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RESTRUCTURE TO MEET RURAL NEEDS

The Minister for Health, Ron Phillips, announced significant changes to the organisation of rural health services in NSW at a Rural Hospitals' meeting on April 3. Twenty-two District Health Services will be formed, each with its own board and administration.

The existing six regional Public Health Units (PHUs) will be maintained, in the short term, in their current locations, will continue in their present role and will be directly responsible to Head Office.

This decision will allow the PHUs to continue operations while the organisational restructure is taking place. This is obviously the most appropriate course of action from an administrative perspective. However, it must not be seen as the opportunity for the PHUs to become isolated from the remainder of the health system.

The Minister's address at the meeting very clearly set the agenda for a change from thinking of health in terms of hospital buildings and admissions to a concern with the health of people — a customer-oriented focus which is concerned with health outcomes — improving the health of the population, preventing illness, promoting health and keeping people out of hospitals.

Surely this is what public health is all about.

The creation of the District Health Boards is the perfect opportunity to develop a service which will meet the health needs of populations ranging in size from 14,000 to 120,000, and to plan a range of integrated services — preventive, curative, rehabilitative and palliative. It is the perfect opportunity to bring together general practitioners, medical specialists, community-based staff, non-government organisations (NGOs) and hospital staff to focus on defining goals and targets specific to the needs of the community and identifying the contribution each of the players will make.

Staff from PHUs and others with a public health training must be a key part of the action. We cannot afford to watch from the sidelines and risk seeing the District Health Boards become no more than an amalgamation of hospital boards in which administrative savings are made in the hotel-type services. These changes must be about improving people's health.

The size of the populations will vary, and most will have their own distinctive health problems. If we take a population of 50,000 people, we know that if that population conforms to the NSW average there will be about 730 babies born every year. About 100 of these will be born by caesarean section, and 4 or 5 will have a birth weight of less than 1,500 grams and may need transfer to a major centre. That

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Correspondence

Please address all correspondence and potential contributions to:

The Editor,
NSW Public Health Bulletin,
Public Health Division,
NSW Health Department
Locked Bag No 961,
North Sydney NSW 2059
Telephone: (02) 391 9218
Facsimile: (02) 391 9232

INFLUENZA IMMUNISATION FOR HEALTH CARE WORKERS

Health care workers may be immunised with influenza vaccine either because they are at high risk of complications of influenza A themselves or because they may transmit influenza A to high-risk patients in their environment. People at high risk of complications include those over 65 years of age, particularly if resident in chronic care facilities such as nursing homes; adults and children with chronic cardiac and pulmonary disease, including children with asthma; adults and children requiring regular medical follow-up or hospitalisation for chronic metabolic diseases, diabetes, renal dysfunction haemoglobinopathies or immunosuppression (including AIDS); and children and teenagers receiving long-term aspirin therapy (who risk Reye's syndrome with influenza B).

The incidence of respiratory complications after influenza (especially secondary bacterial pneumonia) rises progressively in people over the age of 55. Between 80 and 90 per cent of excess deaths due to pneumonia/influenza in epidemics occur in people over 65 years.

Influenza vaccine is made from split products of killed egg-grown virus. This year it consists of A/Texas (H1N1), A/Shanghai and B/Panama strains, designed to protect against the two currently circulating strains of influenza A (H3N2 and H1N1) and influenza B. As the vaccine is administered in the autumn before the winter peak of influenza A, its constitution depends on trying to forecast the strains of influenza A likely to circulate in the winter. Knowledge of the strains circulating in the preceding northern winter (facilitated by World Health Organisation networks) is very helpful. When the strains circulating in the community and the vaccine are well matched (the usual situation) efficacy is 60-80 per cent for one year and if clinical influenza occurs it is usually attenuated and complications are less severe. The change ("drift") in antigenicity of successive influenzae strains infecting a community is responsible for the major disadvantage of influenza immunisation: its short duration of efficacy. Whereas natural infection may lead to immunity lasting more than 10 years, immunisation of high-risk individuals must be repeated annually.

Partly for this reason compliance is low (about 40 per cent). Therefore many elderly patients entering hospital and chronic care facilities are unimmunised and susceptible to nosocomial epidemics within the institution. Obviously efforts should be made to improve immunisation compliance among those at risk. Immunisation levels of more than 70 per cent have been obtained where intense publicity campaigns have been conducted (e.g. Paris, Colorado).

Influenza is highly infectious by aerosol spread, and health care workers (HCWs) have been shown to initiate nosocomial epidemics. These HCWs include physicians, nurses and other personnel in hospital and outpatient settings and employees of nursing homes and chronic care facilities. Home-care nurses may also transmit infection to patients at high risk.

The Centers for Disease Control in the United States recommends that such HCWs be immunised on a yearly basis whereas the National Health and Medical Research Council in Australia recommends that "in the event of a pandemic or other major outbreak, advice should be given about vaccination of staff particularly liable to exposure". The latter recommendation does not clarify whether immunisation is for the benefit of HCWs, for patients with whom they are in contact or both. Protection of patients or staff is very difficult after an influenza A epidemic has begun as it spreads rapidly with a short incubation period (two-three days), is of short duration (often less than two months) and takes time to identify. Also, immunity takes two weeks to develop after vaccination. Influenza virus may cause only upper respiratory tract symptoms (or be subclinical). Hence laboratory diagnosis by viral isolation, immunofluorescence or serology is essential to confirm a clinical suspicion of influenza A.

The alternative strategy to contain nosocomial epidemics — *prophylactic* immunisation of HCWs — also has disadvantages as HCWs are probably even less likely than high-risk patients to maintain compliance with annual influenza immunisation.

A reasonable synthesis of these strategies would be to educate the staff of geriatric and respiratory wards, nursing homes and chronic care facilities to the risks of nosocomial influenza A epidemics in these settings (30 per cent mortality in patients in nursing homes), to maintain annual influenza immunisation of their patients and to offer immunisation to the staff.

FURTHER FACTS ABOUT INFLUENZA VACCINES

Timing of injection:	autumn
Side-effects:	– local soreness in <30% – fever/malaise <2% (6-48hrs after injection) – allergic manifestations: angioedema, asthma, especially in patients with egg allergy in which the vaccine is grown
Contraindications:	egg allergy

FURTHER READING

CDC — Prevention and Control of Influenza. Recommendations of the Immunisation Practices Advisory Committee (ACP). *MMWR* 1991; Vol. 40 No. 20 pp1-15.

NH&MRC — Immunisation Procedures, 4th edition, Australian Government Publishing Service, Canberra p82, 1991.

Pachucki CT, Walsh-Pappa SA, Fuller GF et al. Influenza A among hospital personnel and patients: implications for recognition, prevention and control. *Arch Intern Med* 1989; 149:77-80.

Fry J. Influenza 1959. The story of an epidemic. *Br Med J* 1959; 2:135.

