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COUNTING ON CANCER REGISTRY

Many cancers are avoidable and treatable. The broad purpose of cancer registration is to help assess the impact of malignant diseases on the community and the measures taken to control them. Cancer registration also provides a reservoir of data which can be used for case series or analytic epidemiological studies.

As cancer is the second most frequent cause of death (after cardiovascular diseases) in Australia, there is a major need for relevant data to assess impact and to plan strategies for prevention and treatment services. Information on cancer morbidity and mortality is of increasing importance because, as cardiovascular disease becomes less common and life expectancy increases, the number of cases of cancer increases.

In NSW, notification of cancer has been a statutory obligation under the Public Health Act for all hospitals and radiotherapy units since 1971, and for pathologists since 1985. Notification of all cancer deaths is provided by the NSW Registrar of Births, Deaths and Marriages. Analysis of survival with cancer requires, in addition, regular information on *all* deaths in NSW.

The NSW Central Cancer Registry was established in 1971 as a population-based registry, and began data collection in January 1972. In 1986, management of the Registry was transferred from the NSW Department of Health to the NSW Cancer Council.

Although hospital morbidity statistics and death certificates can provide some useful information on cancer epidemiology, the only effective method of obtaining cancer incidence data is considered to be universal registration of cancer cases. In particular, data are needed on different types of cancer, patient characteristics, survival and mortality.

The importance of cancer registration is indicated by the fact that many countries and States now have cancer registries. Every Australian State and Territory is covered by cancer registration and most have legislation making notification compulsory.

State-wide cancer registration using a total enumeration as a method of investigation has advantages and limitations. The advantage is that the total picture in the State can be appreciated, reliable data on rare cancers and small areas can be obtained, and a large number of cases can be accumulated for use in case series or analytic individual-based epidemiological studies of causation or control.

The limitations of total enumeration methods are that it is difficult to control data quality, and many important variables — such as tobacco smoking and occupational history — cannot be collected at all. Cancer registration should therefore focus on what can

Continued on page 51 ►

Contents

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► Continued from page 50

be achieved by this method, and discard data items which have low completion rates and/or are thought to be inaccurate.

It is doubtful whether detailed data on staging and treatment methods can be collected reliably at central level. Hospital-based cancer registries or follow-up studies on a sample of Cancer Registry data can be used to collect additional information.

Cancer registration has a primarily statistical purpose which is aimed at prevention, or future control and treatment methods, and does not benefit the individuals with cancer who are registered. Thus cancer registration differs from registration of births/deaths/marriages because there is no legal necessity and benefit for affected individuals and their families which is attached to registration of cancer.

Cancer registration also differs from registration of diseases such as tuberculosis, because such registers are actively used for individual case follow-up and contact tracing. In these circumstances cancer registration should impose the least burden possible on those who are required to supply information since there is no direct benefit for patients, their families or health care providers.

Hospital-based or area-based cancer registries in NSW are evolving and could become a useful source of information on survival for various cancers for different treatment protocols, since accurate data in this amount of detail can only be collected locally.

The organisation and funding requirements of a cancer registry are related to:

(a) the number of cancers occurring in the community it serves — which is a function of the age-specific incidence and age structure of the population;

(b) the intensity of treatment and number of reporting sources — which have a multiplier effect on (a); and

(c) the size of the data base — which is related to the number of cancers registered per year and the length of the collection.

The difficulties with cancer registration seem to increase geometrically (rather than linearly) with increasing size, unless accompanied by a high level of automation and compromises concerning data items and accuracy.

OBJECTIVES OF THE NSW CENTRAL CANCER REGISTRY

1. Overall objectives

To contribute to the prevention, control and treatment of cancer in the population of NSW, in particular, and human populations, in general, by the supply of timely and accurate data based on a total enumeration of cases of cancer in NSW — which meets statutory requirements and the needs of users.

2. Specific objectives

2.1 Objectives related to characteristics of the data collection

Priority 1: A complete enumeration of all incident malignant neoplasms in NSW, except BCC and SCC of the skin (but including SCC of the lip, vulva, penis and anus), and except carcinoma-in-situ.

Priority 2: Timeliness of the data.

Priority 3: Accuracy in the variables collected.

Priority 4: Dead or alive status current for each individual registered (for survival analysis).

Priority 5: Completeness of variables which are to be collected on each case.

Priority 6: Compatibility of the data with other State registries in Australia and internationally.

2.2 Objectives related to acquisition of data

2.2.1 Reporting and data items will be kept to a minimum. In some instances, only the first contact, death and new primary cancers will be reported from hospitals and radiotherapy departments.

2.2.2 Data acquisition will become as automated as possible. Thus data supplied by institutions should be in electronic form.

2.2.3 Data should be obtained on all incident cancers in NSW using hospital inpatient records, pathology reports, radiotherapy department records and cancer deaths from the Registrar General. Outpatient records will also be used when possible.

2.2.4 Data on non-cancer deaths will be obtained weekly from the Registrar General to calculate survival.

2.2.5 Improvement in quality of peripheral coding of cancer data will be encouraged so internal coding or recoding can be minimised.

2.3 Objectives related to data processing

(a) add to the database new cancer cases from various sources

(b) minimise double registration

(c) add relevant data items, edit existing data to improve accuracy, and document alive/dead status in cases already registered.

2.3.1 Computer programs will be developed which will match data tapes from data suppliers with the Cancer Registry data base, and then automatically add to or edit existing data, add new cases if no match occurs, and reject the information for semi-automated processing by operators if near matches are detected.

