inguinale*, Lymphogranuloma venereum*, Plague*, Poliomyelitis*, Rabies, Typhus*, Viral haemorrhagic fever, Yellow fever.

TABLE 4

DISEASE NOTIFICATIONS BY PUBLIC HEALTH UNIT AREA, NSW, 1998

Condition	Public Health Unit Area								
	CCA	CSA	FWA	GMA	HUN	ILL	MAC	MNC	MWA
Adverse event after immunisation	7	5	1	3	0	0	1	15	5
AIDS	4	37	0	1	4	5	1	0	0
Arboviral infections (total)*	9	10	55	197	50	30	79	90	34
Arboviral: Barmah Forest virus infections*	0	0	9	7	7	7	2	49	0
Arboviral: Ross River virus infections*	8	3	46	188	37	19	77	40	34
Arboviral: NOS*	1	7	0	2	6	4	0	1	0
Blood lead level ≥ 15ug/dl*	40	88	129	7	141	19	9	11	14
Brucellosis*	0	0	0	0	0	0	0	1	0
Chlamydia trachomatis infections*	1	43	16	104	35	31	28	17	37
Cholera*	0	0	0	0	0	0	0	0	0
Cryptospordiosis*	54	85	7	22	82	50	27	93	4
Food-borne illness (NOS)	130	9	5	0	0	0	1	6	8
Gastroenteritis (in an institution)	42	174	5	0	276	2	1	0	0
Giardiasis	12	46	2	8	15	11	5	6	6
Gonorrhoea*	11	194	9	7	27	13	9	32	7
Invasive *H. influenzae* type b infections (total)	0	0	0	1	1	3	0	2	0
H. influenzae type b epiglottitis	0	0	0	0	0	1	0	0	0
H. influenzae type b meningitis	0	0	0	0	0	1	0	0	0
H. influenzae type b septicaemia	0	0	0	1	1	0	0	1	0
H. influenzae type b infection (NOS)	0	0	0	0	0	1	0	1	0
Haemolytic uraemic syndrome	0	0	0	1	2	0	0	0	0
Hepatitis A*	31	75	4	9	41	35	4	71	30
Hepatitis B: acute viral*	0	3	3	0	0	2	0	4	1
Hepatitis B: other*	19	558	25	26	61	66	13	29	15
Hepatitis C: acute viral*	0	51	4	0	2	10	2	0	2
Hepatitis C: other*	348	680	17	175	503	266	54	341	234
Hepatitis D: other*	1	1	0	0	0	0	0	0	0
Hepatitis E*	0	1	0	0	0	0	0	0	0
Hepatitis: acute viral (NOS)	0	0	0	0	0	0	0	0	0
HIV infection*	6	62	1	3	6	10	0	2	1
Legionnaires' disease (total)	0	5	0	0	3	0	0	1	1
Legionnaires' disease: *L. longbeachae**	0	1	0	0	2	0	0	0	1
Legionnaires' disease: *L.pneumophila**	0	4	0	0	1	0	0	0	0
Legionnaires' disease: NOS	0	0	0	0	0	0	0	1	0
Leprosy	0	0	0	0	0	0	0	0	0
Leptospirosis*	0	0	0	1	10	0	0	7	2
Listeriosis*	2	1	0	0	6	8	0	1	0
Malaria*	3	17	0	0	14	4	2	7	3
Measles infections (total)	7	7	1	0	14	10	1	18	7
Measles: lab confirmed cases*	1	2	0	0	1	1	0	2	0
Measles: other	6	5	1	0	13	9	1	16	7
Meningococcal disease (total)	10	7	5	8	17	8	1	1	12
Meningococcal meningitis	2	3	1	2	4	3	0	0	7
Meningococcal septicaemia	3	3	4	4	9	2	0	0	2
Meningococcal infection (NOS)	5	1	0	2	4	3	1	1	3
Mumps*	2	8	0	0	1	2	0	5	0
Mycobacterial infection: other than TB*	14	30	1	11	30	9	4	19	2
Pertussis	51	102	81	229	257	223	23	112	71
Q Fever*	4	1	12	5	11	2	63	31	10
Rubella*	5	2	0	1	9	2	0	12	1
Salmonella infections (total)*	57	156	16	44	129	59	22	71	37
Salmonella bovis morbificans infections*	1	3	0	1	3	3	1	0	0
Salmonella typhimurium infections*	24	80	2	19	45	28	12	27	18
Salmonella infections (NOS)	32	73	14	24	81	28	9	44	19
Syphilis*	6	100	15	1	9	1	20	10	23
Tetanus	0	1	0	0	0	2	0	0	0
Tuberculosis*	4	72	1	0	6	12	0	7	2
Typhoid and paratyphoid*	0	6	0	0	1	0	0	0	0
Verotoxin-producing *Escherichia coli**	0	1	0	0	0	0	0	0	0