Gill PW, Murphy AM, Cunningham AL. Influenza A (H1N1): A widening spectrum. *Med J Aust* 1991; 155:362-367.

Pachucki CT, Lentino JR, Jackson GG. Attitudes and behavior of health care personnel regarding the use and efficacy of influenza vaccine (letter). *J Infect Dis* 1985; 151:1170-1171.

Gill PW, Cunningham AL, Murphy AM. Should healthy children be vaccinated against influenza? *Lancet* 1987; 1:1440-41.

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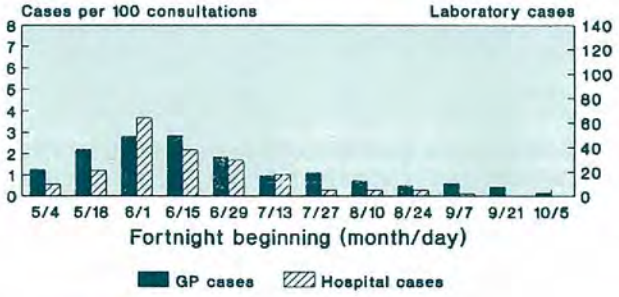
VACCINATION STATUS OF NURSING HOME STAFF AND RESIDENTS

Each year the Commonwealth Government makes influenza vaccine available to groups at risk in the community. The vaccine is prepared as a conjugate of the expected strains anticipated in the coming year. The goal is to reduce influenza-related morbidity and mortality in the community. In NSW during 1991 the rates of reported infection reached a peak in June of 12.75 cases/100 general practice consultations. Lower rates were observed in Victoria – 3/100 general practice consultations. The peak rates occurred in June in both States[1]. The Victorian figures are reproduced in Figure 1.

FIGURE 1

INFLUENZA SURVEILLANCE
CLINICAL AND LABORATORY CASES, VICTORIA, 1992



GP cases based on GP surveillance, laboratory cases from Fairfield & Royal Children's Hospital.

The National Health and Medical Research Council (NH&MRC) states that "annual vaccination is recommended for individuals ... (who are) ... residents of nursing homes and other chronic care facilities"[2]. The Public Health Unit of Central and South Sydney thought it worthwhile to examine the vaccinated status of this risk group in our Area.

TABLE 1

SIZE OF NURSING HOMES

	Number	(%)
0-39 residents	10	(20)
40-49 residents	8	(16)
50-59 residents	10	(20)
60-69 residents	6	(12)
70-79 residents	6	(12)
80+ residents	9	(18)
Missing data	1	(02)
Total	50	(100)

These people are at increased risk because of their age, often debilitating medical condition and residence in an institution where rapid spread is possible.

SURVEY METHOD

A list of registered nursing homes was obtained from the National Association of Nursing Homes and Private Hospitals Inc. We sent a questionnaire to the directors of each nursing home on August 6, 1992 inquiring about the vaccination status of their staff and residents.

RESULTS

There were 120 nursing homes on the list provided. Four questionnaires were returned unopened. A total of 53 (45 per cent) survey forms was returned. Three were excluded because significant information appeared to be wrong or was missing. The remainder, some with missing data, were used in the analysis.

The homes varied considerably in size (Table 1). The smallest had 14 and the largest 300 residents. The average is not meaningful given this distribution.

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Influenza immunisation

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Associate Professor Anthony Cunningham
Director, Virology Department
Centre for Infectious Diseases and Microbiology
Westmead Hospital

EDITORIAL COMMENT

Influenza immunisation poses several unique problems for public health:

- Influenza vaccine is the only vaccine in routine use that varies in composition from year to year. It is the only vaccine which, because of limited supply, has achieved 'commodity' status.
- The terms flu, cold and common cold are interchanged in day-to-day language, making it difficult to communicate reasonable health messages to the general public. Influenza, with its graphic history of pandemics, has the ability to generate florid and exaggerated media reports.
- Risk groups for complications of influenza have been identified by the National Health and Medical Research Council. In general terms they are the aged and those people with serious cardiac, pulmonary problems or immunosuppressed individuals. Recommendations for the carers of these people, and for others at risk of infection, are less clear.

Influenza is usually a mild illness in otherwise healthy children and young adults. Data from overseas studies indicate that the best protection from the fatal complications of influenza later in life is prior lifetime exposure to influenza.

These are strong arguments against immunisation of otherwise healthy individuals. Immunisation protects against specific virus strains for one year. Natural exposure generates a broader antibody response which is longer lasting, possibly lifelong.

In addition, as supplies of vaccine are not sufficient to immunise all high-risk individuals, it is appropriate to discourage healthy people from influenza immunisation.

TABLE 2

VACCINATION STATUS OF NURSING HOME STAFF

Vaccination status	Nursing staff (No. of homes)	Support staff (No. of homes)
Status unknown in 100% of staff	16	21
Status unknown in 50-99% of staff	8	4
>50% of staff – not vaccinated	15	15
>50% of staff – vaccinated	3	3

Influenza vaccination status

► *Continued from page 39*

There were 1,672 full-time equivalent nursing staff employed in these homes and 747 support staff (administrative, clerical and cleaning). This staff looked after a total of 3,158 full-time residents of whom 2,392 (80 per cent) were considered chronically debilitated. The patient to nursing staff ratio varied from 1:1 (40 per cent of homes) to 6:1 (10 per cent of homes).

VACCINATION STATUS

Forty-five institutions reported the vaccination status of either their nursing or support staff (Table 2 on page 40). This information was missing for nursing staff in eight and for support staff in seven nursing homes. Thus in only three (6 per cent) of nursing homes were more than 50 per cent of nursing staff thought to have been vaccinated. The equivalent figure for support staff was three (6 per cent) of nursing homes.

Forty-six institutions reported the vaccination status of their residents (Table 3 on page 40). Therefore while the vaccination status of many staff was not known, more than half the nursing homes had less than 80 per cent of residents vaccinated. There were three homes (10 per cent) where 100 per cent were vaccinated.

ORGANISATION OF VACCINATIONS

In most homes the staff organise their own vaccinations while among residents the service is provided equally by the person's doctor or in conjunction with the home (Table 4).

PUBLIC HEALTH IMPLICATIONS

The avoidance of major outbreaks in these institutions depends on the presence of high levels of herd immunity. Although there are no Australian recommendations about optimal immunisation rates, US recommendations are that at least 80 per cent of people in such settings should be immunised if there

TABLE 3

VACCINATION STATUS OF NURSING HOME RESIDENTS

% of residents vaccinated	Number of nursing homes	(%)
<50% vaccinated	5	(10)
50-79% vaccinated	17	(34)
>80% vaccinated	24	(48)
Missing data	4	(08)
Total	50	(100)

is to be adequate herd immunity[3]. Just under half the homes surveyed reported a level of vaccination among residents that met this US criterion. In most homes the vaccination level among staff was either unknown or inadequate. As a result the level of protection afforded appears less than desirable.

