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IMPROVED TRACKING FOR HIV

Surveillance of Human Immunodeficiency Virus Infection, NSW, January 1984-June 1989

The Department of Health aims to collect accurate information on the number of people infected with the human immunodeficiency virus (HIV) and their characteristics to track the course of the condition in specific population subgroups and to assist in planning health services for HIV-related health conditions.

Since the introduction of specific HIV/AIDS notification and surveillance procedures in April 1986, both medical practitioners and HIV laboratories have been responsible for providing data concerning HIV to the NSW Department of Health. The lack of a standard HIV test request form hampered efforts to collect reliable epidemiological data from laboratories, and surveillance of HIV infection relied on reports received from medical practitioners. In 1987 the National Health and Medical Research Council Special Unit in AIDS Epidemiology and Clinical Research (now the National Centre in HIV Epidemiology and Clinical Research) and the Department of Health, NSW agreed that HIV surveillance be conducted by collecting reference laboratory data. This recommendation.was endorsed by the NSW Ministerial Advisory Committee on AIDS which recommended procedures in October 1987.

The three HIV reference laboratories in NSW are the Serology Laboratory, Prince of Wales Hospital (POW); the AIDS Laboratory, Centre for Immunology, St Vincent's Hospital (SVH); and the HIV Laboratory, Institute for Clinical Pathology and Medical Research, Westmead Hospital (WMH). In addition to conducting screening tests, these laboratories receive all screen-positive and indeterminate samples from other laboratories for confirmatory testing. The only exception to this is the laboratory at Royal Prince Alfred Hospital which conducts its own confirmatory testing.

Doctors requesting HIV tests are now asked to complete a request form specific to the laboratory where the sample is to be processed and to provide the following information: patient identifier — either initials, name (for hospital inpatients), or a code generated by the medical practitioner or clinic attending the patient; sex, date of birth, postcode of residence, transmission category, clinical information, whether the patient has been previously tested for HIV infection and the result of any previous test. This last data item was introduced at the suggestion of the Ministerial Advisory Committee on AIDS to overcome the difficulties of double counting. As the request form promoted

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Improved Tracking for HIV

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use of clinic codes rather than names and addresses, it was important to differentiate specimens belonging to patients who were newly diagnosed positive, from specimens belonging to patients who had previously been tested and returned a positive result.

For each reference laboratory data base we counted a group of specimens as a single 'case' if identifying codes matched. We did not use gender or date of birth for matching as these fields had not been completed on many test requests (Table 1). Because patient identifiers are not necessarily the same at different laboratories it was not possible to cross-match cases between laboratories, so those cases confirmed at more than a single laboratory have been counted at each. Similarly, patients attending more than a single clinic during the 5.5 year reporting period have been counted separately for each clinic patient identifier assigned to them.

We used only the well-known patient risk categories which could be unambiguously combined over time and data source (Table 2). Patient risk category information is collected differently by laboratories; indeed within laboratories over time. The detailed definitions used by each laboratory were therefore considered in judging which groups could be appropriately used in summarising the data. For example, it would have been of interest to collate data on needle stick incidents and the like. However, the most relevant risk group used at WMH during 1987 and 1988 is broadly defined to include needle stick injury, stood on syringe, bitten, blood splash in eyes, cut finger with contaminated scalpel, tattoos, whereas in 1985, 1986, and 1989 a similar group is defined as needle stick, mucosal splash only. At SVH there are codes for lab/hospital staff to cover routine testing, but for this very reason the code does not refer to a specific transmission category. Groups of this kind are listed as specified, not elsewhere classified in Table 2. Finally, some groups which were assigned separate codes at particular laboratories had to be merged because other laboratories did not make the same distinction. Examples are the inclusion of haemophilia within the transfusion group, and the use of a combined gay/bisexual group.

For the reporting period January 1984 to June 1989, a total of 9979 cases were identified: 293 (3%) from Prince of Wales, 8343 (84%) from St Vincent's, and 1343 (13%) from Westmead. Of these, we excluded 1670 (17%) because their request forms indicated a previous positive test result. Of the remaining 8309 cases, 6809 (82%) were from SVH, 1263 (15%) from WMH and 237 (3%) from POW. The number of new cases identified per quarter at each source and in total is shown in Figure 1.

Table 1 demonstrates the data quality for specific variables which are relevant for epidemiological purposes. There is a general change in data quality during the period when specific test request forms were being introduced by screening laboratories and reference laboratories. We chose the beginning of July 1987 as an appropriate dividing point between the previous and current systems. As the use of these forms steadily increased since then, we also show the most recent data available — for the second quarter of 1989. Postcode data were so rarely provided on request forms that they were not requested from laboratories when compiling the summary data reported here. Data were, however, provided from WMH, and estimates from an earlier analysis of the SVH data set are included for illustration. The last two fields deserve particular attention, since they indicate the effect of asking doctors to use their knowledge of the patient's clinical history to distinguish new cases from previously-known positives. Without this information we would have considerably over-

TABLE 1

PERCENTAGE OF COMPLETED DATA ON HIV REQUEST FORMS BY VARIABLE, LABORATORY, AND TEST PERIOD

Period	Before Mid 87			Since Mid 87			Second Quarter 89		
Laboratory	POW	SVH	WMH	POW	SVH	WMH	POW	SVH	WMH
No of cases	106	5318	564	187	3025	779	29	352	114
Info provided:	%	%	%	%	%	%	%	%	%
Gender	99	53	74	95	97	90	83	97	91
Age/DoB	64	29	63	88	80	78	79	84	76
Risk Group	73	15	18	73	79	47	93	81	12
Postcode	N/A	1	20	N/A	26	38	N/A	62	41
Previous Test	14	3	3	33	54	12	86	86	41
Previous Test +	8	3	2	25	46	9	79	69	5

TABLE 2

HIV CASES BY RISK GROUP AND SEX, NSW, January 1984-June 1989

RISK GROUP	SEX			TOTAL
	F	M	U	
Sexual Contact	4	33	5	42
Gay/Bisexual	6	1679	124	1809
Heterosexual Contact	11	41	–	52
IVDU	21	81	15	117
Transfusion	17	68	2	87
Child-Mother Positive	4	6	1	11
Gay/Bisexual + IVDU	1	35	4	40
Heterosexual + IVDU	3	7	–	10
Gay/Bisexual + Transfusion	–	1	–	1
Specified, n.e.c.[1]	32	247	38	317
Unknown	194	3052	2577	5823
Total	**293**	**5250**	**2766**	**8309**

1. not elsewhere classified

Continued on page opposite ►

estimated the number of new positives at both POW and SVH in the second quarter of 1989, and at SVH for the whole period since July 1987.

For the 67% of cases with known sex, 95% were reportedly male and 5% female. This remained relatively stable over time, with the male percentage in the range 95-96% since 1986, as against 93% in 1985 and 91% in 1984. The age distribution at the time of confirmation also remained stable during the study period (Figure 2). Of those with known risk category, 73% were reportedly gay or bisexual and 5% were reported as intravenous drug users (Table 2). Fifty-two cases reported heterosexual contact as a risk factor and eleven HIV positive children were reported to have HIV positive mothers.

