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Editor: Helen Longbottom
Deputy Editor: Jenny Hargreaves

Editorial and production staff: Margaret Curran, Graeme Oliver, Scott Crerar, Ana Herceg, David Evans, Htoo Myint, Michelle Wood, Kim Moser, Heather Morlock

COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

CDI is produced fortnightly by:
AIDS/Communicable Diseases Branch
Department of Human Services and Health
GPO Box 9848 Canberra ACT 2601
Fax: (06) 289 7791 Telephone: (06) 289 1555

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ANNUAL REPORT OF THE *CDI* VIROLOGY AND SEROLOGY REPORTING SCHEME, 1994

Margaret Curran, AIDS/Communicable Diseases Branch, Department of Human Services and Health

Introduction

The *CDI* Virology and Serology Laboratory Reporting Scheme, LabVISE, began in 1977. Data are contributed on viruses and organisms diagnosed in sentinel virology and serology laboratories from all States and from the Australian Capital Territory. This is the annual report for 1994.

Laboratories elect to submit data on either computer diskette using LabVISE software (written in Epi Info), or on paper forms in the same format. Reports are submitted, collated and anlaysed and published in *CDI* each fortnight. Each record includes laboratory, specimen collection date, name code, specimen source, the agent detected and the method of diagnosis (compulsory fields), and also optionally specimen laboratory code number, sex, date of birth (or age), postcode, clinical diagnosis and risk factors.

CDI fortnightly reports are based on the date of reporting to the scheme, that is, they are published in *CDI* in the issue following their receipt. However cumulative records are kept according to the date of specimen collection, which should more accurately reflect the date of onset for acute infections. Graphs published in the *CDI* fortnightly report are based on specimen collection dates as is this annual report.

Data derived from this scheme must be interpreted with caution as the number and type of reports received is subject to a number of biases including the location of participating laboratories, the availability of diagnostic services and diagnostic practices.

Total reports

In 1994 20 laboratories contributed a total of 47,029 reports to the scheme (Table 1), the highest number ever recorded (Figure 1). More reports were received for the winter months, peaking in the month of July (Figure 2). This corresponds to the seasonal peaks observed for several viruses, paricularly the respiratory viruses (respiratory syncytial virus, the influenza and parainfluenza viruses) and rotavirus.

Commonly reported viruses and other organisms

The most commonly reported agents for 1994 accounted for 83% of total reports, 38,882, as was the case over the past 3 years (Figure 3). Hepatitis C became the most commonly reported virus whilst herpes simplex virus type 2 ranked second.

Table 1. Laboratory reports with 1994 specimen collection dates, by State or Territory and contributing laboratory

State or Territory	Laboratory	Reports
Australian Capital Territory	Woden Valley Hospital, Canberra	1020
New South Wales	Institute of Clinical Pathology and Medical Research, Westmead	3349
	Prince Henry/Prince of Wales Hospitals, Sydney	2151
	Royal Alexandra Hospital for Children, Camperdown	764
	Royal Prince Alfred Hospital, Camperdown	136
	Royal North Shore Hospital, St Leonards	18
	South West Area Pathology Service, Liverpool	1695
Queensland	Nambour Hospital, Nambour	87
	Queensland Medical Laboratory, West End	10012
	State Health Laboratory, Brisbane	6011
South Australia	Institute of Medical and Veterinary Science, Adelaide	5061
Tasmania	Northern Tasmanian Pathology Service, Launceston	161
	Royal Hobart Hospital, Hobart	472
Victoria	Microbiological Diagnostic Unit, University of Melbourne	152
	Monash Medical Centre, Melbourne	569
	Royal Children's Hospital, Melbourne	2983
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	4024
Western Australia	Princess Margaret Hospital, Perth	1784
	PathCentre Virology, Perth	6521
Total		47,029

Table 2. Laboratory reports, 1994, by virus/organism and State or Territory[1], and 1991-93 average

	State or Territory									Average
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total	1991-93
MEASLES, MUMPS, RUBELLA										
Measles virus	14	70	49	870	84	1	59	52	1199	352
Mumps virus		2		39	3	1	34	8	87	42
Rubella virus	3	52	8	974	31		7	103	1178	560
HEPATITIS VIRUSES										
Hepatitis A virus	3	81		136	22	1	37	93	373	274
Hepatitis B virus	45	750	6	580	67	14	434	511	2407	1642
Hepatitis C virus	184	1577	23	809	1152	228	216	1929	6118	2369
Hepatitis D virus		4		9			10	1	24	31
Hepatitis E virus			1				4	1	6	4
ARBOVIRUSES										
Ross River virus	1	84	56	1994	22	3	5	75	2240	1071
Barmah Forest virus		7	19	231				16	273	153
Dengue type 2				3	1				4	240
Dengue type 3		1		3					4	2
Dengue type 4				1					1	0
Dengue not typed	1		6	2			1	16	26	59
Japanese encephalitis virus								1	1	0
Kunjin virus			1	1					2	3
Flavivirus (unspecified)		1		10			11	1	23	50
ADENOVIRUSES										
Adenovirus type 1		1			17	2	28		48	65
Adenovirus type 2		7			13		25		45	86
Adenovirus type 3		4	1		19		33		57	100
Adenovirus type 4					1		1		2	48
Adenovirus type 5					5		7		12	22
Adenovirus type 6					1				1	3
Adenovirus type 7		3			11		2		16	5
Adenovirus type 8							55		55	29
Adenovirus type 9							3		3	4
Adenovirus type 11							1		1	5
Adenovirus type 22							3		3	1
Adenovirus type 26							2		2	1
Adenovirus type 30							1		1	1
Adenovirus type 35							1		1	1
Adenovirus type 37							2		2	1
Adenovirus type 46							2		2	1
Adenovirus not typed/pending	13	321	3	364	204	13	213	160	1291	812
HERPES VIRUSES										
Herpes simplex virus type 1	14	505	17	1475	682	58	1114	745	4610	2507
Herpes simplex virus type 2	10	808	13	1631	583	37	775	1032	4889	3077
Herpes simplex not typed/pending	133	494	1	93	8	2	42	51	824	502
Herpes virus type 6		5			1				6	2
Cytomegalovirus	18	292	2	741	37	31	463	144	1728	1096
Varicella-zoster virus	6	141	5	430	126	3	195	156	1062	536
Epstein-Barr virus	19	219	8	504	390	4	194	177	1515	1065
Herpes virus group - not typed		4			1	1	5	4	15	21
OTHER DNA VIRUSES										
Papovavirus group							4		4	4
Molluscum contagiosum							3	1	4	6
Contagious pustular dermatitis (Orf virus)							1	1	2	4
Poxvirus group not typed				1			1		2	3
Parvovirus	1	5	3	38	8	1	20	33	109	88
PICORNA VIRUS FAMILY										
Coxsackievirus A9		1					1		2	27
Coxsackievirus A16		1					33		34	13

Table 2. Laboratory reports, 1994, by virus/organism and State or Territory[1], and 1991-1993 average, continued

	State or Territory								Total	Average 1991-93
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA		
Coxsackievirus B1		3					1		4	36
Coxsackievirus B2		12			4		7		23	3
Coxsackievirus B3	2	7				1	21		31	7
Coxsackievirus B4	1	2			2		6	1	12	5
Coxsackievirus B5		3					12		15	30
Coxsackievirus B6					1		1		2	1
Echovirus type 3	3	19		1	2		2		27	0
Echovirus type 5					1				1	2
Echovirus type 6	3	61			5	3	34	1	107	32
Echovirus type 9		7							7	79
Echovirus type 11		23					3		26	51
Echovirus type 14		12							12	13
Echovirus type 18		2							2	1
Echovirus type 22		2				1	6		9	7
Echovirus type 23					1				1	0
Echovirus type 25							1		1	12
Echovirus type 30	4	105			9	16	110	3	247	67
Echovirus not typed/pending		1					2		3	1
Poliovirus type 1 (uncharacterised)		30			1		10		41	38
Poliovirus type 2 (uncharacterised)		31			3	3	4		41	27
Poliovirus type 3 (uncharacterised)		9			2		3		14	21
Poliovirus not typed/pending		10							10	17
Rhinovirus (all types)	5	133		252	10	2	435	68	905	517
Enterovirus not typed/pending	2	101	7	506	1	1	191	292	1101	575
ORTHO/PARAMYXOVIRUSES										
Influenza A virus	2	102	30	297	258	8	206	219	1122	552
Influenza A virus H_3N_2	5	9		18			42		74	67
Influenza B virus	1	11	2	36	14		17	6	87	258
Influenza virus - typing pending							4	4	8	2
Parainfluenza virus type 1	6	40		145	63		236	57	547	108
Parainfluenza virus type 2		5		11	4		26	15	61	62
Parainfluenza virus type 3	7	77		159	48		157	77	525	356
Parainfluenza virus typing pending		1				6	48	13	68	42
Respiratory syncytial virus	96	803	10	812	344	108	823	750	3746	2354
Paramyxovirus (unspecified)		1							1	0
OTHER RNA VIRUSES										
HIV-1		5		41		3		27	76	38
HTLV-1			1						1	5
Rotavirus	333	695	3	41	293	82	457	370	2274	1374
Astrovirus		1							1	6
Reovirus (unspecified)		2						1	3	6
Calici virus		3					3		6	10
Norwalk agent							11		11	9
Coronavirus		2							2	12
Small virus (like) particle		17					6	10	33	32
OTHER										
Chlamydia trachomatis - A-K		1							1	4
Chlamydia trachomatis not typed	65	235	12	704	398	44	189	531	2178	1799
Chlamydia psittaci		1	1	44	9		57	2	114	57
Chlamydia spp typing pending				3	7				10	6
Chlamydia species		43			19				62	8
Mycoplasma pneumoniae	7	58	2	492	66	7	169	18	819	1113
Mycoplasma hominis					2				2	1
Coxiella burnetii (Q fever)		111		165	18		41	10	345	274
Rickettsia australis		1				1	1		3	4
Rickettsia spp - other		1		3	1			1	6	4

Table 2. Laboratory reports, 1994, by virus/organism and State or Territory1, and 1991-1993 average, continued

	State or Territory									Average
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total	1991-93
Streptococcus group A		33	14	288		1	4		340	122
Streptococcus species							5		5	17
Salmonella Typhi				1					1	0
Yersinia enterocolitica	1	27		3			3		34	3
Brucella species		3		18					21	6
Bordetella pertussis	1	35	3	25		5	297	254	620	123
Bordetella parapertussis				1				2	3	0
Bordetella species		16	3	140					159	112
Legionella pneumophila				3					3	0
Legionella longbeachae				4		1			5	1
Legionella species		4		4			1	18	27	4
Crytococcus neoformans		4							4	0
Cryptococcus species	1	10		11					22	14
Leptospira canicola				1					1	1
Leptospira icterohaemorrhagiae				2					2	2
Leptospira pomona				5	1				6	4
Leptospira autumnalis				1					1	0
Leptospira grippotyphosa				1					1	0
Leptospira hardjo				25					25	9
Leptospira australis				5					5	2
Leptospira species		2		43					45	11
Treponema pallidum	13	345	8	55			6	4	431	271
Entamoeba histolytica		1		6					7	4
Toxoplasma gondii	2	38		19		2	23		84	28
Schistosoma species		3					2	1	6	0
Strongyloides stercoralis		1					1		2	0
Echinococcus granulosus		4		16			3		23	10
TOTAL	1025	8765	318	15349	5076	695	7735	8066	47029	27855

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.

Figure 1. Total laboratory reports by year of specimen collection, 1978 to 1994

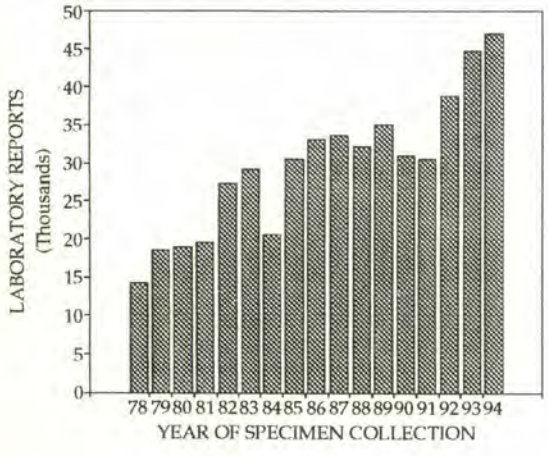


Figure 2. Total laboratory reports, 1994, by month of specimen collection

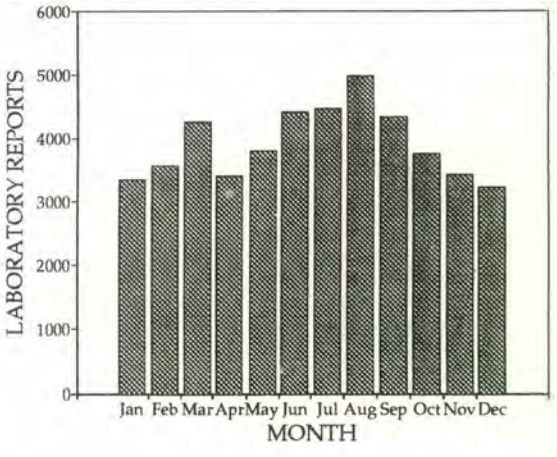
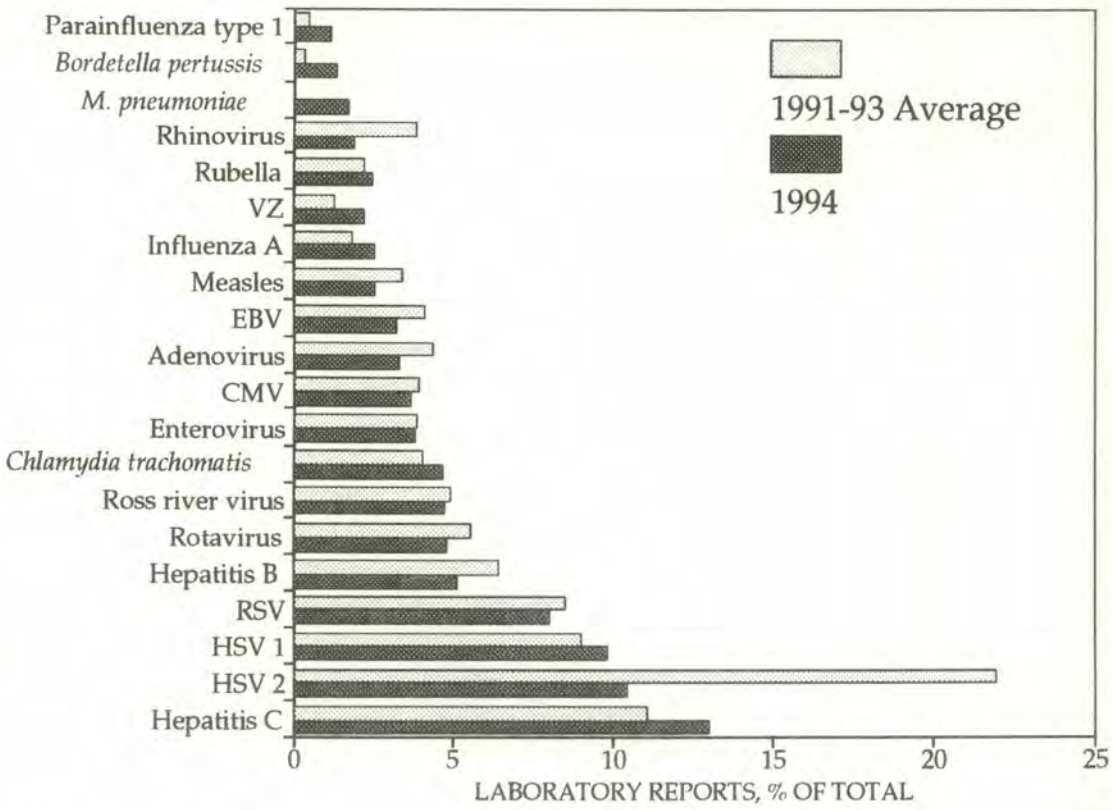


Figure 3. The twenty most commonly reported agents, 1994 and 1991-93 average, as % of total reports for the period

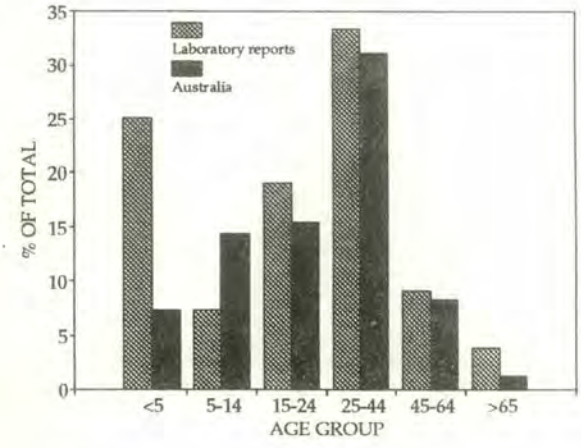


Age and sex distribution

Sex was recorded in 99% of cases, the overall male:female ratio being 1.1:1.0. This is largely a reflection of the higher attack rates of viral diseases known to be experienced by males particularly those in younger age groups, and also the larger number of HIV infected males who experience opportunistic infections.

Date of birth or age was provided for 98% of total reports in 1994. Children under the age of five years were most frequently represented, this age group accounting for 25% of all reports, compared to 7.0% of the population (Figure 4). This is largely due to the higher attack rates of many viral diseases in young children, particularly the respiratory viruses and the agents of viral gastroenteritis.

Figure 4. Laboratory reports and Australian population, 1994, by age group as % of total

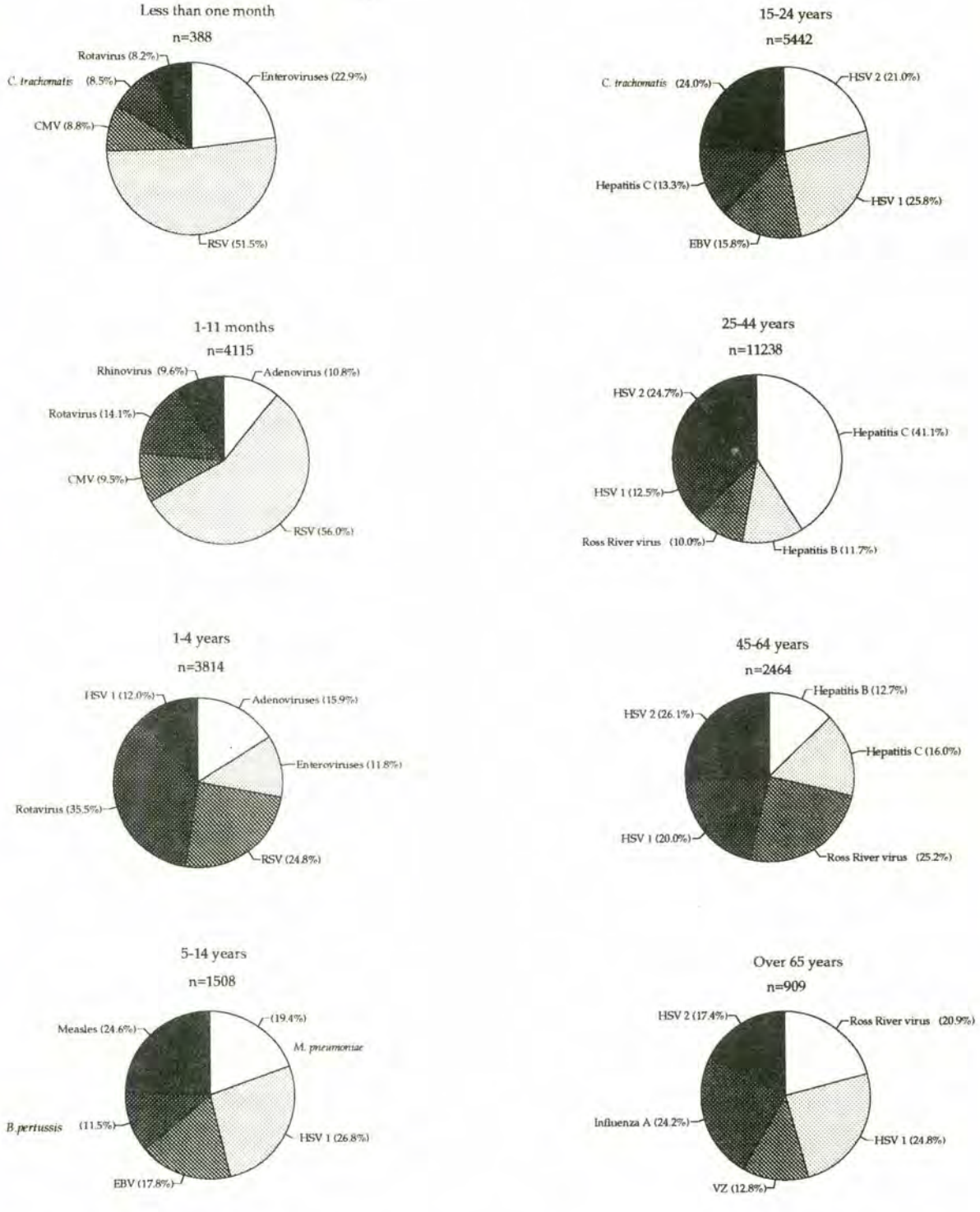


Respiratory syncytial virus was the most commonly reported virus in the less than one month age group (Figure 5), followed by the enteroviruses, cytomegalovirus, *Chlamydia trachomatis* and rotavirus. For infants aged one to 11 months respiratory syncytial virus remained the most frequently diagnosed virus, in addition to other respiratory viruses (the adenoviruses and rhinoviruses), rotavirus and cytomegalovirus (CMV).

For the one to four year age group, rotavirus was most commonly reported, followed by respiratory syncytial virus (responsible for a smaller proportion of reports than for patients under the age of one year), the adenoviruses, herpes simplex virus type 1 (HSV1) and the enteroviruses. For children of school age (five to 14 years), *Mycoplasma pneumoniae*, HSV 1, measles, Epstein-Barr virus (EBV) and *Bordetella pertussis* were the five agents for which most reports were received.

Young adults between 15 and 24 years of age reported high numbers of HSV1, Epstein-Barr virus and hepatitis C in addition to the sexually transmissible agents, herpes simplex type 2 (HSV2) and *Chlamydia trachomatis*. For the 25 to 44 year age group hepatitis C was most

Figure 5. The five most frequently reported agents, 1994, by virus/organism and age group

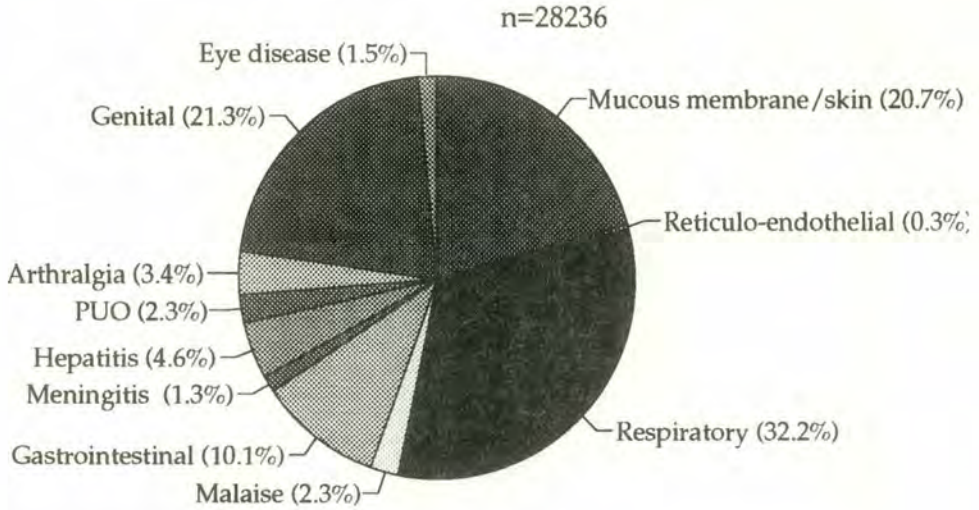


commonly reported followed by HSV 2, HSV 1, hepatitis B, and Ross River virus. Patients in the 45 to 64 year age group reported the same five most common viruses though a smaller proportion of reports were for hepatitis C virus and larger proportion were for Ross River virus (Figure 8). Over the age of 65 years the herpesviruses, HSV1, HSV2 and varicella-zoster virus were commonly reported as were Ross River virus and influenza A.

Clinical diagnosis

Clinical information was available for 32,407 reports (69%) in 1994. Eleven clinical diagnoses were reported more than 100 times accounting for 28,236 (60% of total)

Figure 6. Agents for which 100 or more reports were received in 1994, by virus/organism



reports received (Figure 6). Respiratory tract infections (upper, lower and other) were most commonly reported, followed by genital disease, skin/mucous membrane disease and gastrointestinal infections.

In 1994, 9081 reports of respiratory tract infection were received including upper respiratory (1901), lower respiratory (3986) and respiratory unspecified (3194). Respiratory syncytial virus, influenza A, *Mycoplasma pneumoniae* and the rhinoviruses were most commonly reported in association with lower respiratory tract disease (Table 3), whilst respiratory syncytial virus and the rhinoviruses were reported for upper respiratory tract infections.

For skin/mucous membrane disease (5831 reports) the herpesviruses (HSV1, HSV2 and varicella-zoster virus) were frequently reported, followed by the childhood exanthems, rubella and measles, and the arboviruses (Ross River virus, and Barmah Forest virus). The enteroviruses and Epstein-Barr virus were also amongst the viruses reported in association with skin/mucous membrane disease.

Six thousand two hundred and five reports of genital disease were received for 1994. Included were HSV2 and *Chlamydia trachomatis*, the two most commonly reported agents, and HSV1 and *Treponema pallidum*.

