ESR LABLINK MARCH 1999
ISSN 1173-1591
Volume 6 No 1

ANNUAL SUMMARIES - 1998

BACTERIOLOGY

INVASIVE INFECTIONS

Numbers of isolates received from cases of invasive disease caused by *Haemophilus influenzae, Neisseria meningitidis, Streptococcus pneumoniae, Streptococcus pyogenes* (Group A) and *Streptococcus agalactiae* (Group B) for the twelve months January to December 1998, are shown in Table 1.

Table 1. Sterile site isolates, 1998

Organism	BC	CSF or CSF/BC	Other sterile site	Total
*H. influenzae**	33	4	4	41
N. meningitidis	133	86	0	219
S. pneumoniae	325	38	15	378
S. pyogenes	74	1	21	96
S. agalactiae	28	5	4	37

* *H. influenzae*: 10 serotype b and 31 non- b

The age profile of the patients from whom the isolates were obtained is given in Table 2.

Table 2. Age distribution of cases of invasive disease, 1998

Organism	<1m	1-11m	1y	2y	3y	4y	5-9y	10-24y	25-59y	≥60y
H. influenzae b	0	4	1	0	0	1	0	1	2	1
H. influenzae non b	2	4	0	0	0	0	4	3	6	12
N. meningitidis	2	39	19	18	11	13	27	52	31	7
S. pneumoniae	1	36	35	7	6	10	18	19	81	165
S. pyogenes[1]	0	3	0	1	1	2	16	10	22	40
S. agalactiae[1]	16	3	0	0	1	0	0	2	10	4

[1] Information on age was not provided with one isolate of *S. pyogenes* and one isolate of *S. agalactiae*

Haemophilus influenzae

Isolates were received from 41 cases of *Haemophilus influenzae* invasive disease in 1998. Ten of these isolates were serotype b, five were serotype f, and 26 were non-serotypable using serotype-specific antisera. This compares with nine serotype b out of a total of 38 viable organisms in 1997.

All organisms which were non-serotypable were tested by PCR for the presence of the serotype b specific *cap* gene and the *bexA* gene necessary for capsular expression. One of these isolates was shown to possess these genes and has been included in the total number of serotype b organisms. Repeat testing from a freshly grown culture confirmed this PCR result and showed the organism to be consistently polyagglutinating.

The antimicrobial susceptibilities of these isolates are reported in the Antibiotic Resistance section of this issue of LabLink.

Neisseria meningitidis

A total of 219 isolates were received from confirmed cases of meningococcal disease, two of which were non-viable on receipt. Confirmed cases are those from whom a meningococcus has been isolated from a sterile site. Of the viable isolates, 88% (191/217) were serogroup B, 11% (23/217) were serogroup C, two were serogroup Y, and one was serogroup A. This compares with 314 viable invasive isolates in 1997, 84% of which were serogroup B. In addition nine isolates were received from respiratory sites from notified cases. These comprised six B:4:P1.4, one C:2b:P1.5,2, one non-groupable NG:4:P1.4, and one non-viable.

All organisms which were not serosubtypable with monoclonal antibodies were subtyped by amplification of the *porA* gene. This gene encodes the subtype specific antigens. Restriction digestion of the PCR product enables prediction of the subtype, which is confirmed by dot blot hybridisation with the subtype-specific probes for P1.2, P1.4, P1.7 and P1.16. Serotyping using monoclonal antibodies may not detect the P1.7 antigen commonly associated with the P1.4 antigen, whereas it is detected using the specific DNA probe.

Among the serogroup B isolates received, one type, B:4:P1.4, accounted for 69% (132/191) and one subtype, B:P1.4, accounted for 88% (169/191). This compares with 69% and 86% respectively for 1997 and shows the continuing dominance of meningococci with the PorA protein serosubtype P1.4. Organisms with this serosubtype have been identified from the majority of cases of meningococcal disease since the beginning of the current epidemic in mid 1991. One of the non-viable isolates was able to be typed and was identified as 4:P1.4, although the serogroup could not be determined.

The serogroup A isolate typed as A:4:NST, both the serogroup Y isolates typed as Y:14:NST.