* lab-confirmed cases only NOS = Not Otherwise Specified

Area Health Service population estimates 1998:

CCA = Central Coast Area (281,028) CSA = Central Sydney Area (479,819) FWA = Far West Area (49,426)

GMA = Greater Murray Area (258,612) HUN = Hunter Area (528,992) ILL = Illawarra Area (341,677)

MAC = Macquarie Area (103,549) MNC = Mid North Coast Area (256,180) MWA = Mid Western Area (167,000)

TABLE 4

DISEASE NOTIFICATIONS BY PUBLIC HEALTH UNIT AREA, NSW, 1998 *continued*

Condition	Public Health Unit Area								
	NEA	NRA	NSA	SA	SES	SWS	WEN	WSA	NOS
Adverse event after immunisation	2	4	2	8	24	5	5	7	0
AIDS	1	5	16	0	52	5	4	14	0
Arboviral infections (total)*	43	80	22	23	19	8	9	16	3
Arboviral: Barmah Forest virus infections*	1	44	2	3	0	0	2	0	0
Arboviral: Ross River virus infections*	40	35	12	17	4	5	6	7	3
Arboviral: NOS*	2	1	8	3	15	3	1	9	0
Blood lead level ≥ 15ug/dl*	13	15	33	7	31	198	32	97	5
Brucellosis*	0	0	1	0	0	0	0	1	0
Chlamydia trachomatis infections*	20	27	16	13	107	18	8	30	9
Cholera*	0	0	1	0	0	0	0	0	0
Cryptospordiosis*	53	116	63	51	158	115	53	92	5
Food-borne illness (NOS)	4	25	0	2	10	0	0	1	0
Gastroenteritis (in an institution)	0	5	0	0	75	2	16	141	0
Giardiasis	21	22	38	7	61	49	35	55	5
Gonorrhoea*	23	9	77	5	504	52	9	55	9
Invasive *H. influenzae* type b infections (total)*	1	1	0	0	1	0	1	0	0
H. influenzae type b epiglottitis*	0	0	0	0	0	0	0	0	0
H. influenzae type b meningitis*	1	1	0	0	0	0	0	0	0
H. influenzae type b septicaemia*	0	0	0	0	0	0	1	0	0
H. influenzae type b infection (NOS)*	0	0	0	0	1	0	0	0	0
Haemolytic uraemic syndrome	1	0	2	0	0	0	0	0	0
Hepatitis A*	25	175	62	14	166	75	54	52	3
Hepatitis B: acute viral*	2	5	1	1	18	2	1	7	2
Hepatitis B: other*	34	20	369	13	443	859	44	636	12
Hepatitis C: acute viral*	3	0	1	0	26	0	3	2	0
Hepatitis C: other*	137	388	423	221	1003	1058	364	1339	32
Hepatitis D: other*	0	0	0	0	0	0	0	1	1
Hepatitis E*	0	0	0	0	1	1	1	0	0
Hepatitis: acute viral (NOS)	0	0	0	0	0	0	0	2	0
HIV infection*	2	4	32	1	139	25	10	16	51
Legionnaires disease (total)	1	4	11	0	2	4	6	8	0
Legionnaires' disease: *L. longbeachae**	1	4	4	0	0	2	2	2	0
Legionnaires' disease: *L. pneumophila**	0	0	7	0	1	2	3	4	0
Legionnaires' disease: NOS	0	0	0	0	1	0	1	2	0
Leprosy	0	0	0	0	1	0	0	0	0
Leptospirosis*	11	16	0	1	1	1	0	0	0
Listeriosis*	0	0	0	0	5	4	0	1	0
Malaria*	2	13	29	3	22	15	13	11	2
Measles infections (total)	2	6	4	4	9	11	4	14	0
Measles: lab confirmed cases*	0	2	2	2	1	1	1	3	0
Measles: other	2	4	2	2	8	10	3	11	0
Meningococcal disease (total)	5	6	19	5	25	15	14	27	0
Meningococcal meningitis	0	5	8	0	2	8	4	3	0
Meningococcal septicaemia	5	1	4	4	3	6	9	17	0
Meningococcal infection (NOS)	0	0	7	1	20	1	1	7	0
Mumps*	0	2	3	0	11	1	1	3	0
Mycobacterial infection: other than TB*	2	18	73	6	48	31	5	0	3
Pertussis	62	61	138	74	245	221	197	163	3
Q Fever*	25	32	2	29	5	1	0	1	2
Rubella*	0	17	7	1	12	4	1	4	0
Salmonella infections (total)*	54	191	223	36	215	182	93	223	7
Salmonella bovis morbificans infections*	2	4	3	1	5	3	6	4	1
Salmonella typhimurium infections*	26	36	114	12	105	107	57	144	2
Salmonella infections (NOS)*	26	151	106	23	105	72	30	75	4
Syphilis*	12	14	41	4	148	104	14	93	12
Tetanus	0	0	0	0	0	0	0	0	0
Tuberculosis	3	3	44	4	53	100	6	74	3
Typhoid and paratyphoid*	2	0	2	0	5	6	1	4	0
Verotoxin-producing *Escherichia coli**	0	1	0	0	0	0	0	0	0