Rotavirus, the adenoviruses and the enteroviruses were most frequently reported in association with gas-

Table 3. The most frequently reported clinical diagnoses, by frequently reported agents, 1994

	Lower respiratory tract disease		Upper respiratory tract disease	
Rank	Virus/organism	Reports	Virus/organism	Reports
1	Respiratory syncytial virus	1898	Respiratory syncytial virus	265
2	Influenza A	317	Rhinoviruses	226
3	*Mycoplasma pneumoniae*	303	Herpes simplex virus type 1	203
4	Rhinovirus	238	Adenoviruses	109
5	Cytomegalovirus	188	Epstein-Barr virus	104
6	Parainfluenza virus type 3	174	Influenza A	94
7	Parainfluenza virus type 1	100	Enteroviruses	81
8	Adenoviruses (all)	185	Parainfluenza virus type 3	80
9	*Bordetella pertussis*	175	Cytomegalovirus	73
10	*Bordetella* species	65	*Mycoplasma pneumoniae*	31
	All reports	3986	All reports	1901

Table 3. The most frequently reported clinical diagnoses, by frequently reported agents, 1994, continued

	Skin/mucous membrane disease		Genital disease	
Rank	Virus/organism	Reports	Virus/organism	Reports
1	Herpes simplex virus type 1	2276	Herpes simplex virus type 2	2869
2	Herpes simplex virus type 2	1260	*Chlamydia trachomatis*	1734
3	Varicella-zoster virus	732	Herpes simplex virus type 1	1227
4	Rubella	481	Herpes simplex virus not typed	122
5	Measles	439	*Treponema pallidum*	22
6	Herpes simplex (not typed)	213		
7	Ross River virus	144		
8	Enterovirus (not typed)	40		
9	Barmah Forest virus	23		
10	Epstein-Barr virus	17		
	All reports	5831	All reports	6025

	Gastrointestinal disease		Hepatitis	
Rank	Virus/organism	Reports	Virus/organism	Reports
1	Rotavirus	2174	Hepatitis C	584
2	Adenoviruses (all)	406	Hepatitis B	429
3	Enteroviruses	133	Hepatitis A	206
4	Small round viruses	28	Epstein-Barr virus	33
5	Norwalk agent	11	Cytomegalovirus	22
6			Hepatitis D	13
7			Hepatitis E	2
	All reports	2849	All reports	1308

	Meningitis		Eye disease	
Rank	Virus/organism	Reports	Virus/organism	Reports
1	Echovirus type 30	150	Herpes simplex virus type 1	191
2	Enteroviruses (untyped)	97	Adenovirus type 8	53
3	Echovirus type 6	33	Chlamydia trachomatis	52
4	Echovirus type 7	11	Adenovirus (not typed)	44
5	Coxsackievirus B6	11	Adenoviruses type 3	23
6	Herpes simplex virus (not typed)	11	Cytomegalovirus	13
7	Influenza A	9	Enterovirus	10
8	*Cryptococcus neoformans*	5	Herpes simplex virus (not typed)	8
9			Herpes simplex virus type 2	6
	All reports	372	All reports	427

	Muscle/joint disease		Reticuloendothelial disease	
Rank	Virus/organism	Reports	Virus/organism	Reports
1	Ross River virus	728	Epstein-Barr virus	58
2	Barmah Forest virus	56	Cytomegalovirus	8
3	Group A *Streptococcus*	37	Mycoplasma pneumoniae	8
4	Influenza A	16	Measles	2
5	Parvovirus	16	Rubella	2
6	Cytomegalovirus	13	Ross river virus	2
7	*Mycoplasma pneumoniae*	8	*Chlamydia psittaci*	2
8	Q Fever	7		
	All reports	962	All reports	94

Figure 7. Commonly reported risk factors, 1994

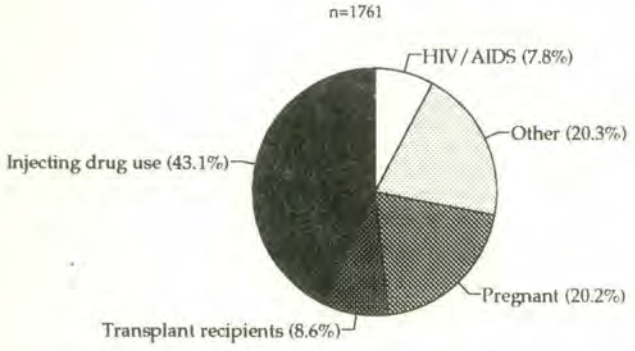
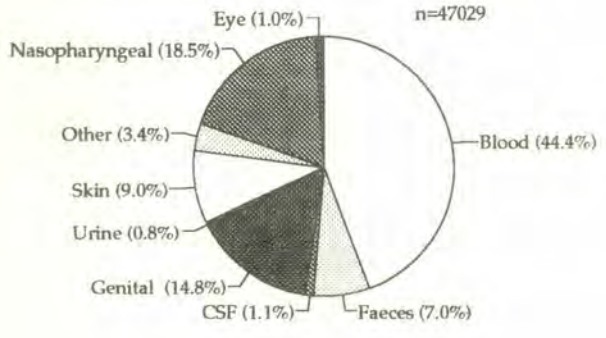


Figure 8. Virus reports, 1994, by specimen type



trointestinal disease and a number of reports of small round viruses and Norwalk agent were also received. The total number of reports for gastrointestinal disease was 2849.

For clinical diagnoses of hepatitis, 1308 reports were received for the year. Hepatitis C was most commonly reported followed by hepatitis B, A, D, cytomegalovirus (CMV), Epstein-Barr virus (EBV) and hepatitis E.

Three hundred and seventy-two reports of viral meningitis were received for 1994, fewer than the 459 reports received for 1993 . Several echovirus types (6, 7 and 30) and Coxsackievirus type B6 were reported. Also included were several reports of influenza A, herpes simplex virus and *Cryptococcus neoformans*.

For patients with eye disease (427 reports) HSV1 was most frequently reported, followed by the adenoviruses (particularly types 3 and 8), and *Chlamydia trachomatis*.

Nine hundred and sixty-two reports of muscle/joint disease were received in 1994. Ross River virus accounted for the largest proportion of these, followed by Barmah Forest virus.

For reticuloendothelial disease in 1994, 94 reports were received. Epstein-Barr virus was most commonly reported virus followed by cytomegalovirus.

Reports of other diagnoses are not included in Table 3. There were 27 reports of sudden infant death syndrome received in 1994, including reports of adenoviruses (three), cytomegalovirus (four), HSV1 (three), enteroviruses (10, one echovirus type 6, one echovirus type 30, seven untyped), parainfluenza type 3 (one).

A clinical diagnosis of encephalitis was reported for 44 patients in 1994, with the following agents associated: measles (four), mumps (one), Ross River virus (one), Japanese encephalitis virus (one), adenoviruses (five, one type 2, four untyped), HSV1 (two), herpes simplex virus not typed (13), cytomegalovirus (two), varicella-zoster virus (five), Epstein-Barr virus (two), herpes group not typed (one), enteroviruses (three, one echovirus type 30, two not typed), influenza A (one) and *Mycoplasma pneumoniae* (three).

Forty-three reports of congenital disease were received by the LabVISE scheme in 1994. Included were rubella (five), hepatitis C (one), adenovirus (one), HSV1 (two), HSV2 (one), herpes simplex virus not typed (one), cytomegalovirus (29), Coxsackievirus B3 (one), parainfluenzavirus type 3 (one) and *Treponema pallidum* (one).

In 1994, 36 reports of myocarditis/pericarditis were received. Included were measles (one), hepatitis B (two), hepatitis C (three), adenoviruses (two), HSV1 (one), cytomegalovirus (three), coxsackievirus type B3 (one), coxsackievirus type B5 (one), untyped enterovirus (two), influenza A (six), influenza B (two), parainfluenza virus type 3 (two), small round virus (one), *Chlamydia psittaci* (3), *Mycoplasma pneumoniae* (2), Q fever (one) and *Toxoplasma gondii* (3).

Risk factors

One thousand seven hundred and sixty-one reports (4%) included risk factor information. Of these, 759 (41.3%) reported injecting drug use, 356 (20.2%) were pregnant, 137 (7.8%) were HIV/AIDS patients, 152 (8.6%) were transplant recipients and 357 (20.3%) reported other risk factors (Figure 7).

Specimen type

Blood was the most commonly reported specimen type accounting for 20,879 reports in 1994 (Figure 8). Nasopharyngeal specimens were reported in 8,720 instances, genital 6941, skin 4234 and faeces 3280.

Methods of diagnosis

With respect to method of laboratory diagnosis, 39% of reports were for virus isolation, 21% antigen detection and 40% antibody detection.

Agents most commonly diagnosed by culture were the herpes viruses, the enteroviruses and *Chlamydia trachomatis* (Table 4).

Enzyme immunoassay (EIA) was the most frequently reported method of antigen detection accounting for 46% of antigen reports (Table 5), followed by immunofluorescence (IF) with 41 of such reports. Antigen detection was the method of diagnosis for hepatitis B (EIA), adenoviruses (IF and EIA), the herpesviruses (EIA and immunofluorescence), the influenza viruses, the parainfluenza viruses and respiratory syncytial virus (immunofluoresecence and some EIA), rotavirus (EIA, latex agglutination and electron microscopy, EM), Norwalk agent, small virus-like particles (EM) and *Chlamydia trachomatis* (EIA and IF).

For 77.8% of serological diagnoses, EIA was the reported method, followed by the complement fixation test (CFT) 8.6%, and (IF) 4.5%. The most commonly reported criterion was IgM detection (45.5% of antibody diagnoses) followed by total antibody (27.3%), single high titre (19.4%), IgA detection (2.9%), fourfold rise in titre (2.3%), and other (2.6%). Antibody detection was the method of diagnosis commonly reported for measles, mumps, rubella, hepatitis A (IgM detection), hepatitis C (IgG), the arboviruses, (mostly IgM detection, some fourfold rises), herpesviruses (IgM detection), influenza viruses (mostly single high titres, some fourfold rises and IgM detection), *Mycoplasma pneumoniae* and Q fever (IgM, fourfold rises and single

Table 4. Agents for which there were 200 or more reports of isolations, 1994

Agent	Isolate reports	%
Herpes simplex virus type 2	4794	26.5
Herpes simplex virus type 1	4444	24.6
Enterovirus	1654	9.2
Chlamydia trachomatis	1189	6.6
Respiratory syncytial virus	1169	6.5
Cytomegalovirus	1010	5.1
Adenoviruses	915	5.6
Rhinoviruses	897	5.0
Herpes simplex, not typed	655	3.6
Parainfluenza viruses	585	3.2
Varicella-zoster virus	402	2.2
Influenza viruses	362	2.0
Total isolates	18076	100

Table 5. Method of antigen detection, 1994

Method	Reports	%
Enzyme immunoassay	4526	46.0
Immunofluorescence	4067	41.4
Radio immunoassay	274	2.8
Latex agglutination	499	5.1
Electron microscopy	232	2.4
Nucleic acid detection	146	1.5
Other	81	0.9
Total	9825	100

Table 6. Method of antibody detection, 1994

Method	Reports	%
Enzyme immunoassay	14759	8.6
Complement fixation	1639	77.7
Haemagglutination inhibition	564	2.9
Immunofluorescence	844	4.4
Latex agglutination	434	2.2
Particle agglutination	360	1.8
Other	372	1.9
Total	18972	100

Figure 9. Measles laboratory reports, 1982 to 1994, by year of specimen collection

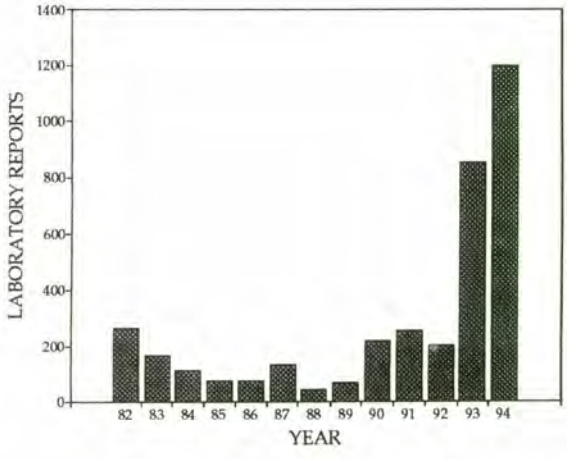


Figure 10. Measles laboratory reports, 1994, by month of specimen collection

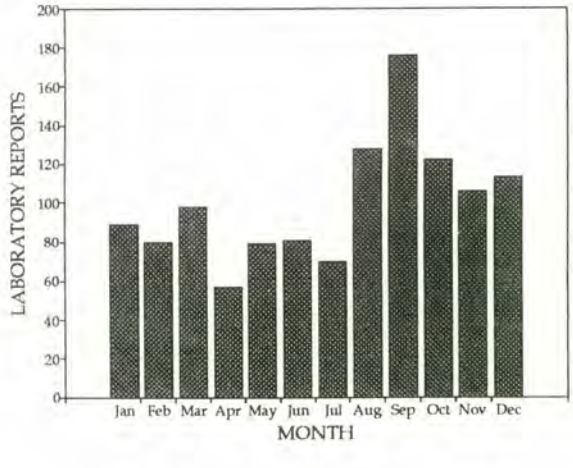
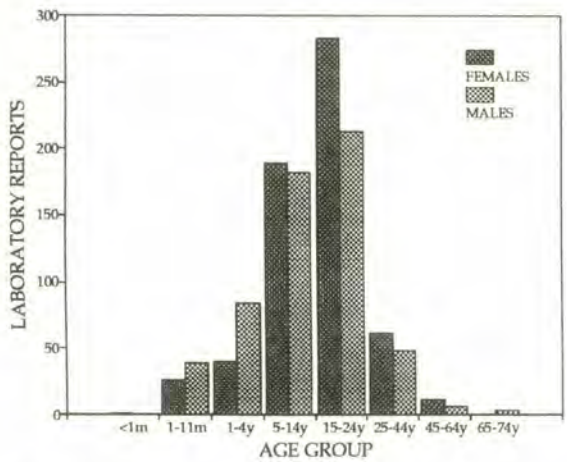


Figure 11. Measles laboratory reports,1994, by age group and sex



high titres), *Bordetella* (IgA detection in both serum and nasopharyngeal specimens, some IgM detection) and *Treponema pallidum* .

Reports by organism

The remainder of this report consists of selected details of viruses/organisms reported to the Scheme, presented in the order in which they are listed in Table 2.

Measles, mumps, rubella

Measles virus

For 1994 1199 reports of measles were received, the highest figure recorded by this Scheme (Figure 9), and a marked increase on the number of reports (853) received for 1993. Most reports were for the spring-summer months of August to December (Figure 10). The majority were received from Queensland (870), South Australia (84) and New South Wales (70).

Figure 12. Rubella laboratory reports, 1982 to 1994, by year of specimen collection

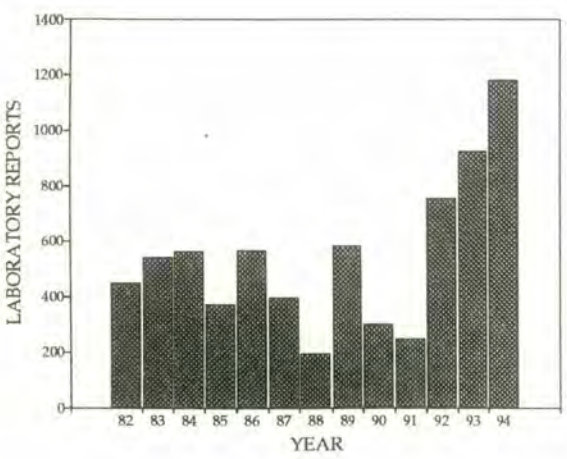
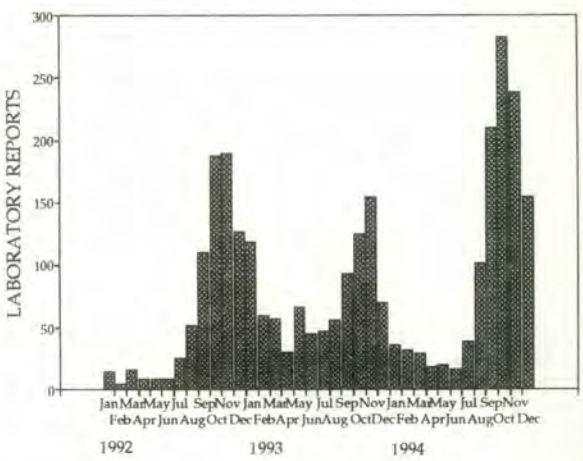


Figure 13. Rubella laboratory reports, 1994, by month of specimen collection

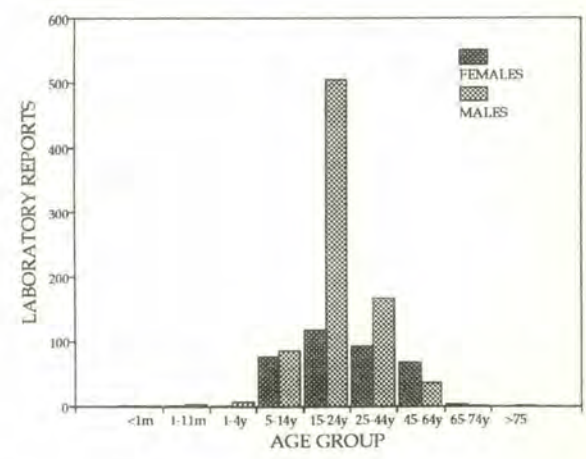


The largest number of reports received was for the 15 to 24 year age group (Figure 11), the male:female ratio being 1.3:1.0 for this group compared to an overall male:female ratio of 1.1:1.0. Skin disease and respiratory tract symptoms were the most common clinical manifestations, 439 and 53 reports respectively. Four cases of encephalitis and two of meningitis were also included. Laboratory diagnosis was by antigen detection (14) and antibody detection (1185, including 1134 IgM detections, 12 fourfold rises in titre, 38 single high titres and one other).

Mumps virus

Mumps was reported for 87 patients. All age groups were included and the male:female ratio was 1.1:1.0. Two cases of mumps meningitis and one report of encephalitis were included. All were diagnosed serologically (72 IgM detections, 13 single high titres and one fourfold rise in titre).

Figure 14. Rubella laboratory reports,1994, by age group and sex



Rubella virus

There were 1178 rubella virus reports in 1994, more than for any other year of this Scheme (Figure 12). An increased number of reports was received for the spring and summer months (Figure 13). The peak number of reports of 282 for November was the highest number received for any month recorded by this Scheme. An increased number of reports was received from Queensland (1883), Western Australia (163), New South Wales (124), South Australia (118), Victoria (100) and the Northern Territory (57).

Most commonly reported were 15 to 24 year olds, particularly males, this age group accounting for 53% of all reports (Figure 14), compared to 47% in 1993. Two hundred and eleven reports were for women of childbearing age (15 to 44 years), 14 of whom were pregnant. Overall there was a marked predominance of males, the male:female ratio being 2.2:1.0, although this sex difference did not become apparent until adolescence and young adulthood. The most common clinical manifestation was skin disease (481), followed by muscle/joint disease (36) and fever (16). One diagnosis was by antigen detection and the remainder by serological means (1,150 EIA, 13 HAI, 4 CFT and 11 other; 1126 IgM detections, 44 fourfold rises in titre, 5 single high titres and 2 other). There were five reports of congenital infections.

Hepatitis viruses

Hepatitis A virus

A total of 373 reports of hepatitis A was received with specimen collection dates in 1994, an increase on the average figure for the previous three years of 274. There was no clearly apparent seasonal distribution (Figure 15). Males were more commonly reported than females, the male:female ratio being 1.5:1.0. This sex difference was most apparent for the adult age groups (Figure 16). All diagnoses were by EIA, IgM detection.

Hepatitis B virus

Positive hepatitis B serology was reported for 2407 patients, 399 of whom reported evidence of possible acute infection (hepatitis B core IgM detected). The remaining diagnoses were established by the detection of hepatitis B surface antigen (HBsAg), and hence may have been acute or chronic infections. The male:female ratio was 1.2:1.0. Most reports (36%) were for individuals in the 15 to 44 year age group (Figure 17). Four hundred and twenty-nine (18%) reported clinical hepatitis. Risk factors included injecting drug use (21) and pregnancy (201).

Hepatitis C virus

A total of 6118 reports of hepatitis C was received for 1994. Numbers have risen since the introduction of testing in 1990, this largely being a reflection of an increase in the number of patients being tested. Also, current testing methods do not distinguish between acute, chronic or past infection with this virus. In addition whilst every attempt is made to delete duplicate

Figure 15. Hepatitis A laboratory reports, 1994, by month of specimen collection

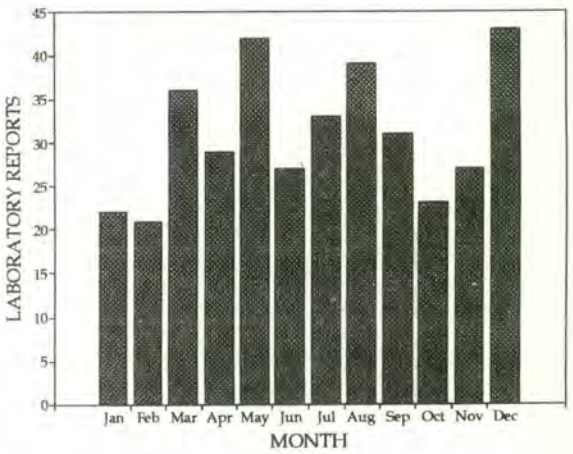


Figure 16. Hepatitis A laboratory reports,1994, by age group and sex

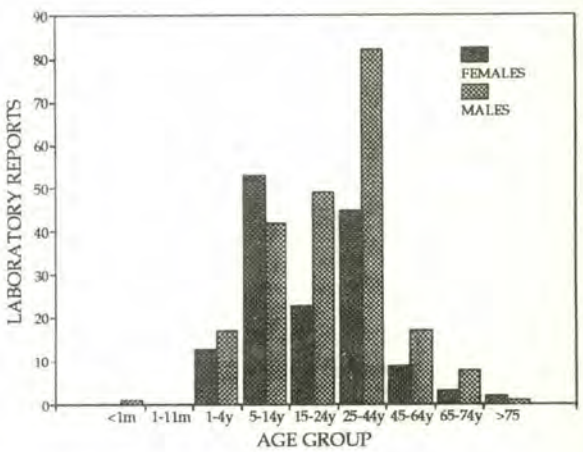


Figure 17. Hepatitis B laboratory reports,1994, by age group and sex

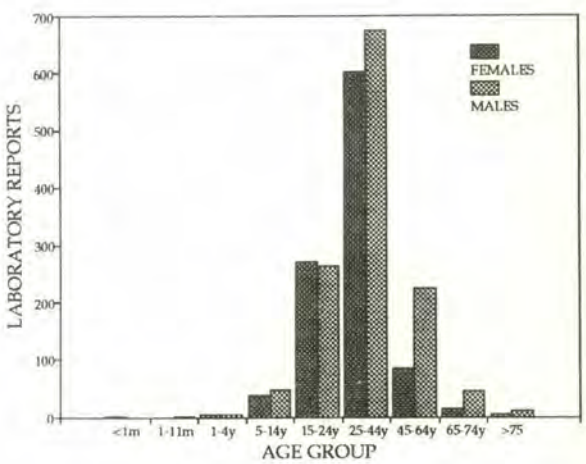
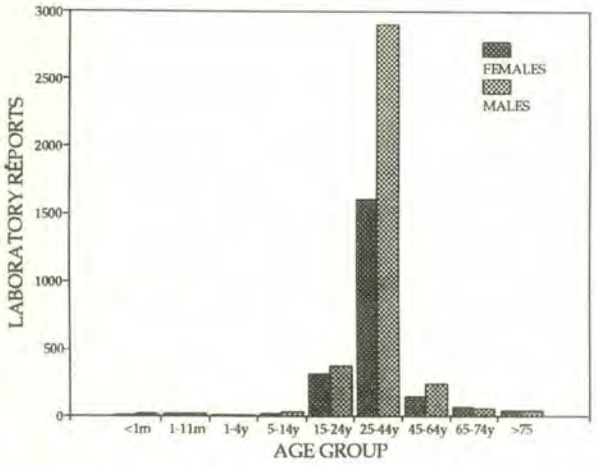


Figure 18. Hepatitis C laboratory reports,1994, by age group and sex



records from the Scheme, this cannot be completely ruled out, particularly if patients are re-tested many months or years after an initial test. More males were reported than females, the male:female ratio being 1.7:1.0 (as for 1993) and 4621 (76%) of reports were for the 25 to 44 year age group (Figure 18). Five hundred and eighty-four patients (10%) reported clinical hepatitis. Reported risk factors included injecting drug use (727, 12%), pregnancy (38) and history of blood transfusion (15).

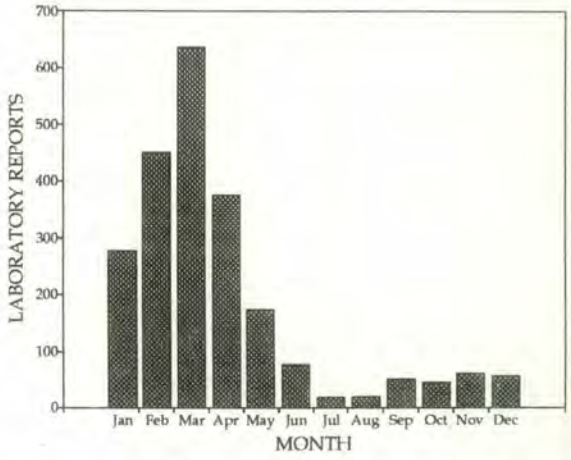
Hepatitis D virus

Twenty-four reports of hepatitis D were received for 1994, fewer than the average of 31 for the previous three years. Included were 20 males and four females, 21 of whom were in the 25 to 44 year age group. Thirteen patients reported clinical hepatitis. One patient had a history of injecting drug use.