2.3.2 Data entry from written or electronic sources will occur at the time of data receipt or shortly afterwards.

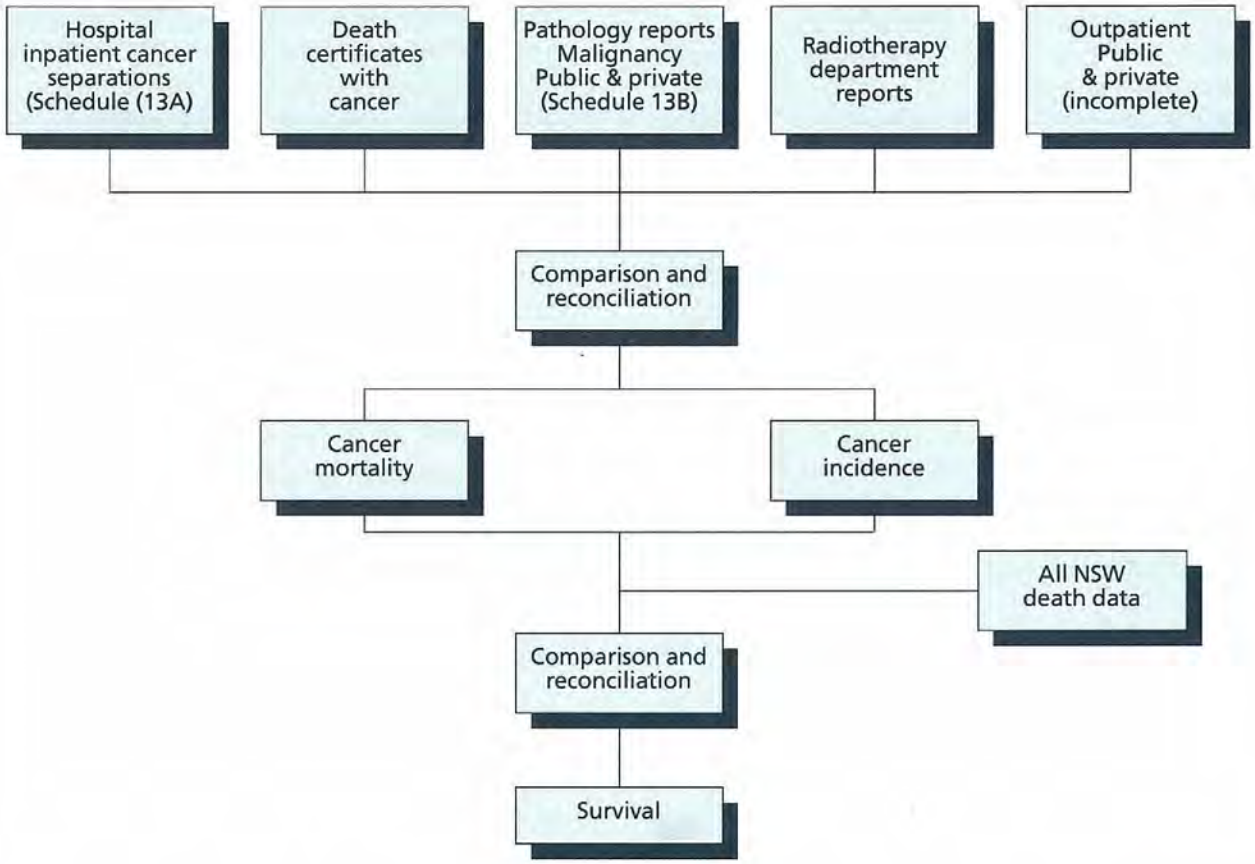
2.3.3 Coding for topography and morphology will be automated.

2.3.4 Geographic coding will include suburb, postcode, legal LGA, statistical subdivision, statistical division, health service area/region and urban/rural for the year of incidence and year of death.

Continued on page 52 ►

FIGURE 1

DATA SOURCES — NSW CENTRAL CANCER REGISTRY



2.4 Objectives related to data output
These objectives overlap with those of the Cancer Epidemiology Research Unit. Certain functions will be exchanged between the Epidemiology Unit and Registry on a cost recovery basis.

2.4.1 **Descriptive epidemiology**
Analyse and publish descriptive data concerning cancer incidence and mortality in NSW:

(a) magnitude of the health problem due to various cancers. This is measured by incidence and mortality rates.

(b) distribution of various cancers by age, sex and country of birth.

(c) survival for various cancers by age group, sex and other factors.

(d) small area differentials in incidence and mortality for various cancers. Small areas include urban/rural, health areas/regions, local government areas, postcodes or appropriate aggregations.

(e) temporal trends in incidence and mortality from various cancers, and temporal trends in survival.

(f) patterns of referral for diagnosis and treatment of various cancers (and temporal trends), and patterns of treatment for various cancers (and temporal trends). These aims will require additional ad hoc surveys based on registered cases.

2.4.2 **Collaboration with the Cancer Epidemiology Research Unit and other Institutions.** This consists of provision of data for:

(a) more detailed descriptive epidemiological studies related to cancer using subsamples of the Registry data base.

(b) descriptive-analytic studies of cancer incidence and mortality in relationship to other variables (ecological studies and before-and-after studies).

(c) analytic epidemiological studies using case control and cohort methodologies.

(d) case series studies by clinicians, radiotherapists, pathologists or other medical scientists.

2.4.3 **Reports and publications**
The NSW Central Cancer Registry will publish an annual report of cancer incidence in NSW and reports related to cancer epidemiology derived from routinely collected data sources.

Richard Taylor
Head, NSW Central Cancer Registry
and Cancer Epidemiology Research Unit

HUMAN CUTANEOUS ANTHRAX — A CASE REPORT

This report describes the circumstances and clinical findings of a case of human cutaneous anthrax, and discusses the public health implications.

Anthrax is a zoonosis that was endemic in Europe before the introduction of an effective animal vaccine. Koch, in the late 1800s, demonstrated the bacterial aetiology of anthrax, the first disease to which a bacterial cause was ascribed.[1]

Human anthrax is still a problem in many regions of the world,[2,3,4,5] although in developed countries it is uncommon. In NSW there have been only two reported cases of human anthrax since 1982.