A major limitation of the survey is the relatively low response rate. This has not been investigated further. It may be that the non-responding homes were those where full coverage had been achieved although this is not thought likely. Therefore the level of protection could be improved.

Similar findings to these are in an unpublished report (in press) from Victoria. If these findings are common, a major influenza outbreak within the State could result in much unnecessary morbidity and mortality. Last year there was no influenza epidemic in Australia and therefore the Victorian surveillance system did not find a rise in death and hospital morbidity. However the levels of immunisation reported in this study are a cause for concern. Public Health Units should plan strategies in reponse to these findings before a major outbreak occurs.

Robert Reznik, Public Health Unit for Central and Southern Sydney

1. Department of Health and Community Services, Victoria. Influenza Surveillance 1992. Influenza Newsletter No. 12.
2. National Health and Medical Research Council. Immunisation Procedures. Fourth Edition, AGPS 1991. p83.
3. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. Washington DC. Department of Health and Welfare, Public Health Service 1991, p521.

TABLE 4

ORGANISATION OF VACCINATIONS

Who provided the vaccinations?	Nursing home staff	(%)	Residents	(%)
Institution	4	(08)	9	(18)
Own physician	34	(68)	19	(38)
Both	5	(10)	20	(40)
Missing data	7	(14)	2	(04)

VICTORIAN PUBLIC HEALTH TRAINEE SCHEME

In 1988 the Victorian Parliament passed the Health (General Amendment) Act. This was a radical revision of the public health legislation and symbolised the reaffirmation of the importance of public health as a key element of the State's health system. It acknowledged that public health must now embrace preventive approaches, have a working relationship with health promotion and be able to address physical planning and lifestyle issues. It must understand its part in the context of environmental controls, occupational health and safety measures, social justice and global concepts such as the Ottawa Charter.

The Victorian training scheme is both a preparation for, and a reflection of, the new enthusiasm for public health within its wider context. It has been designed to ensure there is a passing on of professional wisdom and also to open up the key resource of the Health and Community Services Department to wider professional interaction.

Population medicine has a long and varied history. If anything has been learned over the decades, it is that as one problem is brought under control, another arises. As each challenge emerges there is a need to train new staff or retrain existing staff to meet it. The Victorian trainee scheme is therefore designed as a vocational training program. It is not only essential to the effectiveness of the organisation but also to the construction of a proper career structure, which is invaluable in the recruitment of quality staff.

The Victorian Public Health Trainee Scheme was established in 1990 by creating three permanent medical positions. To be eligible for recruitment candidates need to undertake post-graduate training in public health. The vocational experiential program consists of part-time training and part-time in a service area. The service area chosen has been in infectious diseases because of the need to replenish staff levels and because it offered the most challenging and rigorous learning experience in the public health section of the Department.

The training component offers a wide range of opportunities which combine traditional public health activities with the modern tools of epidemiology, health promotion and health policy and planning. Participants are rotated through a number of placements which vary in length from three to six months over a period of two years. Rotations have been available in the following areas.

- applied epidemiology (communicable and non-communicable);
- microbiological aspects of public health;
- health sector information systems and health status epidemiology;
- health promotion/education;
- public health research and evaluation;
- nutritional health;
- toxicology and environmental health;
- injury prevention surveillance; and
- cancer prevention.

Most of these rotations have taken place outside the Department and have involved organisations such as the Anti-Cancer Council of Victoria, the Microbiological Diagnostic Unit at Melbourne University, the Macfarlane Burnet Centre for Medical Research and the Monash Accident Research Centre. Participants have found the rotations excellent and the supervision by staff of these organisations outstanding.

In 1991 the Victorian scheme was opened to non-medical participants, but recruitment through new positions was not possible. New participants, of which there were five, were obtained by secondment from various parts of the Department. By 1992 the Department approved the establishment of a further three permanent medical positions. These were supplemented in 1991 and 1992 by medical registrars undertaking a Masters in Applied Epidemiology in the Australian National University on placement in Victoria for two years.

Since it began in 1990 the Victorian Public Health Trainee Scheme has had eleven participants — eight medical and three non-medical. Four medical officers have graduated from the scheme. One graduand is working in the Environmental Health Unit of the Department and was recently promoted. A second graduand was awarded a fellowship funded by the Victorian Health Promotion Foundation to complete a Master of Science (Epidemiology) course at the University of California. She returns to the Department later this year. The other two graduands are involved in innovative and challenging activities in the Department. One is piloting a project on immunisation in the metropolitan north-east health region, and the other is assisting in a study of the health status of Victorians, a project which is a focal point for descriptive epidemiology developments.

The creation of medical trainee positions as permanent positions, as opposed to supernumerary or short-term positions, has been perceived as an advantage in that once graduated, trainees have the option of staying on to continue a public health career with the Department.

One disadvantage of the arrangement is the lack of a dedicated training budget. This has limited the capacity to plan ahead and take into consideration public health workforce planning. In future it is hoped that recruitment from a broader professional background can take place.

As conceiver, initiator and coordinator of the Victorian Public Health Trainee Scheme, I am happy with the contribution it is making to public health, to the organisation and to the career prospects of participants. The scheme would not have got off the ground without the generous participation of a wide range of people and organisations. Many professionals have given much time and knowledge to set enthusiastic, young feet on the path of learning. Although the scheme is still young, it has become an integral part of public health training but much is yet to be achieved.

Cathy Finocchiaro, Manager
Public Health Development and Liaison Unit
Department of Health and Community Services, Victoria

Rural restructure

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means about 730 mothers will need antenatal care and education and every year we will need to start immunisation for 730 babies.

There will be about 500 people with diabetes, 100 epileptics, 4,000 asthmatics and 200 schizophrenics. About 1,500 people will have some degree of developmental disability. An examination of the data on the known prevalence of disease in this way will assist in the definition of an appropriate range of services[1].

None of the District Health Services will have a population which conforms exactly to this average. In some there will be significant Aboriginal populations and the services will need a special focus to meet their health needs. Others may have distinctive problems such as children with high lead levels.

Having defined the particular health characteristics of the district, the challenge is to ensure the health services are designed to meet these needs and not just to treat those who come through the door. All the resources must be aimed at achieving improvements in health.

It is likely there will be positions in Districts for District Managers of Clinical Services, and it is hoped these positions will be filled by people with a public health training and perspective.

Public health staff cannot afford to sit back and watch these changes. They need to be in with the action from the beginning.

Sue Morey
Chief Health Officer

1. Normaltown NSW. J. Best. in print

INFECTIOUS DISEASES

TIMELINESS AND COMPLETENESS OF REPORTING

The following table lists the number of weekly reports made to the Epidemiology and Health Services Evaluation Branch for the past three months, i.e. from Epiweek 01 to Epiweek 12.