* lab-confirmed cases only NOS = Not Otherwise Specified

Area Health Service population estimates 1998:

NEA = New England Area (177,086) NRA = Northern Rivers Area (256,685) NSA = North Sydney Area (760,663)

SA = Southern Area (183,114) SES= South Eastern Sydney (752,977) SWS = South Western Sydney (752,217)

WEN = Wentworth Area (309,647) WSA = Western Sydney Area (657,997) NOS = Area Not Stated

TABLE 5

DISEASE NOTIFICATIONS BY AGE AND SEX, NSW, 1998

Conditions	0–4 yrs		5–24 yrs		25–44 yrs	
	M	F	M	F	M	F
Adverse event after immunisation	45	32	8	7	0	1
AIDS‡	1	0	3	0	98	6
Arboviral infections (total)*	1	4	61	53	157	149
Arboviral: Barmah Forest virus infections*	1	2	6	9	24	17
Arboviral: Ross River virus infections*	0	2	44	40	117	121
Arboviral: NOS*	0	0	11	4	16	11
Blood lead level ≥ 15ug/dl*	66	34	104	12	416	20
Brucellosis*	0	0	0	0	1	0
Chlamydia trachomatis infections*	2	7	90	224	134	78
Cholera*	0	0	0	0	0	0
Cryptospordiosis*	302	239	163	154	69	127
Food-borne illness (NOS)	7	8	21	29	46	44
Gastroenteritis (in an institution)	83	70	63	69	20	42
Giardiasis*	71	54	35	31	71	51
Gonorrhoea*	7	1	162	57	688	46
Invasive *H. influenzae* type b infections (total)	5	6	0	0	0	0
H. influenzae type b epiglottitis	0	1	0	0	0	0
H. influenzae type b meningitis	1	2	0	0	0	0
H. influenzae type b septicaemia	3	1	0	0	0	0
H. influenzae type b infection (NOS)	1	2	0	0	0	0
Haemolytic uraemic syndrome	2	2	1	0	1	0
Hepatitis A*	20	18	193	154	297	120
Hepatitis B: acute viral*	0	0	13	8	17	8
Hepatitis B: other*	15	9	325	279	1,023	760
Hepatitis C: acute viral*	0	0	16	15	42	22
Hepatitis C: other*	36	24	809	522	3,212	1,723
Hepatitis D: other*	0	0	0	0	2	0
Hepatitis E*	0	0	2	0	1	0
Hepatitis: acute viral (NOS)	0	0	1	0	0	0
HIV infection*	3	7	28	9	226	24
Legionnaires' disease (total)	0	0	0	1	7	3
Legionnaires' disease: *L. longbeachae**	0	0	0	0	2	1
Legionnaires' disease: *L. pneumophila**	0	0	0	0	5	2
Legionnaires' disease: NOS	0	0	0	1	0	0
Leprosy	0	0	0	1	0	0
Leptospirosis*	0	0	12	1	23	2
Listeriosis*	1	1	0	1	1	4
Malaria*	4	1	30	11	66	18
Measles infections (total)	48	29	18	19	2	3
Measles: lab confirmed cases*	5	2	3	6	1	2
Measles: other	43	27	15	13	1	1
Meningococcal disease (total)	42	37	35	38	8	8
Meningococcal meningitis	10	6	13	13	3	3
Meningococcal septicaemia	20	20	13	14	2	1
Meningococcal infection (NOS)	12	11	9	11	3	4
Mumps*	2	0	7	6	7	8
Mycobacterial infection: other than TB*	7	8	9	9	31	19
Pertussis	142	131	497	530	244	307
Q Fever*	0	0	36	7	94	25
Rubella*	9	6	25	12	4	18
Salmonella infections (total)*	335	282	282	258	179	183
Salmonella bovis morbificans infections*	8	8	5	3	4	5
Salmonella typhimurium infections*	168	132	157	139	64	87
Salmonella infections (NOS)	159	142	120	116	111	91
Syphilis*	0	0	29	64	133	132
Tetanus	0	0	0	0	0	0
Tuberculosis*	3	2	29	33	77	80
Typhoid and paratyphoid*	1	0	8	3	9	4
Verotoxin-producing *Escherichia coli**	1	1	0	0	0	0

* Laboratory-confirmed cases only
† includes unknown age and/or sex
‡ 1 transsexual case
NOS = Not Otherwise Specified