Anthrax is caused by the *Bacillus anthracis*, a spore-forming, gram-positive organism. The spores are extremely resistant to adverse environmental conditions,[6] surviving high temperatures and drying, and can remain dormant but potentially infective for more than 20 years.[8] Pathophysiologic effects in infected animals or humans are due to toxins produced by the organism.[7]

The main reservoirs of infection are domestic herbivores such as sheep, cattle and goats. Human infection comes from direct contact with contaminated skins or carcasses, inhalation of spores from contaminated animal products such as wool fibres or bone meal, or from eating infected meat.[7]

The index case, a 35-year-old male, initially presented to a general practitioner with a number of vesicular lesions on his hands which the patient himself suspected to be anthrax. The patient was otherwise well and was given oral penicillin. In the following 24 hours, the man became systemically unwell and was admitted to a metropolitan hospital for intravenous penicillin therapy.

The vesicular lesions developed black necrotic lesions typical of cutaneous anthrax. *B. anthracis* was cultured from the swabs taken by the GP. The organism was not found in the patient's blood or in the lesions.

Three days before going to the GP, the patient, with two others, had been slaughtering sheep on a property in western NSW. There was no evidence of anthrax on that property, although it was known to be present in neighbouring properties.

The carcasses were to be used as feed for animals in a Sydney wildlife park. Eight other staff members of the park had direct contact with the carcasses.

Anthrax is common among stock in NSW, but human anthrax is uncommon. It is potentially fatal, especially if accompanied by septicaemia and severe toxaemia. Cutaneous anthrax comprises 90-95 per cent of all human anthrax, and has a case fatality rate of 10-20 per cent if untreated.[9]

For public health, it is important that all human contacts be treated appropriately, and that contaminated materials be disposed of in a manner that eliminates further human or animal exposure.

All definite contacts, and many others at the wildlife park who were not at risk, were treated with oral penicillin for at least five days. The treatment of non-contacts was unnecessary but deemed justifiable in view of the high level of anxiety, and the relatively low cost of treatment.

It is recommended that contaminated materials be incinerated or disinfected, and that infected carcasses be covered with anhydrous calcium oxide (quicklime) during deep burial.[9] Some of the potentially contaminated materials were burnt, while others were disinfected with 5 per cent formalin solution.

The contaminated carcasses were buried, without any quicklime, at a local waste depot before involvement of the Public Health Unit. Though not the most appropriate site for disposal, it was the most accessible at the time. Fortunately, the buried carcasses are unlikely to be disturbed, since as normally is the case, the waste depot would be designated 'unhealthy building land' under the Public Health Act.

There was the potential for many more cases of human anthrax and it was fortunate that only one case was confirmed. In this case the diagnosis was confirmed by bacterial culture. If microbiological confirmation is not possible, or in epidemiological investigations, serological diagnosis is both sensitive and specific.[4,5]

Eradication of human anthrax depends primarily on the ability to control it in domestic animals by effective surveillance and vaccination programs. Vaccination for humans is not available in Australia, so preventive measures should be emphasised to high-risk groups.

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REDUCING FATAL CHILDHOOD INFECTIONS

The importance of *Haemophilus influenzae* type b (Hib) as a cause of severe infections in young children is not generally appreciated by health care workers outside children's hospitals or the general public. This is probably because severe Hib disease is largely restricted to young children (at least 90 per cent of cases occur by five years of age), although there have been a number of case series reporting disease in adults,[1] particularly epiglottitis.[2]

Despite the restricted age group affected, the annual mortality caused by Hib in the US has been calculated as comparable to that of epidemic poliomyelitis in the early 1950s.[3] Universal immunisation against Hib disease has been recommended in a number of countries, including the US (since 1985) and Canada.[3]

To assess the value to the Australian community of immunisation, data on the costs of Hib disease (which depends on disease incidence and sequelae) and the efficacy, costs and side-effects of the vaccine (which depends on population characteristics and vaccine type) are needed. Decisions about vaccine delivery (universal vs targeted and timing and number of doses) are also important.

EPIDEMIOLOGY OF HIB DISEASE

Pattern of Hib disease

The epidemiology of invasive *Haemophilus* disease differs markedly in different geographic areas. The most important differences are the total disease incidence, the age distribution and the proportion of epiglottitis, which are inter-related and have important implications.

The highest reported annual incidence of invasive *Haemophilus* disease in the world is that in Central Australian Aboriginal children (900 per 100,000 children under five years). Epiglottitis rarely occurs in these groups, in whom most cases occur in the first six months of life, affecting up to 2 per cent of children by their first birthday.

Population-based data on childhood Hib disease show a pattern of Hib disease in urban Australia which resembles that in Scandinavia most closely, with an annual incidence of 30-60 per 100,000 for all Hib disease with a relatively high incidence of epiglottitis (13-23 per 100,000). Using a mid-range estimate of incidence (40), a minimum of 500 cases occur each year in children under five years in Australia.

In a recent study of childhood Hib disease in the greater Sydney metropolitan area, 292 cases in children 0-14 years were identified between 1985 and 1987, an average of about 100 a year.[5] Meningitis accounted for the majority of cases (51 per cent), and epiglottitis (32 per cent), with the remainder predominantly cellulitis (6 per cent), arthritis (5 per cent) and pneumonia (4 per cent).

Most studies from the US report a higher incidence for all Hib disease (60-100 per 100,000) but much less epiglottitis (2-11 per 100,000).[6] This difference in the incidence of epiglottitis largely explains the differences in age distribution, with 50 per cent of cases being over 24 months in Australia[5,7] and Finland[8] compared to 20 per cent or fewer in the US. In general, as a higher disease incidence occurs, a lower median age of onset is noted and epiglottitis is found to be relatively less.