Hepatitis E virus

Hepatitis E was reported for six patients in 1994, three males and three females, all in the 5 to 44 year age group. Four reports were received from Victoria, one from the Northern Terrirtory and one from Western Australia. All patients reported recent overseas travel. Clinical symptoms included two with hepatitis. All laboratory diagnoses were by EIA.

Figure 20. Ross River virus laboratory reports, 1994, by month of specimen collection



Arboviruses

Ross River virus

Two thousand two hundred and forty reports of Ross River virus were received in 1994, more than for any year ever recorded by this Scheme (Figure 19). Numbers peaked in March, as is normally the case (Figure 20). Reports were received from Queensland, 1,994 (89%), South Australia, 22, Victoria, five, Western Australia, 75, New South Wales, 84, the Northern Territory, 56, the Australian Capital Territory, one, and Tasmania, three. The male:female ratio was 1.0:1.0 and most patients (78%) were in the 25 to 64 year age range (Figure 21). The diagnosis was confirmed (fourfold change in titre) in 24 cases, the remainder being presumptive diagnoses (IgM detected). One hundred and forty-four

Figure 19. Ross River virus laboratory reports by year of specimen collection

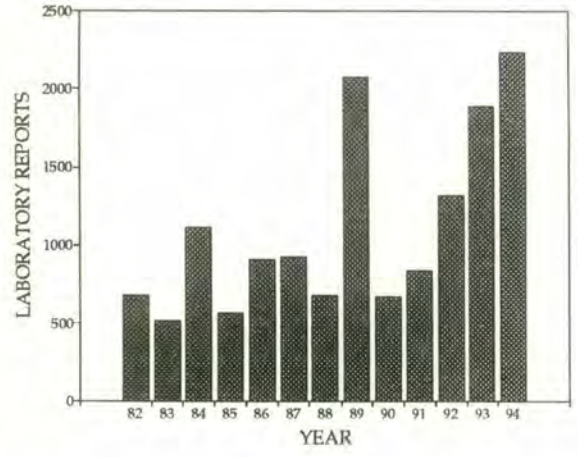


Figure 21. Ross River virus laboratory reports,1994, by age group and sex

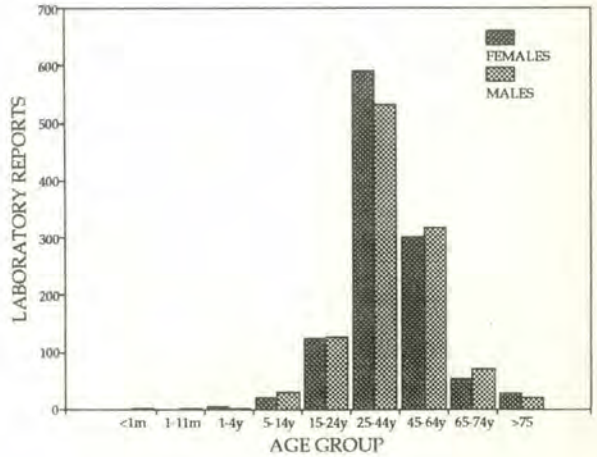
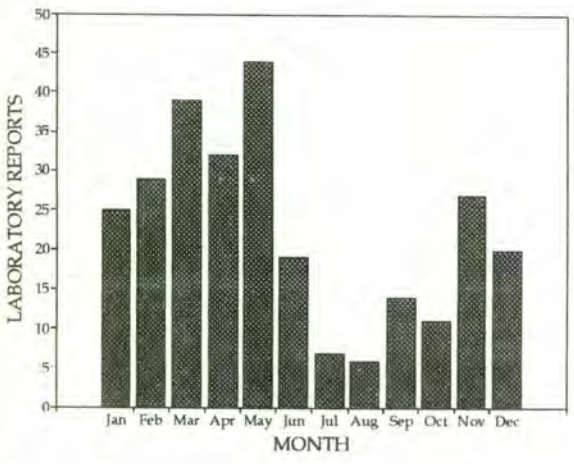


Figure 22. Barmah Forest virus laboratory reports, 1994, by month of specimen collection



patients (6%) reported having a rash, 121 (5%) general malaise and 728 (33%) reported muscle/joint disease.

Barmah Forest virus

Barmah Forest virus was reported for 273 patients in 1994, the highest annual figure recorded by this Scheme. Included were reports from Queensland (231), Western Australia (16), the Northern Territory (19) and New South Wales (7). The maximum monthly number of reports was received for May (Figure 22), two months later than the peak month for Ross River virus reports. The sex distribution was 1.0:1.0. and adults aged 25 to 64 years were primarily affected (Figure 23), accouting for 78% of all reports. Fifty-six patients reported joint/muscle disease, 23 skin disease and 26 general malaise. Eight diagnoses were confirmed (fourfold rise in titre), the remainder being presumptive (IgM detected).

Dengue 2

Dengue 2 was reported for four persons in 1994 compared to 422 in 1993 and 297 in 1992 (Figure 24). Three

Figure 23. Barmah Forest virus laboratory reports, 1994, by age group and sex

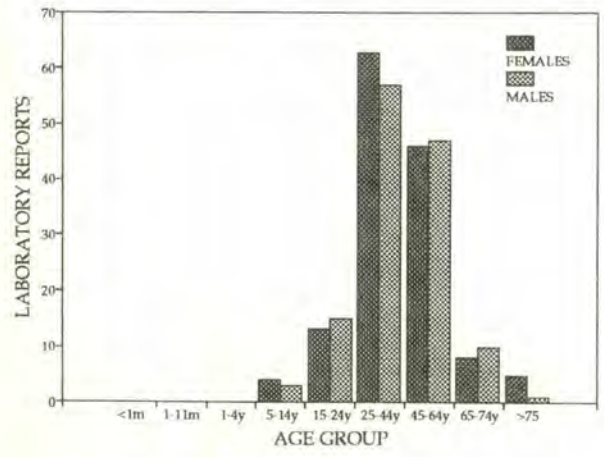
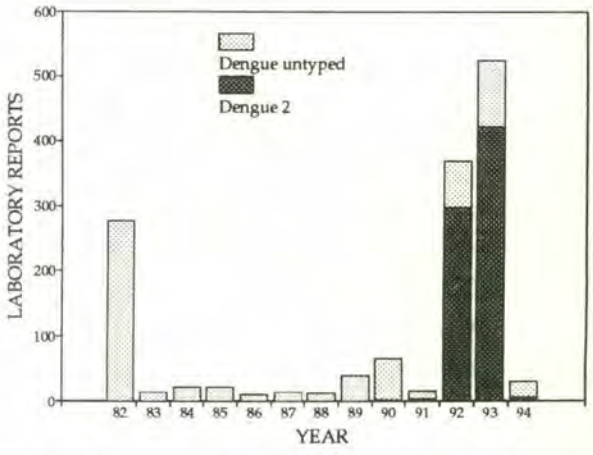


Figure 24. Dengue 2 and dengue (not typed) laboratory reports, 1982 to 1994, by year of specimen collection and type



were from Queensland and one from South Australia. Included were two males and two females, all in the 25 to 44 year age group. No risk factor information was available. All diagnoses were presumptive (IgM detected).

Dengue 3

Four reports of dengue 3 were received, for one male and three females, all in the 5 to 44 year age range. One patient was from New South Wales and three from Queensland. None reported risk factors and all were diagnosed by IgM detection.

Dengue 4

One report of dengue type 4 was received in 1994 for a female in the 45 to 64 year age group. Diagnosis was by IgM detection.

Dengue not typed

There were 26 reports of untyped dengue received in 1994, fewer than in 1993 (Figure 24). Most were from Western Australia (16) and the Northern Territory (6).

Figure 25. Untyped adenovirus laboratory reports, 1994, by age group and sex

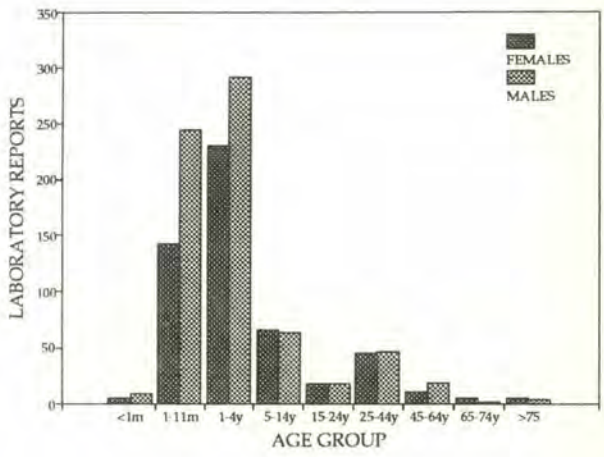
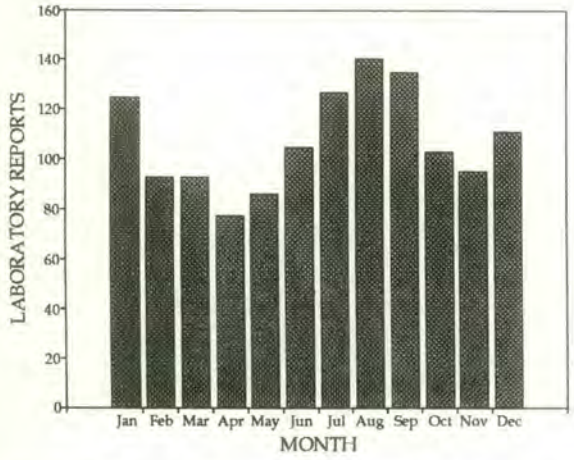


Figure 26. Untyped adenovirus laboratory reports, 1994, by month of specimen collection



Included were 12 males and 14 females. Ten patients reported a history of overseas travel. Two diagnoses were confirmed (fourfold rise in titre), the remainder being presumptive (IgM detected).

Japanese encephalitis virus

A single report of Japanese encephalitis virus was received in 1994. The patient was a female in the one to 4 year age group with encephalitis who had returned fromoverseas. Diagnosis was by fourfold rise in titre.

Kunjin virus

Kunjin virus was reported for two patients in 1994, one each from the Northern Territory and Queeensland. Both were males in the 15 to 44 year age group diagnosed by IgM detection.

Flaviviruses not typed

Untyped flaviviruses were reported from Queensland (10), Victoria (11), New South Wales (one) and Western Australia (one), a total of 23. The male:female ratio was 0.83:1.0 and 12 (52%) were aged 25 to 44 years. Eight reported a recent history of overseas travel. Seven diagnoses were by fourfold rise in titre and 16 by IgM detection.

Adenoviruses

A total of 1542 reports of adenovirus was received in 1994 of which 251(19%) were typed. This is a lower proportion of typed viruses than in 1993 when 31% of all reported adenoviruses were typed. There was a predominance of males, the overall male:female ratio being 1.4:1.0. Most patients were in the under five year age group (Figure 25). Adenovirus type 3 was most commonly reported (57 reports, 23% of those typed), followed by type 8 (55, 22%), type 1 (48, 19%), type 2 (45, 18%) and type 7 (16, 6%).

Respiratory symptoms were reported in association with types 1, 2, 3, 5, 7, 22 and 46; eye disease in association with types 1, 3, 4, 7, 8 and 47; and gastrointesinal disease with types 1, 2, 3, 8, 9 and 30. Three reports of SIDS were received in association with adenoviruses, adenovirus type 1 (two) and untyped adenovirus (one). Six patients were HIV positive, two were transplant recipients, and seven had a malignancy.

An increased number of reports of untyped adenovirus was received in January, and from July to September (Figure 26). Adenovirus type 3 was reported most commonly in the month of December and more reports of adenovirus type 8 were received in the first part of the year, for the months of January to March.

Specimen types included faeces (554), eye (143), nasopharyngeal (567), blood (204), urine (24) and other (50). Four hundred and twenty-five (28%) diagnoses were established by antigen detection, 915 (60%) by virus isolation and 202 (12%) by serology.

Herpesviruses

As the herpesviruses are persistent in nature, many diagnostic tests are unable to distinguish between primary and recurrent infection thus care must be exercised in the interpretation of these data.

Herpes simplex virus type 1

A total of 4610 reports of HSV1 was reported, male:female ratio 0.6:1.0. Patients aged 15 to 44 years were most commonly reported, this group accounting for 61% of all reports (Figure 27). Clinical manifestations included skin disease, 2276, 49%; genital disease, 1227, 27%; and eye disease, 191, 4%. Two patients were reported to have meningitis. Risk factors included HIV/AIDS (12), transplant recipients (29), malignancy (eight), pregnancy (two) and immunosuppression (seven). Specimen types included skin (2070), genital (1402), nasopharyngeal (410), eye (224), bronchial washings (30) and CSF (three). Diagnosis was by virus isolation, 4442 reports; serology, 10 (all IgM detections); and antigen detection, 158 (117 IF and 41 EIA).

Herpes simplex virus type 2

HSV 2 was reported for 4,889 patients in 1994, with a predominance of females, the male/female ratio being 0.61:1.0. The sex difference was most apparent for 15 to 44 year olds, this age group accounting for 80% of all reports (Figure 28), which may be accounted for by higher case ascertainment in women of child-bearing years. Genital disease was reported most commonly (2869, 59%), followed by skin disease (1260, 26%). Twelve patients were HIV positive, 14 were pregnant and two were immunosuppressed. The most common specimen type was genital (3300), followed by skin (1175), nasopharyngeal (13) and eye (seven). Method of diagnosis included 4793 virus isolations, four serological diagnoses (all IgM detections), 92 antigen detections (39 EIA and 53 IF).

Herpes simplex not typed

A total of 824 herpes simplex virus reports were for untyped viruses, representing 8% of all herpes simplex reports. The male:female ratio was 0.94:1.0. and 36% of reports were for the 25 to 44 year age group. Clinical diagnosis included skin disease, 213; eye, eight; genital,

Figure 27. Herpes simplex virus type 1 laboratory reports, 1994, by age group and sex

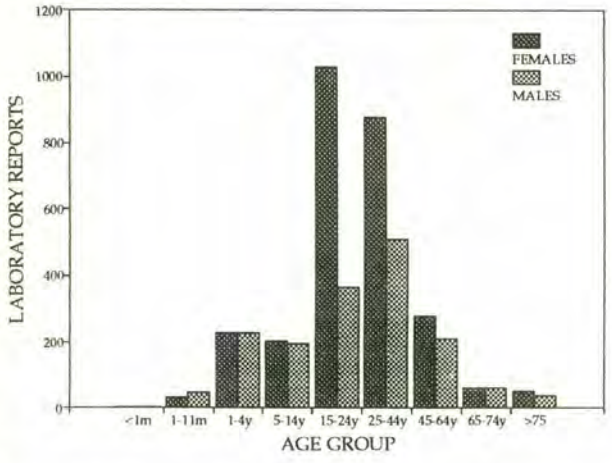


Figure 28. Herpes simplex type 2 laboratory reports, 1994, by age group and sex

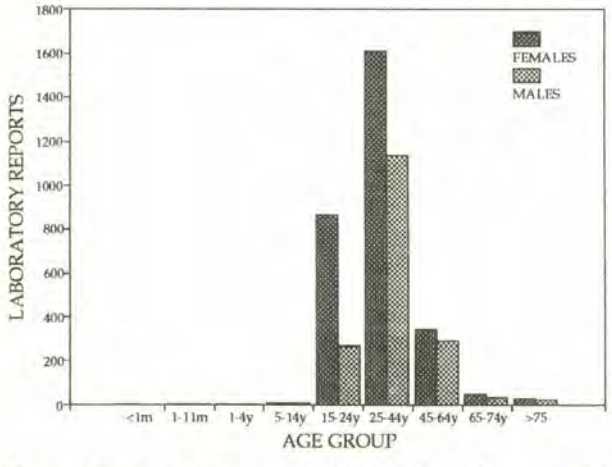


Figure 29. Cytomegalovirus laboratory reports, 1994, by age group and sex

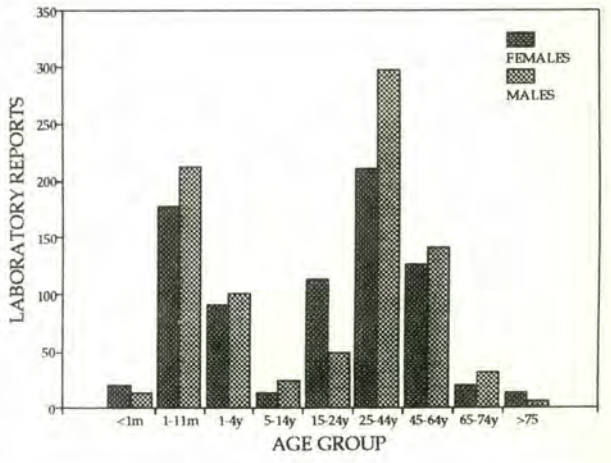
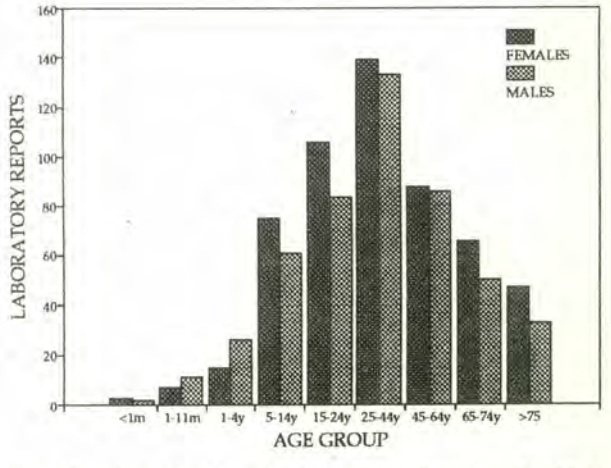


Figure 30. Varicella-zoster laboratory reports, 1994, by age group and sex



122; respiratory, 19; encephalitis, 13; and meningitis, nine. Specimen types included skin, 224; blood 143; nasopharyngeal 110; genital 126 and eye 20. Six hundred and fifty-five diagnoses were by virus isolation, 143 by serology (62 CFT, 77 EIA and 4 IF; 77 IgM detections, seven fourfold rises in titre and 59 single high tires) and 26 by antigen detection (12 nucleic acid detection, eight IF, four EIA and one electron microscopy).

Herpes virus type 6

Human herpes virus type 6 was reported for six patients in 1994, three males (one in the one to 4 year age group, two aged 24 to 44 years) and three females (all in the 25 to 44 years age range). Five diagnoses were by IgM detection and one other.

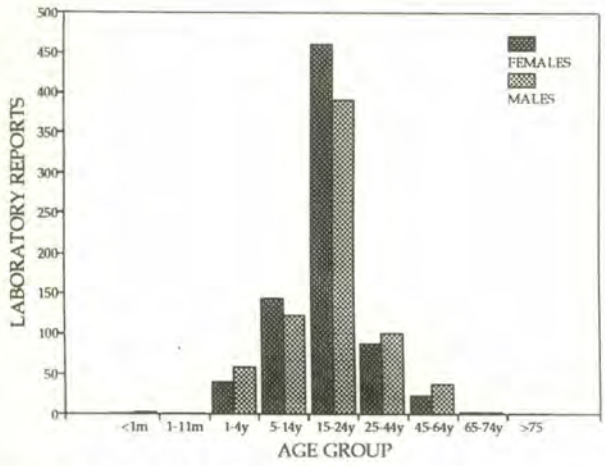
Cytomegalovirus

CMV was reported for 1728 patients, 912 males and 803 females, male:female ratio 1.1:1.0. This virus was most commonly diagnosed for infants in the one to 11 months age group and for the 25 to 44 years age group, the predominance of males being most marked in these groups (Figure 29). Fifteen patients were reported to have died. Sixty-four were HIV positive, 87 transplant recipients, 13 immunosuppressed, 18 pregnant and 15 had a malignancy. Clinical manifestations included 514 respiratory (73 upper, 188 lower, 253 unspecified), 88 malaise/fever and 22 hepatitis. Specimen types included nasopharyngeal, 535; blood, 696; urine, 285; bronchial washings, 79; leucocytes, 23; and post-mortem lung, 13. Diagnosis was by virus isolation, 1009; antigen detection, 34 (32 IF, one nucleic acid detection and one other); serology, 687 (18 CFT, 662 EIA, two IF and five other; 646 IgM, five fourfold rises, 31 single high titres, one other).

Varicella-zoster virus

One thousand and sixty-two reports of this virus were received in 1994. Due to the recurrent nature of this virus and the limitations of current testing methods a distinction frequently cannot be made between reports which may be due to chickenpox and those due to shingles. More females were reported than males,

Figure 31. Epstein-Barr virus laboratory reports,1 994, by age group and sex



male:female ratio 0.9:1.0, and all age groups were represented (Figure 30). Clinical manifestations included 732 reports of skin disease, five of encephalitis, four of meningitis and four of eye disease. Risk factors included 18 pregnant females, two patients with malignancies, three transplant recipients, one HIV positive patients and three patients with other immunosuppression. Source of specimen included skin (676) and blood (298). Four hundred and one diagnoses were established by virus isolation, 364 by antigen detection (IF 355, EIA seven, nucleic acid detection two), and 297 serological diagnoses (CFT 18, EIA 258, IF 21; 271 IgM, 21 single high titre, five fourfold rises in titre).

Epstein-Barr virus

Epstein-Barr virus was reported for 1,515 patients in 1994. The overall male:female ratio was 0.9:1.0 and the majority of reports were for the 15 to 24 years age group (57%, Figure 31) there being a slight predominance of females in this group. One hundred and fifty-nine patients reported malaise/fever, 122 respiratory symptoms, 58 reticuloendothelial disease, 33 hepatitis, two encephalitis and one meningitis. Risk factors included pregnancy (one), malignancy (four), transplant recipient (three)and HIV/AIDS (one).

Other DNA viruses

Parvovirus

A total of 109 reports of parvovirus were received. Included were 21 males and 88 females, male:female ratio 0.2:1.0. Forty-six percent of reports were for females in the 25 to 44 years age group (Figure 32), case ascertainment probably being higher for females of child-bearing years compared to other groups. Two patients were reported as being pregnant, one had a malignancy and two neutropenia. Clinical manifestations included 39 reports of skin disease and 16 of arthralgia.

Other DNA viruses

Four reports of **papovavirus** were received, all for males from Victoria in the five to 44 years age group.

Molluscum contagiosum was reported for four patients, all males aged five to 64 years, two of whom were HIV/AIDS patients. All patients reported skin disease and diagnosis was by EM in all cases.

Two reports of **Orf virus** were received, both for males with skin disease in the 15 to 64 years age group. Diagnosis was by EM.

Two reports of **untyped poxvirus** were received in 1994 both for males in the 15 to 64 year age group.

Picornavirus family

Coxsackievirus type A16

This virus was reported for 34 patients, 22 males and 11 females, (one sex unknown) 22 (65%) of whom were in the under five year age group. Most reports were received for the month of March and more reports were received than for any year since 1987 (Figure 33).

Figure 32. Parvovirus laboratory reports,1994, by age group and sex

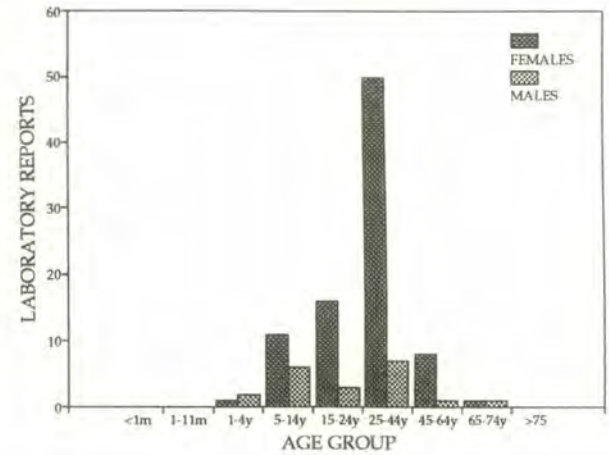


Figure 33. Coxsackievirus type A16 laboratory reports, 1982 to 1994, by year of specimen collection

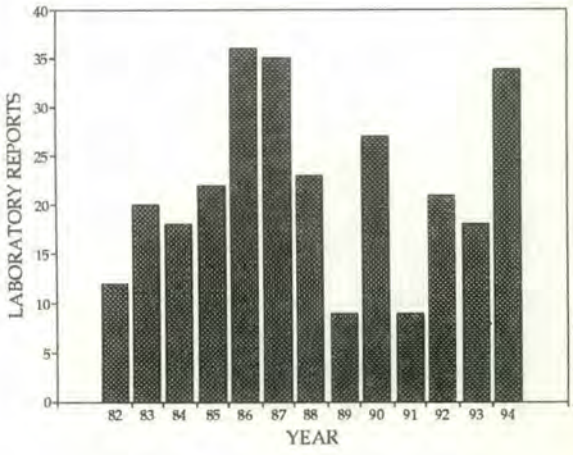
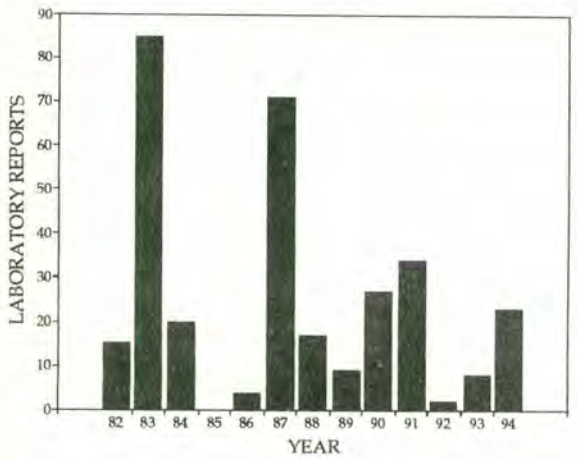


Figure 34. Coxsackievirus type B2 laboratory reports, 1982 to 1994, by year of specimen collection



Twenty-five patients reported skin disease. Specimen types included skin (20), nasopharyngeal (seven), faeces (four), CSF (two) and other (one) and the method of diagnosis was virus isolation in all cases.