These data, the first estimates of HIV infected persons using data provided by reference laboratories in NSW, were reported to the National Centre in HIV Epidemiology and Clinical Research early in 1990[1].

It is likely that our figures do not accurately represent the true number of HIV infected persons in NSW. On the one hand there are several reasons why we may have over-estimated the true number. First, it is likely that persons were tested at the same laboratory with a different identifier or were tested at different laboratories with the same or different identifiers. In either case we would have double counted such persons.

Second, the absence of a field for previous HIV testing in earlier years, combined with the use of coded identifiers, makes the estimated numbers likely to contain duplicates. Relying on the coded identifier fields alone increased our estimate by 20 per cent. *Adequate data on previous history are essential to compensate for the difficulties introduced by inadequate patient identifiers.*

Third, because of incomplete data we were unable to make positive matches on date of birth and gender. Using these poorly-completed fields in the matching criteria yielded a new case for every person of unknown gender and/or date of birth.

On the other hand our figures may under-estimate the true number of cases. An unknown proportion of persons with HIV fail to get tested. Of persons presenting with AIDS at two of the major centres for AIDS management, 18-20% have not been previously tested (Dr Roger Garsia, and Dr Philip Jones, personal communications, May 3, 1990).

Changes in data quality over time (Table 1) result in corresponding changes in the ability to match cases, and thus to estimate the number of newly-identified cases in each time period. This in turn creates considerable uncertainty in projections of the future need for HIV-related services and the funding to provide them. Similarly, the high proportions of missing data in fields such as risk group and postcode, limit our ability to estimate the regional distribution of HIV infection or the groups likely to require services. The most common single subgroup in this data has "unknown" status on all demographic variables.

Fortunately, the more recent data suggest that substantial improvements in data quality can be achieved through relatively simple changes in procedure. To improve tracking HIV infection in NSW we propose to:

- Clarify legislation concerning reporting of persons with HIV infection and AIDS. The Department of Health is currently reviewing related regulations. Completion of all fields on an HIV test request form would be all that would be necessary to notify a case of HIV infection.
- Introduce standardised HIV test request forms throughout the State. All request forms should collect exactly the same information.
- Develop mechanisms for HIV reference laboratories to check new positive results with their existing positives data set. This would decrease the work load to obtain further information on those persons with a positive test and missing information on the request form. The data from POW have been improved by procedures for comparing identifiers for new positive results with the laboratory's historical list of positives and by allowing patients to be matched manually when automated matches fail. Similar labour-intensive procedures which are now being applied to the SVH and WMH data are expected to reduce our current estimate of the number of cases and to considerably improve the quality of demographic information.
- Provide clear information to medical practitioners to explain how the system works, and especially the relationship between provision of information on request forms and the ability of the Health Department to plan for appropriate provision of services.
- And finally, clarify the generation of patient code identifiers by standardising the use of the first two letters of first name and the first two letters of surname. ■

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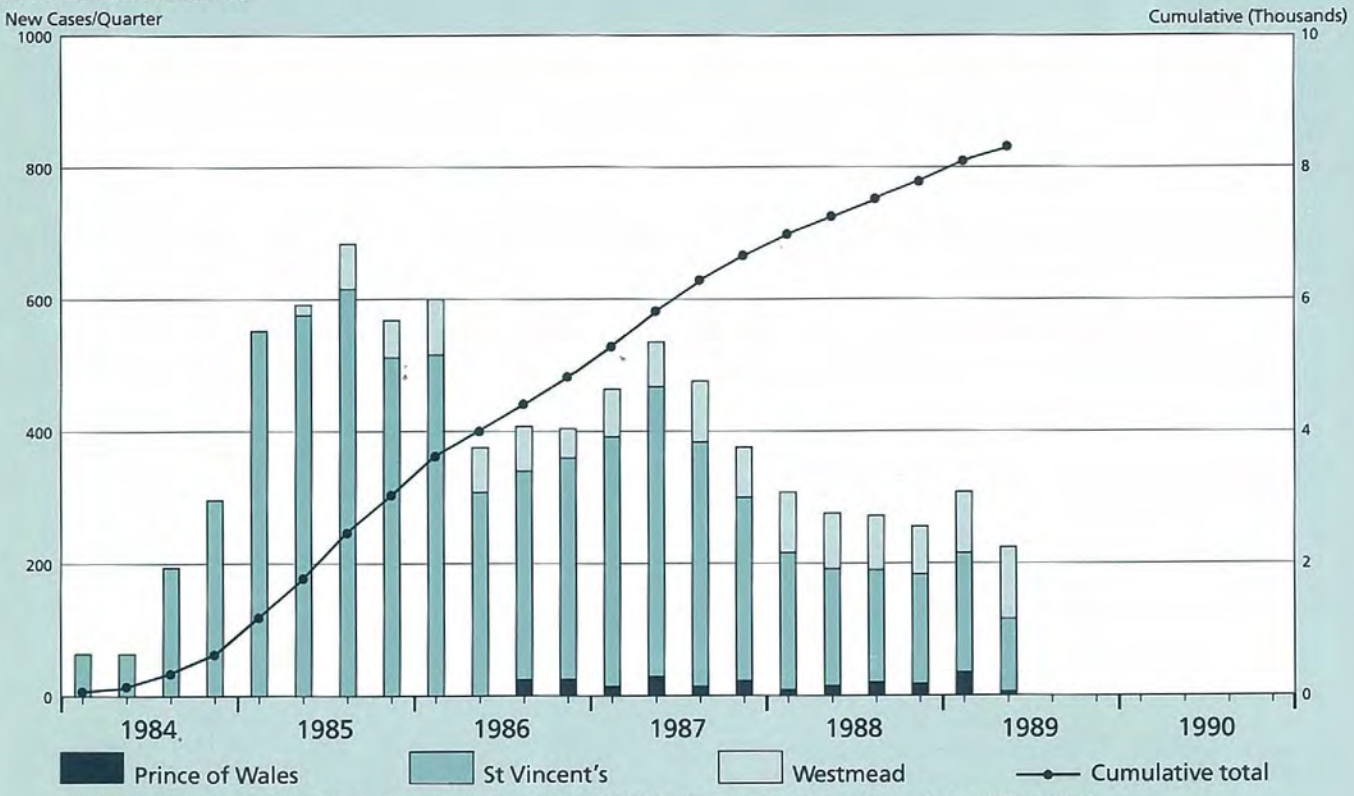
We acknowledge the assistance of laboratory staff, hospital computing staff and clinical facilities which maintained their own patient record systems.