Risk factors for Hib disease

Case control studies in the US and Finland have identified day-care outside the home and the presence of young siblings as independent risk factors, whereas breast feeding was protective.[9,10,11] The interaction of day-care attendance and age differed in two US studies, increasing indirectly with age in Atlanta[9] but directly with age in Colorado.[10] The attributable risk for Hib disease from day-care was estimated to be 50 per cent in Atlanta.[9] There is evidence of genetic differences in susceptibility to Hib disease, as well as differences between strains of Hib, but race and ethnicity were not associated with an increased risk of Hib disease after correction for demographic variables in one study.[9]

There are differences in the findings and obvious socio-demographic differences between each area and Australia. Case-control studies are in progress in Sydney and Melbourne to evaluate the importance of these and other risk factors in Australia.

PUBLIC HEALTH IMPORTANCE OF HIB DISEASE

The magnitude of Hib as a public health problem depends on its incidence, morbidity and mortality.

Incidence

The reported incidence of Hib disease in urban Australia varies from 30 per 100,000 in Adelaide,[12] to 60 in Victoria[8] and the Gold Coast[13] and there are also differences in the pattern of disease, with Victoria having a high proportion of epiglottitis. Although some differences may relate to case ascertainment, real differences may exist between urban areas of Australia, in addition to those in rural Aboriginal children, as has been described in New Zealand[14] and the US[6].

Mortality

Sudden death before hospital admission occurs in both meningitis[15] and epiglottitis[8] and thus mortality will be underestimated if only hospital records are used or if autopsies are not expertly performed. In Sydney in 1985-87, an average of two deaths occurred annually, all of which were due to meningitis and occurred before or soon after hospital admission. The case fatality rate may be higher for NSW as a whole, as rapid access to sophisticated medical care, such as is necessary for epiglottitis, is not available in some areas. If the case fatality rates and incidence of disease observed in Victoria[8] and Sydney[5] are projected to Australia, a minimum of 13 deaths are estimated to occur each year due to childhood Hib disease in this country.

Short-term morbidity

The short-term morbidity and costs of Hib disease primarily relate to hospitalisation. In Sydney in 1985-87, the mean number of hospital days for meningitis was 15, epiglottitis 5, arthritis 11 and other foci 5, with meningitis accounting for 71 per cent and epiglottitis 16 per cent of the 2916 bed days over this period. However, epiglottitis accounted for more than two-thirds of the 416 intensive-care bed days, whose crude cost is about three times greater than standard hospital days.

Long-term morbidity

The only published Australian study of post-meningitis morbidity is about 15 years old, included only 14 patients and suggested that significant morbidity was uncommon.[16] However, preliminary follow-up data from the 138 surviving patients with meningitis in Sydney in 1985-87 indicate otherwise.

Major morbidity (retardation, profound deafness, hydrocephalus) occurred in 7 per cent of children and less severe deficits (fits, motor problems, unilateral hearing loss) in a further 13 per cent. Learning deficits, behaviour problems and other "soft" neurological problems were not studied.

HIB VACCINE EFFICACY

Four vaccines produced by four different manufacturers, with the Hib capsular polysaccharide (PRP) conjugated to a different protein, are at or near marketing stage in the US. The protein carriers are diphtheria toxoid (PRP-D), a mutant diphtheria toxin (PRP-CRM), an outer membrane

Continued on page 55 ►

► Continued from page 54

protein of *Neisseria meningitidis* (PRP-OMP) and tetanus toxoid (PRP-T).[17] The former two vaccines are licensed in the US for use at six months of age; the latter two, which may be more immunogenic in the first six months of life, are likely to be licensed there soon. An additional advantage of the conjugate vaccines is that children who have developed Hib disease despite receiving PRP vaccine appear to respond to them.[18]

The efficacy of vaccines has been controversial because of widely varying observations, first with PRP vaccine and more recently with the conjugate vaccines.[19] The only large trials have been conducted in Finland, where the most recent results from a trial using PRP-D give an efficacy of 94 per cent (CI 83-98 per cent) among children 7-24 months after vaccine at 3, 4, 6 and 18 months.[20] This vaccine has been used routinely in Finland since 1988, with a decrease in cases of Hib disease among children under five years from 172 in 1986 to 27 in 1989.[20]

PRP-D vaccine in Alaska had an efficacy of only 37 per cent,[19] although the calculated number of children required to vaccinate with PRP-D to prevent one case of invasive Hib disease in Alaska (270) was much fewer than Finland (2410) because of the high incidence of disease there (1000 per 100,000 vs 50 per 100,000).[19]

VACCINE SIDE-EFFECTS

There are extensive data documenting the safety of PRP vaccine in the US.[21] A Finnish study has shown that PRP-D retains its immunogenicity when given with triple antigen and is associated with a similar incidence of side-effects to triple antigen alone.[22] The main concern is the induction of a transient fall in antibody levels which has been documented with both the PRP and conjugated vaccines.[23] Although this may be associated with a short period of enhanced susceptibility to invasive disease, it is not a significant consideration except in the special situation of an outbreak of Hib disease (eg a day-care centre) where chemoprophylaxis rather than vaccination is indicated, at least initially.

VACCINE COSTS

Vaccine administration differs markedly between States, which can have a substantial impact on costs. However these costs are largely fixed, and as any Hib vaccine could be given within the current schedule, additional administration costs should be minimal. Two cost analyses of PRP vaccine at two years[24,25] and one of PRP-D vaccine at 18 months[26] in the US concluded that immunisation was cost-effective. In Australia, the pattern of an older disease peak and greater public funding of vaccination would be expected to make the equation more favourable. The cost of prevention of Hib disease should be put in the context of other potentially vaccine-preventable diseases, such as hepatitis B and varicella, when decisions about funding priorities are made.

CONCLUSIONS

- Invasive Hib disease is a common cause of serious morbidity and mortality in Australian children, with an estimated minimum of 500 cases and 13 deaths annually.
- Protein conjugate vaccines are among the safest. They appear to be highly immunogenic, however good-quality data on effectiveness are available only from Finland and substantial differences may exist between populations in their response to polysaccharide vaccines. One of these conjugate vaccines has recently been licensed for use at two, four and six months in the US; licensing of two such vaccines in Australia is being reviewed.
- For vaccination against Hib to be effective as a public health measure, it should be introduced in a co-ordinated fashion after consideration of the various competing alternatives, the most prominent of which is vaccination against hepatitis B. Detailed consideration of the costs and benefits of universal as opposed to directed immunisation and specific vaccination schedules, both timing and number of doses, in the context of Australian data is needed.