TABLE 5

DISEASE NOTIFICATIONS BY AGE AND SEX, NSW, 1998 *continued*

Conditions	45—64 yrs		≥ 65 yrs		Total		
	M	F	M	F	M	F	U†
Adverse event after immunisation	0	0	0	0	53	40	1
AIDS‡	36	1	3	0	141	7	1
Arboviral infections (total)*	132	139	46	30	397	375	5
Arboviral: Barmah Forest virus infections*	34	27	10	3	75	58	0
Arboviral: Ross River virus infections*	88	107	32	25	281	295	5
Arboviral: NOS*	10	5	4	2	41	22	0
Blood lead level ≥ 15ug/dl*	201	10	15	0	802	76	11
Brucellosis*	1	0	0	1	2	1	0
Chlamydia trachomatis infections*	15	6	0	1	241	316	3
Cholera*	0	0	1	0	1	0	0
Cryptospordiosis*	17	22	10	23	561	565	4
Food-borne illness (NOS)	24	20	1	1	99	102	0
Gastroenteritis (in an institution)	12	41	94	242	272	464	3
Giardiasis*	36	25	5	8	218	169	17
Gonorrhoea*	78	3	7	0	942	107	3
Invasive *H. influenzae* type b infections (total)*	0	0	0	0	5	6	0
H. influenzae type b epiglottitis*	0	0	0	0	0	1	0
H. influenzae type b meningitis*	0	0	0	0	1	2	0
H. influenzae type b septicaemia*	0	0	0	0	3	1	0
H. influenzae type b infection (NOS)*	0	0	0	0	1	2	0
Haemolytic uraemic syndrome	0	0	0	0	4	2	0
Hepatitis A*	62	36	13	12	585	340	1
Hepatitis B: acute viral*	3	0	0	3	33	19	0
Hepatitis B: other*	395	251	87	62	1,845	1,361	36
Hepatitis C: acute viral*	6	3	0	2	64	42	0
Hepatitis C: other*	589	300	162	122	4,808	2,691	64
Hepatitis D: other*	2	0	0	0	4	0	0
Hepatitis E*	1	0	0	0	4	0	0
Hepatitis: acute viral (NOS)	0	1	0	0	1	1	0
HIV infection*	52	3	4	1	313	44	14
Legionnaires' disease (total)	15	1	16	3	38	8	0
Legionnaires' disease: *L. longbeachae**	3	1	10	2	15	4	0
Legionnaires' disease: *L. pneumophila**	11	0	3	1	19	3	0
Legionnaires' disease: NOS	1	0	3	0	4	1	0
Leprosy	0	0	0	0	0	1	0
Leptospirosis*	10	1	1	0	46	4	0
Listeriosis*	4	3	6	6	12	15	1
Malaria*	21	5	0	4	121	39	1
Measles infections (total)	0	0	0	0	68	51	0
Measles: lab confirmed cases*	0	0	0	0	9	10	0
Measles: other	0	0	0	0	59	41	0
Meningococcal disease (total)	4	9	0	4	89	96	0
Meningococcal meningitis	2	2	0	0	28	24	0
Meningococcal septicaemia	1	5	0	0	36	40	0
Meningococcal infection (NOS)	1	2	0	4	25	32	0
Mumps*	1	4	2	2	19	20	0
Mycobacterial infection: other than TB*	32	31	87	71	166	138	2
Pertussis*	147	193	49	64	1,079	1,225	9
Q Fever*	47	13	8	4	185	49	2
Rubella*	1	1	1	1	40	38	0
Salmonella infections (total)*	83	97	50	58	929	878	8
Salmonella bovis morbificans infections*	1	4	2	1	20	21	0
Salmonella typhimurium infections*	32	35	18	20	439	413	6
Salmonella infections (NOS)*	50	58	30	37	470	444	2
Syphilis*	129	28	64	35	355	259	13
Tetanus	1	0	1	1	2	1	0
Tuberculosis*	31	37	52	50	192	202	0
Typhoid and paratyphoid*	2	0	0	0	20	7	0
Verotoxin-producing *Escherichia coli**	0	0	0	0	1	1	0

* Laboratory-confirmed cases only
‡ 1 transsexual case
† includes unknown age and/or sex
NOS = Not Otherwise Specified