1. Australian HIV Surveillance Report. National Centre in HIV Epidemiology and Clinical Research, 23 March 1990, pp 7-8

FIGURE 1

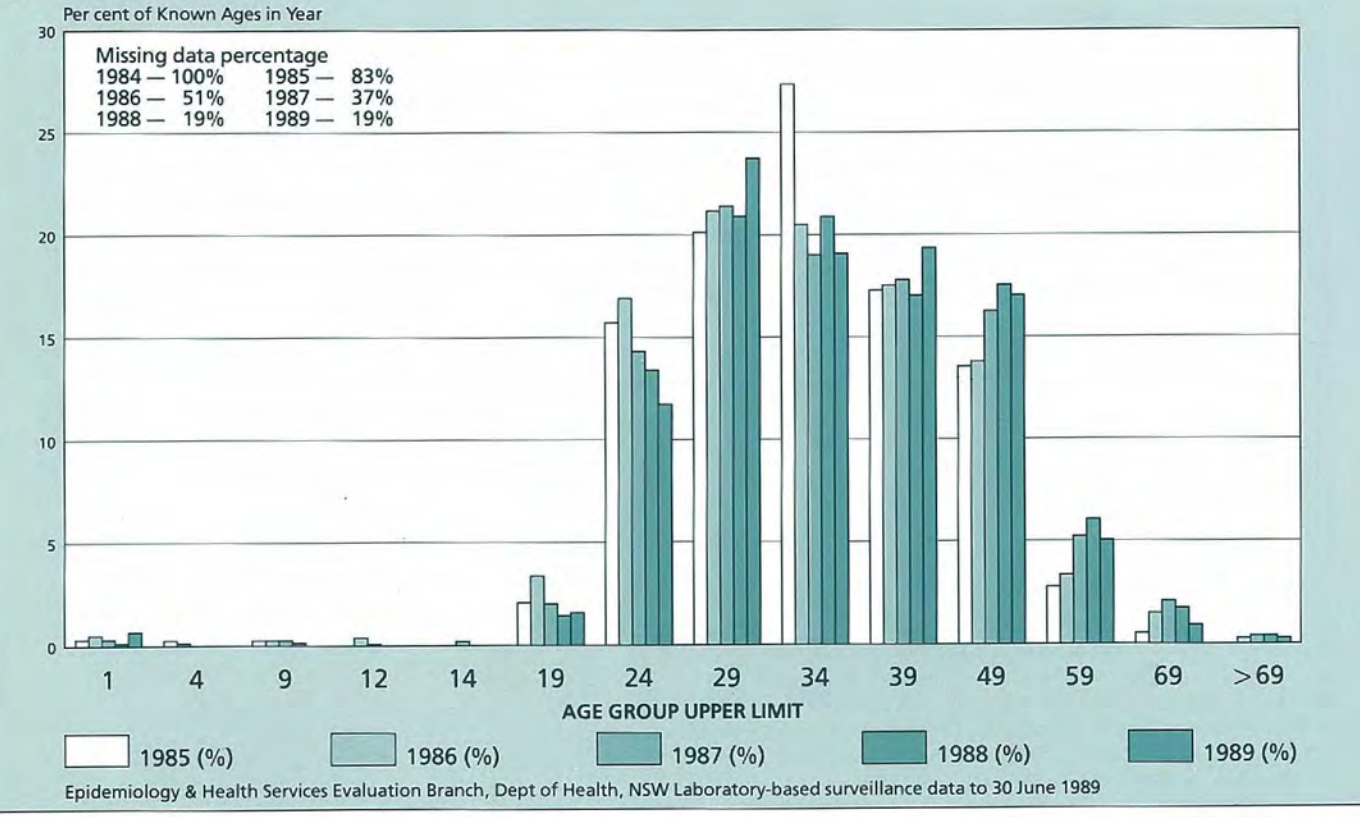
ESTIMATED NUMBER OF CONFIRMED HIV POSITIVE PERSONS IN NSW



Epidemiology & Health Services Evaluation Branch, Dept of Health, NSW Laboratory-based surveillance data to 30 June 1989

FIGURE 2

AGE AT DIAGNOSIS OF CONFIRMED HIV POSITIVE PERSONS IN NSW



Epidemiology & Health Services Evaluation Branch, Dept of Health, NSW Laboratory-based surveillance data to 30 June 1989

OYSTER RELATED FOOD POISONING

New South Wales has the largest oyster industry in Australia, producing an annual crop worth more than $32 million. The Sydney rock oyster *(Saccostrea commercialis)* is considered a gourmet food, highly valued for its quality and flavour. The oyster is grown in estuaries, where it feeds by filtering large quantities of water, so any water-borne contaminants such as pathogenic micro-organisms contained in the water are likely to be concentrated in the oyster's digestive system. Heavy rainfall in the urbanised catchment area of the Georges River in Sydney produces large quantities of nutrients for the oysters grown in that estuary, particularly when the sewerage system is overloaded by storm water and discharges directly into the river.

Sydney rock oysters have been implicated in numerous food poisoning incidents. In June and July of 1978, an outbreak of food poisoning involving over 2000 people from as far afield as Great Britain was traced to the consumption of oysters from the Georges River. A further outbreak of food poisoning in Darwin affecting 60 people in December 1978 was traced to oysters which were harvested from the Georges River in August 1978. They had been frozen, packaged and subsequently shipped to Darwin in December.

Norwalk virus (which is thought to be a parvovirus and has been implicated in numerous outbreaks of gastroenteritis) was implicated in both outbreaks, and was also implicated in the food poisoning of a party of 30 Health Surveyors who consumed oysters at a regional dinner at Tamworth in July of 1984. Between April and June 1989, 23 incidents of food poisoning involving 412 people were traced to oysters from the Georges River. Norwalk virus was once again implicated.

Following the 1978 outbreaks compulsory 'purification' of oysters in tanks was progressively introduced. This involves placing the oysters in tanks of water sterilised by ultraviolet light or ozone. The oyster filters the clean water and over a period of time its digestive system is emptied of pathogens. This is a very fragile system dependent for success on numerous critical parameters such as water salinity, dissolved oxygen content, water temperature, water cleanliness, flow rates, tank design, prevention of oyster faeces contaminating the cycle, number of oysters in the tank, the time oysters are in the tank, ensuring oysters are not subjected to physical shock, the effectiveness of the ultraviolet light tubes (which deteriorate with use), the cleanliness of the quartz tubes surrounding the ultraviolet light tubes and the effectiveness of electrical components.

To ensure the effectiveness of the purification system the Department of Health Food Inspection Branch commenced an oyster program in 1989 when this Department assumed responsibility for the purification plants from the Department of Agriculture. Under the program a technical advisor to the oyster industry was appointed to manage a specialist team of Food Inspectors who liaised closely with oyster farmers, providing technical knowledge, and evaluating and upgrading plants to ensure the success of the purification system.

On April 23 of this year the Food Inspection Branch of the Department of Health received a complaint alleging that 30 people had been ill after eating at a club on April 20. Investigation of this complaint revealed that oysters were the suspect food. Further complaints followed rapidly and to date complaints have been received alleging 752 cases of food poisoning from 43 different premises. All complaints involved the consumption of oysters and relate to a 15-day period between April 20 and May 4.

This period was preceded by heavy rainfall in the Georges River catchment area. Average rainfall for the month of April in the catchment area was approximately 300mm with the heaviest falls occurring around April 4-6, 9-11 and 19-21.

Considerable effort was made by Food Inspectors to trace and interview all possible victims in the period following initial notification. From analysis of the epidemiological data obtained, it is apparent that all major outbreaks reported are closely related, with a similar incubation period and with similar symptoms.