The antimicrobial susceptibilities of these isolates are reported in the Antibiotic Resistance section of this issue of LabLink.

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9V (13), 23F (9), 19F (3), and 14 (2). Both penicillin-resistant isolates that were cefotaxime-resistant belonged to serotype 19F. Of the penicillin-resistant *S. pneumoniae*, eight were isolated from patients aged ≤ 15, six from patients aged 16 - 60, and 13 from patients > 60 years. Twenty four isolates were from blood cultures, one from CSF and two from sterile fluids.

Haemophilus influenzae

Among the 41 *H. influenzae* isolates from invasive disease that were tested for susceptibilities in 1998, 6 (14.6%) were ß-lactamase positive. Among the ten serotype b isolates, three were ß-lactamase positive. All isolates were sensitive to cefotaxime and rifampicin. One isolate was chloramphenicol-resistant.

Neisseria meningitidis

Of 217 *N. meningitidis* isolates from invasive disease that were referred to ESR, 95 were tested for susceptibility to penicillin, ceftriaxone, ciprofloxacin and rifampicin. Reduced penicillin susceptibility (MICs 0.12 - 0.25 mg/L) occurred in 7.4% (7) of the isolates; all were serogroup B. The proportion of isolates with reduced penicillin susceptibility has fluctuated between 0.6% and 7.4% in the last five years. All isolates were sensitive to ceftriaxone, ciprofloxacin and rifampicin. The MIC ranges and MIC_{90} of the isolates are shown in Table 20.

Table 20. MIC ranges and MIC_{90} (mg/L) of isolates from invasive disease, 1998

Antibiotic	*S. pneumoniae*		*N. meningitidis*	
	Range	MIC_{90}	Range	MIC_{90}
Penicillin	0.008-4	1.0	0.016-0.25	0.06
Cefotaxime	0.008-2	0.5	-	-
Ceftriaxone	-	-	0.002-0.008	0.004

NCCLS NEW PUBLICATIONS

NCCLS released updated tables for the NCCLS antimicrobial susceptibility testing standards M2-A4 and M7-A4 in January 1999: M100-S9, *Performance Standards for Antimicrobial Susceptibility Testing; Ninth Informational Supplement*

The major additions to the standards include screening and confirmatory tests for ESBLs, susceptibility testing protocol for *Helicobacter pylori*, revised oxacillin zone diameter and MIC breakpoints for coagulase-negative staphylococci, and zone diameter and MIC breakpoints for several new antibiotics.

The publication can be purchased from NCCLS, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898, USA (Fax: 610.688.0700; Email: exoffice@nccls.org).

Compiled by Maggie Brett,
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VIROLOGY

Table 21 summarises viral indentifications and mycoplasma infections in New Zealand in 1998. The information is based on weekly data collated from the virology laboratories of Auckland Healthcare, Healthcare Waikato, Canterbury Health Laboratories, Healthcare Otago and ESR.

Table 21. Summary of virus identification and mycoplasma infections, 1998

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Influenza A	3	2	4	0	3	76	178	155	59	5	2	1	488
Influenza B	0	0	0	0	2	0	0	0	0	0	0	0	2
Parainfluenza 1	1	0	0	2	7	7	3	0	1	1	0	1	23
Parainfluenza 2	0	0	0	1	5	3	0	0	2	0	0	0	11
Parainfluenza 3	2	1	0	0	2	0	5	1	10	13	11	9	54
Adeno	10	1	8	2	8	7	7	21	12	13	11	12	112
Entero	4	0	2	1	2	7	6	3	3	4	5	3	40
RSV	4	4	4	11	20	27	167	329	184	38	5	7	800
Rhino	4	3	8	8	6	19	7	15	21	12	8	8	119
CMV	1	0	0	0	1	3	1	1	3	2	2	1	15
Rubella	0	0	0	0	0	0	1	1	0	0	0	0	2
Mumps	0	0	0	0	4	0	0	0	0	0	0	0	4
Measles	3	2	8	5	2	4	1	0	1	2	1	2	31
Mycoplasma	14	2	0	0	7	6	4	0	8	4	1	0	46

RESPIRATORY VIRUSES

Influenza

Influenza activity in 1998 occurred at the lowest level since the Influenza Surveillance Programme began to operate in New Zealand in its current form in 1990. The first influenza isolations during the surveillance period (May-September 1998) were reported from the Auckland region in May, with two sporadic cases of influenza B. In June, the influenza activity remained relatively low compared with previous years, with only nine cases of laboratory-confirmed cases of influenza A. The number of isolates began to increase in July. The 1998 influenza outbreak was characterised by two peaks, the first in early July and the second in the middle of August (Figure 9).