TABLE 5

NUMBER OF WEEKLY REPORTS MADE TO EPIDEMIOLOGY BRANCH: JANUARY-MARCH 1993

Public Health Unit	Number	Status
Central / Southern Sydney	10	Incomplete
Eastern Sydney	10	Incomplete
South Western Sydney	10	Complete
Western Sector	11	Complete
Northern Sydney	11	Complete
Central Coast	4	Complete
Illawarra	9	Complete
Hunter	10	Complete
North Coast	10	Complete
New England	9	Complete
Orana and Far West	10	Complete
Central West	9	Complete
South-West	11	Complete
South-East	11	Complete

SEXUALLY TRANSMITTED DISEASES

Surveillance of non-notifiable sexually transmissible diseases (STDs) through sexual health clinics (SHCs) began in 1992 to complement the reporting of notifiable STDs under the Public Health Act 1991. The establishment of SHCs in each Area/Region has created the potential for this sentinel surveillance system to provide trend data for these diseases. Thirteen of fourteen PHUs are now reporting data on non-notifiable STDs. Thirteen of sixteen Areas and Regions now have SHCs and of those, eleven have reported data for 1993. In addition, two of the three Regions without a SHC are reporting data from an alternative source.

WHOOPING COUGH

One hundred and eight cases of whooping cough have been notified in 1993. This is a 2.25 fold increase over the same period in 1992. Thirty-two per cent of notifications were received for people under the age of five years. Forty-six per cent of notifications were received for school-aged children, indicating that schools are a major setting for transmission of whooping cough. From 1994 children enrolling in NSW schools will be required to present evidence of immunisation. In the presence of a case of whooping cough, unimmunised children will be excluded for two weeks.

Wentworth Area Health Service reported the highest rate of pertussis notifications —21.0 per 100,000 population per year. The notification rate for the State is 7.3 per 100,000.

MEASLES

One hundred and fifty-four notifications for measles have been made in 1993 — an increase of 125 per cent over the same period last year. Seventy-eight per cent of notifications were for individuals over the age of one year, and therefore "preventable".

Thirty-one per cent of measles notifications were received for children in the school-age groups. Orana and Far West received measles notifications at a rate of 74 per 100,000 population per year compared with 9.4 per 100,000 for NSW.

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TABLE 6

PERCENTAGE OF NOTIFICATIONS WITH INCOMPLETE INFORMATION BY VARIABLE AND PUBLIC HEALTH UNIT, JANUARY-MARCH 1993.

PUBLIC HEALTH UNIT	AGE	SEX	ABORIGINALITY	ETHNICITY*
Central Sydney	Complete	Complete	9.4	7.6
Southern Sydney	Complete	Complete	43.5	43.5
Eastern Sydney	2.3	8.2	64.5	44.5
South Western Sydney	2.0	11.5	58.6	67.3
Western Sydney	0.3	Complete	14.0	14.0
Wentworth	Complete	Complete	4.8	9.5
Northern Sydney	5.4	Complete	96.0	76.0
Central Coast	1.2	2.4	87.5	25.0
Illawarra	1.9	1.9	95.1	97.6
Hunter	2.9	0.5	82.9	71.4
North Coast	1.5	4.8	25.7	28.6
New England	1.1	Complete	12.5	18.8
Orana and Far West	3.9	Complete	53.7	50.0
Central West	29.6	28.2	76.2	69.1
South-West	20.4	1.8	83.3	77.8
South-East	Complete	Complete	Complete	40.0

*Reportable only from medical practitioners and hospital Chief Executive Officers.

TABLE 7

NOTIFICATIONS OF NON-NOTIFIABLE SEXUALLY TRANSMITTED INFECTIONS JANUARY-MARCH 1993
(Clinical diagnoses from sexual health centres unless otherwise stated in footnote)

AHS Infection		CSA + SSA[1]	ESA[1]	SWS[1]	WSA[1] + WEN	NSA[2]	CCA[1]	ILL[1]	HUN[2]	NCR[3]	NER[2]	OFR[3]	CWR[4]	SWR[5]	SER[6]
Chlamydia trachomatis	Male	–	–	–	–	–	–	–	4	–	1	–	–	–	
	Female	–	–	–	–	–	–	–	4	–	3	–	–	3	
	Total	–	–	–	–	–	–	–	**8**	–	**4**	–	–	**3**	**1**
Donovanosis	Male	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Female	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Total	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Genital herpes	Male	–	–	–	–	4	–	–	5	1	–	–	–	–	
	Female	–	–	–	–	1	–	–	11	–	–	–	–	1	
	Total	–	–	–	–	**5**	–	–	**16**	**1**	–	–	–	**1**	**2**
Genital warts	Male	–	–	–	–	9	–	–	26	2	–	1	–	–	
	Female	–	–	–	–	7	–	–	7	–	4	–	–	–	
	Total	–	–	–	–	**16**	–	–	**33**	**2**	**4**	**1**	–	–	**7**
Non-specific urethritis	Male	–	–	–	–	3	–	–	17	1	–	2	–	–	
	Female	–	–	–	–	1	–	–	–	–	–	–	–	–	
	Total	–	–	–	–	**4**	–	–	**17**	**1**	–	**2**	–	–	–
Lymphogranuloma venereum	Male	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Female	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Total	–	–	–	–	–	–	–	–	–	–	–	–	–	–

1. No data yet received for 1993; 2. 01/01/93 — 28/02/93; 3. 01/01/93 — 31/01/93; 4. No SHC in Region; 5. No SHC in Region, laboratory data 01/01/93 — 31/03/93; 6. No SHC in Region, data from GP network 01/01/93 — 21/03/93.

TABLE 8

VACCINE PREVENTABLE DISEASE NOTIFICATIONS BY HEALTH AREA AND REGION CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Measles	29	3	3	33	15	11	1	1	5	10	14	1	26	1	1	–	–	154
Pertussis	1	2	3	13	10	15	27	1	6	6	3	1	3	16	1	–	–	108
Rubella	5	10	6	4	9	8	20	3	–	7	13	4	–	2	2	6	–	99
Tetanus	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	2

TABLE 9

RARELY NOTIFIED INFECTIOUS DISEASES BY HEALTH AREA AND REGION CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Brucellosis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Leptospirosis	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2	–	–	4
Listeriosis	2	–	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	5

Infectious diseases

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RUBELLA (GERMAN MEASLES)

Ninety-nine notifications for rubella have been received for 1993. This is an increase of 430 per cent over last year's notifications. Twenty-one notifications have been received for females in the 15-44 age group (i.e. child-bearing years), for a rate of 6.2 per 100,000 females per year. The notification rate for females of all ages in the State is 4.7 per 100,000 while the rate for males is 8.4 per 100,000. The higher rate in the females of child-bearing age may reflect the increased tendency to test for rubella in this age-sex group. Due to the non-specific nature of rubella, a degree of under-reporting of this condition is expected. The overall lower rate in females over males is due to the immunisation program targeted to schoolgirls.