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TRAINING CONFERENCE EMPHASISES COMMUNICATION

This year's training conference for more than 300 trainee public health physicians in the UK emphasised the necessity of clear communication for adequate public health function. The conference, at Blackpool in early April, was organised by the Faculty of Public Health Medicine (formerly Community Medicine) of the Royal Colleges of Physicians of the UK.

The conference used groups of trainees to identify the key communication issues in their daily work — written or oral, with public health colleagues or clinicians, the community or the media. Oral presentations of completed work were examined within groups for their clarity and stimulus.

Much of the conference concerned communication from the college to trainees about revised examination arrangements for both Part I and Part II of the fellowship. In the UK both parts of the fellowship are awarded by examination, Part II requiring the submission of completed projects by the trainees and orals pertaining to them. A similar pattern is followed in New Zealand College.

Non-medical associates are to be accepted into the UK Faculty of Public Health Medicine. The faculty fulfils in the UK many of the functions of the more multidisciplinary Public Health Association in Australia and the Australasian Epidemiological Association.

In the recently revised NHS, which emphasises the role of Area-equivalents in planning and buying rather than providing health care, Public Health Medicine has received an immense boost. It is seen as the key discipline underpinning needs identification, comparison of inter-Area health statistics, observation and measurement of health outcomes and evaluation.

The UK Faculty of Public Health Medicine is about to embark on a national goals and targets exercise for the UK akin to the Australian Better Health and New Zealand efforts and the corporate interest in goals-based planning receiving emphasis in NSW.

The dramatic highlight of the conference was when, following their noses, president Walter Holland and the vice-president inspected the kitchens of the conference hotel — and declared them unfit. That day's conference banquet was organised at another Blackpool hotel with great haste — a fine example of rapid policy formulation and implementation following hard on epidemiological inquiry — and good communication!

Stephen Leeder
Professor of Community Medicine
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INFECTIOUS DISEASES

TETANUS (ICD-9 037)

Tetanus cases continue to be notified in NSW. Nine were notified in the period 1982-1990 — two of them in 1990.

The 1990 cases were a 66-year-old man from New England and an 81-year-old woman from the North Coast Regions.

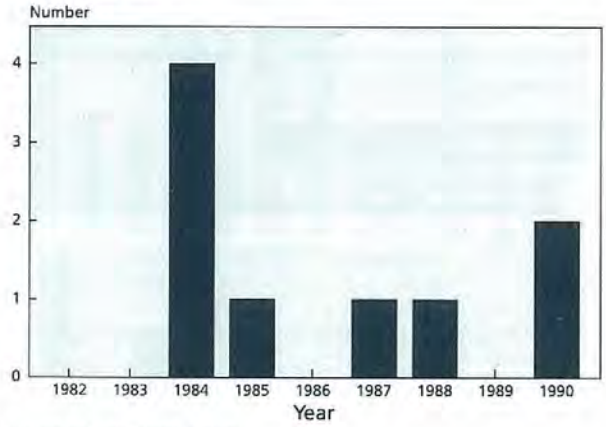
During 1989/1990 one separation from hospital due to tetanus was recorded in the Inpatient Statistics Collection.

Tetanus Toxoid first became available to Australian servicemen during World War II. Routine use of tetanus toxoid began in 1954. The cases of tetanus notified in 1990 give cause for concern that all people born before 1953 who did not serve in the armed forces may not be immunised against tetanus.

The NSW Health Department recommends that doctors review the immunisation status of all patients. Primary immunisation can be started at any age.

FIGURE 2

TETANUS NOTIFICATIONS NSW, 1982-1990



Source: NSW Infectious Disease Database.

MEASLES (ICD-9 055)

Preventing measles has been the focus of concerted public health initiatives over the past three years through health promotion and immunisation campaigns. There is evidence, however, that the coverage of measles immunisation is less than optimal. Estimates of immunisation coverage during the recent Hunter epidemic indicate that only 85-90% of the population of NSW are immune to measles.

The three-year periodicity of measles has yet to be altered by the mass immunisation program in place since 1968. The greatest number of measles

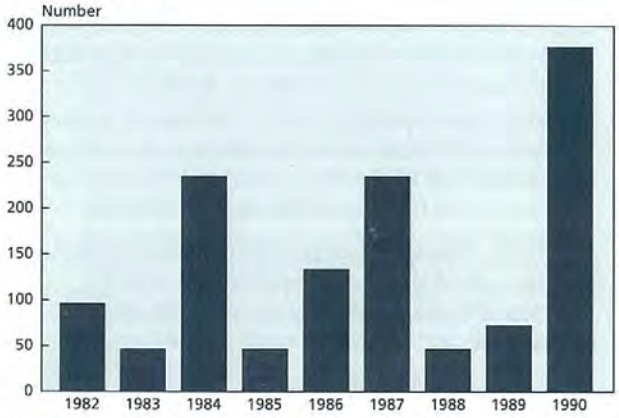
Continued on page 57 ►

► *Continued from page 56*

notifications received by the NSW Health Department was recorded in 1990. This was in part due to active surveillance of cases and formal notifications initiated by Public Health Units in the absence of notifications by medical practitioners.