TABLE 6

DISEASE NOTIFICATIONS BY MONTH OF ONSET, NSW, 1998

Conditions	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Adverse event after immunisation	15	13	11	5	5	7	3	7	9	8	9	2
AIDS	18	16	10	14	16	16	17	11	9	4	5	13
Arboviral infections (total)*	67	57	83	52	31	21	22	25	39	39	181	160
Arboviral: Barmah Forest virus infections*	23	11	16	11	5	4	8	7	17	4	15	12
Arboviral: Ross river virus infections*	39	34	60	39	20	15	10	12	15	25	165	147
Arboviral: Other infections*	5	12	7	2	6	2	4	6	7	10	1	1
Blood lead level ≥ 15ug/dl*	88	108	102	93	72	53	55	67	55	99	46	51
Brucellosis*	0	0	0	0	0	0	2	0	0	1	0	0
Chlamydia trachomatis infections*	15	12	17	8	16	10	4	12	34	91	176	165
Cholera*	1	0	0	0	0	0	0	0	0	0	0	0
Cryptospordiosis*	123	350	398	113	40	14	12	7	22	8	17	26
Food-borne illness (NOS)	7	5	3	7	35	3	17	5	10	4	90	15
Gastroenteritis (in an institution)	26	12	74	12	6	42	3	19	23	278	142	102
Giardiasis*	0	0	0	1	2	0	20	97	90	68	53	73
Gonorrhoea*	84	89	72	89	74	91	98	64	89	82	84	136
Invasive *H. influenzae* type b infections (total)	0	1	0	1	1	2	1	0	1	1	3	0
H. influenzae type b epiglottitis	0	0	0	0	0	1	0	0	0	0	0	0
H. influenzae type b meningitis	0	0	0	1	1	0	0	0	0	0	1	0
H. influenzae type b septicaemia	0	0	0	0	0	0	1	0	1	1	1	0
H. influenzae type b infection (NOS)	0	1	0	0	0	1	0	0	0	0	1	0
Haemolytic uraemic syndrome	1	0	1	0	0	0	0	2	1	1	0	0
Hepatitis A*	175	139	120	103	81	66	62	44	47	33	25	31
Hepatitis B: acute viral*	6	5	4	5	4	5	4	1	6	4	4	4
Hepatitis B: other*	271	256	287	282	277	243	288	301	268	273	249	247
Hepatitis C: acute viral*	8	6	6	8	5	11	8	13	14	14	8	5
Hepatitis C: other*	599	597	762	589	711	623	619	607	673	619	631	553
Hepatitis D: other*	0	0	0	1	1	0	1	0	1	0	0	0
Hepatitis E*	1	1	2	0	0	0	0	0	0	0	0	0
Hepatitis: acute viral (NOS)	1	0	1	0	0	0	0	0	0	0	0	0
HIV infection*	33	32	45	28	22	26	42	29	37	25	36	16
Legionnaires' disease (total)	2	1	2	8	10	5	2	3	1	4	6	2
Legionnaires' disease: *L. longbeachae**	2	1	0	3	5	4	1	0	0	2	1	0
Legionnaires' disease: *L. pneumophila**	0	0	1	4	5	1	0	3	1	1	4	2
Legionnaires' disease: (NOS)	0	0	1	1	0	0	1	0	0	1	1	0
Leprosy	0	0	0	0	1	0	0	0	0	0	0	0
Leptospirosis*	3	4	2	2	1	2	5	2	9	4	11	5
Listeriosis*	8	3	3	1	0	2	1	4	1	2	2	1
Malaria*	20	13	16	14	13	15	13	11	12	10	10	14
Measles infections (total)	10	10	14	12	10	10	11	15	4	13	9	1
Measles: lab confirmed cases*	2	0	3	1	2	2	3	1	1	3	0	1
Measles: other	8	10	11	11	8	8	8	14	3	10	9	0
Meningococcal disease (total)	10	10	3	14	13	16	37	24	17	21	6	14
Meningococcal meningitis	3	4	0	6	5	6	9	8	4	2	0	5
Meningococcal septicaemia	4	4	1	2	5	3	19	13	8	8	3	6
Meningococcal infection (NOS)	3	2	2	6	3	7	9	3	5	11	3	3
Mumps*	4	3	8	3	2	5	4	3	3	1	1	2
Mycobacterial infection: other than TB*	23	17	31	15	24	30	24	34	31	24	33	20
Pertussis	443	254	227	146	111	101	126	162	213	231	156	143
Q Fever*	23	21	12	18	20	11	17	11	39	22	29	13
Rubella*	4	2	7	4	7	4	4	8	8	9	11	10
Salmonella infections (total)*	216	206	213	160	141	88	67	109	167	140	144	164
Salmonella bovis morbificans infections*	5	1	8	4	4	1	1	1	4	3	4	5
Salmonella typhimurium infections*	122	99	85	69	66	38	35	51	95	71	55	72
Salmonella infections (NOS)	89	106	120	87	71	49	31	57	68	66	85	87
Syphilis*	45	36	59	53	53	62	59	49	63	62	39	47
Tetanus	1	0	0	0	1	0	0	0	0	1	0	0
Tuberculosis*	28	34	32	25	28	31	39	29	42	37	37	32
Typhoid and paratyphoid*	6	4	4	1	1	0	1	2	1	5	1	1
Verotoxin-producing *Escherichia coli**	0	1	0	0	0	0	0	1	0	0	0	0

* Laboratory-confirmed cases only NOS = Not Otherwise Specified

system;[3]

- the introduction of enhanced influenza surveillance that added **directed virology surveillance** to the existing sentinel general practice and laboratory-based surveillance systems.[4]

The whole system of health protection rests on the foundation of public health surveillance. Your notifications—whether from general or specialist medical practices, laboratories, hospitals, schools or childcare centres—are vital for running, planning and improving public health programs in New South Wales. So thanks.