The North Coast Region received notifications for rubella at a rate of 10.5 per 100,000 population per year. The rate for women between 15-44 years was 24.0 per 100,000 per year.

Seventy per cent of notifications were received in the first four weeks of 1993.

TUBERCULOSIS

Thirty-two cases of tuberculosis have been notified for 1993. Due to delays in laboratory confirmation, no comparison should be made with 1992 notifications for the same period. Central Sydney reported tuberculosis at a rate of 6.1 per 100,000 population per year. The rate for NSW was 2.2 per 100,000 population per year.

LEGIONNAIRES' DISEASE

Twelve notifications for Legionnaires' disease for 1993 represent a 25 per cent decrease over the same period for 1992. Isolates for seven notifications have been identified. Four (57 per cent) were for L. pneumophila, two (29 per cent) for L. longbeachae and one (14 per cent) for L. micdadei. No clusters of cases have been identified this year.

ANTIBIOTIC SENSITIVITY OF GONOCOCCAL ISOLATES

The previously noted upsurge in fully penicillin-sensitive WT/IB2 gonococci in male patients in Sydney has abated in favour of more resistant isolates in the same group of patients. Overall, penicillin resistance stands at just over 16 per cent.

There has been a substantial increase in the number and proportion of isolates fully sensitive to penicillin in male patients over the past two years. In the October-December 1992 quarter the number and proportion of these isolates declined. However, a marked increase in relatively resistant strains was recorded, again mostly in male patients.

No resistance to spectinomycin or ceftriaxone was detected throughout 1992.

Strains less sensitive to ciprofloxacin were detected in about 3 per cent of isolates, a proportion that has remained unchanged for many years.

High level tetracycline resistance was detected in eight strains (just under 4 per cent) in the October-December 1992 quarter.

ARBOVIRAL SURVEILLANCE

For the period July 1992 to March 1993, 378 notifications of arboviral infection were received by the Public Health Network.

By month of onset 50 notifications were received for January, 221 for February and 57 for March, with fewer than 15 notifications for the remaining months.

TABLE 10

SUMMARY OF NSW INFECTIOUS DISEASE NOTIFICATIONS MARCH 1993

Condition	Number of cases notified			
	Period		Cumulative	
	March 1992	March 1993	March 1992	March 1993
Adverse reaction	3	–	15	4
AIDS	31	5	90	45
Arboviral infection	97	57	164	328
Brucellosis	–	–	–	1
Cholera	–	–	–	–
Diphtheria	–	–	–	–
Foodborne illness (NOS)	21	6	101	16
Gastroenteritis (instit.)	16	2	110	37
Gonorrhoea	49	15	104	70
H influenzae epiglottitis	3	3	8	8
H influenzae B – meningitis	10	6	24	15
H influenzae B – septicaemia	3	4	6	7
H influenzae infection (NOS)	1	1	8	4
Hepatitis A	121	13	334	127
Hepatitis B	293	104	791	572
Hepatitis C	327	117	869	806
Hepatitis D	–	–	1	–
Hepatitis, acute viral (NOS)	1	–	4	1
HIV infection	68	22	225	106
Hydatid disease	2	–	4	–
Legionnaires' disease	3	2	16	12
Leprosy	–	–	3	–
Leptospirosis	–	–	7	4
Listeriosis	1	–	3	5
Malaria	14	4	38	18
Measles	33	22	123	154
Meningococcal meningitis	2	–	5	5
Meningococcal septicaemia	–	–	3	3
Meningococcal infection (NOS)	–	1	4	3
Mumps	2	–	11	–
Mycobacterial tuberculosis	36	3	163	34
Mycobacterial – atypical	49	–	116	10
Mycobacterial infection (NOS)	7	1	17	15
Pertussis	26	13	48	108
Plague	–	–	–	–
Poliomyelitis	–	–	–	–
Q fever	12	9	42	58
Rubella	8	12	23	99
Salmonella infection (NOS)	117	32	327	240
Syphilis	74	20	216	112
Tetanus	–	–	1	2
Typhoid and paratyphoid	2	2	12	10
Typhus	–	–	–	–
Viral haemorrhagic fevers	–	–	–	–
Yellow fever	–	–	–	–

By Area and Region the highest rates of notification were for South-West Region (128.7 per 100,000 population per year) and Orana and Far West Region (58.5 per 100,000 population per year) with the remaining Areas and Regions having rates less than 10 per 100,000.

By age and sex the highest rates were for the 30-39 age groups for both males and females (14.9 per 100,000 population per year and 14.2 per 100,000 population per year, respectively). The lowest rate was for females in 0-9 age group (0.9 per 100,000).

Of the 378 notifications 327 (86.5 per cent) were notified as Ross River virus.

HEPATITIS A

Since January 1993, 127 notifications of hepatitis A have been received by the Public Health Network compared to 273 for a similar period in 1992 (total notifications for 1992 was 930).