Onset of symptoms has occurred between five and 70 hours after first exposure, with the majority occurring between 30 and 45 hours. The median time has been 36 hours. The predominant symptoms have been nausea, abdominal cramps, diarrhoea, fever and vomiting. These symptoms and the incubation period are consistent with a viral gastroenteritis. Many victims have given stool and blood specimens from which conclusive results will not be available for some time (around one month). However to date Norwalk virus has been confirmed in three stool specimens. Around 23% of victims reported to a doctor. In all the outbreaks the food with a significantly higher attack rate has been oysters. Attack rates for oysters have varied from 85% to 100% with an average of 92%.

Although the source of contaminated oysters is still being pursued it has been possible to trace many batches through receipts kept on food premises and through labels on containers used for packaging of the oysters. Two large and separate outbreaks were found to have been caused by one batch of oysters from a purification plant on the Georges River. At three of the premises involved, residues of the oysters consumed by victims were obtained. Initial results of bacteriological examination of one of these samples shows evidence of recent faecal contamination. The samples have also been submitted for examination for viral contamination. Results are not yet available.

Oysters which have been recently subjected to fresh water, particularly in cooler weather, are shocked and are slower to empty their digestive system in the purification tanks. When this is combined with sewerage contamination of the water in which the oysters are grown, the consumption of raw or partially cooked oysters from implicated areas must be considered as the potential source of further food poisoning until such time as the oysters have been exposed to optimal conditions to reduce the infective risk to an acceptable level.

The subsidence of the outbreak around May 4 can be linked to the closure of a number of estuaries and the rapid decline in the consumption of oysters by the public as a result of the wide publicity surrounding this outbreak, which has had a significant impact on the viability of the NSW oyster industry. Oyster farmers from as far afield as Tasmania have reported a massive drop in sales. The proclamation of the Food Act of 1989 on May 11, 1990 has given the Director-General of the Department of Health the power, by order, to prohibit the harvesting of foods from areas specified by the order. This power can be expected to have a significant impact on the likelihood and duration of any further outbreaks.

Edward Kraa, Food Poisoning Investigation Co-ordinator. Department of Health, NSW

VIBRIO WARNING

On March 13, 1990 the Health Department was notified of the death of a 53-year-old woman from septicaemia at a large Sydney teaching hospital. The woman had suffered from diabetes and chronic liver disease and was taking immunosuppressive drugs. Blood cultures taken before her death grew *Vibrio vulnificus*.

The patient's husband reported that he and his wife had consumed oysters on March 10 and 11. As *V. vulnificus* was also detected in samples of oysters taken from the same oyster lease in Brisbane Water, the woman's septicaemia was attributed to eating oysters. Three other cases of *V. vulnificus* primary septicaemia attributed to oyster consumption have been reported in NSW since 1988. All patients (males aged 64, 74, and 69 years) had chronic liver disease. One of these patients died.

Three cases of septicaemia following wound infection also occurred in the past 12 months in the same NSW north coast town where one of the men had lived. All three people had been wading in coastal rivers in the warmer months prior to presentation. No obvious wounds were seen on initial examination, but in all three, rashes occurred on the legs followed by cellulitis and septicaemia. *V. vulnificus* was grown from the wounds in each case. The first, a man in his 70's on low doses of corticosteroids for asthma, died of septicaemia. The other two, a woman aged 55 who was treated with radiotherapy for cancer of the thyroid five years before, and a man of 65 with chronic airways disease, survived. Oyster consumption was not implicated in these cases.

These occurrences prompt the question as to whether people with chronic liver disease or other chronic conditions should be advised not to eat oysters.

THE ORGANISM

V. vulnificus is a member of the Vibrio family of bacteria. Vibrios are relatively salt tolerant (halophilic) gram negative rods which can ferment lactose. Eleven Vibrio species are pathogenic in man. Of these, the most important medically are *V. cholera*, *V. parahaemolyticus* and *V. vulnificus*[1].

Halophilic Vibrios are natural inhabitants of estuary waters, occurring even in areas free from faecal contamination. Their survival depends on a number of environmental factors — most importantly water temperature. While the organism thrives in temperatures of 10-30°C it can survive at cooler temperatures when sediment is present. It favours salinity levels of 5-30%, which are found in estuaries and inshore coastal areas. However, lower salinity levels may be tolerated where warmer temperatures and high levels of organic nutrient exist.

Cases of human infection with *V. vulnificus* have been reported in Japan, Belgium, the USA[2] and Australia. Infection is rare. The incidence in Louisiana, USA, for example has been estimated to be 0.8 per 100,000 population. Infection is most likely to occur in summer and autumn[3].

The severity of infection appears to be related to both host and organism factors. An acidic polysaccharide capsule probably confers resistance to the bactericidal activity of human serum and to phagocytosis.

Virulent strains can use iron bound to transferrin (in haemoglobin and in haptoglobin complexes) for growth[4].

The sensitivity of the organism to iron may help explain why iron overloading diseases are associated with a greater risk of severe disease. Cirrhosis may lead to increased levels of available iron, and deficiencies in neutrophil and macrophage function, or lead to bacterial leakage across the bowel wall or problems in clearing the organism from the enterohepatic circulation[5].

V. vulnificus produces a number of enzymes including cytotoxin-haemolysin, elastolytic protease, collagenase and phospholipases which may aid invasion of the body by the organism[1].

SEA FOOD

Most pathogenic vibrios can maintain larger populations and live longer in environments with higher organisms[1] such as plankton, fish and shellfish.

By filtering large amounts of water, shellfish can concentrate a variety of pathogenic aquatic organisms. Association with the flesh of filter feeding bivalve molluscs after harvesting prolongs the life of pathogenic Vibrios outside their natural environments. The Vibrios can multiply if the molluscs are stored in warm temperatures[1]. Pathogenic Vibrios can infect crustaceans, particularly in warmer climates, and to a lesser extent, fish. Studies in the USA have shown that over half of samples taken grew *V. vulnificus* during selected months. One study found that 11% of crabs sampled from a bay in Texas were infected[5] in summer. A recent survey in NSW found *V. vulnificus* in about 40% of oysters sampled.

CLINICAL MANIFESTATIONS

V. vulnificus has been implicated in septicaemia and wound infections. In one study of 24 cases of primary septicaemia[6], the illness typically began with chills, fever and prostration. One quarter had hypotension on admission, and three quarters developed secondary cutaneous lesions. The organism was cultured from the blood in 83% of cases.

Primary septicaemia is thought to occur after ingestion of the organism. *V. vulnificus* probably invades and replicates in the intestine causing inflammation and micro abscess formation. The organism produces toxins that destroy tissue and gains entry to the bloodstream through the portal vein or the intestinal lymphatic system[1]. The incubation period is short, with symptoms appearing about 16 hours after the organism is ingested. Overall more than half of patients with primary septicaemia die, and of those who develop hypotension within 12 hours of hospital admission, 90% die[5].

In a review of three studies, Hoffmann et al[7] found that 42 of 45 patients with primary septicaemia had underlying illnesses, and 76% had some type of liver disease. 53% of patients with primary septicaemia died.

A US case control study[8] using all isolates of *V. vulnificus* received by the Centers for Diseases Control in 1981 and 1982 found that patients with primary *V. vulnificus* septicaemia were more likely to report having eaten raw oysters and have a history of liver disease, while patients

with wound infection were more likely to have had recent exposure to salt water or shellfish.