Coxsackievirus type B2

Twenty-three reports of coxsackievirus type B2 were received, the highest number of reports received since 1991 (Figure 34). Included were 11 males and 12 females. Eighteen patients (78%) were under the age of four years. Reports were received from New South Wales (12), Victoria (seven) and South Australia (four). Clinical symptoms included four cases of meningitis, one other CNS disease, seven respiratory tract disease, and two skin manifestations. Specimen types included CSF (three), faeces (seven), nasopharyngeal (12), and urine (one). All diagnoses were by virus isolation.

Coxsackievirus type B3

Coxsackievirus type B3 was reported for 31 patients in 1994. Included were 24 males (16 under the age of five

Figure 35. Echovirus type 6 laboratory reports, 1982 to 1994, by year of specimen collection

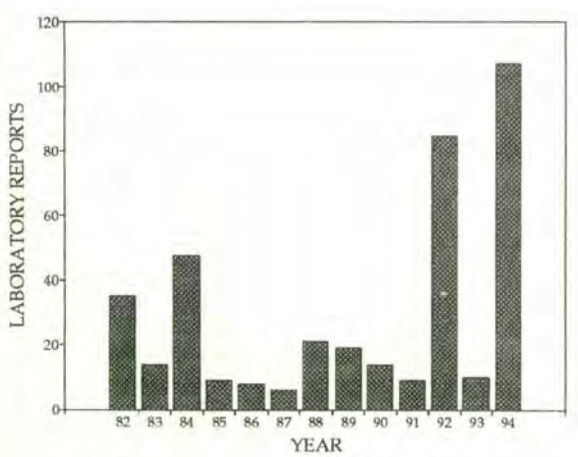
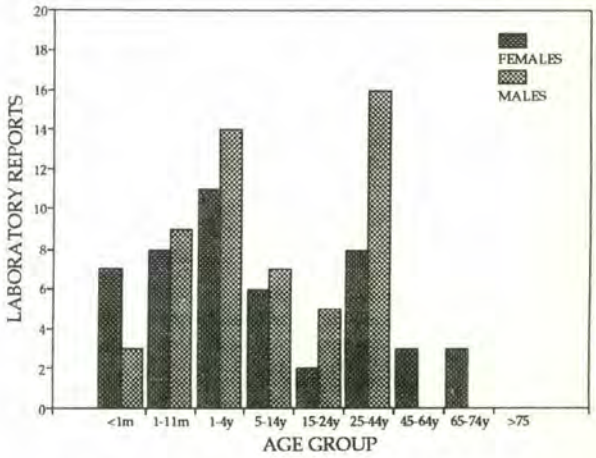


Figure 36. Echovirus type 6 laboratory reports, 1994, by age group and sex

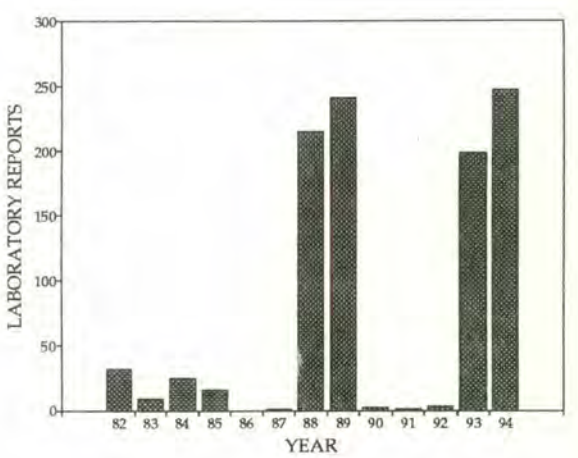


years) and six females (one sex unknown), male:female ratio 4.0:1.0. Two deaths were reported. Clinical diagnoses included seven cases of meningitis, five of upper respiratory tract disease, five of lower respiratory tract disease, two of gastrointestinal disease, one case of myocarditis and one case of congenitally acquired infection. Specimen types included CSF (four), faeces (seven), nasopharyngeal (17) and urine (one). All diagnoses were by virus isolation.

Coxsackie B viruses (other)

Thirtythree reports of other coxsackie B viruses were received, coxsackievirus B1 (four), coxsackievirus B4 (12), coxsackievirus B5 (15) and coxsackievirus B6 (two). The overall male:female ratio was 0.7:1.0 and 13 patients (36%) were under the age of one year. Twenty-three cases of meningitis were reported (B4, five and B5, 11) and one case of myocarditis (B5). All laboratory diagnoses were by virus isolation from CSF (17), faeces (5) or nasopharyngeal (11) specimens.

Figure 37. Echovirus type 30 laboratory reports, 1982 to 1994, by year of specimen collection



Echovirus type 3

Twenty-seven reports of echovirus type 3 were received in 1994, the highest number received by this Scheme. Included were 18 males and 8 females, 20 (74%) of whom were under the age of five years. Most reports (24, 89%) were received for the months of November and December. Included was one report of meningitis, one of lower respiratory tract disease, two of skin disease, two of gastrointestinal disease and two of eye disease. No risk factor information was available. Specimen types included CSF (three), eye (two), faeces (16), nasopharyngeal (five) and other (one). All diagnoses were by virus isolation.

Echovirus type 6

Echovirus type 6 was reported for 107 patients this period, more than for any year recorded by this Scheme (Figure 35). The male:female ratio was 1.2:1.0 and 43 (40%) reports were for children under the age of five years (Figure 36). Most reports were received for the month of February. Included was one case of SIDS, 33 reports of meningitis, nine respiratory tract disease, four CNS disease (other), five gastrointestinal disease, and one eye disease. Two patients were transplant recipients. All diagnoses were by virus isolation, specimen types including CSF (37), faeces (38), eye (one), biopsy (one), nasopharyngeal (21) and other (nine).

Echovirus type 11

Echovirus type 11 was reported for 26 patients including 17 males and eight females (one sex not stated), male:female ratio 2.0:1.0. Reports of this virus were received for all age groups. Nine patients reported meningitis and two CNS disease (other). Specimen types included CSF (21), nasopharyngeal (two), skin (one), urine (one), and other (one). All diagnoses were established by virus diagnosis.

Echovirus type 30

For 1994 a total of 247 reports of echovirus type 30 was received, the biggest epidemic year ever recorded (Figure 37). However the maximum number of monthly reports received for the month of November (40) was lower than that received for the 1993 peak month of December (60)(Figure 38). The majority of reports were from Victoria (110, 45% of total), and New South Wales 105 (43%). Most specimen collection dates were in the latter part of the year. The male:female ratio was 0.9:1.0 and 96 reports (39%) were for adults in the 25 to 44 year age group (Figure 39). One death was reported. Clinical diagnoses included meningitis (150, 61% of all reports), encephalitis (one), SIDS (one), respiratory symptoms (eight), CNS paralytic disease (one), CNS other (five) and gastrointestinal (four). One hundred and sixty two specimens were CSF, 38 were faeces, 43 were from the nasopharynx, two biopsy and two other. Laboratory method was virus isolation in all cases.

Poliovirus

Polioviruses were reported for 106 patients (type 1, 41; type 2, 41; type 3, 14; and untyped, 10) all uncharacterised. The male:female ratio was 0.9:1.0 and 84 (96%) were under the age of one year. All were diagnosed by virus isolation.

Figure 38. Echovirus type 30 laboratory reports, 1993 to 1994, by month of specimen collection

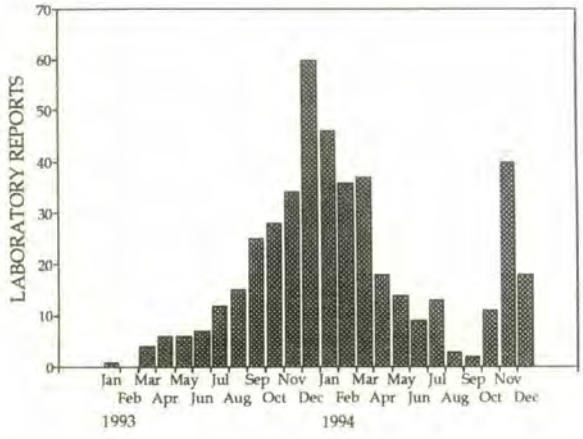


Figure 39. Echovirus type 30 laboratory reports,1994, by age group and sex

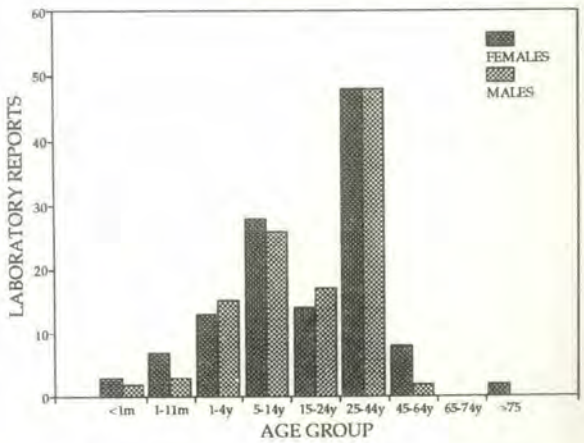


Figure 40. Rhinovirus laboratory reports, 1994, by month of specimen collection

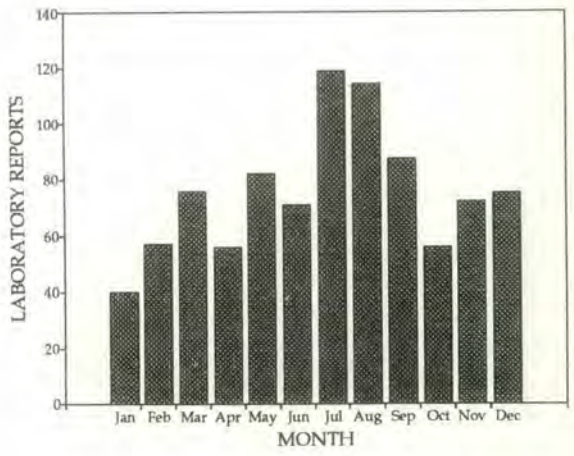
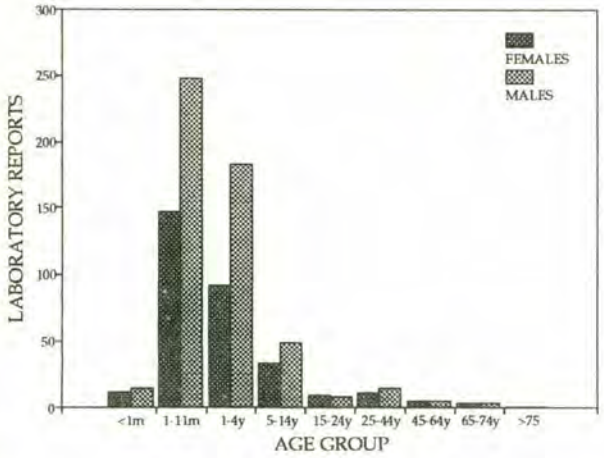


Figure 41. Rhinovirus laboratory reports, 1994, by age group and sex



Enteroviruses not typed

There were 1101 reports of untyped enteroviruses, male:female ratio 1.3:1. Most reports were for young children aged under five years (696 reports, 63% of total). Fourteen patients were reported to have died, including eight SIDS. Two patients were immunosuppressed. Meningitis was reported for 97 patients, encephalitis for two, CNS disease (other) for 63, upper respiratory tract disease for 65, lower respiratory tract infection for 47, gastrointestinal symptoms for 106, skin manifestations for 40, myocarditis for two and eye disease 13. Specimen types included CSF (187), post-mortem (12), bronchial washings (six), blood (61), eye (seven), faeces (215), nasopharynx (549), skin(23), urine (nine) and other (72). Diagnosis was by virus isolation, 853, nucleic acid detection, 54 and serology, 36.

Rhinoviruses

Rhinoviruses were reported for 905 patients, above the average figure of 517 for the previous three years. A

Figure 42. Influenza A laboratory reports, 1982 to 1995, by month of specimen collection and virus subtype

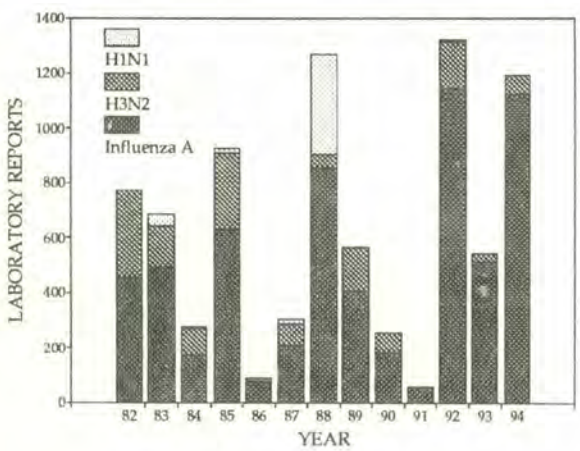
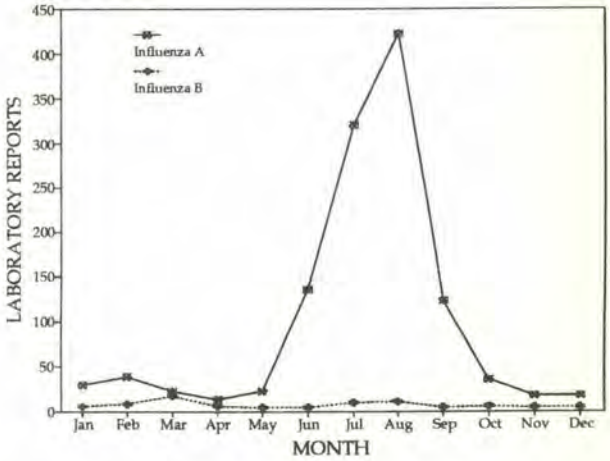


Figure 43. Influenza A and influenza B laboratory reports, 1994, by month of specimen col-



peak in the number of reports was observed for the months of July and August (Figure 40). The male:female ratio was 1.7:1.0 and 44% of reports were for the one to 11 month age group (Figure 41). Two deaths were reported. Also included were four cases of meningitis, 226 upper respiratory tract disease, 238 lower respiratory tract infection and 280 respiratory (unspecified). One patient was HIV positive, two were transplant recipients, one was immunosuppressed (other) and eight had a malignancy. Specimen types included nasopharyngeal specimens (875), bronchial washings (13) and other (17).

Ortho/paramyxoviruses

Influenza A

A total of 1196 reports of influenza A was received in 1994, including 74 H_3N_2 strains (Figure 42). No reports of H_1N_1 strains were received. There was an overall seasonal peak in the month of August (Figure 43) for most States and Territories whilst reports from South

Figure 44. Influenza A laboratory reports, 1994, by age group and sex

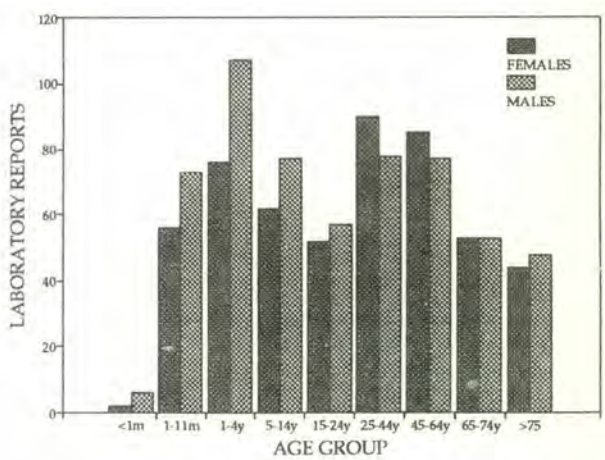
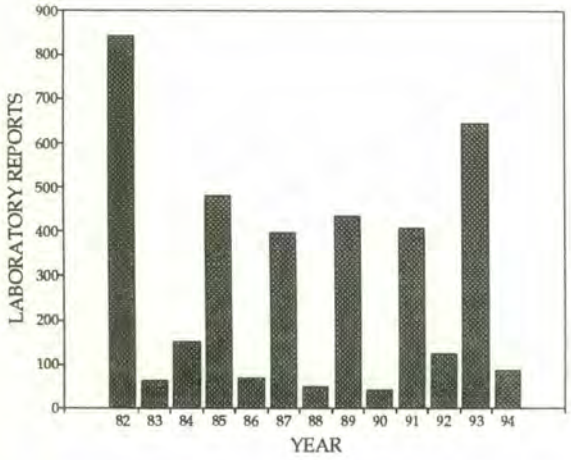


Figure 45. Influenza B laboratory reports, 1982 to 1994, by year of specimen collection



Australia peaked in July. The male:female ratio was 1.1:1.0 and all age groups were affected (Figure 44), including 109 patients over the age of 65 years. Two deaths were reported for a one month old male (H_3N_2 isolated at postmortem) and a 53 year old male (single high titre). Included were two patients with diabetes, two transplant recipients and six with malignancies. Reported clinical syndromes included lower respiratory tract disease (317), upper and other respiratory tract disease (460), muscle/joint disease (16), gastrointestinal (five), general malaise/fever (72), and skin manifestations (four). Specimen types included 546 nasopharyngeal specimens, 635 sera and 15 lung specimens. Methods of detection were antigen detection, 210 (182 IF, 28 EIA); virus isolation, 303; and serology, 633 (87 fourfold rises, nine IgM detections, 536 single high titres and one other).

Figure 46. Parainfluenza virus laboratory reports, 1982 to 1994, by year of specimen collection

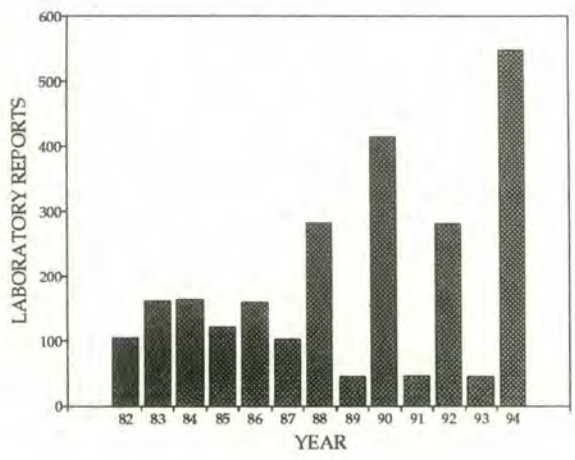
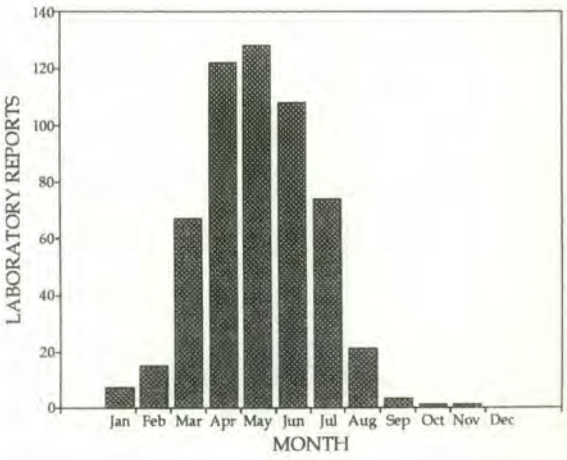


Figure 47. Parainfluenza virus type 1 laboratory reports, 1994, by month of specimen collection



Influenza B

Eighty seven reports of influenza B were received in 1994 (Figure 45). Numbers were low compared to those for influenza A (Figure 43). Similar numbers of males and females were reported, male:female ratio 1.0:1.0, 37% of reports being for the 25 to 44 year age group. Eighteen patients reported lower respiratory tract disease, 5 upper respiratory tract disease, 13 respiratory tract disease (unspecified) and one muscle/joint manifestations. Specimen types inclued sera, 69 and nasopharyngeal, 18. Method of diagnosis was by virus isolation nine, antigen detection nine (all IF), and serology, 69 (five fourfold rises, two IgM detections and 62 single high titres).

Parainfluenza type 1

There were 547 reports of parainfluenza virus type 1 in 1994, the highest figure ever recorded (Figure 46), fol-

Figure 48. Parainfluenza virus type 1 laboratory reports, 1994, by age group and sex

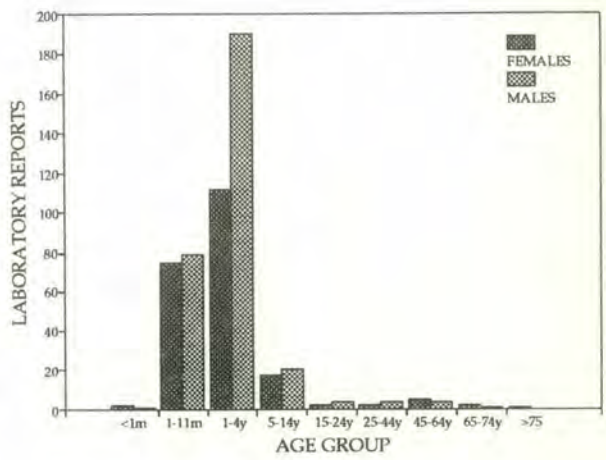
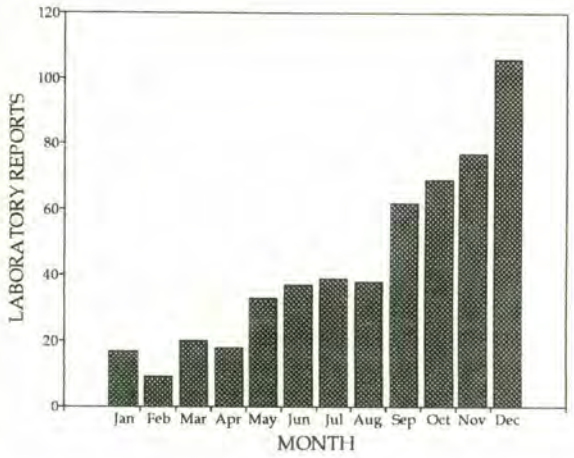


Figure 49. Parainfluenza virus type 3 laboratory reports, 1994, by month of specimen collection



lowing a record low season in 1993. Reports peaked in the month of May, the epidemic season extending from March through July (Figure 47). Included were 321 males and 223 females (three sex not recorded), male:female ratio 1.4:1.0. Most patients (85%) were under five years of age, 29% being under one year (Figure 48). Upper (203), lower (100), and unspecified (180) respiratory tract symptoms were most commonly reported. Specimens included blood, 12; nasopharyngeal, 523; and other, 12. Diagnosis was by culture, 295; antigen detection, 240 (11 EIA, 229 IF); and serology, 12 (all CFT; one fourfold rise, 11 single high tires).

Parainfluenza type 2

Sixty-one reports of parainfluenza virus type 2 were received for 1994 following the receipt of 127 reports in 1993, an epidemic year. There was a seasonal peak in the months of April to June. More males were reported than females, male:female ratio 1.6:1.0 and 46 (75%)

Figure 50. Parainfluenza virus type 3 laboratory reports,1994, by age group and sex

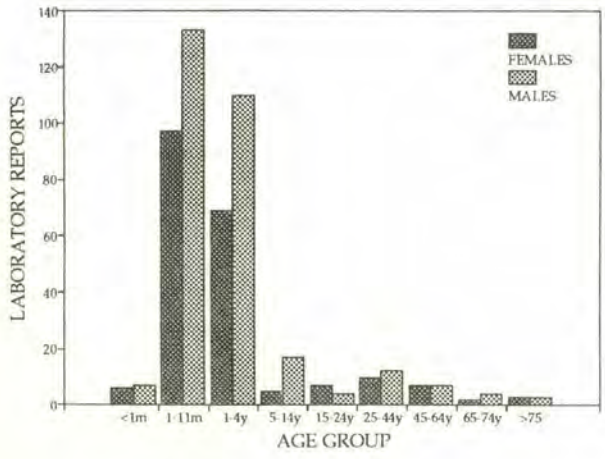
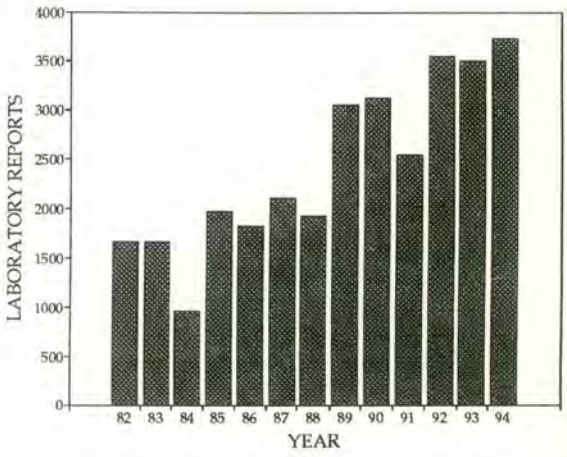


Figure 51. Respiratory syncytial virus laboratory reports, 1982 to 1994, by year of specimen collection



were for children under the age of five years. Forty-two patients reported respiratory tract symptoms. Specimen types included 54 nasopharyngeal, four sera and three other. Diagnoses included 23 virus isolations, 34 antigen detections (33 IF, one EIA), and serology, four (all CFT; one fourfold rise, three single high tires).