TABLE 11

INFECTIOUS DISEASE NOTIFICATIONS BY HEALTH AREA AND REGION CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Adverse event after immunisation	1	–	–	–	1	–	–	–	–	2	–	–	–	–	–	–	–	4
AIDS	5	–	21	2	–	–	3	–	–	–	5	2	1	2	4	–	–	45
Arboviral infection	–	1	–	–	–	–	2	1	–	6	9	6	55	8	237	3	–	328
Brucellosis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Foodborne illness (NOS)	–	–	–	2	5	3	–	1	2	–	–	–	3	–	–	–	–	16
Gastroenteritis (instit)	2	–	–	1	10	2	–	–	–	–	–	–	2	20	–	–	–	37
Gonorrhoea infection	10	5	30	–	5	–	3	–	2	2	3	6	3	–	1	–	–	70
H. Influenzae epiglottitis	1	1	1	–	–	1	1	–	–	1	–	1	–	–	–	1	–	8
H. Influenzae meningitis	1	1	–	–	2	1	–	1	4	–	2	3	–	–	–	–	–	15
H. Influenzae septicaemia	–	–	–	3	–	–	–	–	1	1	–	2	–	–	–	–	–	7
H. Influenzae infection (NOS)	–	–	–	–	1	1	–	2	–	–	–	–	–	–	–	–	–	4
Hepatitis A — acute viral	10	4	4	13	45	10	9	4	3	3	10	4	4	3	–	1	–	127
Hepatitis B — acute viral	1	–	–	–	–	–	–	–	–	–	11	1	–	–	–	–	–	13
Hepatitis B — unspecified	82	52	4	189	96	3	72	8	8	15	12	3	7	5	2	1	–	559
Hepatitis C — acute viral	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	2	–	3
Hepatitis C — unspecified	119	51	108	87	81	11	73	43	20	85	72	14	5	9	16	9	–	803
Hepatitis, acute viral (NOS)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
HIV infection	12	1	42	1	1	1	8	3	–	–	2	–	–	–	1	–	34	106
Legionnaires' disease	2	1	–	4	4	–	–	–	–	–	–	–	–	–	–	1	–	12
Leptospirosis	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2	–	–	4
Listeriosis	2	–	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	5
Malaria	–	–	–	1	2	–	3	–	1	4	–	5	–	–	2	–	–	18
Measles	29	3	3	33	15	11	1	1	5	10	14	1	26	1	1	–	–	154
Meningococcal meningitis	–	–	–	1	–	–	1	–	–	–	1	–	1	–	1	–	–	5
Meningococcal septicaemia	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	1	–	3
Meningococcal infection (NOS)	–	–	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–	3
Mycobacterial atypical	1	–	–	–	4	–	2	–	–	2	1	–	–	–	–	–	–	10
Mycobacterial tuberculosis	5	4	4	–	7	1	4	2	–	4	1	2	–	–	–	–	–	34
Mycobacterial infection (NOS)	7	1	–	–	–	–	5	–	–	1	–	–	1	–	–	–	–	15
Pertussis	1	2	3	13	10	15	27	1	6	6	3	1	3	16	1	–	–	108
Q fever	–	–	1	–	2	–	1	–	–	5	12	10	24	–	1	2	–	58
Rubella	5	10	6	4	9	8	20	3	–	7	13	4	–	2	2	6	–	99
Salmonella bovis morbificans	–	3	–	–	–	–	1	–	–	8	–	–	–	–	–	–	–	12
Salmonella typhimurium	2	5	3	9	–	–	4	–	–	9	2	1	9	–	–	3	–	47
Salmonella (NOS)	5	16	16	12	5	2	19	15	1	32	16	19	13	2	4	4	–	181
Syphilis infection	10	3	14	26	5	–	6	2	1	1	15	7	21	1	–	–	–	112
Tetanus	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	2
Typhoid and paratyphoid	1	–	3	–	–	2	2	–	–	–	2	–	–	–	–	–	–	10

In 1992 the 20-29 age group had the highest rate of hepatitis A notifications (26.7 per 100,000 population) followed by the 0-9 age group (22.7 per 100,000), while for 1993 the highest rate is in the 0-9 age group (18.9 per 100,000), followed by the 10-19 age group (14.2 per 100,000).

The ratio of male to female cases was 1.7:1 in 1992, compared to 1.1:1 in 1993.

The highest rate of notification by Area or Region was 63.4 per 100,000 population per year for Orana and Far West Region in 1992 and 29.4 per 100,000 for Western Sydney Area in 1993.

SALMONELLA ENTERITIDIS PHAGE TYPE 4

Salmonella enteritidis and in particular Salmonella enteritidis phage type 4 (PT4) has emerged as a major pathogen in many Western European countries, particularly in the United Kingdom as well as the United States in the past decade. In the United Kingdom isolations of S. enteritidis PT4 increased from 392 in 1981 to 12,522 in 1988, a period when isolations of all other salmonella serotypes combined increased by only about 50 per cent.

The importance of this organism is not just its apparent increased virulence but its means of transmission; not only the traditional mode of transmission associated with foodborne salmonellosis being that of contaminated animal carcasses, external contamination of egg shells or cracked eggs contaminating food through inadequate cooking or cross-contamination but S. enteritidis can cause a systemic infection in chickens, invading the ovaries and oviducts resulting in transovarian contamination of intact eggs.

Epidemiological evidence has linked whole raw eggs as a significant vehicle of transmission, however the organism is also a significant contaminant of raw chickens. A case-control study of laboratory isolations in England identified fresh shell eggs, raw shell egg products (home-made mayonnaise, ice cream and milk drinks containing eggs) and pre-cooked hot chicken as the significant vehicles of infection with S. enteritidis PT4 in indigenous sporadic cases.

Incidence in Australia

In Australia there has been no apparent change in demographic distribution and incidence of S. enteritidis over the past decade. The organism has always been isolated at low frequency, particularly from North Queensland, with phage types 4 and 26 being the most common isolated. Strains of the organism isolated in Australia do not appear to differ from those isolated overseas in terms of their plasmid content or lipopolysaccharide structure, two of the factors believed to contribute to the virulence of the organism.

Incidence in NSW

In 1991 there were 14 notifications of S. enteritidis (of which four were PT4) for NSW, which represented around 1 per cent of total notifications for the year. In 1992 there were 19 notifications, which represented around 2 per cent of total notifications. Seven of the notifications of S. enteritidis received in 1992 have been identified as PT4. Six of these were associated with overseas travel (three from South-East Asia, one from Portugal, one from Spain and one from Europe).

To the end of March 1993 there have been six notifications of S. enteritidis, three of which have been S. enteritidis PT4.

Continued on page 46 ▶

IMPROVING NOTIFICATIONS OF MENINGITIS

Infectious disease notification requirements changed in November 1991 with the introduction of the Public Health Act 1991. The number of medical conditions that medical practitioners were required to notify fell from 52 to 10, and responsibility for notification was given to hospital Chief Executive Officers (CEOs) and laboratories[1].

Meningococcal infection was one of the diseases notifiable by medical practitioners under the Public Health Act 1902. From November 1991 meningococcal meningitis and septicaemia became notifiable by hospital CEOs and by laboratories. Haemophilus influenzae type b (Hib) epiglottitis, meningitis and septicaemia became notifiable by laboratories and hospital CEOs for the first time in NSW.

We reviewed methods of case ascertainment of bacterial meningitis to:

- determine the trends in disease incidence; and
- compare the efficiency of different data sources for case ascertainment.

METHODS

Hospital separations

The number of hospital separations was calculated using the Inpatient Statistics Collection (ISC), a computer database of data routinely collected on each patient discharged from hospital. Diagnosis is coded using the International Disease Classification, 9th revision — Clinical Modification (ICD9-CM).

Data were extracted for three financial years, 1989-1990, 1990-1991 and 1991-1992. Records coded for meningococcal meningitis (code 036.0), meningococcal septicaemia (036.2) and meningococcal infection (not otherwise specified — NOS) were extracted. Duplicate records representing transfers between hospitals, and cases of neonatal meningitis were excluded. In addition, records for Hib (320.0), septicaemia (038.4) and epiglottitis (464.3) and bacterial meningitis (320.0-320.9) were extracted for the financial year 1991-1992.

Infectious disease notifications

Passive surveillance of infectious diseases occurs in NSW through notifications to Public Health Units. These notifications have been recorded on a computer database, called the Infectious Diseases Surveillance System (IDSS) since 1991. Notifications for meningococcal infection in the years 1989 to 1992 were extracted from IDSS and Hib infection for 1991 and 1992. Cases of neonatal meningitis and duplicate records were excluded.