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INFECTIOUS DISEASES, NSW: SEPTEMBER 1999

TRENDS

Reports of notifiable diseases to the end of July were largely unremarkable for this time of year (Figure 1, Table 7).

NSW INFLUENZA ACTIVITY UPDATE

Summary

Influenza activity continued at a moderately high level during July and early August as reflected by both the number of laboratory diagnoses and reported clinical activity. There was a sharp increase in both forms of surveillance activity in early July. In late July and early August, influenza A activity declined while influenza B activity increased. The influenza season appears to have arrived earlier this year than in the previous few years, and at the same time of year that respiratory syncytical virus (RSV) activity usually peaks. However, influenza activity this year has not yet exceeded the peaks achieved in recent years.

Clinical activity

Rates of reported influenza-like illness have oscillated during July and early August (Figure 2). Reports were received from more than 30 general practioners (GPs) through four public health units, including approximately 3,500 consultations per week. This source of data may include illness due to causes other than influenza.

Virological activity

The laboratory reporting rate for influenza A decreased markedly during July and early August; however, influenza B reports increased (Figure 3). In the second week of August, 32 cases of influenza A were reported (30 virological, 2 serological), 15 cases of influenza B (all virological) and 39 RSV. In the same week last year, there were 88 cases of influenza A, no cases of influenza B, and 120 cases of RSV. The rate of RSV isolation has been included to show that the rates of these two viruses have increased at the same time of year this season, whereas influenza A has peaked in July–August in previous years. This source of data tends to include a high proportion of hospitalised patients, particularly children, and may not accurately reflect the affect of the illness on other sections of the community.

Directed virological surveillance

Approximately 25 to 30 nasopharyngeal or throat gargle samples from patients suffering from influenza-like illness were received each week from 10 to 15 of the sentinel GPs (that is, GPs who have been specially enrolled to provide this data) during July and early August. These samples showed a similar virological pattern to the routine laboratory reports discussed previously: the influenza A isolation rate decreased from 30 per cent of samples in mid-July to zero in the second week of August, while the rate for influenza B increased from seven to 21 per cent during that period. No other respiratory viruses were isolated during the period.

There are approximately 30 sentinel GPs from Central Sydney, South Eastern Sydney, Western Sydney, Wentworth, Central Coast, Hunter, Illawarra, Greater Murray and Southern Areas participating in the scheme this year.

International surveillance

Influenza activity in the southern hemisphere reported to the World Health Organization varies considerably between countries. During the first two weeks of August, Argentina continued to report influenza A activity at the level of 'widespread outbreak', while Brazil reported 'local outbreak' activity. New Zealand reported 'sporadic' activity. South Africa continues to report flu activity at the level of 'local outbreak' for both influenza A and B, and both Chile and Paraguay reported 'sporadic' activity.

FIGURE 3

REPORTS OF SELECTED INFECTIOUS DISEASES, NSW, JANUARY 1994 TO JULY 1999, BY MONTH OF ONSET

These are preliminary data: case counts in recent months may increase because of reporting delays