Parainfluenza type 3

Parainfluenza virus type 3 was reported for 525 patients, similar to the annually reported figure in recent years. Reports peaked in December (Figure 49) which is later than the usual the peak month which is between September and November. More males were reported than females (308 and 213 reports respectively), male:female ratio 1.5:1.0. Forty-seven percent of patients were under the age of one year (Figure 50). One death due to SIDS was reported. One neutropaenic patient and two with malignancies were also included. Respiratory tract disease was reported for 255 patients (174 upper, 80 lower and one other). Three cases of

Figure 52. Respiratory syncytial virus laboratory reports, 1994, by month of specimen collection

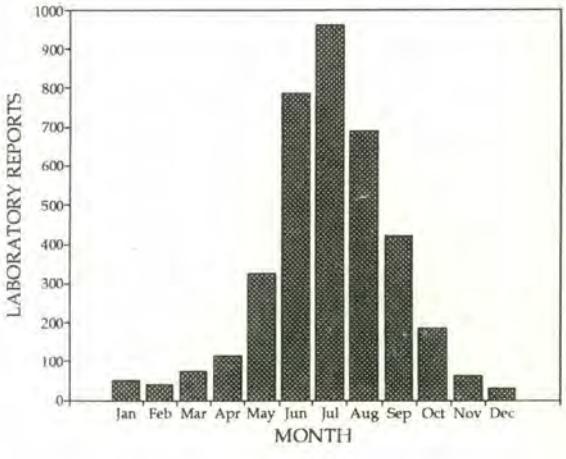
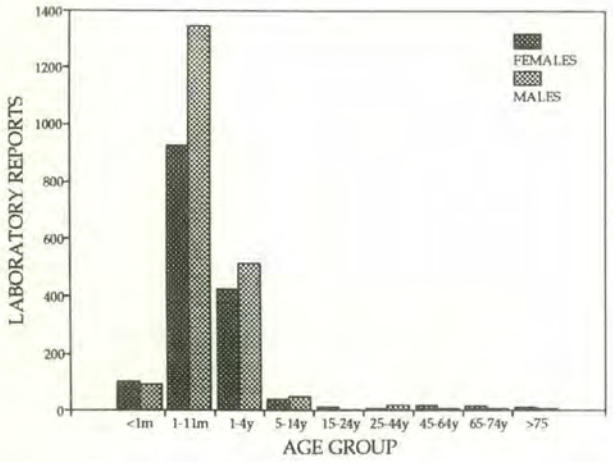


Figure 53. Respiratory syncytial virus laboratory reports, 1994, by age group and sex



meningitis were also included. Specimen types included blood, 67, nasopharyngeal, 432, CSF three, bronchial washings seven, postmortem one and other, 15. Serology was the method of diagnosis for 67 patients (one IgM detection, four fourfold rise in titre and 62 single high titres), isolation for 245 and antigen detection for 213 (207 IF and 6 EIA).

Respiratory syncytial virus

A total of 3746 reports of respiratory syncytial virus was received for 1994, more than for any previous year (Figure 51). Overall reports peaked in July (Figure 52) as was the case for the Australian Captal Territory, Queensland and Western Australia, whilst the peak number of reports for New South Wales was for June. South Australia, Tasmania and Victoria reported maximum numbers in August. The male:female ratio was 1.3:1.0. There were 2504 reports (67%) for children under the age of one year and 3449 (92%) for the under five years age group (Figure 53). Six patients had malignancies and five were transplant recipients. Upper

Figure 54. Rotavirus laboratory reports, 1982 to 1994, by year of specimen collection

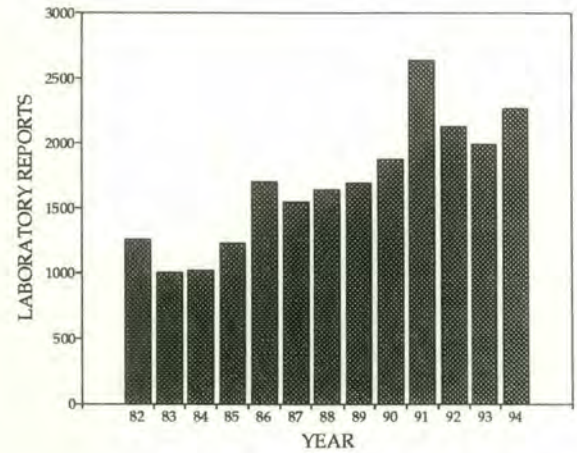
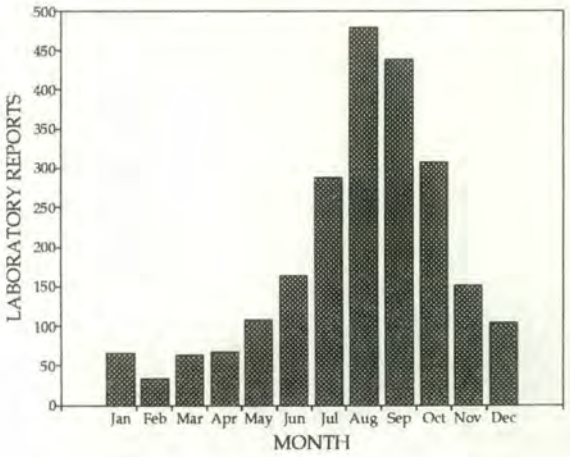


Figure 55. Rotavirus laboratory reports, 1994, by month of specimen collection



respiratory tract disease was reported for 265, lower for 1898 and unspecified for 280. Specimen types included 3450 nasopharyngeal specimens, 118 sera, 10 bronchial washings, one post mortem lung specimen and 167 other. Method of diagnosis was antigen detection, 2,460 (2335 IF, 123 EIA, two other), isolation, 1169 and serology, 117 (all CFT; 10 fourfold rises, 106 single high titres, one other).

Other RNA viruses

Rotavirus

There were 2274 reports of rotavirus received, the highest number since 1991 (Figure 54). Overall reports peaked in the month of August (Figure 55), as was the case in New South Wales, Queensland and Victoria. The peak month for reports was October for South Australia and Tasmania and November for Western Australia. More males were reported than females, male:female ratio 1.2:1.0, and most patients (1966, 87%) were under the age of five years, 611 (27%) being in

Figure 56. Rotavirus laboratory reports, 1994, by age group and sex

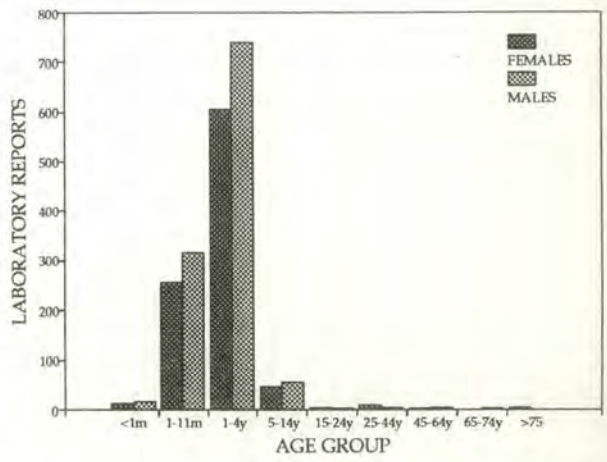
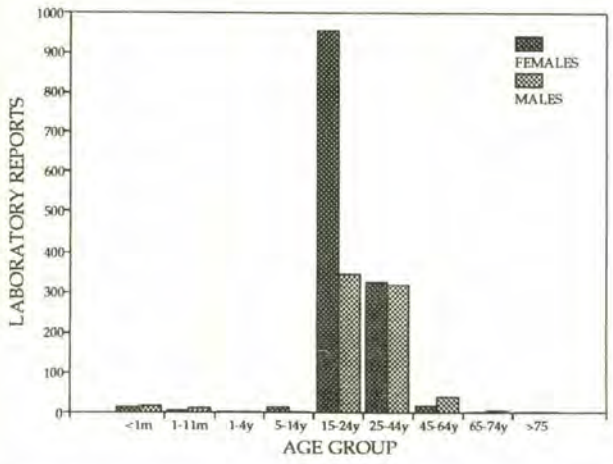


Figure 57. *Chlamydia trachomatis* laboratory reports, 1994, by age group and sex



the under one year age group (Figure 56). A total of 2174 (96%) cases reported gastrointestinal symptoms. Diagnosis was by EM (133), EIA (1740) and latex agglutination (382).

Calicivirus

Six reports of calicivirus were received in 1994 for four males and one female (one sex not stated), all in the one month to 24 year age group. All were diagnosed by EM and reported gastrointestinal disease.

Other

Chlamydia trachomatis

Two thousand one hundred and seventy-eight reports of *Chlamydia trachomatis* were received with collection dates in 1994. More females were reported than males, male:female ratio 0.6:1.0 and 1956 (90%) reports were for the 15 to 44 year age group (Figure 57). Thirty-three reports were for infants under the age of one month.

Figure 58. *Mycoplasma pneumoniae* laboratory reports, 1982 to 1994, by year of specimen

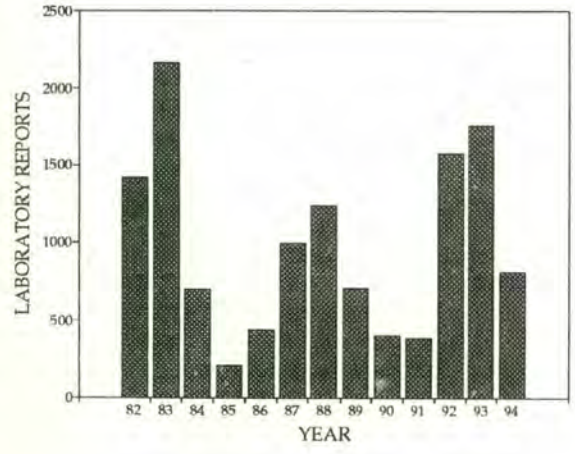
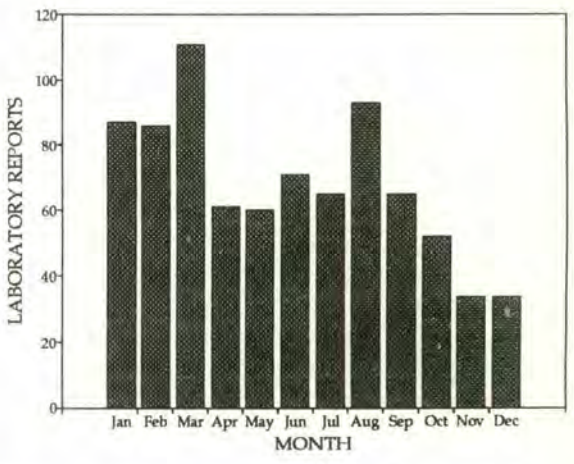


Figure 59. *Mycoplasma pneumoniae* laboratory reports, 1994, by month of specimen collection



Thirteen patients were pregnant, 52 reported eye disease and 1734 reported genital tract infections. Specimen types included 2035 genital specimens, 58 eye specimens and 85 other. Diagnosis was by culture, 1189; serology, 26; and antigen detection, 963 (568 EIA, 299 IF, 68 nucleic acid detection, 28 other).

Chlamydia psittaci

Chlamydia psittaci was reported for 114 patients, 59 males and 54 females in 1994. Forty-eight reports (42%) were for the 45 to 64 year age group. A peak in the number of reports was observed in December. Fifty-eight patients reported respiratory symptoms.

Mycoplasma pneumoniae

Mycoplasma pneumoniae was reported for 819 patients in 1994, fewer than in the previous year (Figure 58). Reports had a biennial distribution peaking in March and August (Figure 59). The largest number of reports was for the five to 14 year age group (292 reports, 36%),

Figure 60. *Mycoplasma pneumoniae* laboratory reports, 1994, by age group and sex

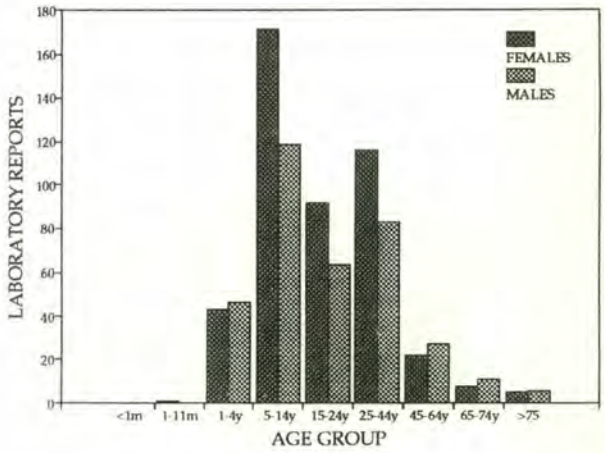


Figure 61. *Coxiella burnetii* (Q fever) laboratory reports, 1982 to 1994, by year of specimen collection

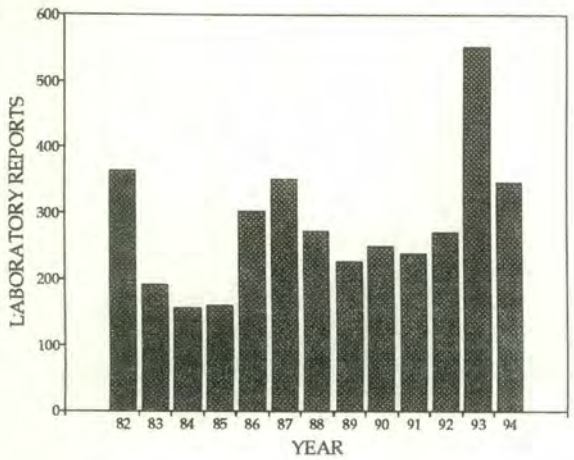


Figure 62. Coxiella burnetii (Q fever) laboratory reports, 1994, by age group and sex

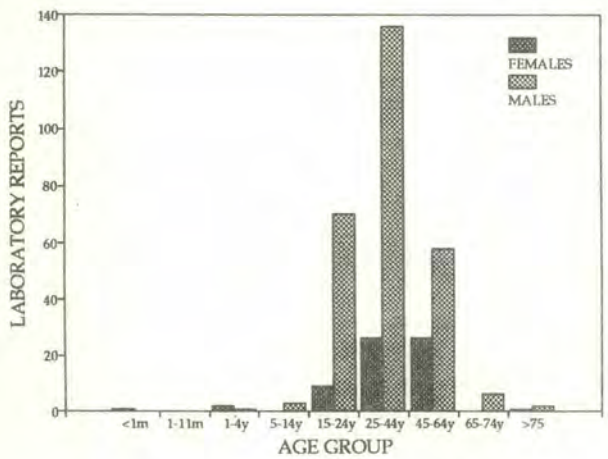
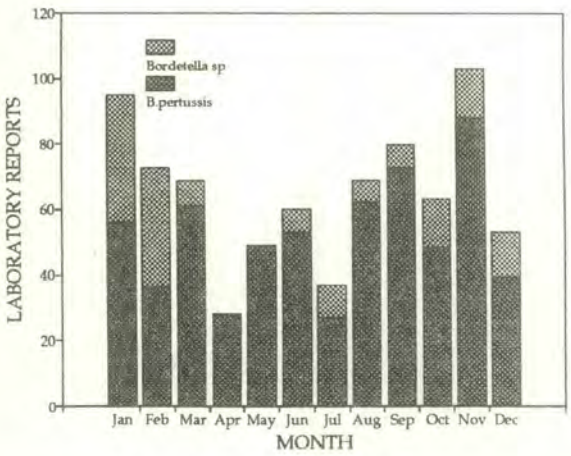


Figure 63. *Bordetella pertussis* and *Bordetella* species laboratory reports, 1994, by month of specimen collection



followed by the 25 to 44 year age group (199 reports, 24%; Figure 60). Fewer males were reported than females, male:female ratio 0.8:1.0. Three hundred and three patients reported lower respiratory tract disease, 39 upper and 85 unspecified. Three reports of encephalitis and one report of meningitis were also included. Specimen types included serum, 815 and nasopharyngeal, four. Diagnosis was by serology 813 (CFT 102, EIA 260, agglutination, 449 and other, two; fourfold rise, 18; IgM detection, 654; single high titre, 129; other, 12) and culture six.

Coxiella burnetii (Q fever)

Three hundred and forty five reports of Q fever were received, fewer than in the previous year (Figure 61). There was a marked predominance of males (280 reports, male:female ratio 4.3:1.0), most of whom were in the 25 to 44 year age group (Figure 62). Ten were reported to have had animal exposure and two were reported as occupationally acquired. Eighty patients

Figure 64. *Bordetella pertussis* laboratory reports, 1994, by age group and sex

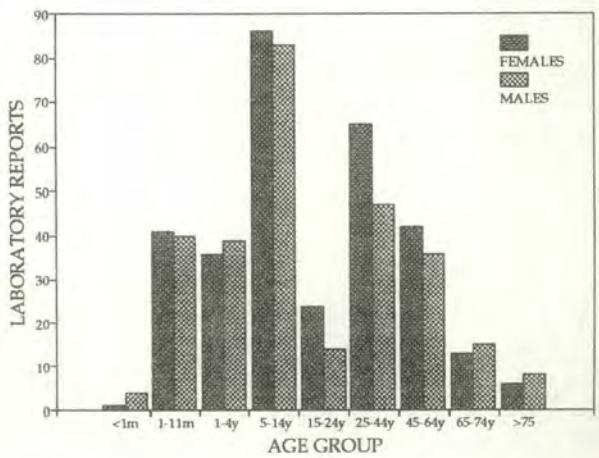
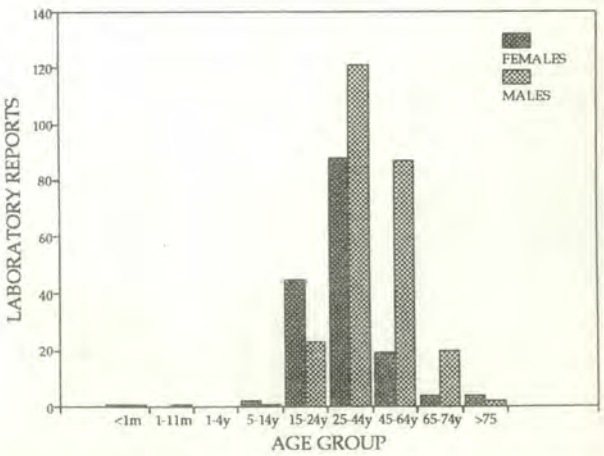


Figure 65. *Treponema pallidum* laboratory reports,1994, by age group and sex



reported general malaise/fever, seven muscle/joint disease and 13 respiratory tract disease. Diagnosis was by IgM detection (203), single high titre (68), fourfold rise (73) and other (one).

***Bordetella pertussis* and *Bordetella* species**

A total of 779 reports of *Bordetella pertussis* and *Bordetella* species was received for 1994, more reports being received for the warmer months of the year (Figure 63). The male:female ratio was 0.9:1.0 and cases occurred in all age groups (Figure 64). Methods included isolation 68, IF 58 and antibody detection 653.

***Cryptococcus* species**

Twenty-six reports of *Cryptoccocus* species were received (23 males and three females), 16 of whom were in the 25 to 44 year age group. Included were five cases of meningitis and one of lower respiratory tract disease. Specimen types were blood (25) and CSF (one).

Treponema pallidum

Four hundred and thirty-one reports of *Treponema pallidum* were received, 258 for males and 163 for females. Reports did not distinguish between recent and past ingection. Most reports (341, 79%) were for the 15 to 44 year age group (Figure 65). Twenty cases were pregnant, three were HIV positive, one was an injecting drug user and 11 reported recent overseas travel. All specimens were blood.

Toxoplasma gondii

Toxoplasma gondii was reported for 84 patients in 1994, 35 males and 45 females. More reports were received for the months of May and June than for other times of year. Included were 38 females of childbearing age, three of whom were reported to have been pregnant, and one transplant recipient. Diagnosis was by IgM detection (65), single high tire (10) and other (7).

***Echinococcus granulosus* (hydatid disease)**

Twenty-three reports of hydatid disease were received in 1994, for 12 males and 11 females. All diagnoses were by serology.

Acknowledgement

The contribution of all the *CDI* Virology and Serology Reporting Scheme (LabVISE) contributing laboratories is gratefully acknowledged.

ACUTE HEPATITIS C NOTIFICATIONS AND ASSOCIATED RISK FACTORS IN AUSTRALIA, 1995 FIRST QUARTER REPORT

Margaret Curran, AIDS/Communicable Diseases Branch, Department of Human Services and Health, for the Communicable Diseases Network Australia New Zealand

Introduction

Since the introduction of antibody testing in 1990 the National Notifiable Diseases Surveillance System (NNDSS) has received 37,077 reports of hepatitis C (Table 1). Until recently however no distinction has been made between incident and prevalent infection thus no information has been available to gauge current levels of transmission of the virus.

No information on risk factors for infection has been collected by the NNDSS, apart from demographic details. A recent study has demonstrated that exposure to blood or blood products, including through injecting drug use, has been the major risk factor for hepatitis C virus (HCV) infection in Australia. However not all cases had a history of such exposure and a significant proportion of cases had no identified risk factor[1]. Better information on risk factors is therefore required to guide national control activities for this disease.

Table 1. Hepatitis C notifications, 1991 to 1995, by category and year of report

Year	Incident	Unspecified	Total
1991		4116	4116
1992		8812	8812
1993	30[1]	7543	7573
1994	43[2]	8898	8941
1995	82[3]	7553	7635
Total	155[3]	36 922	37 077

1. New South Wales, South Australia.
2. New South Wales, South Australia, Australian Capital Territory.
3. New South Wales, South Australia, Australian Capital Territory, Northern Territory, to 28 October 1995.

In the National Hepatitis C Action Plan[2] endorsed by the Australian Health Ministers' Advisory Council (AHMAC) in October 1994, epidemiology and surveillance were identified as being one of the four priority areas for action. As part of the response the CDNANZ undertook to enhance the NNDSS surveillance of hepatitis C by conducting a 12 month pilot study to improve identification of incident cases of HCV infection and to compile information on their associated risk factors.

Methods

Hepatitis C is recommended as a notifiable disease by the National Health and Medical Research Council. This recommendation has been adopted under the legislative requirements of all States and Territories.

States and Territories agreed to participate in the pilot study, conducted under the auspices of the Communicable Diseases Network Australia New Zealand (CDNANZ). All commenced data collection from 1

who began enhanced surveillance later in the year, and Queensland, which has been unable to participate. Notifications of hepatitis C were followed up with the notifying practitioners to determine whether cases were incident or prevalent. In addition, risk factor information was sought on those cases identified as being incident.

The Commonwealth undertook the development of a uniform national minimum dataset and the collation and reporting of the data. States and Territories were supplied with a standard questionnaire written in Epi Info v6.02. Fields included those of the National Notifiable Diseases Surveillance System (unique identifier, disease code, postcode of residence, date of birth, sex, date of onset, date of report, Aboriginality, confirmation status) plus a supplementary dataset for risk factors (injecting drug use, receipt of blood/blood products, medical procedure, skin penetration in a non-medical setting, other) and comments.

For the purposes of the national pilot study the CDNANZ agreed to the following incident case definition:

a) demonstration of documented sero-conversion to HCV when the most recent negative specimen was within the last 12 months

   OR

b) i) demonstration of anti-HCV positive test; or HCV PCR positive test;

   AND

   ii) a clinical illness consistent with acute hepatitis C within the last 12 months where other causes of acute hepatitis can be excluded.

Information was sought on those risk factors which were consistent with the suspected time of acquisition of the incident infection.

Contributers to the scheme were requested to submit reports on a quarterly basis, three months after the end of the reporting period in order to allow adequate time for follow-up.

The surveillance system adopted in New South Wales involved follow-up of one in every 20 new notifications of HCV to determine whether they were incident or prevalent cases and to collect risk factor information on cases identified as incident.

The notification rate was calculated using the Australian Bureau of Statistics' 1994 estimates of the mid-year populations of the reporting States and Territories, and adjusting for the New South Wales sampling system.

Results

For the first quarter of 1995 (1 January to 31 March) the pilot project received 83 reports of incident HCV from the Northern Territory, the Australian Capital Territory, South Australia, New South Wales and Victoria (Table 2). This corresponded to an adjusted annual rate of 4.8 per 100,000 population. More males were notified

Table 2. Incident hepatitis C reports, 1st quarter 1995, by State or Territory

Stateor Territory	Incident hepatitis C reports
New South Wales	50
Australian Capital Territory	1
Northern Territory	1
South Australia	11
Victoria	20
Total	83

Table 3. Incident hepatitis C reports, first quarter 1995, by age group and sex

Age group (years)	Sex		Total
	Female	Male	
15-19	2	4	6
20-24	3	14	17
25-29	5	10	15
30-34	12	8	10
35-39	5	11	16
40-44	1	4	5
45-49	0	2	2
50-54	1	0	1
Unknown	0	1	1
Total	29	54	83

Table 4. Number of risk factors reported in associated with incident hepatitis C infection, first quarter 1995

Number of risk factors	Reports (%)
0	36 (43)
1	34 (41)
2	12 (15)
3 or more	1 (1)
Total	83 (100)

Table 5. Risk factors reported in association with incident hepatitis C, first quarter, 1995

	Reports (% of total)
Injecting drug use	43 (52)
Skin penetration in a non-medical setting	12[1] (15)
Other	6 (7)
Total	61(100)

1. Nine of these also reported injecting drug use

than females, male:female ratio 1.9:1.0 (Table 3). Eighty-two per cent of reports were for persons in the 20 to 39 years age group.

No risk factor information was available for 36 (43%) reports (Table 4). Twenty-three of these patients were male and 13 female, male:female ratio 1.8:1.0, and 29 (81%) were between the ages of 20 and 39 years.

A total of 43 cases (52%; 30 males and 13 females) reported injecting drug use (Table 5), 12 skin penetration in a non-medical setting (15%; eight males and four females) and six 'other' (7%; three males and three females).