FIGURE 3

MEASLES NOTIFICATIONS NSW, 1982-1990

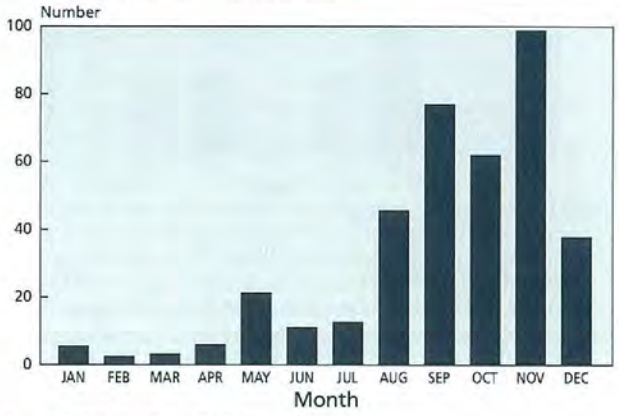


Source: NSW Infectious Disease Database.

A major measles outbreak was recorded in 1990. Early indications of the epidemic may be traced back to May, although the major epidemic began in August and peaked in November.

FIGURE 4

MEASLES, NSW, 1990 NOTIFICATIONS BY MONTH OF ONSET



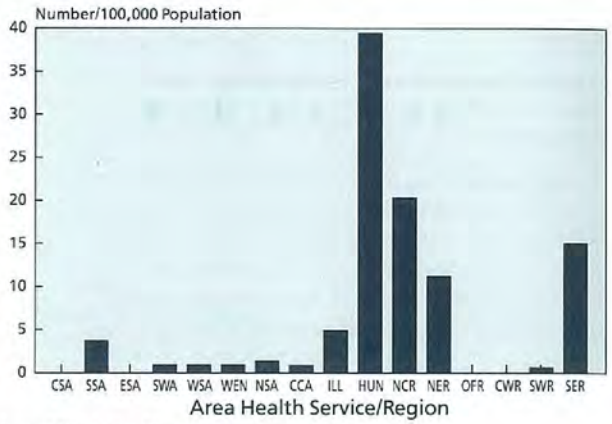
Source: NSW Infectious Disease Database.

The centre of the epidemic was the Hunter Area. Neighbouring regions, New England and North Coast, also reported higher than average rates.

In 1990 379 cases of measles were notified. The State average for measles was 6.5 cases/100,000 population. Males and females were affected equally. The preponderence of cases in under 15-year-olds highlights the importance of schools as the site

FIGURE 5

MEASLES NOTIFICATIONS NSW, 1990, BY AHS/REGION



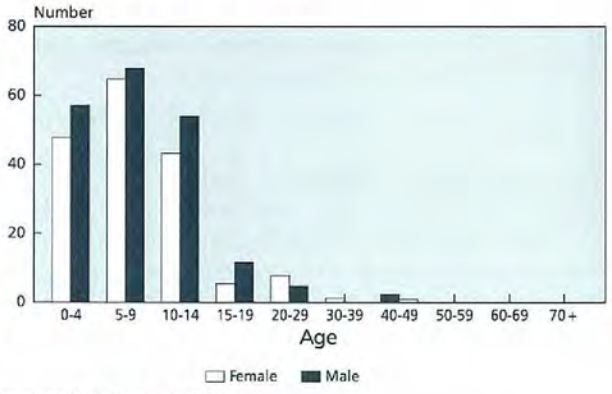
Source: NSW Infectious Disease Database.

of disease transmission. Legislation to require documentation of immunisation at the time of school-entry is envisaged in 1992.

The National Health and Medical Research Council is considering the issue of a second dose of measles-mumps-rubella vaccine. NSW data would support this initiative, as most of the 1990 cases would have been prevented by compliance with the existing immunisation protocol.

FIGURE 6

MEASLES, NSW, 1990 NOTIFICATIONS BY AGE AND SEX



Source: NSW Infectious Disease Database.

In 1989/1990 71 separations from hospital due to measles were recorded in the Inpatient Statistics Collection.

The prospect of eradicating measles is still an unachievable goal. The aim of the NSW immunisation program against measles is a high level of control, consistent with World Health Organisation programs.

Continued on page 58 ►

► *Continued from page 57*

This situation requires increased compliance with notification requirements by medical practitioners, and an ability to respond to outbreaks in a timely and efficient manner. Staff of several Public Health Units have responded effectively to measles outbreaks throughout the year.

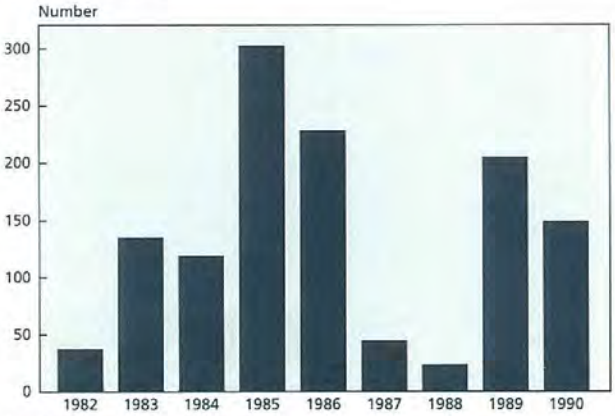
PERTUSSIS (WHOOPING COUGH) (ICD-9 033)

Pertussis cases were notified from 15 of the 16 Area Health Services and Regions. No distinctive winter pattern could be discerned from 1990 notifications, and total notifications were lower in 1990 than for 1989.

Cases are predominantly in pre-school children, but school-age children still constitute enough cases to raise concern about the place of schools in the transmission of this disease.

FIGURE 7

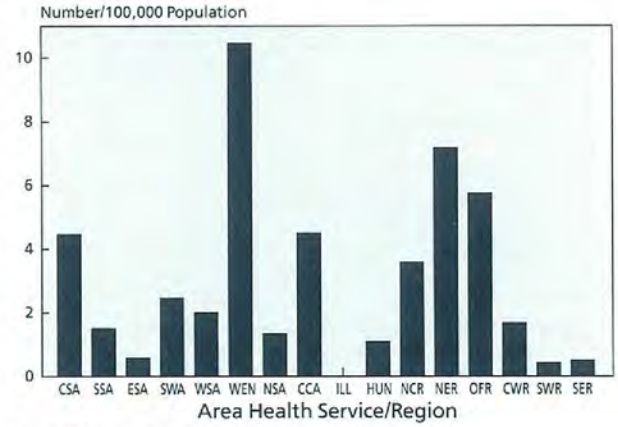
PERTUSSIS, NSW, 1982-1990
NOTIFICATIONS



Source: NSW Infectious Disease Database.