Another multi-state US study[6] identified ingestion of raw oysters as a risk factor for developing *V. vulnificus* septicaemia, but not for wound infection. Primary septicaemia occurred almost exclusively in people who had some underlying illness, particularly liver disease. Wound infection, on the other hand, resulted from exposure to seawater or freshly caught saltwater crabs, and appeared to affect people with no underlying illness. A case control study conducted in New Orleans[3] found similar risk factors.

Liver disease, haemopoietic disorders, chronic renal insufficiency, haemochromatosis[6], heavy alcohol intake and the use of immunosuppressants are risk factors for developing *V. vulnificus* septicaemia[3]. Other reported risk factors include thalassaemia[4], diabetes, and leukaemia.

V. vulnificus wound infections may be mild and self limiting, or can progress to severe rapidly progressive cellulitis and myositis. The incubation period is short, with symptoms developing about 12 hours after contamination. The infection occurs in healthy as well as debilitated people[1]. Almost half (48%) of cases in one study[7] had an underlying disease such as diabetes, cirrhosis, gastric carcinoma and steroid-dependent asthma. While the presence of underlying disease does not appear to influence the risk of developing *V. vulnificus* wound infection, use of immunosuppressive drugs and having underlying diseases are associated with more severe outcomes for those who develop the condition[5].

V. vulnificus has also been reported in association with diarrhoea in patients reporting heavy alcohol intake[7], meningitis in a child with thalassaemia[4], pulmonary infection, and endometriosis following undersea intercourse[1].

PREVENTION AND CONTROL

Various recommendations have been made to reduce the risk of developing *V. vulnificus* infection, including:

- Reducing faecal contamination of aquatic areas[1].
- Cleaning oysters through self purification with clean sea water[2].
- Cooking seafood at temperatures greater than 60°C for several minutes[1].
- Storing seafood below 4°C to avoid proliferation of Vibrios.
- Irradiating seafood before consumption has also been suggested[1].
- Advising people with underlying illnesses — in particular liver disease, hyperferraemia[4] and immunosuppression — to avoid eating raw seafood[1,8].
- Advising people with underlying illness to avoid shellfish injuries and contaminating any wounds with sea water during the warmer months[1,7].

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INFLUENZA MONITORING

There has been widespread community concern that an influenza epidemic will spread within Australia this winter.

During the recent 1989-90 influenza epidemic [subtype A/England/427/88 (H3N2) — close to A/Shanghai/11/87 (H3N2)] in the United Kingdom, there was a reported peak number of some 800 deaths attributable to influenza[1], the majority of these occurring in people over the age of 65.

Worse influenza epidemics have occurred in the UK in the past. In 1969-70 an epidemic of A/Hong Kong/1/68 (H3N2) influenza occurred, with an estimated peak of 3,000 deaths per week, and in a 1975-76 A/Victoria/3/75 (H3N2) epidemic less than half as many influenza deaths were reported.

However, there are in fact important differences in the epidemiology of influenza between Australia and the UK. As can be seen from Fig 3, the UK had not experienced an epidemic of Influenza A (H3N2) since 1976. In contrast, Australians have been exposed to Influenza A (H3N2) virus in 1982, 1983, 1985 and 1989, making them less susceptible to these virus strains and decreasing the likelihood of a large influenza epidemic this year.

Should Australia experience an influenza epidemic in 1990, initial cases could have occurred as early as May (as was the experience in the recent UK outbreak), or as late as July (as occurred in Australia during the moderate epidemic of 1989). The typical epidemic lasts five to nine weeks, peaking around the third to fifth week.

Ongoing surveillance of viral isolates by Commonwealth Communicable Diseases Intelligence (CCDI) has revealed only 12 influenza isolates in the March and April periods — and only one was Influenza A subtype H3N2. It was noted that this was normal Influenza A activity for that particular time of year[2].

Compared with immunisation, natural acquisition of influenza appears to afford greater immunity against the disease and provides some protection against later emerging strains resulting from 'antigenic drift'[3]. This is the basis for not recommending influenza vaccine in otherwise healthy children and young adults.

To monitor the occurrence of influenza in the community, the Epidemiology and Health Services Evaluation Branch of the Department of Health and the Department of Community Medicine of the University of Sydney have established an influenza monitoring network. A total of 24 general practitioners throughout metropolitan Sydney will report on patients presenting with "'flu-like illness". These data will be collated with data from hospital separations and virology laboratories in order to identify the beginning, peak and end of an epidemic, if it does occur.

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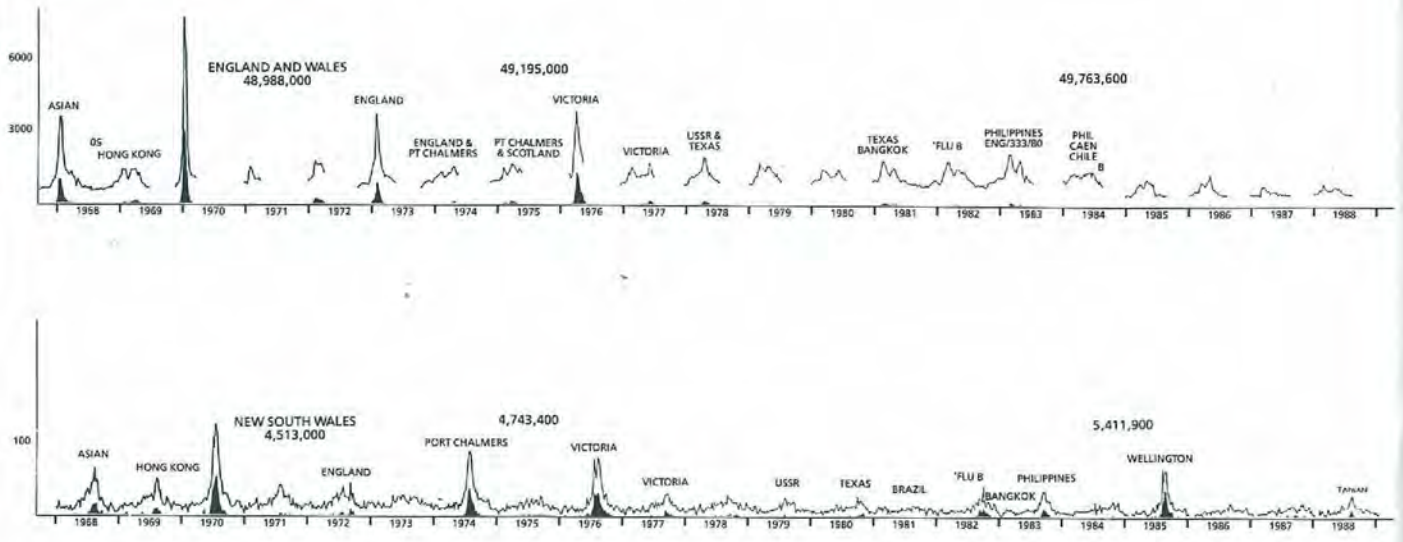
FIGURE 3

DEATHS REPORTED WEEKLY IN ENGLAND & WALES (UPPER DIAGRAM), AND NEW SOUTH WALES (LOWER DIAGRAM)[1]



1. In each diagram the lower blacked-in graphs represent deaths attributed to Influenza (on death certificates), and the upper fine line graphs represent deaths from Influenza AND Pneumonia combined.