Included in the 'other' category was a 35 year old male whose spouse was also hepatitis C positive and a 19 year old male who had been in contact with hepatitis C positive blood. Also included was a 34 year old female who had sustained a needlestick injury.

Discussion

The data presented here are limited to those incident cases of HCV infection notified to State and Territory health authorities. Due to the high rate of asymptomatic infection with this virus the adjusted annual rate of hepatitis C of 4.8 per 100,000 population presented here is likely to be an under-estimation of the true incidence of this infection in Australia.

A high proportion of reports (43%) lacked risk factor information. It is not known whether the risk factor information was unavailable or unreported (due to the limitations of the surveillance system) or whether these patients had none of the recognised risk factors for hepatitis C (in which case further detailed research is indicated). In terms of patient demographics this group of patients did not differ from those with reported risk factors.

As has been documented elsewhere[1], injecting drug use accounted for the largest proportion, 52%, of new cases of hepatitis C. Skin penetration in a non-medical setting (which could include tatooing) was also a significant source of this virus, accounting for 17% of reports during this period. These data highlight the need for effective prevention and education programs for injecting drug users and groups such as tatooists.

The pilot study will be evaluated at the end of the 12 month period to assess its contribution to an improved understanding of the occurence of, and risk factors for, acquisition of hepatitis C in Australia.

Factors that will need to be considered include that the surveillance system is very labour intensive. Contributers must investigate the thousands of new notifications of HCV infection in order to identify incident cases and determine risk factors. The time required to follow-up all cases adequately has major resource implications. Data are provisional and maybe subject to revision hence this impacts on the quality of the risk factor information.

In addition to this surveillance system the Department of Human Services and Health is currently commissioning research in order to gain a better understanding of the epidemiology of HCV in Australia. The results of this study will also contribute to informing the development of education and prevention programs.

References

1. Strasser SI, Watson KJR, Lee CS, Coghlan PJ, and Desmond PV. Risk fators and predictors of outcome in an Australian cohort with hepatitis C virus infection. *Med J Aust* 1995: **162**; 355-358.
2. Australian Health Ministers Advisory Council. *National Hepatitis C Action Plan*. October 1994.

NATIONAL *SALMONELLA* SURVEILLANCE SYSTEM ANNUAL REPORT 1994

Reproduced from the Human Annual Report 1994, National Salmonella Surveillance Scheme 1995; (5):1-16, editors Joan Powling, Qiming Huang, Diane Lightfoot and Petrina Adams

There were 6228 *Salmonella* reports received by the National *Salmonella* Surveillance Scheme (NSSS) in 1994 (Table 1) and 5205 cases acquired in Australia, an increase of 13% over the total for 1993 (4587).

Nineteen reported outbreaks and sixteen smaller incidents were associated with *Salmonella* infections and four with *Shigella* infections. The largest of the *Salmonella* outbreaks was that of *S.* subsp I ser 16:l,v:- which affected all the mainland States and the Northern Territory (see *CDI* 1995; **18**: 378-379). Examination of the data suggests that this incident originated in Queensland in early March and then spread southwards and westwards. One hundred and seventeen cases were reported between March and September and there were 147 cases in total. An unusual incident was that of a rare serovar, *S.* Bonn, with 11 adult cases over three days in Brisbane in October.

New Salmonella serovars reported to the NSSS during the year were *S.* Agama (F/1 New South Wales), *S.* Bispebjerg (F/<1 Western Australia), *S.* Colindale (F/<1 Victoria) and *S.* Mornington (M/<1 Western Australia).

Rare serovars were *S.* Brunei (M/1 Western Australia - immigrant ex Vietnam); *S.* Champaign (F/1 Northern Territory); *S.* Hull (F/<1 Northern Territory and F/33 Qld - ex Africa); *S.* Ibadan (M/53 New South Wales); *S.* Kisarawe (F/1 Northern Territory); *S.* Meleagridis var 15+ (formerly *S.* Cambridge; F/26 Victoria) and *S.* Pensacola (M/10 Victoria). *S.* Brunei was last reported to the NSSS in 1990 (New South Wales), *S.* Champaign in 1991 (Western Australia), *S.* Hull in 1985 (Victoria), *S.* Ibadan in 1991 (New South Wales), *S.* Kisarawe in 1990 (Western Australia), *S.* Meleagridis var 15+ in 1990 (New South Wales) and *S.* Pensacola in 1989 (Queensland, ex overseas).

A case of *S.* Typhimurium PT 188 (F/6 New South Wales) was a new record of this phage type for the NSSS. Rare Australian acquired phage types were PT 36 (F/<1 Victoria), PT 89 (M/5 Queensland), PT 136 (M/2 Victoria), PT 151 (F/46 New South Wales) and PT

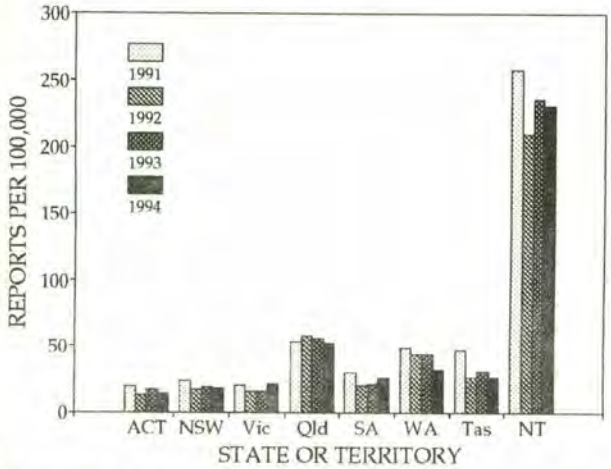
Table 1. Total reports received, 1994

	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total
Salmonella species	61	1350	1262	1848	447	673	146	441	6228
Aeromonas species	0	3	19	8	0	4	0	0	34
Campylobacter species	0	1	345	0	0	0	3	1	350
E. coli (EPEC)	0	2	1	5	0	0	1	0	9
Plesiomonas species	0	0	0	0	0	0	0	0	0
Shigella species	10	93	93	122	47	307	2	105	779
Vibrio species	0	4	2	1	0	1	0	0	8
Yersinia species	0	46	14	120	1	0	0	0	181
Total	71	1499	1736	2104	495	985	152	547	7589

Table 2. Reports of *Salmonella* infection per 100,000 population, by State or Territory, and total reports, 1985 to 1994

	Rate per 100,000 population									Total
	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total	reports
1994	13.7	18.5	21.7	52.7	26.3	32.2	27.1	230.6	29.2	5205
1993	17.2	18.9	15.7	56.4	22.1	44.8	30.9	235.7	26.0	4587
1992	13.2	17.3	16.0	57.7	21.1	44.1	27.0	209.9	25.4	4451
1991	20.4	24.8	21.4	53.3	30.5	48.8	47.4	258.3	30.8	5334
1990	20.0	25.0	20.0	59.6	39.5	46.3	30.7	235.1	31.8	5435
1989	32.1	24.4	26.8	55.6	35.1	49.8	37.4	268.6	33.7	5678
1988	17.6	19.6	18.0	62.6	25.8	53.0	25.4	226.6	32.0	5298
1987	21.4	16.0	12.3	52.4	23.2	50.2	28.2	236.8	27.4	4462
1986	19.2	17.1	12.7	50.4	25.6	52.9	13.3	264.8	27.1	4342
1985	55.3	21.4	12.0	43.1	28.6	59.7	18.5	311.9	30.0	4743

Figure. Reports of Salmonella infection per 100,000 population, 1991 to 1994, by State or Territory and year



153 (M/5 Queensland). PT 17 (M, Victoria) was acquired in Malaysia.

There were 22 reports of enteric pathogens isolated from HIV infected patients in 1994 (13 in 1993). As in past years the *Sh. flexneri* serotypes 3c (4 cases), 1b and 2a (3 cases each) and 4a (2 cases) were reported most frequently. A mixed infection of *Sh. sonnei* biotype g and *S.* Enteritidis untypable was acquired in Thailand, *S.* Weltevreden was acquired in Indonesia and *S.* Typhimurium PT 22 in Singapore or Hong Kong.

Salmonella infection case rates

A total of 5205 cases of *Salmonella* infection was reported as acquired in Australia in the year ended 31 December 1994. In addition there were 523 follow-ups, 21 isolations from migrants and refugees and 479 cases reported as acquired overseas by travellers. This latter figure represents an increase of 17% from 1993.

Reports of cases acquired in Australia were made at a rate of 29.2 per 100,000 population, 12% more than in 1993 but about the same as for most years in the last decade.

The case rate for *Salmonella* infection was higher than for the previous year in only two States, Victoria (an increase of 38%) and South Australia (19%) and lower in all the others (Figure, Table 2).

Isolations from blood, urine and unusual sites

Bacteraemias, excluding enteric fever

There were 92 cases of bacteraemia in 1994 compared with 94 in 1993. Of these, 80 were isolates of *Salmonella*, five were of *Campylobacter* species (four *C. jejuni* subspecies *jejuni*, one *C. coli*), five were of *Shigella* species (*Sh. flexneri* serotypes 2a, 3c and 4a and *Sh. sonnei* biotype a) and one each of *V. cholerae* non O1 and *Y. enterocolitica* O3 biotype 4.

From 21 serovars of *Salmonella* the most common blood isolates were *S.* Typhimurium (31) including PT 135 (5), PT 44 (5), PT 9 (4), PT 12a (2), PT 41 (2) and one each of PT 4, PT 4 var, PT 8, PT 22 (ex Hong Kong), PT 64, PT 141 and PT 179; *S.* Virchow (11); *S.* Enteritidis (10) including six cases of PT 4 (four were reported as acquired overseas and one (M/33 New South Wales) reported no travel); *S.* Paratyphi B biovar Java (3) and *S.* Chester (3).

There were two isolates from each of *S.* Agona, *S.* Bredeney, *S.* Dublin, *S.* Ohio, *S.* Saintpaul and *S.* Waycross and single isolates of *S.* Aberdeen, *S.* Anatum, *S.* Birkenhead, *S.* Heidelberg PT 1, *S.* Infantis, *S.* Oranienburg, *S.* Panama (ex Thailand), *S.* Potsdam, *S.* Thompson, and *S.* subsp IIIb ser 61:i:z (the latter from a four day old baby in Victoria).

As in 1993, the serovars most commonly reported from blood comprised a larger proportion of blood isolates than isolates overall (Table 3).

Isolations from urine

There were 79 cases involving isolations from urine in 1994 (76 in 1993). There were 76 isolates of *Salmonella*, two of *Shigella* (*Sh. flexneri* 2a) and one of *Aeromonas* (*A. caviae*). Of the *Salmonella* isolates 60 (79%) were from females, 15 from males and two not specified. When the age distribution of the cases is examined, 18 of the females were over 50 and seven were teenagers. Of the males, only three were over 50 years old.

From 32 serovars of *Salmonella* the most common isolates were *S.* Typhimurium (14) including PT 135 (4), PT 44 and PT 55; *S.* Virchow (6), *S.* Infantis (5), *S.* Saintpaul (5); *S.* Chester (4); *S.* Mississippi (4) and *S.* subsp I ser 16:l,v:- (3). There were two cases each of *S.* Agona; *S.* Give; *S.* Hadar; *S.* Oranienburg; *S.* Potsdam and *S.* Senftenberg and single cases of *S.* Aberdeen; *S.*

Table 3. *Salmonella* serovars isolated from blood and totals for those serovars, 1994

	Blood isolates (80)		Total isolates (5205)	
Serovar	Number	% of total	Number	% of total
S. Typhimurium	31	38.8	1925	36.9
S. Virchow	11	13.8	305	5.8
S. Enteritidis	10	12.5	162	3.1
S. Chester	3	3.8	128	2.5
S. Paratyphi biovar Java	3	3.8	61	1.2

Abony; *S.* Bovismorbificans PT 23; *S.* Brandenburg; *S.* Cerro; *S.* Eastbourne; *S.* Enteritidis RDNC; *S.* Heidelberg PT 1; *S.* Hvittingfoss; *S.* Javiana; *S.* Kottbus; *S.* Lansing; *S.* Newport; *S.* Orion; *S.* Paratyphi B biovar Java; *S.* Singapore; *S.* Tennessee; *S.* Urbana; *S.* Waycross; *S.* subsp I ser rough:c:1,5; *S.* subspecies I ser rough:c:1,6 and *S.* subspecies I ser rough:e,h:1,2.

The serovars most commonly reported from urine comprised a larger proportion of urine isolates than isolates overall, with the exception of *S.* Typhimurium. This pattern also occurred in 1993.

Unusual sites of isolation

There were 36 cases involving isolates from sites other than faeces, blood and urine. *A. hydrophila* (wound, M/22), knee (M/38), ileostomy fluid (F/64), and pus (M/61), *A. veronii* biovar *sobria* (wound, M/63) and *V. parahaemolyticus* (wound M/35) were isolated in addition to 18 different serovars of *Salmonella.*

Sites of isolation for the *Salmonella* serovars included colon biopsy for *S.* Typhimurium PT 44 (F/52), colonic fluid for *S.* Senftenberg (F/19), caecum for *S.* Virchow (F/38), caecal fluid for *S.* Singapore (F/9), scrotum for *S.* Typhimurium PT 135 (M/47), elbow fluid for *S.* Welikade (M/<1), peritoneal fluid for *S.* Birkenhead (M/55), joint fluid (unspecified) for *S.* Typhimurium PT 13 (M/<1), breast aspirate for *S.* Paratyphi A 1 (F/44 ex overseas), disc aspirate for *S.* Orion (F/25), anal abscess for *S.* Typhimurium PT 9 (M/54) and *S.* Infantis (M/36), liver abscess for *S.* Paratyphi A 1 (M/50), spleen abscess for *S.* Poona (F/38), gall bladder swab for *S.* subsp I ser 9,12:-:1,5 (F/70), ischio-rectal swab *for S.* Typhimurium PT 135 (M/30), navicular swab *for S.* subspecies I ser 16:l,v:- (M/2), chest wound swab for *S.* Typhimurium PT 135 (F/33), foot wound (F/17, osteomyelitis) and thumb for *S.* Potsdam (M/33), ovarian cyst for *S.* subsp IIIb ser 61:z52,z53:- (F/31), unspecified cyst for *S.* Typhimurium PT 44 (F/59), miscellaneous wounds for *S.* Bareilly (M/68), *S.* Orientalis (M/72), *S.* Paratyphi B 3a var (F/55), *S.* Typhimurium PT 4 (M/72), PT 141 var (M/44), and RDNC (M/72), unspecified tissue for *S.* Thompson (F/9), unspecified swab for *S.* Typhimurium PT 9 (F/17).

Typhoid and paratyphoid cases

S. Typhi

There were 79 reports during the year. Of these, one was an overseas visitor (D2), two were carriers (A - F/69 New South Wales and untypable - M/26 New South Wales) and 23 were repeat isolations. This left 53 cases for 1994 compared with 51 for 1993. Seven cases were reported from migrants and one from a refugee, five cases gave no details and the remaining 40 cases were reported as acquired overseas.

Table 4. *Salmonella* serovars isolated from urine and totals for those serovars, 1994

	Urine isolates (76)		Total isolates (5205)	
Serovar	Number	% of total	Number	% of total
S. Typhimurium	14	18.4	1925	36.9
S. Virchow	6	7.9	305	5.8
S. Infantis	5	6.6	120	2.3
S. Saintpaul	5	6.6	247	4.7
S. Chester	4	5.3	128	2.5
S. Mississippi	4	5.3	49	0.9
S. I ser 16:1, v:-	3	3.9	147	2.8

Table 5. Reports of *Shigella* infection acquired in Australia per 100,000 population, by State or Territory, and total reports, 1986 to 1994

	Rate per 100,000 population									Total
	ACT	NSW	Vic	Qld	SA	WA	Tas	NT	Total	reports
1994	3.0	1.2	0.8	3.5	2.4	16.7	0.4	58.2	3.6	644
1993	0.8	1.2	1.0	4.0	4.0	11.9	0.0	56.8	2.9	520
1992	0.8	1.2	0.9	2.5	3.5	12.2	0.7	91.1	3.0	528
1991	1.6	1.2	0.9	1.3	4.0	17.8	0.2	157.6	4.0	685
1990	1.2	1.5	0.9	2.0	2.8	24.5	0.2	129.8	4.4	759
1989	0.0	1.4	1.2	1.9	3.2	23.4	0.5	93.6	4.1	692
1988	0.4	1.1	0.8	3.8	2.1	14.6	0.9	124.5	4.0	656
1987	0.0	1.3	0.6	2.2	3.2	19.8	0.4	120.0	4.2	687
1986	0.4	2.3	0.8	2.0	3.2	32.8	0.5	164.7	6.1	970

The most common Vi-phage types acquired overseas were D2 with nine cases acquired in Indonesia (4), Papua New Guinea (2), not stated (2) and India and E1a with eight cases from India (3), not stated (2), Nepal, Thailand and Indonesia. There were two cases of M1 (Indonesia and not stated), three cases of M3 (all immigrants from Vietnam) and single cases of C1 (Thailand); D6 (Bali); D var (immigrant from Vietnam); E2 (Nigeria) and J1 (Hong Kong). Four cases of *S.* Typhi untypable j:z66 phase were reported from travellers to Indonesia including Bali.

There were four cases identified as *S.* Typhi degraded (Burma, Philippines, Indonesia, not stated) and 16 cases of *S.* Typhi untypable acquired in Indonesia (7 including Bali (3) and Java), Vietnam (3 including 2 carriers), Pakistan (2) and Cambodia (2).

S. Paratyphi A

There were 47 reports and 36 cases compared with 24 cases in 1993. Three cases were reported without patient details and the remainder were acquired overseas. There was one report from a visitor from Indonesia (PT A9).

Eleven cases of PT 1 (Thailand (3), Indonesia (3), Pakistan (2), Africa, South-east Asia, not specified) were reported, four cases of PT 13 (India (3) and not specified), three cases of PT 2 (Pakistan (2) and India), two cases of PT 6 (India, Nepal) and one case each of PT 3 (not specified) and PT 5 (Indonesia). Seven cases were typed as RDNC (India (2), Indonesia (2), Nepal, Vietnam and not specified) and six as untypable (India (2), Nepal, Thailand, Cambodia (immigrant) and not specified).

S. Paratyphi B

There were 16 reports and nine cases, of which not one reported acquiring the infection overseas. There were two cases of PT 1 var 3 (F/28 South Australia, F/not stated Queensland), two of PT 3a var (F/55 New South Wales, M/6 Queensland) and one case each of PT 1 var (F/3 South Australia), PT 3b var 3 (M/37 South Australia), PT Battersea (F/5 Queensland) and PT Jersey var (M/1, Northern Territory) and RDNC (F/65 New South Wales).

Of the 79 reports of *S.* Paratyphi B biovar Java in 1994, nine were follow-up isolations and 11 were reported as

Table 6. Top ten *Salmonella* serovars, 1994

Position	Serovar	Number of cases	Position in 1993	% of total	Origin/number of cases
1	*S.* Typhimurium[1]	1916	1	36.8	Vic 638, NSW 561, Qld 255
2	*S.* Virchow	305	2	5.8	Qld 267, NSW 21
3	*S.* Saintpaul[1]	247	3	4.7	Qld 124, WA 48, NT 37
4	*S.* Enteritidis[1]	162	-	3.1	Qld 70, NSW 33, Vic 18, SA 15
5	*S.* subsp I ser 16:1, v:-[1]	147	-	2.8	Qld 49, NSW 48, Vic 25
6	*S.* Birkenhead	136	6	2.6	Qld 87, NSW 42
7	*S.* Bovismorbificans[1]	129	-	2.5	NSW 36, SA 31, Vic 20, Qld 19
8	*S.* Chester	128	5	2.5	Qld 61, WA 27
9	*S.* Infantis	120	9	2.3	NSW 40, Vic 35, NT 15
10	*S.* Muenchen	112	8	2.1	Qld 42, WA 29, NT 16
	Total	3402		65.2	

1. Associated with outbreaks or incidents of salmonellosis.

Table 7. Top ten phage types of *S.* Typhimurium

Position	Phage type	Number of cases	Position in 1993	% of total	Origin/number of cases
1	9[1]	382	2	19.9	Vic 167, NSW 132
2	135[1]	359	1	18.7	Vic 144, NSW 94, Qld 47
3	44	192	3	10.0	Vic 105, SA 39
4	170[1]	144	4	7.5	Qld 64, NSW 44, Vic 33
5	12a[1]	119	5	6.2	SA 29, NSW 27, Vic 25
6	8[1]	74	-	3.9	NSW 33, Vic 20, SA 12
7	64[1]	63	6	3.3	NSW 29, Qld 14, SA 8
8	141[1]	41	10	2.1	Vic 12, WA 12, NSW 8
9	179[1]	38	7	2.0	NSW 20, Vic 10, ACT 4
10	108[1]	23	9	1.2	SA 14, NSW 7
	Total	1435		74.8	

1. Associated with outbreaks or incidents of salmonellosis.

acquired overseas leaving a total of 59 infections assumed to have been acquired in Australia. There were 37 cases of phage type Battersea (8 adults, 26 children, 3 not stated) and 27 of these were reported from localities north of the Tropic of Capricorn. Of the overseas acquired infections, two cases of PT 1 var 3, one of PT 1 var 5 and three of RDNC were acquired in Bali, one RDNC in Pakistan, one PT 3b var in Thailand and PT 3b var 9 in both Thailand and Burma. One case of PT Dundee was acquired in Bali.

Suspected or confirmed outbreaks

Only the larger outbreaks (more than ten cases reported to the NSSS) are summarised below. Details of each outbreak and of smaller incidents are to be found in the quarterly reports.

Northern Territory

Twelve adult cases of *S.* Eastbourne were reported as acquired in a hospital between December 1993 and January 1994.

New South Wales

Forty-eight cases of *S.* subsp I ser 16:l,v: were reported from Sydney, April to August, mostly in children. *S.* Typhimurium PT 9 was reported for 30 persons (mixed ages) in Sydney in January. Eleven cases of *S.* Typhimurium PT 9 were reported from Sydney in May (mostly children). *S.* Typhimurium PT 8 was reported for 17 adults and young children in Tamworth in October; poultry meat was implicated in some cases.

Queensland

Sh. sonnei was reported for 24 persons, eight from Rockhampton in February (mixed ages) and from a nearby settlement in March (mostly children). *S.* Typhimurium PT 170 was reported for 35 teenagers and young adults from Roma in March. There were 15 reports of *S.* Anatum from Bundaberg in April (infants and elderly). *S.* subsp I ser 16:l,v:- was reported for 49 persons in Brisbane from April to May (mostly young children). Forteen cases of *S.* Bonn were reported from Brisbane in October (mostly adults). Fourteen cases of *S.* Saintpaul were reported for young children and teenagers.

South Australia

S. Bovismorbificans PT 13 was reported for 10adults in the Barossa Valley in September. *S.* Enteritidis PT 4 was reported for 12 adults from the Riverland in October. Eleven adults were reported to have had *S.* Typhimurium PT 108 infections in Adelaide in November.

Victoria

Twenty-two cases of *S.* Typhimurium PT 9 were reported from widespread areas in February (all ages). *S.* Typhimurium PT 135 was reported for 25 persons of all ages fromMelbourne and Gippsland from February to March. *S.* Typhimurium PT 135 was reported for 10 persons of all ages in Melbourne in May. There were 25 reports of *S.* subsp I ser 16:l,v:- in Melbourne from April to July (mostly children). *S.* Typhimurium PT 135 was reported for 15 persons in Melbourne from August to September.

Western Australia

Twenty-nine cases of *Sh. sonnei* (mixed ages) were reported from Geraldton and to the north in March. There were 123 adult cases of *S.* Newport in Perth in April.

Shigella infections

There were 779 reports of *Shigella* infections for 1994. Of these, 104 were acquired overseas, nine were from migrants and refugees, and 22 were follow-up isolations leaving a total of 644 cases which were reported as having been acquired in Australia. This is likely to have been an over-estimation of the cases acquired in Australia as not all reports were accompanied by comprehensive patient details. The 644 cases of *Shigella* infection Australia-wide was an increase compared with the 520 cases in 1993. Increased case rates were recorded in Western Australia (an increase of 40%) and the Northern Territory (2.5%) (Table 5).

National top ten *Salmonella* serovars

The top ten *Salmonella* serovars for 1994 comprised 65% of the total cases acquired in Australia (5205) and are listed below in Table 6, together with their position in 1993. Five of the listed serovars were associated with outbreaks. The top ten phage types of *S.* Typhimurium comprised 75 percent of the total number of *S.* Typhimurium cases and are listed in Table 7.

S. Typhimurium headed the list of the top ten *Salmonella* serovars for 1994 accounting for 37% of Australian acquired cases (29% in 1993). There were 1916 cases of *S.* Typhimurium Australia-wide compared with 1339 for 1993, an increase of 43%. The two most commonly reported phage types (PT) of *S.* Typhimurium were PT 9 and PT 135.

S. Enteritidis, *S.* Bovismorbificans and *S.* subsp I ser 16:l,v:- were newcomers to the list of the top ten serovars for 1994, displacing *S.* Hadar, *S.* Heidelberg and *S.* Newport. Otherwise, the top ten *Salmonella* serovars remained unchanged from 1993. The order of the top three serovars (*S.* Typhimurium, *S.* Virchow and *S.* Saintpaul) also remained unchanged from 1993 (and 1992) and accounted for 47% of all Australian acquired cases (41% in 1993).

The top ten *Salmonella* serovars and top *S.* Typhimurium phage types differed in each State and Territory (Table 8). *S* Virchow was the most commonly reported serovar in Queensland and *S.* Saintpaul in the Northern Territory. *S.* Typhimurium PT 12a was the most commonly reported in the Northern Territory, PT 44 in South Australia, PT 170 in Queensland, PT 135 in Western Australia and PT 179 in the Australian Capital Territory. Over 80% of *S.* Virchow reports were from Queensland, and over 60% of *S.* Newport reports were from Western Australia, as in 1993.