FIGURE 8

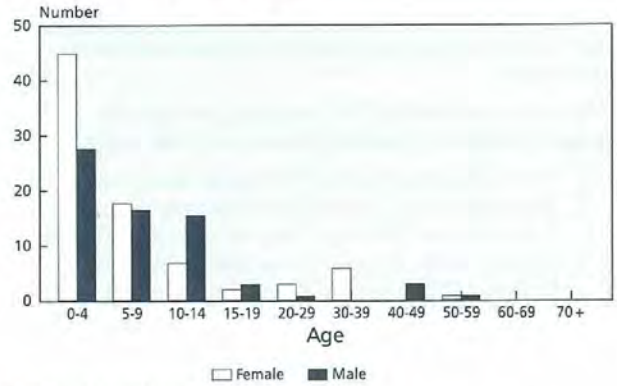
PERTUSSIS NOTIFICATIONS, NSW, 1990
BY AHS/REGION



Source: NSW Infectious Disease Database.

FIGURE 9

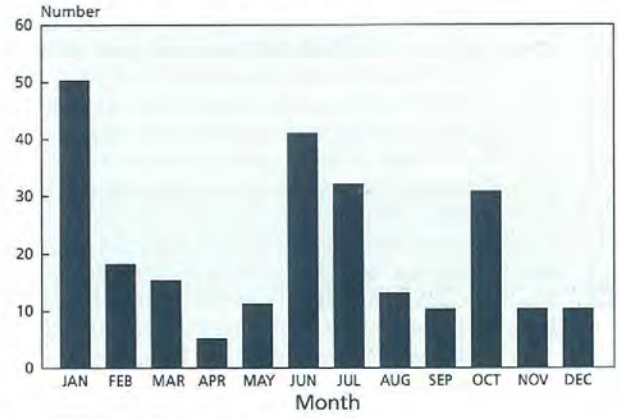
PERTUSSIS, NSW, 1990
NOTIFICATIONS BY AGE AND SEX



Source: NSW Infectious Disease Database.

FIGURE 10

PERTUSSIS, NSW, 1990
NOTIFICATIONS BY MONTH OF ONSET



Source: NSW Infectious Disease Database.

The NH&MRC has considered the issue of pre-school pertussis booster, but in the absence of proof of pertussis transmission from school into homes with unimmunised infants, it has deferred its decision.

In 1990 152 cases of pertussis were notified. The State average for pertussis was 2.6 cases/100,000 population.

In 1989/1990 510 separations from hospital due to pertussis were recorded in the Inpatient Statistics Collection.

The pertussis vaccine still has a poor public image, and is the least effective of all vaccines routinely used. The basis for lack of confidence in this vaccine must play a large role in the persistence of widespread outbreaks of disease.

Notification of cases plays a crucial role in the prevention of further cases.[1]

1. De Cean G, Levy M. Pertussis notification. *Med J Aust* 1990;153:503.

INFECTIOUS DISEASES

NOTIFICATIONS

Infectious diseases notifications are now received on the Infectious Diseases Database System (IDDS) and efforts are being made to ensure they are reported quickly. Notifications in May were 21 per cent higher than in April.

Notifications received by Epidemiology and Health Services Evaluation Branch to the end of May include:

- New confirmed cases of HIV infection are now reported from the NSW HIV Reference Laboratories. The total number of cases (10,243) is fewer than reported in the last Public Health Bulletin (12,833) because previous positive test results have now been excluded (repeat tests) for all reference laboratories including St Vincent's. Sub-totals for the various risk-group categories have also been adjusted as a result of this improved matching process. As further refinements to the St Vincent's matching algorithm that identifies repeat tests on individuals will be implemented, subsequent figures will need to be adjusted again.
  Of the total of 10,243 identified positives to date, 299 new cases have been reported this year — giving a rate of 15.9/100,000/year compared with 14.5/100,000/year for the same period last year.
- Food-related infection accounts for 43 per cent of notifications received within one month of onset. The Food Branch is investigating an outbreak of Salmonella bovis morbificans serotypes 21 and 23 throughout NSW.
- A further case of tetanus has been reported. A 49-year-old man with no previous immunisation against tetanus is recovering from this condition. The risk groups for tetanus have been previously described in the *Bulletin* (Vol 2 Pp 3, 13, 26). NHMRC recommends that everyone receive tetanus immunisation.
- Measles cases continue to be notified. Many notifications are received too late for effective responses to be mounted. We urge medical practitioners to telephone notifications if a case is suspected[1], and to confirm all index cases serologically. The Hunter Area Health Service notified measles at an annual rate of 15/100,000 this year. This compares with a rate of 39/100,000/year during 1990.
- The rate of syphilis notification in Orana and Far West is 41/100,000 (not 4.1/100,000, as reported in Vol 2, Number 5).
- Hepatitis C has been notified by only seven Areas and Regions. Laboratories are encouraged to notify all confirmed cases of Hepatitis C to Public Health Units.
  New South Wales has a rate of 1.4/100,000/year. The Central Sydney Area Health Service notifies Hepatitis C at a rate of 10.8/100,000/year and the North Coast Region notifies at a rate of 5.6/100,000/year.

1. Notifications can be made to the local Public Health Unit or to the Epidemiology and Health Services Evaluation Branch (02) 391 9196 (After hours (02) 925 3911, page No. 38869).