Figure 9. Laboratory- confirmed influenza isolates, January 1994 - September 1998

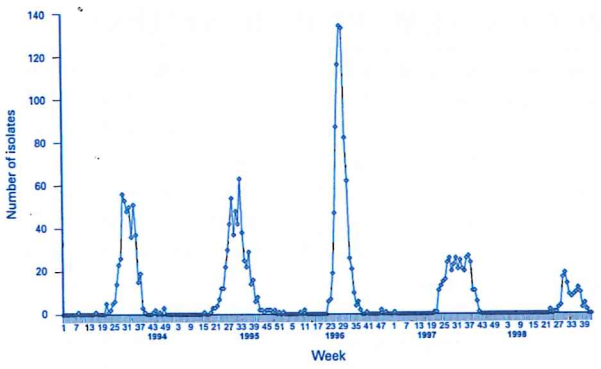
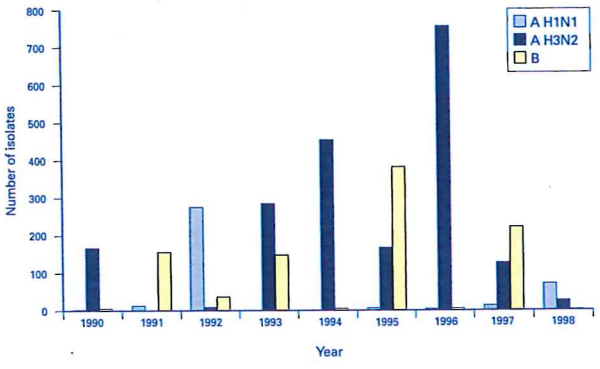


Figure 10. Laboratory-confirmed influenza isolates by type, 1990-1998



Influenza activity in New Zealand was caused predominantly by A H1N1, similar to A/Johannesburg/82/96 viruses, which accounted for 55% of the 129 laboratory-confirmed influenza isolates (Figure 10). This is in contrast to other countries where A H1N1 caused only sporadic outbreaks with no major activity. Most of the influenza activity worldwide in 1998 was due to A H3N2, whereas it accounted for only 20% of laboratory-confirmed influenza isolates in New Zealand. Interestingly, there were two groups of A H3N2 viruses identified: one which was typical A/Sydney/5/97-like and another which reacted with reduced titre to antisera to A/Sydney/5/97. These A/Sydney/5/97 low reacting strains were examples of the host-selected variation phenomenon because they regained reactivity to antisera against A/Sydney/5/97 directly after being passaged in embryonated eggs (Figure 10).

The Australian Influenza Vaccine Committee, with a New Zealand representative, met in Canberra in October 1998 to decide on the influenza vaccine composition for 1999. Based on isolate data from the southern hemisphere countries, such as Australia, South Africa and New Zealand, the recommended composition was:

- H1N1 an A/Beijing/262/95-like strain
- H3N2 an A/Sydney/5/97-like strain
- B a B/Beijing/184/93-like strain

Respiratory Syncytial Virus (RSV)

RSV activity in 1998 was the second largest (800 cases) since 1990 (Figures 11 and 12). It had a rapid onset at the beginning of July (55 cases in week 28) and remained at that level through July and early August. The number of cases peaked in the middle of August with 90 cases in week 31 which was three weeks earlier than the 1997 peak (71 cases in week 34). The number of reported cases declined rapidly around the middle of October.