Infections acquired overseas

S. Enteritidis, with 134 cases (106 cases of PT 4), was again the most common overseas acquired *Salmonella* in 1994. There was double the number of total *S.* Enteritidis and more than double the number of PT 4 infections acquired overseas compared with 1993. Most reports were from travellers to Asian countries, particularly Bali (45). *Sh. sonnei* biotype g was the most common overseas acquired *Shigella* with 18 cases acquired in Bali, India, Africa and other areas.

These infections exclude enteric fever but include migrants or refugees, denoted by asterisks. The 1993 figures are given in square brackets.

More than 10 cases:

S. Enteritidis - 134 [66] cases: PT 4 (106 cases) Bali (45), Malaysia (11), Indonesia (8), Thailand (6), South-east Asia (6), Hong Kong (4), Singapore (3), Philippines (2), China, United States, Poland, Malta, Italy, Germany, Lebanon, Middle East, Zimbabwe, New Caledonia, not specified (11); PT 1 Bali, China, Malaysia, Vietnam; PT 6a Thailand (3), Bali, Africa, Spain; PT 7 Malaysia, Indonesia; PT 9a Thailand; PT 13a Hong Kong; PT 34 Malaysia (2), Singapore, not specified; RDNC Singapore, Bali, South-east Asia, Thailand, Tahiti, not specified (4); untypable Thailand.

S. Typhimurium - 30 [27] cases: PT 8 Thailand, Vietnam; PT 12a Bali (3), Spain; PT 17 Malaysia; PT 22 Hong Kong; PT 44 Malaysia, Chile, Macedonia; PT 64 Fiji, Vanuatu; PT 68 United States; PT 135 Bali, Africa, Greece; PT 141 Bali (3), Noumea; PT 201 Vanuatu RDNC Malaysia, Thailand, China, Malta; untypable Thailand (2) not specified (2).

S. Hadar - 30 [33] cases: Bali (18), Indonesia, Irian Jaya, Burma*, India, Pakistan, China, Fiji, Asia (2), not specified (3).

S. Virchow - 17 [8] cases: Thailand (4), Bali (2), India (2), Malaysia (2), Indonesia, Hong Kong, Vietnam, Fiji, Saudi Arabia, Africa and the United Kingdom.

S. Blockley - 14 [16]cases: Indonesia (3), Bali (2), Thailand (2), Malaysia (2), South-east Asia, Singapore, China, not specified (2).

S. Agona - 11 [17] cases: Bali (5), Indonesia, Thailand, Japan, not specified (3).

S. Paratyphpi B biovar Java - 11 [14] cases: PT 1 var 3 Bali (2); PT 1 var 5 Bali; PT 3b var Thailand; PT 3b var 3 Asia (unspecified 2); PT 3b var 9 Thailand; RDNC Bali (3), Pakistan.

Sh. sonnei biotype g - 19 [26] cases: Bali (3), India (3), Indonesia (2), Africa (2), Vietnam, Thailand, Africa, Nepal, Pakistan, Estonia, Solomon Islands, not specified (2).

Sh. sonnei (not typed) - 18 [12] cases: Bali (4), Burma (3*), India (2), Indonesia, Irian Jaya, Malaysia, Philippines, not specified (5).

Sh. sonnei biotype a - 16 [19] cases: Bali (5), India, Vietnam, Central America, South America, Mexico, Western Samoa, not specified (5).

Sh. flexneri 6 - 11 [7] cases: Pakistan (2), India, Bali, Indonesia, Thailand, Malaysia, Cambodia, South-east Asia, Egypt and South America.

Between 5 and 9 cases:

C. jejuni subspecies *jejuni* - Indonesia (2), Bali, India, Malaysia, Ethiopia.
S. Anatum - Philippines (3), Indonesia (2), Vietnam*, Bali, not stated (2).
S. Derby - Bali (4), Hong Kong, Thailand, Jordan, not stated (2).
S. Emek - Bali (3), Thailand, South-east Asia.
S. Infantis - Pakistan (2), Nepal, Afghanistan*, Indonesia, Hong Kong.
S. Newport - India, Pakistan, Hong Kong, Vietnam, Macau.
S. Rissen - Thailand (2), Vietnam* (2), not stated.
S. Saintpaul - Hong Kong (2), China, India, Pakistan, Vietnam*, Thailand.
S. Stanley - Thailand (3), Bali, Malaysia, South-east Asia.
S. Thompson - Bali (2), China, Vietnam, Japan.
S. Weltevreden - Bali (4), Indonesia, Vietnam*.
Sh. flexneri 2a - Vietnam (2), Papua New Guinea, not stated (2).

Between 2 and 4 cases:

S. subsp I ser 4,5:i:-, Bali, Singapore, not stated.
S. Albany, Bali (2), Thailand, Pakistan.
S. Amsterdam, var 15+, Bali (2).
S. Bareilly, South-east Asia (2), Burma*, Vietnam*.
S. Bovismorbificans PT 2, Africa; untypable, not specified.
S. Braenderup, Sri Lanka, Nepal.
S. Chester, Thailand, South-east Asia.
S. Heidelberg, Bali, Indonesia.
S. Kentucky, Bali (3).
S. Litchfield, Bali (2).
S. Livingstone, Bali (2).
S. London, Hong Kong (2), Greece.
S. London var 15+, Thailand, not stated.
S. Mississippi, Vanuatu, Solomon Islands.
S. Montevideo, Indonesia, not stated.
S. Muenchen, Korea, Mexico.
S. Ohio, Thailand (2).
S. Oranienburg, Africa, North-east Asia.
S. Panama, Thailand (3).
S. Poona, Pakistan, South-east Asia.
S. Worthington, India (2).
Sh. boydii 1, India, Indonesia.
Sh. boydii 2, India, Bali, Africa, not stated.
Sh. boydii 4, Indonesia, not stated (2).
Sh. boydii 11, India, Cambodia.
Sh. boydii 18, Cambodia, not stated.
Sh. dysenteriae 1, India, South Africa.
Sh. flexneri 1b, Bali, Turkey, not stated (2).
Sh. flexneri 2, Afghanistan*, Burma*, Africa*.
Sh. flexneri 2b, India (2).
Sh. flexneri 3a, Indonesia, Bali, South-east Asia, unspeci-

Table 8. Top ten *Salmonella* serovars and top *S.* Typhimurium phage types by State and Territory, 1994

New South Wales 1110 cases (21.3% of total)							
Salmonella serovars				*S.* Typhimurium phage types			
	Number	% of NSW	% of Australia	PT	Number	% of NSW	% of Australia
S. Typhimurium	561	50.5	29.1	9	132	23.5	34.6
S. I ser 16:1, v:-	48	4.3	32.7	135	94	16.8	26.2
S. Birkenhead	42	3.8	30.9	170	44	7.8	30.6
S. Infantis	40	3.6	33.3	8	33	5.9	44.6
S. Bovismorbificans	36	3.2	27.9	64	29	5.2	46.0
S. Enteritidis	33	3.0	20.4	Total	332	59.2	
S. Saintpaul	25	2.3	10.1				
S. Virchow	21	1.9	6.9				
S. Agona	16	1.4	25.4				
S. Hadar	16	1.4	27.6				
S. Singapore	16	1.4	28.1				
Total	838	75.4					
Northern Territory	388 cases (7.5% of total)						
Salmonella serovars				*S.* Typhimurium phage type			
	Number	% of NT	% of Australia	PT	Number	% of NT	% of Australia
S. Saintpaul	37	9.5	15.0	12a	7	25.0	5.9
S. Typhimurium	28	7.2	1.5	44	5	17.8	2.6
S. Anatum	22	5.7	23.4	135	2	7.1	0.5
S. Eastbourne	18	4.6	50.0	186	2	7.1	40.0
S. Para B bv Java	18	4.6	29.5	Total	16	57.0	
S. Adelaide	16	4.1	25.0				
S. Bovismorbificans	16	4.1	12.4				
S. Muenchen	16	4.1	14.3				
S. Infantis	15	3.9	12.5				
S. Oranienburg	13	3.4	35.1				
Total	199	51.2					
South Australia	380 cases (7.3% of total)						
Salmonella serovars				*S.* Typhimurium PT			
	Number	% of SA	% of Australia	PT	Number	% of SA	% of Australia
S. Typhimurium	214	56.3	11.2	44	39	18.2	20.3
S. Bovismorbificans	31	8.2	24.0	135	31	14.5	8.6
S. Enteritidis	15	3.9	9.2	12a	29	13.6	24.4
S. I ser 16:1, v:-	11	2.9	7.5	9	27	12.6	7.1
S. Adelaide	11	2.9	17.2	108	14	6.5	50.0
S. Infantis	11	2.9	9.2	Total	140	65.4	
S. Newport	8	2.1	9.6				
S. Kottbus	6	1.6	21.4				
S. Muenchen	6	1.6	5.4				
S. Paratyphi biovar Java Battersea	6	1.6	9.8				
S. Singapore	6	1.6	10.5				
Total	319	84.0					

Table 8. Top ten *Salmonella* serovars and top *S.* Typhimurium phage types by State and Territory, 1994, continued

Queensland	1646 cases (31.6% of total)						
Salmonella serovars				*S.* Typhimurium phage type			
	Number	% of Qld	% of Australia	PT	Number	% of Qld	% of Australia
S. Virchow	267	16.2	87.5	170	64	25.2	44.4
S. Typhimurium	255	15.5	13.3	135	47	18.5	13.1
S. Saintpaul	124	7.5	50.2	9	24	9.4	6.3
S. Birkenhead	87	5.3	64.0	12a	14	5.5	11.8
S. Enteritidis	70	4.3	43.2	64	14	5.4	22.2
S. Chester	61	3.7	47.7	Total	163	64.0	
S. Heidelberg	59	3.6	71.1				
S. I ser 16:l, v:-	49	3.0	33.3				
S. Anatum	49	3.0	52.1				
S. Aberdeen	43	2.6	89.6				
Total	1064	64.7					
Victoria	970 cases (18.6% of total)						
Salmonella serovars				*S.* Typhimurium phage type			
	Number	% of Vic	% of Australia	PT	Number	% of Vic	% of Australia
S. Typhimurium	638	65.8	33.3	9	167	26.2	43.7
S. Infantis	35	3.6	29.2	135	144	22.6	40.1
S. I ser 16:l, v:-	25	2.6	17.0	44	105	16.4	54.7
S. Hadar	24	2.5	41.1	170	33	5.2	22.9
S. Agona	20	2.1	31.7	12a	25	3.9	21.0
S. Bovismorbificans	20	2.1	15.5	Total	474	74.3	
S. Enteritidis	18	1.8	11.1				
S. Virchow	12	1.2	3.9				
S. Stanley	11	1.1	47.8				
S. Singapore	10	1.0	17.5				
Total	813	83.8					
Western Australia	540 cases (10.4% of total)						
Salmonella serovars				*S.* Typhimurium phage type			
	Number	% of WA	% of Australia	PT	Number	% of WA	% of Australia
S. Typhimurium	141	26.1	7.4	135	29	20.6	8.1
S. Newport	51	9.4	61.4	141	12	8.5	29.3
S. Saintpaul	48	8.9	19.4	9	9	6.4	2.3
S. Muenchen	29	5.4	25.9	12a	7	4.9	5.9
S. Chester	27	5.0	21.1	22	7	4.9	58.3
S. Eastbourne	15	2.8	32.6	Total	64	45.3	
S. Adelaide	14	2.6	21.9				
S. Bovismorbificans	13	2.4	10.1				
S. Tennessee	12	2.2	32.4				
S. Havana	10	1.8	22.7				
S. Infantis	10	1.8	8.3				
Total	360	66.6					

Table 8. Top ten *Salmonella* serovars and top *S.* Typhimurium phage types by State and Territory, 1994 continued

Australian Capital Territory[1]	41 cases (0.8% of total)						
Salmonella serovars				*S.* Typhimurium phage types			
	Number	% of ACT	% of Australia	PT	Number	% of ACT	% of Australia
S. Typhimurium	21	51.2	1.1	179	4	19.0	10.5
S. I ser 16:1, v:-	3	7.3	2.0	9	3	14.3	0.8
S. Bovismorbificans	3	7.3	2.3	135	3	14.3	0.8
S. Singapore	3	7.3	5.3	126	2	9.5	8.6
S. Blockley	2	4.9	22.2	170	2	9.5	1.3
Total	32	78.0		Total	14	66.6	
Tasmania[1]	128 cases (2.5% of total)						
Salmonella serovars				*S.* Typhimurium phage types			
	Number	% of Tas	% of Australia	PT	Number	% of Tas	% of Australia
S. Typhimurium	58	45.3	3.0	9	19	33.3	5.0
S. Mississippi	39	30.5	76.5	44	14	10.9	7.3
S. Bovismorbificans	4	3.1	1.6	12a	10	7.8	8.4
S. Give	4	3.1	16.7	135	9	7.8	8.4
S. Saintpaul	4	3.1	3.1	Total	52	91.0	
Total	109	85.1					

1. There were insufficient cases to compile a top ten for the Australian Capital Territory and Tasmania.

fied.
Sh. flexneri 4 Burma*, China.
Sh. flexneri 4a India, Netherlands.
Sh. flexneri 4a mannitol neg Bali, not stated.

One case only:

A. hydrophila, India.
C. coli, Vietnam.
Pl. shigelloides, Bali.
S. subspecies I ser 4,12:d:-, Korea.
S. subspecies I ser 1,4,5,12:i:- ,Asia.
S. subspecies I ser 4,12:z10:-, Malaysia.
S. Aberdeen, Mauritius.
S. Adelaide, Bali.
S. Alachua, not stated.
S. Bredeney, Vietnam*.
S. Brunei, Vietnam*.
S. Cerro, India.
S. Chailey, China.
S. Dublin, Hong Kong.
S. Haardt, Malaysia.
S. Havana, Bali.
S. Hull, Africa.
S. Isangi, Bali.
S. Istanbul, Singapore.
S. Javiana, Bali.
S. Kiambu, Africa.
S. Mikawasima, Malaysia.
S. Muenster, Korea.
S. Potsdam, not stated.
S. Richmond, not stated.
S. Schwarzengrund, Bali.
S. Sofia subsp II, Malaysia.
S. Tennessee, Indonesia.
S. Waycross China.
S. Zanzibar, not stated.
Sh. dysenteriae, 2 India.
Sh. dysenteriae ,7 India.
Sh. flexneri 2, Malaysia.
Sh. flexneri 3, Cambodia.
Sh. flexneri, var X Thailand.
Sh. flexneri ,var Y Indonesia.
Sh. sonnei ,biotype f Greece.
V. cholerae O1 El Tor Ogawa, Bali.
V. cholerae non O1, United States.
Y. enterocolitica O3 biotype 4, Bali.

CDI editorial comment

A detailed list of all 7589 reports of human isolates of enteric pathogens received by the NSSS for 1994, tabulated by organism and State or Territory, was published with the NSSS *Human Annual Report 1994*. The list has not been reproduced in this report for *CDI*, but is available from *CDI* or from the NSSS.

The National Notifiable Diseases Surveillance System (NNDSS) received reports of 5283 notifications of salmonellosis, 50 typhoid notifications and 724 shigellosis notifications for 1994. The notification rate per 100,000 for Salmonellosis (29.6 per 100,000 population was similar to that reported by the NSSS for increased from a similar rate for 1993 (26.8). The NNDSS rate was higher, however, for shigellosis (6.1), reflecting the larger proportion of cases of that disease acquired overseas, and therefore not included in the NSSS rate calculations.

OVERSEAS BRIEFS

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

Plague in Madagascar

The human plague acitivity in the Province of Mahajanga in the north-west of Madagascar has occurred after a three year period of latency[1]. The first suspected cases were reported in March 1995. Between 22 July and 17 October, 427 suspected cases were notified, most from Mahajanga town, and there were 11 deaths. Laboratory confirmation had been attempted with 226 samples by 13 October; 35 cases had been confirmed and 28 were classed as 'probable'. All the suspected cases have been bubonic. The case fatality rate has been lower than usual, perhaps due to early admission of all suspected cases to hospital.

Control activities have centred on routine reporting of suspected cases, chemoprophylaxis of all those in contact with suspected cases, disinfection of the districts using deltamethrin powder and encouragement of the entire population to undertake sanitation measures.

Influenza in the Northern Hemisphere

Influenza A H_1N_1 isolates and a few outbreaks of influenza-lilke illness were reported from France in October. In the United Kingdom, a second outbreak of influenza-like illness has been reported from a boarding school in England. The attack rate was about 40% and influenza A was diagnosed by immunofluorescence.

Cholera update

Romania has been declared free of cholera; there have been no new cases reported since 15 October. Porto Novo Island in **Cape Verde** has recently been declared cholera infected, as has the Upper East Region of **Ghana**. Twenty-two cases of cholera have been reported from the **Libyan Arab Jamahiriya**, the first reported from this country in recent years. They were limited to one sector of Ejdabia City among an expatriate community. Contol measures have been applied and the situation is considered stable.

Cholera cases have been reported since June from Afghanistan, Burkino Faso, Burundi, Cameroon, Cape Verde, China, Costa Rica, Cote d'Ivoire, Ecuador, El Salvador, Ghana, Guinea, India, Iran, Japan, Laos, Liberia, Libyan Arab Jamahiriya, Mali, Mexico, Moldova, the Russian Federation, Romania, Sierra Leone, Singapore, Tanzania, Togo, Uganda, Ukraine, Vietnam and Zaire.

Reference

1. Plague. *WHO Wkly Epidemiol Rec* 1995; 70: 309-10.

CDI NOTICES TO READERS

Control of communicable diseases manual

The 16th edition (1995) of *Control of communicable diseases manual* (formerly *Control of communicable diseases in man*), edited by Abram S Benenson, has just been published and is available both in book form (paperback) and on CD-ROM from:

American Public Health Association
Publications Sales
PO Box 5037
Washington, DC (USA) 20061-5037
Phone: +1-(202) 789-5667

Prices: book only: US $22.00 ($15.40 for APHA members); book with CD-ROM: $65.00 ($45.50 for APHA members); the CD-ROM is also available separately.

New FTP site for *CDI*

Parts of *CDI* can now be accessed on the Department of Human Services and Health's FTP site in Canberra, Australian Capital Territory, Australia. It is available through 'FTP.HEALTH.GOV.AU' using id 'ANONYMOUS' and the following directories and files:

- 'PUB/CDI/TEXT' contains CDI95TXT.N*, Text from *CDI* articles and Communicable Diseases Surveillance
- 'PUB/CDI/VIRTABLE' contains CDI95VIR.N*, Virology and Serology Reporting Scheme tables
- 'PUB/CDI/NNDTABLE' contains CDI95NND.N* , National Notifiable Diseases Surveillance System tables
- 'PUB/CDI/ASPREN' contains CDI95ASP.N*, ASPREN table

where * is the *CDI* issue number, for example, CDI95TXT.N22 is the text from issue number 22, dated 30 October 1995, and CDI95NND.N22 is the notifiable diseases tables from the same issue.

Other directories and files available are:

- 'PUB/CDI/ANNLRPT' containing
  - CDI95ANN.NOT, Annual Report of National Notifiable Diseases Surveillance System, 1994

- CDI95ANN.VIR, Annual Report of the *CDI* Virology and Serology Reporting Scheme, 1994
- CDI95ANN.DOS, Annual Report of the *CDI* Sterile Sites Laboratory Reporting Scheme, 1994 (when published)

- 'PUB/CDI' containing
  - CDIWHAT.IS, information on *CDI*.
  - CDIREAD.ME, FTP setup for *CDI*
  - ACROREAD.EXE, ACROBAT reader

CDI will also be available through the Department of Human Services and Health's World Wide Web site, 'WWW.HEALTH.GOV.AU' in the near future. It can also be accessed on the *CDI* Bulletin Board System (as described in *CDI* 1995; **19**: 12-13) by dialling 06-2816695.

Further details are available from David Evans on 06-2897155.

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1704 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 6, 7 and 8).

- No reports of **measles** were received this period. The number of reports received has remained low in recent months (Figure 1).
- **Rubella** was reported for 52 patients this period diagnosed by IgM detection (51) and virus isolation (one). Included were 22 females, 15 of whom were of childbearing age and 28 males. Also included was a 34 year old pregnant female (IgM detected) whose son had rubella.
- **Hepatitis A** was reported for 14 patients this period including 10 males and 4 females. Included was one patient who reported a recent history of overseas travel.
- Positive **hepatitis B** serology was reported for 147 patients this fortnight, including 74 males and 72 females. A total of 117 (80%) were in the 15 to 44 year age range. Included were 20 pregnant females and one injecting drug user.
- Two hundred and thirty-nine reports of positive **hepatitis C** serology were received this period. Included were 126 males and 105 females including a newborn with intra-uterine growth retardation. Also included were 26 injecting drug users, 2 pregnant females and one case which was recorded as being occupationally acquired.
- Three reports of **untyped dengue** were received this period for 2 males and one female all of whom had a history of overseas travel.
- Seventy one reports of **adenovirus** were received this period diagnosed by virus isolation (62) and antigen detection (9). Eight cases of adenovirus type 2 were reported all but one of whom were under 5 years of age. One patient reported eye disease and another lower respiratory tract disease.
- **Herpes simplex virus type 1** was reported for 196 patients this fortnight. Diagnosis was by virus isolation (189) and antigen detection (7). Included was virus isolation from the eye of a one year old male with peri-orbital cellulitis.
- Two hundred and thirteen reports of **herpes simplex virus type 2** were received this period all diagnosed by virus isolation. Included was virus isolation from a perianal swab from a 30 year old pregnant female at 38 weeks gestation.
- **Untyped herpes simplex virus** was detected by nucleic acid detection in the CSF of a 40 year old (sex not stated) with encephalitis.
- **Herpes virus type 6** was reported for a 32 year old male and a 44 year old (sex not stated) both from New South Wales, diagnosed by IgM detection.
- Sixty reports of **cytomegalovirus** were received this period. Diagnosis was by virus isolation (30), antigen detection (one), and IgM detection (29). Included were 2 HIV/AIDS patients, 3 transplant recipients and a 35 year old male with retinitis (virus isolated from urine).
- **Varicella-zoster virus** was reported for 32 patients this period. Diagnosis was by virus isolation (20), antigen detection (7), IgM detection (3) and single high titre (2). Included was a 26 year old pregnant female with chicken pox.

Figure 1. Measles laboratory reports, 1993 to 1995, by month of specimen collection

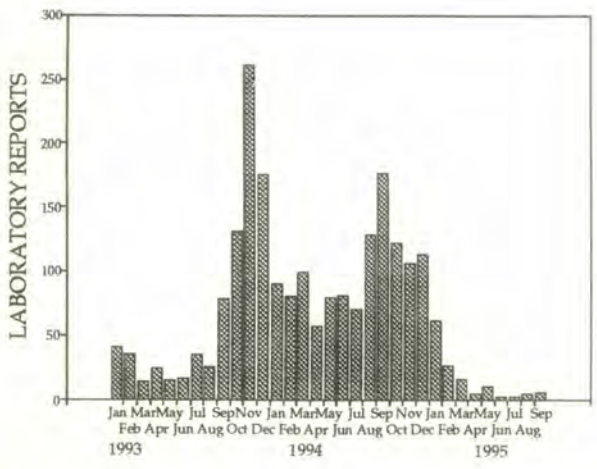


Figure 2. Respiratory syncytial virus laboratory reports, 1990 to 1994 average and 1995, by month of specimen collection

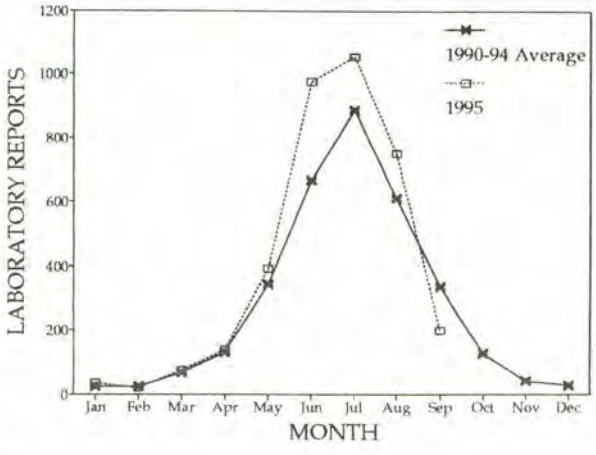


Figure 3. Rotavirus laboratory reports, 1990 to 1994 average and 1995, by month of specimen collection

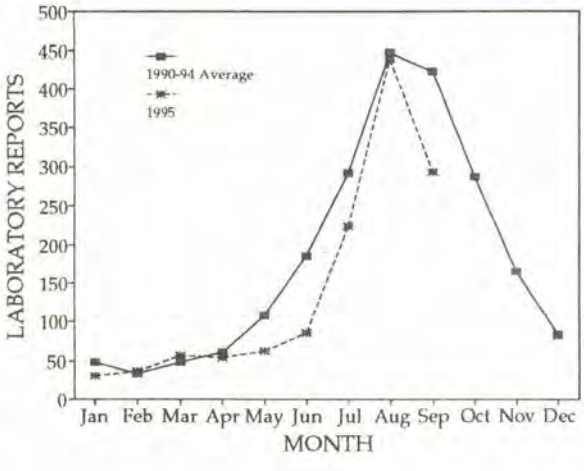
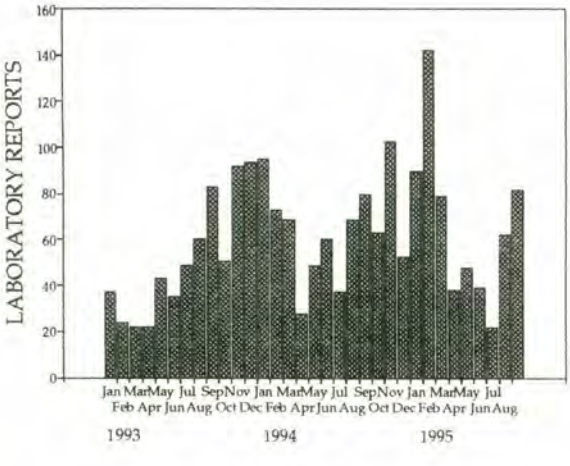


Figure 4. *Bordetella pertussis* and *Bordetella* species laboratory reports, 1994 to 1995



- Two reports **parvovirus** were received this period for a 52 year old female and a 48 year old male. No clinical information was available.
- **Echovirus type 9** was reported for 6 patients including 4 males and 2 females all under the age of 5 years. One reported meningitis and another skin manifestations.
- Four reports of **echovirus type 14** were received this period for 2 males and 2 females all in the 4 month to 44 year age range.
- **Rhinovirus** was reported for 35 patients this period, 27 of whom were under the age of 5 years.
- **Influenza A** was reported for 12 patients this fortnight. Diagnosis was by virus isolation (4), single high titre (5) and fourfold rises in titre (2). A total of 733 reports has been received for the year to date. Ninety two isolates were identified as being H_1N_1 subtypes and 9 as H_3N_2 subtypes. The number of reports received has continued to decline after peaking in July.
- Thirteen reports of **influenza B** were received this fortnight. Diagnosis was by virus isolation (5), single high titre (2) and fourfold rise in titre (6). The number of reports plateaued in July-August and has since declined.
- **Parainfluenza virus type 3** was reported for 38 patients this fortnight, 22 (58%) of whom were under the age of one year and a total of 36 (95%) under 5 years of age. Diagnosis was by virus isolation (34) and antigen detection (4). Included was a one year old male with encephalitis.
- Forty-two reports of **respiratory syncytial virus (RSV)** were received this fortnight. Method of diagnosis included virus isolation (5), antigen detection (33), single high titre (3) and fourfold rise in titre (one). The number of reports received has continued to decline after peaking in July.
- **Rotavirus** was reported for 49 patients this period including 32 males and 17 females. Forty-six reports (94%) were for patients 4 years of age or under. The number of reports continues to decline (Figure 3).
- ***Chlamydia trachomatis*** was reported for 83 patients this period diagnosed by isolation (13), antigen detection (7), nucleic acid detection (60) and serology (3). Included were 35 males and 48 females 75 (90%) of whom were aged 15 to 44 years.
- Sixteen reports of ***Mycoplasma pneumoniae*** were received this period for 7 males and 9 females, all in the one to 64 year age group. Method of diagnosis included IgM detection (9), fourfold rise in titre (2) and singel high titre (4).
- Sixty-one reports of ***Bordetella pertussis*** were received this period including 26 males and 21 females, male:female ratio 1.2:1.0. The number of reports has risen in recent months (Figure 4).