► ***Continued from page 13***

EDITORIAL NOTE:

1 Despite the availability of an effective vaccine against influenza, the disease remains a major public health problem. It has the ability to paralyse essential services, schools and business and to cause substantial costs. Extrapolations from American data[4] suggest that direct costs related to influenza for New South Wales in 1990 may be as high as $25,000,000, with total costs 6-15 times this amount.

The present shortfall of influenza vaccine over demand has generated anxieties among many elderly people and others who consider that they have been denied the protection of immunisation. An alternative is to treat these patients with Amantadine, which provides some protection against influenza A — both prophylactically and therapeutically[5]. Amantadine is marketed in Australia as Antadine[R] and Symmetrel[R].

2 Reye's syndrome has been associated with influenza epidemics. Rates of 30.8 to 57.8 per million children infected with influenza have occurred in the United States — primarily in school aged children[6]. With influenza attack rates of 25-40%[7], NSW hospitals can expect to see 10-30 cases of Reye's syndrome this year.

Administration of aspirin may be implicated in the pathogenesis of Reye's syndrome. A causal relationship with aspirin may never be proven, but with adequate alternative treatment of pyrexia with paracetamol, there is no indication for the use of aspirin for temperature reduction in children or adolescents.

3 The Department of Health, NSW supports the National Health and Medical Research Council recommendations for immunisation against influenza, advising immunisations for:

(i) people of all ages with chronic debilitating disease, especially those with chronic cardiac, pulmonary, renal and metabolic disorders;

(ii) people over the age of 65;

(iii) people receiving immunosuppressive therapy; and

(iv) people engaged in medical and health services, and essential public utilities.

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INFECTIOUS DISEASES

NOTIFICATIONS DOWN

There have been fewer notifications received by the Epidemiology Branch in the period February 25 to April 21 (reporting periods 3 and 4) this year, compared with 1989. There are, however, some exceptions — notably malaria, measles and pertussis.

The overall reduction in the number of notifications is primarily due to major falls in the numbers of sexually transmitted disease notifications (down by 46%) and Arbovirus notifications (down by 89%). The decrease in STD notifications is part of a pattern which has continued for the last seven years. The decline in Arbovirus notifications reflects the epidemic nature of this group of diseases — there was a major outbreak of Ross River fever in the early months of 1989.

The NSW **malaria** register is maintained by Dr John Walker at Westmead Hospital. Most of the malaria cases were diagnosed in Australians travelling overseas. Australians travelling abroad are advised to contact Public Health Units, travellers' medical services, or local doctors well in advance of their planned departure to receive appropriate medical advice.

Of the seven **measles** cases notified, six were reported from one postcode area in the North Coast Region. Cases (three male, three female and one unknown) ranged in age from four to 12 years. The reports suggest that four generations of disease transmission occurred. If so, this means that measles immunisation prevalence of children in the area may be less than 50%. The age distribution of the cases suggests that requiring a record of immunisation as a prerequisite to school entry may reduce the incidence of measles. Four of the cases may have been prevented if non-immune children had been excluded from school for 14 days following identification of the index case. In spite of Statewide immunisation rates approaching 90%, there are still pockets where the rates are much lower. Vaccine delivery, immunisation services and community education programs will need to be constantly improved[1].

There were reports of three separate clusters of **whooping cough**, with one involving two family ►

Continued overleaf

TABLE 3

INFECTIOUS DISEASE NOTIFICATIONS BY HEALTH AREAS AND REGIONS, NSW, February 25 to April 21, 1990

CONDITION	CSA	ESA	SSA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	VIC	QLD	TAS	ACT	U/K	OS	TOTAL
AIDS	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	68	–	68
Amoebiasis	–	2	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	4
Brucellosis	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
Campylobacter infection	17	3	37	27	23	29	28	6	4	8	11	5	–	4	–	1	–	1	–	1	4	1	210
Chlamydia infection	–	9	1	3	1	–	–	–	–	2	5	8	1	–	–	–	–	–	–	–	–	–	30
Cholera	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Food poisoning (NOS)	–	–	–	–	4	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6
Genital herpes	–	34	–	3	–	–	1	–	–	3	8	12	–	2	–	–	–	–	–	–	1	–	64
Giardiasis	1	2	8	4	5	5	13	4	–	9	31	8	–	1	–	1	–	–	–	–	3	–	95
Gonorrhoea	–	38	1	3	–	–	–	–	–	5	8	7	6	3	–	–	–	–	–	–	–	–	71
Hepatitis A	–	–	–	–	1	–	2	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	5
Hepatitis B	1	8	1	9	4	–	1	2	1	1	1	2	17	–	1	–	–	–	–	–	–	–	49
Hepatitis C	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Infantile diarrhoea (NOS)	–	–	–	1	–	4	–	–	2	1	7	–	–	–	–	–	–	–	–	–	–	–	15
Legionnaires' disease	–	–	2	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4
Leprosy	2	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
Leptospirosis	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	1	–	–	–	3
Malaria	5	6	–	–	1	1	9	–	1	–	–	1	–	–	1	–	–	–	–	–	4	–	29
Measles	–	–	2	–	1	–	–	–	–	–	6	–	–	–	–	–	–	–	–	–	–	–	9
Meningococcal infection	–	–	–	1	–	–	1	–	–	1	3	2	1	–	–	–	–	–	–	–	–	–	9
Non specific urethritis	–	138	1	38	–	–	–	–	–	20	–	2	–	–	–	–	–	–	–	–	1	–	200
Pertussis	3	–	–	3	1	3	3	3	–	–	4	–	–	–	–	–	–	–	–	–	–	–	20
Q fever	–	–	–	–	–	–	–	–	–	–	1	–	–	5	–	–	–	–	–	–	–	–	6
Ross River fever	–	1	–	–	–	–	1	–	–	–	3	7	1	1	3	–	–	–	–	–	–	–	17
Salmonella infection	19	12	19	30	14	23	28	6	9	14	28	8	10	7	8	6	2	1	–	2	–	–	246
Shigella infection	1	–	1	3	2	1	–	1	1	–	3	1	2	1	1	–	2	–	–	–	–	–	20
Syphilis	–	11	2	5	–	–	–	–	–	1	2	–	23	–	1	–	–	–	–	–	–	–	45
Trachoma	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
Tuberculosis	6	3	6	3	4	2	4	–	–	–	1	1	–	–	1	–	1	–	–	–	–	–	32
Typhoid & paratyphoid	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	3
Vibrio parahaemolyticus	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1
Vibrio vulnificus	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	2
Yersinia infection	7	2	4	3	3	1	4	1	1	–	2	–	1	–	–	–	–	–	–	–	–	–	29
Total	**64**	**271**	**85**	**140**	**66**	**71**	**96**	**23**	**20**	**67**	**125**	**65**	**62**	**25**	**17**	**11**	**5**	**2**	**1**	**3**	**81**	**1**	**1301**

Abbreviation Health Area/Region: U/K Area of residence unknown, ACT Australian Capital Territory, CCA Central Coast, CSA Central Sydney Area, CWR Central Western Region, ESA Eastern Sydney Area, HUN Hunter Region, ILL Illawarra Region, NCR North Coast Region, NER New England Region, NSA Northern Sydney Area, OFR Orana and Far West Region, OS Overseas, QLD Queensland, SER South East Region, SSA Southern Sydney Area, SWR South West Region, SWS South Western Sydney, TAS Tasmania, VIC Victoria, WEN Wentworth Area, WSA Western Sydney Area.
NOS – not otherwise specified.