Figure 11. Annual laboratory-confirmed RSV cases, 1990-1998

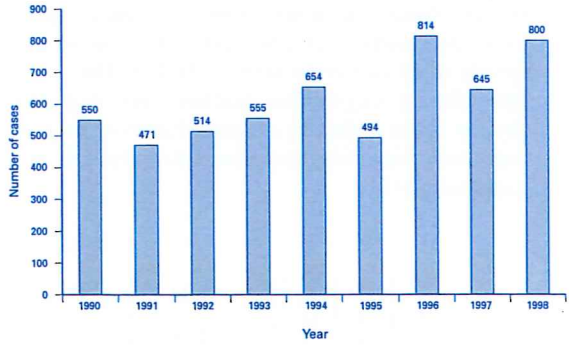
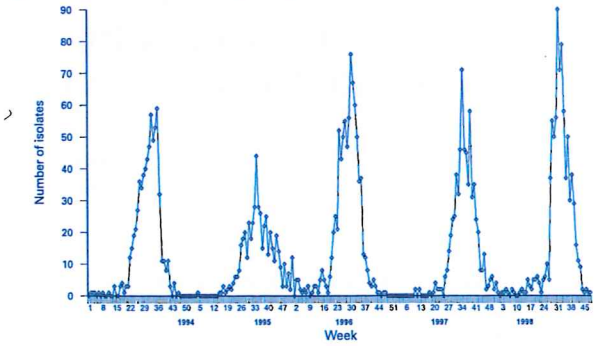


Figure 12. RSV laboratory-confirmed cases by week, 1994-1998



ENTERIC VIRUSES

Viral gastroenteritis associated with Norwalk -like viruses or small round structured viruses (SRSVs)

In 1998, SRSVs were detected in faecal specimens from 27 outbreaks of non-bacterial gastroenteritis. Most outbreaks occurred at restaurants and catered events (11) or in rest homes and hospitals (10). Foodborne transmission was common. A further three outbreaks occurred in camp or school situations. The sourcesfor the other outbreaks (3) was unknown.

Faecal specimens were analysed by reverse transcription and polymerase chain reaction (RT-PCR) to determine the presence of SRSVs and further differentiated by dot blot hybridisation with specific probes. Nucleotide sequence analysis was carried out on representative outbreak strains.

Over the previous three years, the predominant New Zealand strain has been the Maryland/ Camberwell virus, which is genetically similar to the Bristol / Lordsdale virus group in Genogroup 2.[1] This group of closely related strains is common internationally and in New Zealand rest home and hospital outbreaks. During 1998, a wider range of SRSV strains has been observed. There were more from Genogroup 1 (the Norwalk-like group), rather than Genogroup 2, which have been most prevalent in New Zealand in previous years. Saratoga virus and Desert Shield virus were both first identified in New Zealand during 1998, along with German and Dutch strains. Southhampton virus and Napier virus were also identified from a few outbreaks. Comparison of SRSV nucleotide sequences with international reference SRSV strains showed that the majority of New Zealand strains are the same as those occurring overseas.

Seventy faecal samples were examined for the presence of Sapporo-like viruses. These viruses are a newly recognised group also classified within the Caliciviridae. The Sapporo-like viruses are more closely related to rabbit calicivirus than the SRSVs. They cause gastroenteritis, especially in young children, and have been frequently associated with day care centre outbreaks overseas. However, only one outbreak associated with these viruses has been detected to date in New Zealand.

[1] LabLink 1996; 3: 17-8.

CULTURE COLLECTION

NEW CULTURE COLLECTION CATALOGUE

The New Zealand Reference Culture Collection, Medical Section Catalogue of Strains, 6th Edition, 1998 was despatched to users in December. This edition contains an increased range of accessions and a new section on culture media.

Many classification and name changes have taken place over recent years. Your comments and suggestions for improvement are welcomed. Please advise us if you know of a colleague who would like a copy of the catalogue.

ESR LabLink is produced quarterly by the Institute of Environmental Science & Research Limited (ESR), Kenepuru Science Centre, Kenepuru Drive, PO Box 50-348, Porirua, Wellington.
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Editorial Team: Maggie Brett, Yvonne Galloway, Sue Huang, Els Maas, Carolyn Nicol, Susan Walker.
The content of this publication does not necessarily reflect ESR or Ministry of Health policy.