Table 1. Australian Sentinel Practice Research Network, weeks 42 and 43 1995

Condition	Week 42, to 22 October 1995		Week 43, to 29 October 1995	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	48	6.0	45	6.7
Rubella	10	1.2	6	0.9
Measles	0	0	2	0.3
Chickenpox	9	1.1	5	0.7
Pertussis	0	0	0	0
Gastroenteritis	100	12.5	97	14.5

Australian Sentinel Practice Research Network

Data for week 42 (ending 22 October) and week 43 (ending 29 October) are included in this issue of *CDI* (Table 1). There were 8015 consultations reported for week 42 and 6702 for week 43. Influenza was reported at about the same rate as in March and April of this year. The rubella reporting rates continued to be higher than has been usual in recent months.

Surveillance of Serious Adverse Events Following Vaccination

The Serious Adverse Events Following Vaccination Surveillance Scheme is a national surveillance scheme which monitors the serious adverse events which occur rarely following vaccination. More details on the Scheme were published in *CDI* 1995: **19**; 273-274.

Acceptance of a report does not imply a causal relationship between the administration of the vaccine and the medical outcome or that the report has been verified as to the accuracy of its contents. It is estimated that 250,000 doses of vaccines are administered to Australian children under the age of 6 years every month.

Results for the reporting period 1 October 1995 to 28 October 1995

There were 11 reports of serious adverse events following vaccination for the reporting period 1 October to 28 October 1995. Reports were for episodes which occurred between March and October 1995, received from the Australian Capital Territory (9), Queensland (one) and Victoria (one).

Of the 11 reports, one was a case of persistent screaming, 6 of hypotonic/hyporesponsive episodes, one of convulsions and 3 were other events temporally associated with vaccination (Table 2). Of the 3 'other' cases, two were severe local reactions following DTP vaccination and one was a child who developed fever, rash and lymphadenopthy 7 days after receiving MMR vaccine.

Events associated with DTP alone or DTP in combination with other vaccines were associated with the first (3), second (4), third (one), fourth (one) or fifth (one) dose. Two children were hospitalised, one with hypotonic/hyporesponsive episodes and one with fever and rash following MMR vaccine. All children were fully recovered at the time the initial report was sent in.

National Notifiable Diseases Surveillance System, 15 to 28 October 1995

There were 1558 notifications received for the period (Tables 3, 4 and 5, and Figure 5). As no notifications have been received from Queensland in respect of the current reporting period, caution is required in the interpretation of the Figure, and of comparisons of totals for the current period with those for 1994 in the tables.

- There were 9 notifications of **Ross River virus infection**; 3 cases were female, and 6 were male. Cases were from age groups between 30-34 years and 55-59 years, and were from 5 separate jurisdictions. Dates of onset were reported as during September (3 cases) and October (6 cases).

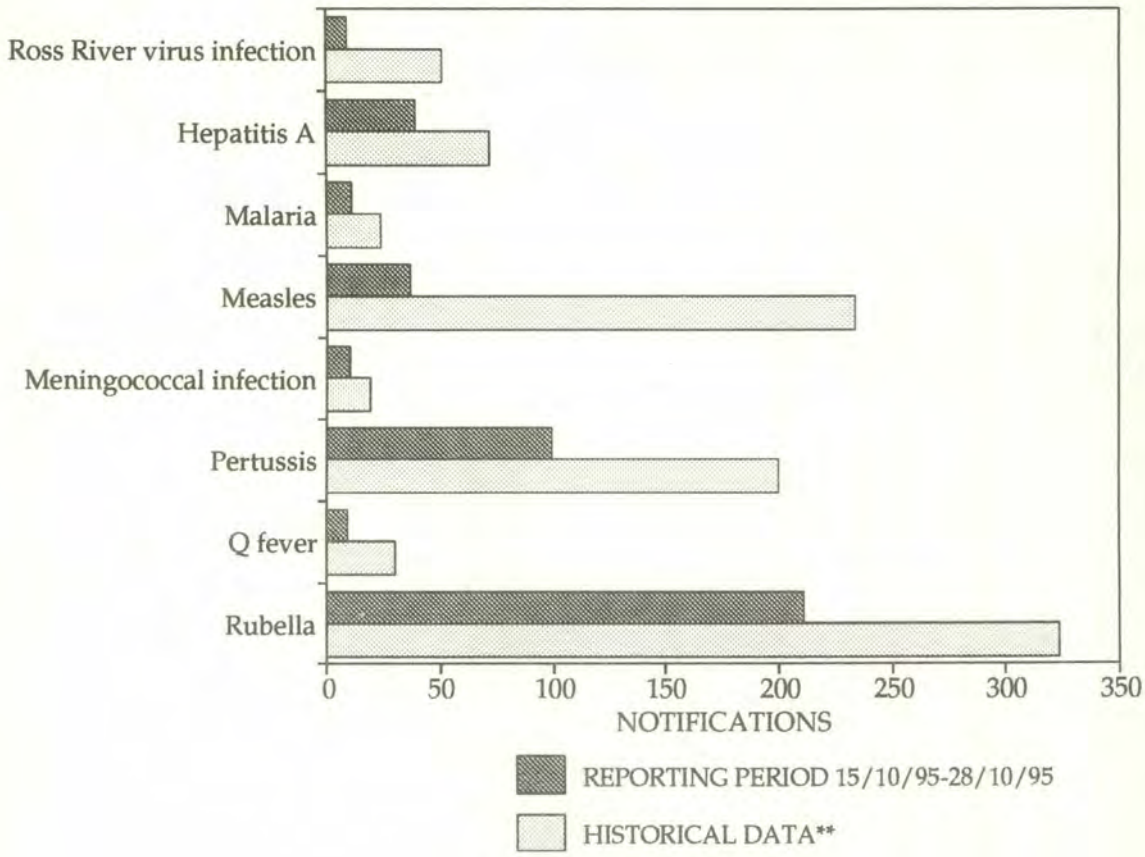
Table 2. Adverse events following vaccination for the period 1 October to 28 October 1995

Event	Vaccines				Reporting States or Territories	Total reports for this period
	DTP	DTP/Hib	DTP/OPV/Hib	MMR		
Persistent screaming	1				ACT	1
Hypotonic/hyporesponsive episode	4		2		ACT, Qld	6
Convulsions		1			Vic	1
Other	2			1	ACT	3
Total	7	1	2	1		11

- There were 374 notifications of **campylobacteriosis**; 194 cases were male, 175 cases were female, and the sex of 5 cases was not reported. Cases were reported from all age groups, with 25% of cases being aged less than 5 years.
- There were 57 notifications of **gonococcal infection** received; 44 cases were male and 13 cases were female. Of the total, one case were reported from the Australian Capital Territory, 17 cases from New South Wales, 11 cases from the Northern Territory, one case from South Australia, 13 cases from Victoria and 14 cases from Western Australia. Recorded ages were from all age groups in the range from 15 to 54 years, and one female aged less than one year; 52% of the cases were aged between 15 and 29 years.
- Two cases of ***Haemophilus influenzae* type b infection** were reported during the period, a female aged one year from Melbourne, and a male aged 4 years from Sydney.
- Thirty-nine cases of **hepatitis A** were reported; 30 cases were male and 9 cases were female. The cases were from most of the age groups 0-4 years to 45-49 years, with one case in the age group 65-69 years and one case in the age group 70-74 years. Cases were reported from both metropolitan and country areas of several States and Territories.
- Three cases of **hepatitis B** were reported; all were males, one from each of the age groups 30-34 years, 35-39 years and 40-44 years. All cases were reported from Western Australia.
- Four cases of **hydatid infection** were reported from Victoria. Two cases were male and 2 were female. Their ages ranged from 50 to 85 years.
- Five notifications of **legionellosis** were received. All cases were male; 4 cases were reported from the Melbourne Statistical Division, and one case from the Sydney Statistical Division. Two of the cases were aged in the 55-59 years age group, and one case in the 60-64 years age group. One case was a child under the age of one year. The age of the remaining case was not recorded.
- Seven cases of **leptospirosis** were reported. All were males and all but one of the age groups between 20-24 years and 50-54 years were represented. All of the cases were reported from country areas of Tasmania and Victoria.
- There were 11 notifications of **malaria** received; 7 cases were male, 3 cases were female, and the sex of one case was not recorded. Recorded ages were between 14 years and 73 years. Reported onset dates were in July (one case), August (one case), September (3 cases) and October (10 cases). Cases were reported from the Statistical Divisions of Melbourne (Victoria), and Perth and Southwest (Western Australia).
- Thirty-seven cases of **measles** were reported; 17 cases were male and 19 cases were female, with the sex of the remaining case not recorded. Four cases were reported in children aged less than two years; the ages of other cases ranged between 3 years and 71 years, with 9 cases in the age range 11-19 years. There were 4 apparent clusters of 2 cases each in the same postcode area, 2 apparent clusters in New South Wales, and one in each of Tasmania and Western Australia.
- There were 10 cases of **meningococcal infection** reported; 7 cases were male and 3 cases were female. The cases were aged between 0 and 54 years, with 2 cases being in the age group 0-4 years. There were no apparent clusters of cases.
- There were 99 notifications of **pertussis**; 48 cases were male and 51 cases were female. All age-groups but one between the 0-4 years and 75-79 years age groups were represented. Eight cases were aged less than one year, and 4 more less than 5 years. There were 17 apparent clusters of between 2 and 7 cases each in the same postcode area. Apparent clusters were in New South Wales (12), Victoria (3), South Australia (1), and Tasmania (2).
- Nine notifications of **Q fever** were received from country regions of New South Wales and Victoria. All cases but one were males; the ages of cases were in age groups between 25-29 years and 50-54 years.
- There were 211 cases of **rubella** reported; 164 cases were male, 44 cases were female, and the sex of 3 cases was not recorded. Recorded ages of cases were from all age groups between 0-4 and 50-54 years. Fifteen cases were reported for females in the age range from 15 to 44 years. Over half of the cases (112) were reported in males 10-24 years of age.
- There were 107 cases of **salmonellosis** reported; 60 cases were male and 45 cases were female; the sex of the remaining 2 cases was not recorded. The cases were from all of the age groups 0-4 years to 80-84 years; 43% of the cases were aged less than 5 years.
- Thirty-two cases of **syphilis** were reported; 9 cases were male, 22 cases were female, and the sex of one case was not reported. One male case was aged under one year and another case was a female aged 6 years. The other cases were from all age groups between 20-24 years and 45-49 years, with one case in the age group 80-84 years.
- There were 24 cases of **tuberculosis** reported; 16 cases were male, 7 cases were female and the sex of one case was not reported. Two cases were aged under 5 years; the other cases were from all age groups but one between 10 and 84 years. The dates of onset were reported as being in the months of March and April (one case each), June and July (2 cases each), August (one case) September (6 cases) and October (11 cases).
- A single case of **typhoid** was reported from South Australia; a male in the age group 20-24 years.

- Six cases of **yersiniosis** were reported; 3 cases were male, 2 were female, and the sex of the other case was not reported. The age groups of the cases ranged from 0-4 years to 80-84 years.

Figure 5. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



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

Table 3. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 15 to 28 October 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1]			
									This period 1995	This period 1994	Year to date 1995	Year to date 1994
Diphtheria	0	0	0		0	0	0	0	0	0	0	0
Haemophilus influenzae b infection	0	1	0		0	0	1	0	2	8	58	153
Measles	1	12	1		0	4	14	5	37	262	1141	3791
Mumps	1	0	2	NN	1	0	4	0	8	5	124	77
Pertussis	2	56	1		11	6	18	5	99	254	3244	4508
Poliomyelitis	0	0	0		0	0	0	0	0	0	0	0
Rubella	23	22	0		2	34	96	34	211	319	2494	1996
Tetanus	0	0	0		0	0	0	0	0	1	3	12

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

NN Not Notifiable.

Table 4. Notifications of other diseases[1] received by State and Territory health authorities in the period 15 to 28 October 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This period 1995	This period 1994	Year to date 1995	Year to date 1994
Arbovirus infection												
Ross River virus infection	0	1	5		1	-	1	1	9	41	2304	3838
Dengue	0	0	0		0	-	0	0	0	1	21	17
NEC[3]	0	2	4		0	0	0	0	6	24	744	503
Campylobacteriosis[4]	6	-	12		165	20	97	74	374	485	8458	7983
Chlamydial infection (NEC)[5]	4	NN	12		16	27	58	31	148	229	4710	5348
Donovanosis	0	NN	3		NN	0	0	1	4	8	64	95
Gonococcal infection[6]	1	17	11		1	0	13	14	57	84	2376	2377
Hepatitis A	1	21	4		0	0	10	3	39	59	1162	1603
Hepatitis B	0	0	0		0	0	0	3	3	13	266	282
Hepatitis C incident	-	0	0		0	-	-	-	0	1	82	33
Hepatitis C unspecified	20		28			11	185	65	309	303	7527	7461
Hepatitis (NEC)	0	0	0		0	0	0	NN	0	3	31	37
Legionellosis	0	1	0		0	0	4	0	5	9	151	156
Leptospirosis	0	0	0		0	2	5	0	7	5	105	108
Listeriosis	0	0	0		0	0	0	0	0	0	51	20
Malaria	0	0	0		0	0	7	4	11	32	489	627
Meningococcal infection	0	2	1		1	0	5	1	10	20	302	326
Ornithosis	0	NN	0		0	0	8	0	8	1	106	66
Q fever	0	3	0		0	0	6	0	9	14	356	556
Salmonellosis (NEC)	3	43	7		16	5	16	17	107	200	4914	4413
Shigellosis[4]	1	-	6		0	0	6	5	18	18	622	613
Syphilis	1	22	8		0	0	0	1	32	92	1400	1929
Tuberculosis	1	7	2		4	0	9	1	24	44	898	849
Typhoid[7]	0	0	0		1	0	0	0	1	3	58	45
Yersiniosis (NEC)[4]	0	-	0		3	0	3	0	6	13	260	351

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

NN Not Notifiable.

NEC Not Elsewhere Classified.

\- Elsewhere Classified.

Table 5. Notifications of rare[1] diseases received by State and Territory health authorities in the period 15 to 28 October 1995

DISEASES	Total this period	Reporting States or Territories	Year to date 1995
Botulism	0		0
Brucellosis	0		22
Chancroid	0		2
Cholera	0		5
Hydatid infection	4	Vic	32
Leprosy	0		6
Lymphogranuloma venereum	0		1
Plague	0		0
Rabies	0		0
Yellow fever	0		0
Other viral haemorrhagic fevers	0		0

1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1994.

Table 6. Virology and serology laboratory reports by State or Territory[1] for the reporting period 19 October to 1 November 1995, historical data[2], and total reports for the year

	State or Territory [1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA											
Mumps virus							2	2	4	3.0	65
Rubella virus		34				3	7	8	52	76.5	711
HEPATITIS VIRUSES											
Hepatitis A virus		3	2				3	6	14	9.2	397
Hepatitis B virus	5	86					16	40	147	70.5	2,083
Hepatitis C virus	25	29	10			14	4	157	239	168.7	5,052
Hepatitis D virus		1							1	1.0	15
ARBOVIRUSES											
Ross River virus		2						1	3	18.0	1,022
Barmah Forest virus		1						1	2	3.8	215
Dengue not typed								3	3	.0	18
Flavivirus (unspecified)		4							4	1.8	37
ADENOVIRUSES											
Adenovirus type 1							3		3	2.8	34
Adenovirus type 2		1					7		8	4.2	31
Adenovirus type 5		2					1		3	.8	14
Adenovirus type 7							3		3	1.2	21
Adenovirus type 8							1		1	2.7	22
Adenovirus type 10								1	1	.0	1
Adenovirus type 19							1		1	.0	2
Adenovirus not typed/pending	1	35	1			3	6	5	51	53.0	771
HERPES VIRUSES											
Herpes simplex virus type 1	1	45	3	1		5	74	67	196	164.2	4,175
Herpes simplex virus type 2		53	2	1		1	54	102	213	166.7	4,414
Herpes simplex not typed/pending	18	34					2		54	21.7	432
Herpes virus type 6		2							2	.2	3
Cytomegalovirus		20		1		4	32	3	60	60.7	1,293
Varicella-zoster virus		12					4	16	32	36.3	907
Epstein-Barr virus	5	19	1				9	38	72	54.8	1,632
Herpes virus group - not typed							2		2	.5	15
OTHER DNA VIRUSES											
Papovavirus group							1		1	.0	11
Poxvirus group not typed							1		1	.0	3
Parvovirus								2	2	3.3	100
PICORNA VIRUS FAMILY											
Coxsackievirus A9		1							1	1.5	7
Echovirus type 9		2					4		6	.2	20
Echovirus type 13		1							1	.0	1
Echovirus type 14		4							4	.2	9
Echovirus type 22		2					1		3	.2	10
Echovirus type 25		1							1	.0	2
Echovirus type 30		1					1		2	7.3	46
Echovirus not typed/pending								7	7	.2	12
Poliovirus type 1 (uncharacterised)		9							9	2.0	27
Poliovirus type 2 (uncharacterised)		9					2		11	.8	18

Table 6. Virology and serology laboratory reports by State or Territory[1] for the reporting period 19 October to 1 November 1995,

	State or Territory [1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
Poliovirus type 3 (uncharacterised)		1					1		2	.5	10
Rhinovirus (all types)	1	14					20		35	33.5	582
Enterovirus type 71 (BCR)							1		1	.0	32
Enterovirus not typed/pending		5	1				7	32	45	46.8	783
ORTHO/PARAMYXOVIRUSES											
Influenza A virus		4				1	3	4	12	19.5	668
Influenza B virus		1					6	6	13	19.3	331
Parainfluenza virus type 2		1							1	1.5	174
Parainfluenza virus type 3	1	19		1			13	4	38	29.0	704
Respiratory syncytial virus	3	22				3	6	8	42	68.8	3,734
Paramyxovirus (unspecified)							5		5	.0	5
OTHER RNA VIRUSES											
HIV-1						2			2	3.0	95
Rotavirus		13				6	24	6	49	110.7	1,545
Astrovirus							2		2	.0	7
Norwalk agent							5		5	.2	28
Small virus (like) particle							3		3	1.5	14
OTHER											
Chlamydia trachomatis not typed	5	9	12					57	83	71.3	2,188
Chlamydia psittaci							7		7	3.0	126
Chlamydia species		12							12	2.8	52
Mycoplasma pneumoniae		9					2	5	16	38.2	274
Coxiella burnetii (Q fever)		9					2		11	14.0	167
Rickettsia australis		1							1	.2	13
Streptococcus group A							1		1	15.5	476
Bordetella pertussis						2	30	16	48	23.5	555
Legionella longbeachae								3	3	.0	17
Helicobacter pylori							3		3	.0	7
Leptospira species								1	1	.7	20
Treponema pallidum		16					3		19	18.3	464
Entamoeba histolytica							1	1	2	.2	16
Schistosoma species		1	1				12	8	22	.0	119
TOTAL	65	550	33	4		44	398	610	1,704	1,459.8	36,854

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

Table 7. Virology and serology laboratory reports by clinical information for the reporting period 19 October to 1 November 1995

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Mumps virus												4	4
Rubella virus					1			2		1		48	52
HEPATITIS VIRUSES													
Hepatitis A virus							6					8	14
Hepatitis B virus							7	1				139	147
Hepatitis C virus							51					188	239
Hepatitis D virus												1	1
ARBOVIRUSES													
Ross River virus												3	3
Barmah Forest virus												2	2
Dengue not typed								1				2	3
Flavivirus (unspecified)												4	4
ADENOVIRUSES													
Adenovirus type 1					1							2	3
Adenovirus type 2					6				1			1	8
Adenovirus type 5												3	3
Adenovirus type 7					2				1				3
Adenovirus type 8									1				1
Adenovirus type 10												1	1
Adenovirus type 19									1				1
Adenovirus not typed/pending					5	11			1			34	51
HERPES VIRUSES													
Herpes simplex virus type 1					6			107	9		22	52	196
Herpes simplex virus type 2								86			74	53	213
Herpes simplex not typed/pending	3	1			3			7			12	28	54
Herpes virus type 6												2	2
Cytomegalovirus		1			18				3			38	60
Varicella-zoster virus								19				13	32
Epstein-Barr virus					10			3				59	72
Herpes virus group - not typed								1			1		2
OTHER DNA VIRUSES													
Papovavirus group												1	1
Poxvirus group not typed								1					1
Parvovirus												2	2
PICORNA VIRUS FAMILY													
Coxsackievirus A9					1								1
Echovirus type 9		1						1				4	6
Echovirus type 13												1	1
Echovirus type 14												4	4
Echovirus type 22					1							2	3
Echovirus type 25												1	1
Echovirus type 30												2	2
Echovirus not typed/pending					5			1				1	7
Poliovirus type 1 (uncharacterised)					1							8	9

Table 7. Virology and serology laboratory reports by clinical information for the reporting period 19 October to 1 November 1995, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
Poliovirus type 2 (uncharacterised)					1							10	11
Poliovirus type 3 (uncharacterised)						1						1	2
Rhinovirus (all types)					18							17	35
Enterovirus type 71 (BCR)												1	1
Enterovirus not typed/pending		5			15	4	1	5				15	45
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					2							10	12
Influenza B virus					6							7	13
Parainfluenza virus type 2												1	1
Parainfluenza virus type 3					20							18	38
Respiratory syncytial virus					26							16	42
Paramyxovirus (unspecified)						5							5
OTHER RNA VIRUSES													
HIV-1												2	2
Rotavirus					1	46						2	49
Astrovirus						2							2
Norwalk agent						5							5
Small virus (like) particle						3							3
OTHER													
Chlamydia trachomatis not typed									2		46	35	83
Chlamydia psittaci					2							5	7
Chlamydia species												12	12
Mycoplasma pneumoniae					5							11	16
Coxiella burnetii (Q fever)												11	11
Rickettsia australis												1	1
Streptococcus group A												1	1
Bordetella pertussis					38							10	48
Legionella longbeachae					1							2	3
Helicobacter pylori												3	3
Leptospira species												1	1
Treponema pallidum			1								1	17	19
Entamoeba histolytica												2	2
Schistosoma species												22	22
TOTAL	3	8	1		195	76	65	235	19	1	156	944	1704

Table 8. Virology and serology laboratory reports by contributing laboratories for the reporting period 19 October to 1 November 1995

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	74
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	406
	Royal Prince Alfred Hospital, Camperdown	9
	South West Area Pathology Service, Liverpool	131
Tasmania	Northern Tasmanian Pathology Service, Launceston	10
	Royal Hobart Hospital, Hobart	26
Victoria	Monash Medical Centre, Melbourne	25
	Royal Children's Hospital, Melbourne	86
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	289
Western Australia	PathCentre Virology, Perth	558
	Western Diagnostic Pathology	90
TOTAL		1704