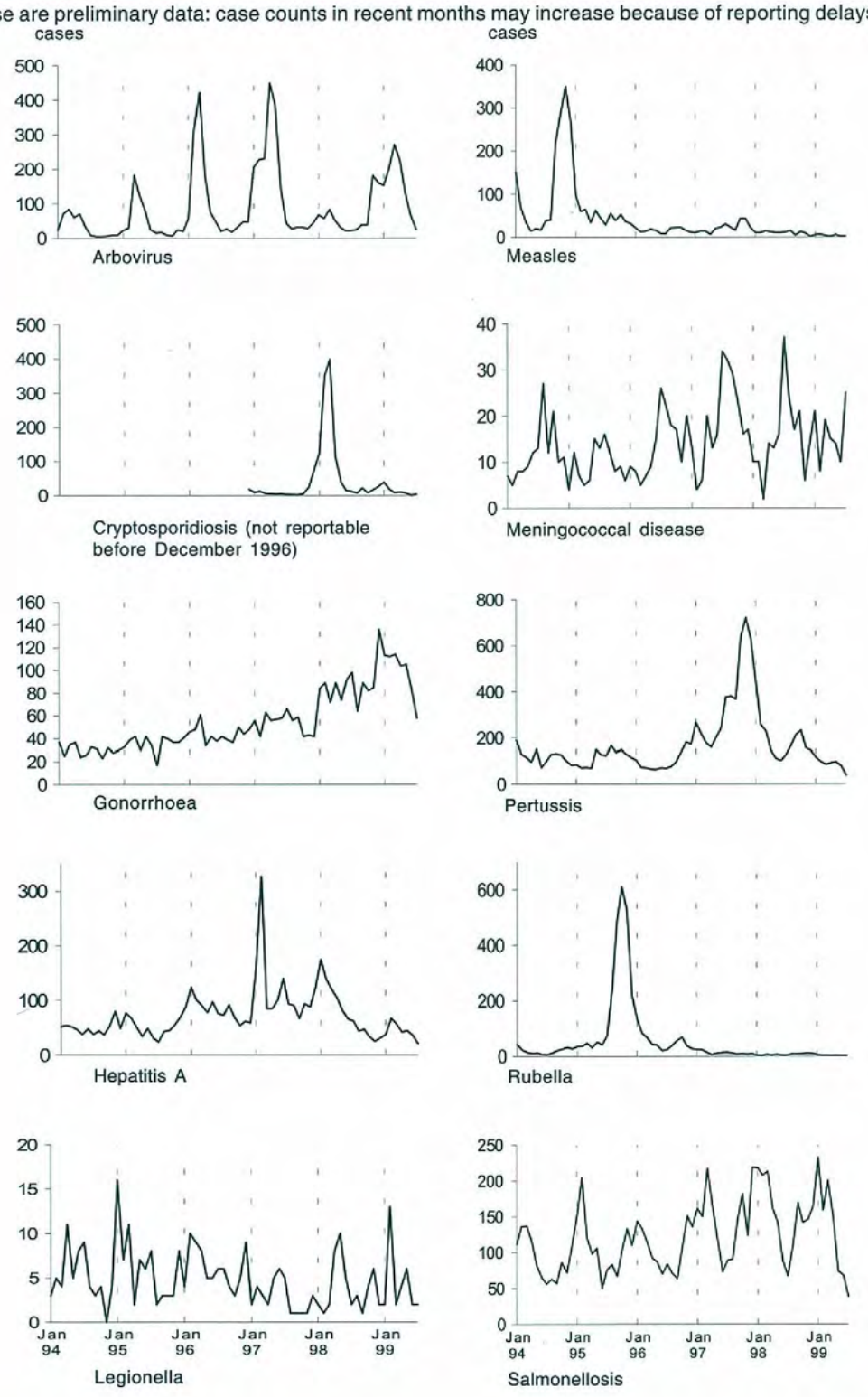

TABLE 7 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN JULY 1999 BY AREA HEALTH SERVICES

Condition	Area Health Service (1999)																	Total	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	for Jul†	To date†
Blood-borne and sexually transmitted																			
AIDS	–	–	2	–	–	–	1	–	2	–	1	–	–	–	–	–	–	7	79
HIV infection*	1	1	–	–	1	–	–	–	4	–	–	–	–	–	–	–	–	22	194
Hepatitis B: acute viral*	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	32
Hepatitis B: other*	32	5	49	12	–	4	6	6	36	4	1	1	3	1	6	–	5	172	1,794
Hepatitis C: acute viral*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14	27
Hepatitis C: other*	52	6	32	30	–	42	54	32	71	26	27	11	3	31	2	14	34	470	4,127
Hepatitis D: unspecified*	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	2	8
Hepatitis, acute viral (not otherwise specified)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chancroid*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Chlamydia (genital)*	13	3	1	3	–	7	24	8	54	20	8	6	7	10	3	7	5	179	1,303
Gonorrhoea*	21	4	–	1	–	3	3	1	31	2	1	1	–	–	–	–	–	68	730
Syphilis	9	1	3	1	–	3	1	2	7	3	5	–	2	2	–	–	–	39	340
Vector-borne																			
Arboviral infection (BFV)*	–	–	–	–	1	–	1	1	–	4	4	2	–	–	–	–	1	14	191
Arboviral infection (RRV)*	1	–	–	–	–	1	2	1	–	3	4	2	3	2	3	1	8	31	982
Arboviral infection (Other)*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11
Malaria*	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	2	3	106
Zoonoses																			
Brucellosis*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3
Leptospirosis*	–	–	–	–	–	–	–	–	–	4	–	2	–	–	–	–	–	6	31
Q fever*	–	–	–	–	–	–	–	–	–	–	2	1	3	–	–	–	1	7	85
Respiratory and other																			
Blood lead level*	2	–	–	1	–	–	1	13	2	–	1	–	–	1	–	–	5	26	349
Legionnaires': Longbeachae*	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	2	9
Legionnaires': Pneumophila*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	18
Legionnaires': Other*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
Leprosy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meningococcal infection (invasive)	1	–	5	5	3	1	–	1	4	–	–	3	1	–	–	–	–	24	111
Mycobacterial tuberculosis	9	1	5	–	–	1	–	–	6	–	1	–	–	–	–	–	1	24	215
Mycobacteria other than TB	9	–	–	–	–	2	3	–	2	–	1	1	–	–	–	–	1	19	233
Vaccine-preventable																			
Adverse event after immunisation	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	21
H. influenzae b infection (invasive)*	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	7
Measles	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	2	23
Mumps*	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	3	13
Pertussis	7	–	3	3	6	1	26	2	14	3	2	–	2	1	–	8	–	78	711
Rubella*	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	23
Tetanus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Faecal-oral																			
Botulism	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cholera*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Cryptosporidiosis*	–	–	–	–	–	–	–	–	–	2	–	2	–	–	–	–	–	4	99
Giardiasis*	4	2	–	6	–	3	8	10	10	5	3	3	1	1	–	4	–	60	675
Food-borne illness (not otherwise specified)	–	–	–	2	–	–	–	–	–	–	–	–	–	–	1	–	–	3	19
Gastroenteritis (in an institution)	–	–	–	14	–	–	–	–	–	–	–	35	–	–	1	–	–	50	219
Haemolytic uraemic syndrome	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8
Hepatitis A*	4	–	5	–	4	3	1	1	3	–	–	1	–	2	–	1	–	25	309
Hepatitis E*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
Listeriosis*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11
Salmonellosis (not otherwise specified)*	6	–	4	3	3	5	4	8	8	7	6	1	1	–	2	2	4	63	1,003
Typhoid and paratyphoid*	2	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	4	19
Verotoxin producing *E. coli**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