Rate calculation and matching of datasets

Records from ISC and IDSS for 1991-1992 were matched on date of birth, postcode of residence and date of admission.

Incidence rates were calculated using denominators obtained from the Australian Bureau of Statistics (ABS)[2].

RESULTS

There were 322 separations for bacterial meningitis for the period July 1, 1991 to June 30, 1992 — a rate of 5.5 per 100,000 population. Of these, 74 were meningococcal meningitis at a rate of 1.3 per 100,000 and 137 were Hib meningitis at a rate of 2.3 per 100,000. The remaining 110 separations were for meningitis due to unspecified bacterium (0.9 per 100,000), pneumococcal meningitis (0.5 per 100,000), and streptococcal meningitis (0.3 per 100,000), meningitis due to other specified bacteria (0.1 per 100,000) and Staphylococcal meningitis (0.05 per 100,000).

For children aged between four weeks and five years there were 210 separations for bacterial meningitis, a rate of 48.1 per 100,000. Of these, 35 were meningococcal infection (8.0 per 100,000) and 127 Hib infection (29.1 per 100,000). In all, more than 66 per cent of the cases of meningitis occurred in children less than five years of age and 60 per cent of these were due to Hib infection.

In 1989-1990, 49 per cent of the meningococcal meningitis cases identified through hospital separations were identified in the passive surveillance system (Table 12). This had risen to 55 per cent in 1990-1991, and to 84 per cent in 1991-1992. When the records for 1991-1992 were matched, 70 per cent of the IDSS could be matched in the ISC.

Before November 1991 meningococcal infection notifications to the NSW Department of Health were not required to be differentiated into meningitis and septicaemia. This is evident in the high proportion of notifications which were unclassified. If the cases are compared, including those in

Infectious diseases

► *Continued from page 45*

Two of the notifications of PT4 have been identified as being related to overseas travel (Hong Kong and Sri Lanka). One case is still being investigated by Northern Sydney Public Health Unit staff.

The incidence of S. enteritidis in NSW has been low with no significant increase in the past decade, however because of the virulence of S. enteritidis PT4 and the potential of the organism to become a major pathogen and contaminant of raw shell eggs all notifications of S. enteritidis should be investigated urgently and with extreme thoroughness.

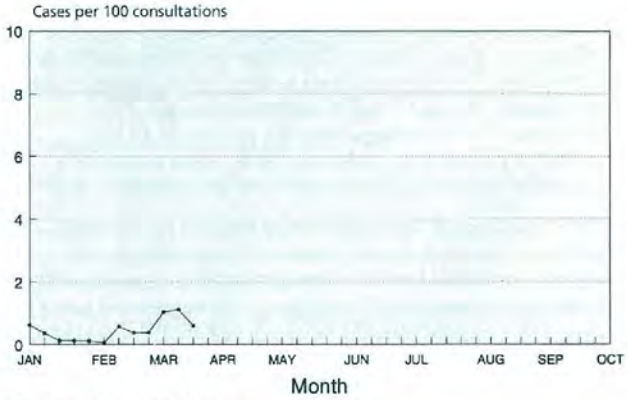
Edward Kraa, Policy Analyst, Foodborne Disease Surveillance

INFLUENZA SURVEILLANCE

Levels of Influenza-like illness (ILI) diagnosed by general practitioners in our sentinel GP network were low in March. No Area or Region has reported a level greater than two cases per 100 consultations this year. During March data were received from four PHUs.

FIGURE 2

INFLUENZA-LIKE ILLNESS NSW 1993



Source: NSW Sentinel GP Network

Prince of Wales laboratory has reported four diagnoses of influenza A and three of influenza B up to the end of February.

the unclassified category, the number of infections identified through hospital separations compared to passive surveillance still improved, with 72 per cent identified in 1989-1990, 84 per cent in 1990-1991 and 102 per cent in 1991-1992.

The cases of Hib identified by passive surveillance are presented only for 1991-1992, as this condition was not notifiable before this time (Table 15). One hundred and two cases of Hib meningitis were recorded by passive surveillance. This was 74 per cent of those recorded as hospital separations. Overall, 83 per cent of Hib infections were recorded in the passive surveillance system, compared to hospital separations.

Discussion

For the period 1988-1992 the rates for bacterial meningitis and meningococcal meningitis in adults have remained stable. The rate for meningococcal meningitis in children aged less than five years has fallen, but the overall rate of bacterial meningitis in children has risen, as a result of an apparent increase in the incidence of Hib meningitis.

Overseas reports indicate the incidence of both meningococcal and Hib meningitis is increasing[3,4,5]. Concern about a rise in the incidence of bacterial meningitis in NSW and Australia has been raised[6,7]. This study's findings do not support an increase in bacterial meningitis overall, but there is an apparent rise in the incidence of Hib meningitis, based on hospital separations for 1989-1992. Deaths from Hib meningitis have also risen, with four deaths reported by the Australian Bureau of Statistics in 1987-1989, and seven in 1991.

Previous studies have found the best methods to estimate the incidence of meningococcal disease were active surveillance and hospital separations. Active surveillance was considered to provide the most accurate timely information, but it is labour intensive, expensive and not a useful routine surveillance method[6]. The ISC is an existing data source which is simple and inexpensive to access, but provides an underestimation of true incidence of disease[7]. Passive surveillance in both these studies detected only 19 per cent[1] to 54 per cent[6] of the incident cases reported by other methods.

Passive surveillance underestimates the incidence of meningococcal disease by 26 per cent. This appears to be largely a result of the classifications of many cases into NOS before October 1991 when meningococcal infection was not required to be differentiated into meningitis and septicaemia. If all the meningococcal cases identified by the passive surveillance system, including those identified as NOS, are compared to the cases discharged from hospital, more cases are identified through the passive system.

The excess of notifications over cases in the ISC may be due to the spectrum of illness, from patients who die before being admitted to hospital, and at the other end of the spectrum, patients who are not sick enough to warrant admission to hospital and improve with oral antibiotics, but have positive blood cultures.

Only 70 per cent of the records for the two datasets could be matched because the passive system records onset of illness and ISC records hospital discharge. Furthermore, unavoidable data-entry errors led to inaccuracies.

It is clear from our results that passive surveillance of meningococcal meningitis using notifications to the NSW Health Department is improving since the introduction of the 1991 Public Health Act. This system now detects at least 75 per cent of the cases recorded as being discharged from hospital. With improving classification of meningococcal notifications, the percentage of cases which passive surveillance detects should equal and possibly exceed those detected using hospital separation data.