► Continued from page 15

members (mother and infant). There were six females and one male, with ages ranging from one to 31 years. The continuing occurrence of the disease is a reflection both of the general level of immunity and intrinsic inadequacies of the vaccine itself. The vaccine does not give complete protection against *B. pertussis* — only 80% of exposed children who have received at least three doses of the vaccine will be protected[2].

Bacterial meningitis has been a major concern of the Epidemiology Branch during the last month. Overseas and interstate reports alert us to a possible resurgence of these diseases. Following a number of fatal cases, active surveillance of hospital admissions is presently being undertaken. A detailed report will appear in the next issue of the "Public Health Bulletin". Preliminary data reveal that for the period January 1 to May 22 a number of organisms have been identified in patients with meningitis (see Table 4).

MH Levy, MB BS, Medical Epidemiologist and R Hunter, Research Officer, Epidemiology & Health Services Evaluation Branch, Department of Health, NSW.

TABLE 4

ORGANISMS IDENTIFIED IN PATIENTS WITH MENINGITIS

ORGANISM	Freq	Percent
N. meningitidis	30	41.2
H. influenzae B	22	30.1
S. pneumoniae	12	16.4
L. monocytogenes	4	5.5
S. aureus	3	4.1
Bacillus sp	1	1.4
Klebsiella pneumoniae	1	1.4
Total	**73**	**100.0**

PLANNED DEVELOPMENTS FOR INFECTIOUS DISEASE SURVEILLANCE IN NSW

July	Final revision of the list of notifiable diseases by the NSW Infectious Disease Advisory Committee
August	Completion of draft protocols for the notification and management of notifiable infectious conditions
December	State-wide laboratory-based surveillance and streamlining of medical practitioner reporting

NOTE: In future issues of the Bulletin we plan to report notifications of infectious conditions by calendar month. The July issue will report notifications to the end of May 1990 with the corresponding 1989 figures.

1. Immunisation policy: recipes for success. *Lancet* 1987;ii:78-80.
2. Report of the Committee on Infectious Diseases. American Academy of Pediatrics. 1988.

TABLE 5

INFECTIOUS DISEASE NOTIFICATIONS
February 25 to April 21, 1990

CONDITION	Number of Cases Notified			
	Period		Cumulative	
	25-02-90 to 21-04-90	25-02-89 to 21-04-89	To 21 April 1990	To 21 April 1989
AIDS	68	36	124	94
Amoebiasis	4	–	4	1
Ancylostomiasis	–	–	–	–
Anthrax	–	–	–	–
Arboviral infection (NOS)	–	–	1	–
Brucellosis	1	–	3	–
Campylobacter infection	210	323	548	695
Chancroid	–	–	–	–
Chlamydia infection (NOS)	30	N/A	61	N/A
Cholera	1	–	1	–
Congenital rubella syndrome	–	–	–	–
Diphtheria	–	–	–	–
Donovanosis	–	–	–	–
Encephalitis (NOS)	–	1	–	1
Food poisoning (NOS)	6	3	7	4
Genital herpes	64	96	183	223
Giardiasis	95	141	214	257
Gonococcal ophthalmia neo.	–	–	–	–
Gonorrhoea	71	130	148	252
Hepatitis A	5	26	9	35
Hepatitis B	49	79	97	149
Hepatitis C	1	–	2	–
Hepatitis unspecified	–	1	2	1
HIV	N/A	N/A	N/A	N/A
Hydatid disease	–	–	–	–
Infantile diarrhoea (NOS)	15	70	30	124
Legionnaires' disease	4	19	14	25
Leprosy	5	3	5	7
Leptospirosis	3	13	15	22
Lymphogranuloma venereum	–	–	–	–
Malaria	23	9	63	17
Measles	9	1	15	5
Meningococcal infection	9	4	13	10
Non specific urethritis	200	371	429	663
Ornithosis	–	2	–	2
Pertussis	20	11	87	21
Plague	–	–	–	–
Poliomyelitis	–	–	–	–
Q fever	6	19	27	38
Rabies	–	–	–	–
Ross River fever	17	105	44	295
Salmonella infection	246	326	558	593
Shigella infection	20	18	56	30
Syphilis	45	51	89	102
Tetanus	–	–	–	–
Trachoma	1	–	1	–
Tuberculosis	32	63	122	155
Typhoid & paratyphoid	3	8	10	12
Typhus	–	–	–	–
Vibrio infection (NOS)	3	4	5	6
Viral haemorrhagic fevers	–	–	–	–
Yellow fever	–	–	–	–
Yersinia infection	29	17	51	35

NOS – Not Otherwise Specified

NEWS AND COMMENT

PUBLIC HEALTH PROGRAM MEETING

On May 17, 1990 staff of Areas, Regions, universities and the central administration of the Department of Health, NSW met to discuss progress in the development of Public Health Units (PHUs) throughout the State. In opening the meeting, the Deputy Director-General, Mr Ross Wraight emphasised the Department of Health's commitment to developing a strong public health infrastructure in NSW. The Chief Health Officer, Dr Sue Morey pointed out the need for strong local and central public health management and a quality program for developing a professional workforce.

The following are the main points raised during the meeting:

- Area/Regional PHUs' current state of development. The greatest advances were reported from the Eastern, Northern and Western Sydney Area Health Services and the South-Western Region.
- The need for PHU action strategies, a quality public health professional training scheme and strong central support for the infrastructure based on sound epidemiologic practice.
- Development of a proactive rather than reactive media strategy. Assistance is available from the Department to prepare press releases.
- Public health network communications include computer systems under development, the Public Health Bulletin and regular three-monthly meetings of PHU and central administration staff.
- Environmental health resources for PHUs include: the NSW Medical Disaster Plan, the SPCC's Chemical Incidents Procedures Handbook and Area/Regional toxicological databases.
- Health surveyors are key resource people in environmental health investigations. Their role in the new PHUs is currently under review.
- Food inspectors are concerned with reducing the toxic and microbial contamination of food and water and investigating food-related illness complaints. They will collaborate with PHU staff on outbreak investigations.
- Five proposed environmental health epidemiologic priorities were identified: surveillance of toxic exposures; ready access to current information concerning health risks of environmental hazards; timely dissemination of information; ad hoc environmental health studies; and development of protocols for public health action.
- Current infectious disease priorities for NSW include: improving communications between central office and the PHUs; developing microcomputer reporting and surveillance systems; revising the list of notifiable conditions; developing action protocols for notifiable conditions; developing laboratory-based surveillance mechanisms; developing better databases for tuberculosis, AIDS, HIV infection, and immunisation rates; improving immunisation services; and developing sentinel surveillance mechanisms for influenza and zoonotic diseases.