* lab-confirmed cases only

† includes cases with unknown postcode

CSA = Central Sydney Area
NSA = Northern Sydney Area
WSA = Western Sydney Area
WEN = Wentworth Area
SWS = South Western Sydney Area
CCA = Central Coast Area
HUN = Hunter Area
ILL = Illawarra Area
SES = South Eastern Sydney Area
NRA = Northern Rivers Area
MNC = North Coast Area
NEA = New England Area
MAC = Macquarie Area
MWA = Mid Western Area
FWA = Far West Area
GMA = Greater Murray Area

FIGURE 2

NSW GP SENTINEL SURVEILLANCE—INFLUENZA-LIKE-ILLNESS, BY WEEK OF CONSULTATION, WITH HISTORICAL COMPARISONS

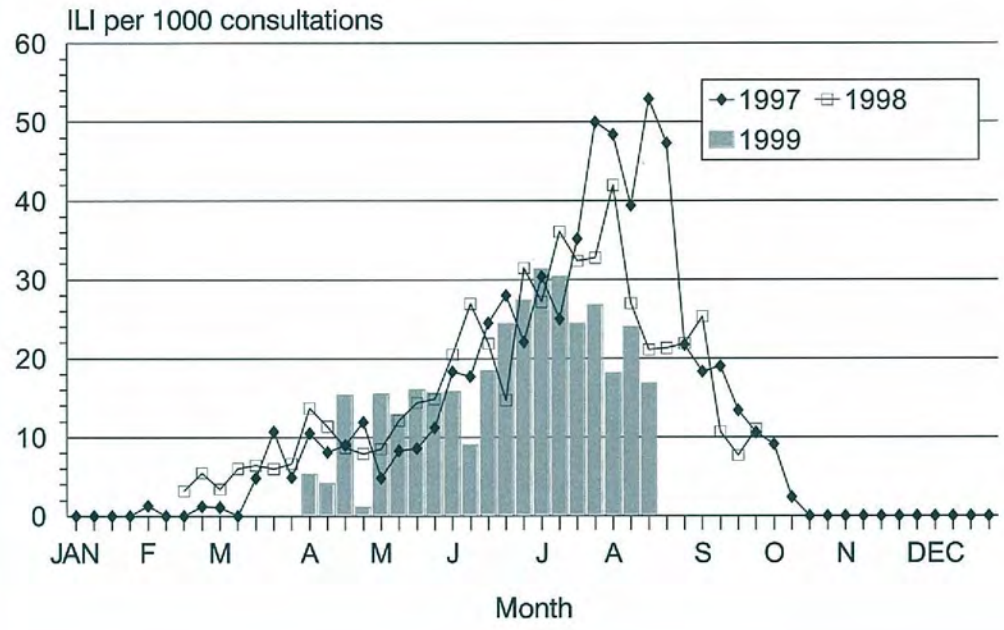

FIGURE 3

RESPIRATORY VIRUS ISOLATION RATES IN NSW, 1990-1999