Cait Lonie, Michael Levy

TABLE 12

INCIDENCE OF MENINGITIS PER 100,000 NSW POPULATION

Type of meningitis	1988-89	1989-90	1990-91	1991-92
All bacterial	5.4[6]	5.1[6]	5.6[8]	5.5
Meningococcal	1.2[6]	1.4[6]	1.4[8]	1.3
Hib	1.9	2.0	2.1	2.3

TABLE 13

INCIDENCE OF MENINGITIS IN CHILDREN PER 100,000 CHILDREN AGED LESS THAN FIVE YEARS OF AGE

Type of meningitis	1989-90	1990-91	1991-92
Meningococcal	10.5[6]	11.2[8]	8.0
Hib	25.7*	26.3[8]	29.1
Bacterial meningitis	38.4	44.8	48.1

*Calculated in this study, but a previous study reported this rate at 13.6[6]

TABLE 14

MENINGOCOCCAL INFECTIONS — COMPARISON OF PASSIVE SURVEILLANCE (PS) WITH HOSPITAL SEPARATIONS (ISC), 1989-1992.

Disease type	1989-1990			1990-1991			1991-1992		
	PS	ISC	%est*	PS	ISC	%est*	PS	ISC	%est*
Meningitis	35	71	49	45	82	55	62	74	84
Septicaemia	7	22	32	15	25	60	15	24	63
NOS	27	3	900	31	1	3100	26	3	867
Total	69	96	72	91	108	84	103	101	102

*%est is the per cent of hospital separations estimated by passive surveillance

TABLE 15

HAEMOPHILUS INFLUENZAE TYPE B – COMPARISON OF PASSIVE SURVEILLANCE AND HOSPITAL SEPARATIONS, JULY 1991-JUNE 1992

	Passive surveillance	Hospital separations	Per cent estimated by passive surveillance (%)
Meningitis	102	137	74
Septicaemia	23	28	82
Epiglottitis	43	131	33
NOS	78	NA	NA
Total	246	296	83

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BACTERIAL MENINGITIS AND SEPTICAEMIA GUIDELINES

Morbidity and mortality associated with bacterial meningitis and septicaemia may be reduced by primary, secondary and tertiary prevention. Vaccination is a primary prevention method available for some meningococcal disease and Hib. The vaccine for meningococcal disease is effective only for types A and C. Its use is indicated when there is a threat of an epidemic and for those travelling to countries with high meningitis rates.

Effective vaccines are now available to prevent Hib infection. These can be given to children aged two months to five years, and it is expected Hib vaccination will be placed on the National Health and Medical Research Council immunisation schedule from July 1993. These vaccines have dramatically reduced the incidence of Hib infection in America[1] and Finland[2].

Secondary prevention is available for Hib and meningococcal disease. This involves the use of chemoprophylaxis in close contacts of the case, as soon as possible after exposure. The definitions for close contacts are outlined in the Infectious Disease Manual[3] held by each Public Health Unit.

Tertiary prevention is aimed at the early identification and management of cases of bacterial meningitis and septicaemia. Reports from England indicate early treatment of suspected cases of meningococcal disease with benzylpenicillin reduces its mortality[4]. This has led health authorities in the United Kingdom, New Zealand and Victoria to recommend that general practitioners carry benzylpenicillin in their emergency bags and give this parenterally when meningococcal disease is suspected.

The Bacterial Meningitis and Septicaemia Advisory Committee was formed by the NSW Health Department to develop guidelines for early diagnosis and management of bacterial meningitis and septicaemia. The literature on tertiary prevention was reviewed and experts in the area were consulted. Data on meningococcal deaths for the period June-October 1991 were reviewed.

Recommendations for improving early diagnosis and management were developed for groups likely to see people with these diseases, specifically parents and carers of young children, GPs and Emergency Department staff. The guidelines are as follows:

Early identification by parents and carers

To improve all parents and carers' awareness of bacterial meningitis and septicaemia, child care centre staff should:

- know the principles for reducing transmission of infectious diseases; and
- have information leaflets on meningitis and *Haemophilus influenzae* type b disease that can be distributed to parents.

To improve parents and carers' knowledge of the early symptoms and signs of meningitis and septicaemia after the case has attended a child care centre, staff should:

- know they are infectious and potentially lethal diseases;
- know the early symptoms and signs that may present in children; and
- give parents of exposed children a letter outlining their child's exposure and the relevant information leaflet.

To improve parents' knowledge of the early symptoms and signs of bacterial meningitis and septicaemia after their child has been exposed, PHU staff should:

- give parents the relevant information leaflet.

To ensure that parents appropriately seek further medical advice after their child has been discharged from an Emergency Department or from a doctor's surgery, doctors should:

- advise parents of the symptoms and signs that would indicate a deterioration requiring further treatment. These should be written instructions. The information page on fever (page 43) in The Personal Health Record (The Blue Book) is ideal.

Identification by general practitioners and appropriate referral

To improve early identification of patients with meningitis or septicaemia, GPs should have:

- an overview of the early symptoms and signs that occur in bacterial meningitis and septicaemia, in particular the non-specific nature of these in young children and the need for a high index of suspicion in these patients; and
- simple guidelines for assessing the severity of illness in a child.

Where diagnosis is not clear at the first consultation, the GP should consider reviewing the patient within a few hours.

To improve early treatment, GPs should:

- have benzylpenicillin available at all times, either in the emergency drug (doctor's bag) supplies or at their surgeries; and
- administer benzylpenicillin immediately to all patients with suspected meningococcal septicaemia or meningitis.

To improve transfer of suspected cases to hospital, GPs should:

- notify the admitting officer at the local hospital of impending transfer; and
- organise the most efficient transport available for patient transport.

Institution of early treatment and investigation by emergency department staff

People presenting to emergency centres may be presenting for the first time or may have been referred.

To improve early identification and treatment, staff should:

- note the severity of illness and inform attending doctors. Advice from the referring doctor should be used in this assessment;
- institute treatment with benzylpenicillin immediately in cases of severe illness, even before lumbar puncture or blood cultures are taken. In other cases, institute treatment with benzylpenicillin immediately after the investigations have been performed, before results become available;
- be aware that a CT scan is not routinely indicated in a case of suspected meningitis. When there is suspected herniation, including progressive loss of consciousness, pupillary changes, absent oculocephalic reflexes and abnormalities in posture and respiratory pattern, lumbar puncture may complete coning. In these cases, blood cultures should be taken and antibiotics commenced immediately, before the CT scan;
- be aware that diagnosis may still be made on gram stain and culture of biopsied skin lesions, or by antigen detection. Supportive evidence may be obtained by growth of meningococci from a throat swab;
- admit any patient who has a differential diagnosis of bacterial meningitis or septicaemia, unless this has been excluded by investigation in the Emergency Department; and
- provide written guidelines to patients or their parents on discharge from Emergency Departments to ensure they know the symptoms and signs of a deterioration requiring further medical advice.

To improve control measures, hospital Chief Executive Officers should:

- notify the Medical Officer of Health (MOH) in their Area or Region as soon as a case of Hib or meningococcal disease is diagnosed. The MOH can be contacted through the Public Health Unit. All PHUs have after-hours contact arrangements.

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