The meeting closed with agreement that PHU and central administration staff should meet on a regular three-monthly basis.

Contact information on the participants at the conference is set out below (see Keeping in Touch).

KEEPING IN TOUCH

NAME	AFFILIATION	PHONE NO.	FAX
Dr Robert Arthurson	Orana & Far West Region	(068) 81 2232	(068) 81 2225
Prof Sydney Bell	Eastern Sydney AHS	399 4054	399 1120
Mr Andrew Bernard	South Western Sydney AHS	821 5760	601 8501
Mr Terry Carvan	Health Surveyor	556 9313	810 6747
Mr Ted Charker	Public Health Services	887 5601	888 7210
Dr Stephen Corbett	Epidemiology Branch	217 5195	217 5602
Mr Bruce Cracknell	Public Health Services	887 5612	888 7210
Dr Gordon De Cean	North Coast Region	(066) 23 1144	(066) 21 8077
Dr David Fox	Toxicology Unit	887 5600	888 7210
Dr Michael Frommer	Epidemiology Branch	217 6038	217 5602
Dr Julian Gold	Central and Southern Sydney AHS	332 1090	332 4219
Dr Peter Hlavacek	South Eastern Region	(048) 21 8111	
Dr Eng Ichou	Central Western Region	(063) 32 8935	(063) 32 1235
Dr Mark Jacobs	Orana & Far West Region	(068) 81 2255	(068) 81 2225
Ms Sue Jobson	Epidemiology Branch	217 5434	281 2430
Dr Rod Kennedy	Central Coast AHS	(043) 25 9111	
Prof David Kleinbaum	University of Sydney	692 4381	692 4179
Prof Stephen Leeder	Westmead Hospital	633 6505	689 1049
Dr Michael Levy	Epidemiology Branch	217 6038	217 5602
Dr Peter Lewis	Western Sydney AHS	633 6677	689 1049
Dr David Lyle	Epidemiology Branch	217 6159	217 5602
Dr Jeremy McAnulty	Epidemiology Branch	217 6034	217 5602
Dr Hugh Merrell	Hunter AHS	(049) 26 6912	
Mr Geoffrey Richards	Toxicology Unit	887 5605	887 7210
Dr George Rubin	Epidemiology Branch	217 5978	217 5602
Dr Louise Rushworth	Epidemiology Branch	217 6152	217 5602
Mr Des Sibraa	Food Inspection	887 5606	888 2210
Dr Owen Spencer	New England Region	(067) 66 7166	(067) 66 1227
Dr Michael Stanford	Northern Sydney AHS	477 9400	482 1650
Dr Greg Stewart	Southern Sydney AHS	553 2686	988 7574
Mr Greg Thomas	Health Surveyor	556 9313	810 6747
Sr Margaret Thomas	TB Public Health Services	887 5969	888 7210
Mr Michael Ward	Health Promotion Unit (McKell)	217 5827	281 2430
Prof Ian W Webster	South Western Sydney AHS	749 1122	
Dr John Westphalen	Hunter AHS	(049) 56 0309	
Dr Andrew Wilson	Western Sydney AHS	633 6677	689 1049
Dr Noel Wilton	Mental Health Services Unit	217 5620	217 5227
Dr Marilyn Wise	Central Sydney AHS	516 8958	516 8705

RECOMMENDED AGE FOR MMR REDUCED

At the April meeting of the NSW Infectious Disease Advisory Committee, it was recommended that NSW accept the recommendation of the National Health and Medical Research Council that children be immunised with Measles-Mumps-Rubella vaccine as soon after their first birthday as possible, and no later than age 15 months.

This decision was vindicated by a recent NSW study which found that seroconversion rates to measles and mumps vaccines were no different between 12- and 15-month-old children[1].

1. Kakakios AM, Burgess MA, Bransby RD et al. Optimal age for measles and mumps vaccination in Australia. *Med J Aust* 1990;152:472-4.

NEWS AND COMMENT

NEW MONOGRAPH ON HEART DISEASE

A monograph has just been published by Department of Health, NSW, to help community health staff promote better heart health. The document, "Public screening for risk of heart disease", which is principally authored by Dr Karen Webb, provides guidelines and procedures for screening for cardiovascular risk factors. It can be obtained from the Health Promotion Unit, Department of Health, NSW, Level 23, McKell Bldg, Rawson Place, Sydney — phone (02) 217 6666.

TRAVEL HEALTH ADVICE

Access is now available for all Public Health Units to the Medical Advisory Service for Travellers Abroad (MASTA). The MASTA system is an information data bank on health and disease risks for overseas travellers which was developed at the London School of Hygiene and Tropical Medicine. It has been modified to Australian standards through the Tropical Health Program of the University of Queensland. The database, which is updated daily, provides the most up-to-date information on travel health currently available.

The Department of Health encourages all Area/Regional staff concerned with preventing infectious disease in travellers to discuss access to this database with Directors of Public Health Units. Further information can be obtained by contacting Mr Gavin Stewart on (02) 217 6160.

FOUNDATION FELLOWSHIP

The Australian Faculty of Public Health Medicine was established by the RACP at its May 1990 Annual General Meeting. Medical practitioners registered in Australia who have been predominantly engaged at any time in the practice of public health medicine may be eligible for Foundation Fellowship of the new Faculty.

Persons wishing to be considered for such Fellowship, should write for further information to:—

The Honorary Secretary
Australian Faculty of Public Health Medicine
145 Macquarie Street
SYDNEY NSW 2000

Phone: 247 4461
Fax: 231 3120

Vibrio Warning

► *Continued from page 13*

EDITORIAL NOTE

The Department of Health recently consulted with senior Sydney physicians on appropriate recommendations for patients with chronic diseases. It was agreed that the risk of contracting *V. vulnificus* infection in NSW is very small. However, patients with chronic hepatic or renal disease, or those on immunosuppressive therapy should be advised to avoid eating oysters during the warmer months particularly after periods of heavy rain.

The Epidemiology and Health Services Evaluation Branch of the Department plans to initiate laboratory-based surveillance of isolations of *V. vulnificus* next spring.

Jeremy McAnulty MB BS, Registrar in Public Health Medicine, Epidemiology & Health Services Evaluation Branch, Department of Health, NSW.

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4. Katz BZ, Vibrio vulnificus meningitis in a boy with thalassemia after eating raw oysters. *Pediatrics*, 1988;82:784-786.
5. Morris JG, Vibrio vulnificus — a new monster from the deep? *Ann Int Med*, 1988;109:261-263.
6. Blake PA, Merson MH, Weaver RE, Hollis DG and Heublein PC, Disease caused by marine vibrio. *N Engl J Med*, 1979;300:1-5.
7. Hoffmann TJ et al, Vibrio vulnificus septicaemia. *Arch Int Med*, 1988;148:1825-1827.
8. Tacket CO, Brenner F, Blake PA, Clinical features and an epidemiological study of Vibrio vulnificus infections. *J Infect Dis*, 1984;149:558-561.