TABLE 1

INFECTIOUS DISEASES NOTIFICATIONS, NSW
Notifications to the end of May 1991

CONDITION	Number of Cases Notified			
	Period		Cumulative	
	May 1990	May 1991	May 1990	May 1990
Acute viral hepatitis	58	23	117	498
AIDS	19	N/A	*143	*77
Arboviral infections	–	2	64	295
Brucellosis	–	–	2	2
Cholera	–	–	1	–
Diphtheria	–	–	–	–
Foodborne illness	N/A	35	N/A	1035
Gastroenteritis (instit.)	N/A	1	N/A	24
Gonorrhoea	44	5	159	113
Haemophilus influenza inf.	N/A	5	N/A	43
HIV	N/A	N/A	*273	*299
Hydatid disease	2	–	2	1
Legionnaires' disease	1	–	18	15
Leprosy	1	–	5	–
Leptospirosis	6	1	21	17
Listeriosis	N/A	–	N/A	–
Malaria	13	4	81	14
Measles	21	2	36	85
Meningococcal infection	12	3	28	21
Mumps	N/A	–	N/A	2
Mycobacterial infections (NOS)	42	8	206	56
Pertussis	11	–	99	16
Plague	–	–	–	–
Poliomyelitis	–	–	–	–
Q fever	10	4	66	36
Rubella	N/A	–	–	7
Salmonella infection	115	20	719	502
Syphilis	35	6	136	176
Tetanus	–	1	–	2
Typhoid & paratyphoid	2	–	14	36
Typhus	–	–	–	–
Viral haemorrhagic fever	–	–	–	–
Yellow fever	–	–	–	–

* Data January-April only

Continued on page 60 ►

TABLE 2

INFECTIOUS DISEASE NOTIFICATIONS, BY HEALTH AREA & REGION JANUARY 1 TO MAY 31,1991

CONDITION	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	OTH	U/K	TOTAL
AIDS	9	2	33	3	7	3	10	4	–	1	3	–	–	–	–	–	–	2	77
Arboviral infection (NOS)	–	–	8	–	–	–	–	–	–	6	–	131	–	4	30	2	–	–	181
Brucellosis	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Foodborne illness (NOS)	25	35	309	43	77	78	50	6	14	39	185	70	12	26	50	2	14	–	1035
Gastroenteritis (instit.)	–	–	–	4	9	6	–	–	–	–	–	5	–	–	–	–	–	–	24
Gonorrhoea	–	1	61	23	5	–	2	–	4	2	6	1	3	–	5	–	–	–	113
H Influenzae B	–	–	–	–	3	1	2	–	2	–	–	1	–	–	2	–	–	–	11
H Influenzae infection (NOS)	–	–	2	–	7	6	–	–	4	4	–	–	–	–	6	2	–	–	31
H Influenzae septicaemia	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Hepatitis (NOS)	3	–	90	28	107	6	–	–	8	18	–	21	–	–	6	14	–	–	301
Hepatitis A	8	3	–	1	5	–	7	1	–	4	3	1	–	–	–	–	–	–	33
Hepatitis B - acute	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	2
Hepatitis B - carrier	4	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	7
Hepatitis B - unspecified	33	4	7	9	8	4	12	–	2	10	17	6	11	–	–	1	–	–	124
Hepatitis C	12	1	–	1	3	–	2	–	–	–	8	4	–	–	–	–	–	–	31
HIV infection	21	6	71	8	17	2	18	1	2	10	8	–	1	1	–	1	2	130	299
Hydatid disease	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
Legionnaires' disease	–	–	–	4	5	2	1	–	–	2	–	–	–	–	–	–	1	–	15
Leptospirosis	–	–	–	–	–	–	1	–	–	5	1	1	1	–	5	–	3	–	17
Malaria	–	–	–	–	2	1	3	–	1	1	1	–	–	–	3	2	–	–	14
Measles	1	–	–	6	16	1	5	–	3	30	13	2	–	–	1	7	–	–	85
Meningococcal infection (NOS)	–	–	–	2	1	1	–	–	2	1	1	2	–	–	–	–	–	–	10
Meningococcal meningitis	–	1	–	–	–	–	1	–	–	1	1	–	–	–	–	1	–	–	6
Meningococcal septicaemia	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	1	–	–	5
Mumps	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Mycobacterial atypical	1	1	–	–	1	–	3	–	–	–	–	–	–	–	–	–	–	–	6
Mycobacterial infection (NOS)	–	–	–	7	16	5	1	–	8	1	3	2	–	3	1	–	–	–	47
Mycobacterial tuberculosis	1	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	3
Pertussis	–	–	3	3	2	1	1	–	–	1	3	–	2	–	–	–	–	–	16
Q Fever	–	–	–	1	–	–	–	–	–	2	7	15	5	3	3	–	–	–	36
Ross River fever	–	–	–	–	–	–	–	2	–	1	11	71	20	–	4	–	5	–	114
Rubella	–	–	4	–	–	1	–	–	1	1	–	–	–	–	–	–	–	–	7
Salmonella infection (NOS)	32	37	12	63	83	45	40	8	31	18	42	36	11	12	9	9	14	–	502
Syphilis	9	4	26	31	12	2	5	1	4	8	31	10	19	4	2	1	7	–	176
Tetanus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	2
Typhoid & paratyphoid	6	4	6	–	–	5	4	1	1	2	–	2	1	–	–	–	4	–	36

TABLE 3

INFECTIOUS DISEASE NOTIFICATIONS, BY HEALTH AREA & REGION MAY, 1991

CONDITION	CSA	SSA	SWS	WSA	WEN	ILL	HUN	NER	SWR	SER	TOTAL
Arboviral infection (NOS)	–	–	–	–	–	–	2	–	–	–	2
Foodborne illness (NOS)	2	2	–	7	5	–	7	2	10	–	35
Gastroenteritis (instit.)	–	–	–	–	–	–	–	1	–	–	1
Gonorrhoea	–	–	–	5	–	–	–	–	–	–	5
H Influenzae infection	–	–	–	1	1	2	–	–	1	–	5
Hepatitis (NOS)	–	–	5	13	–	–	1	1	–	2	22
Hepatitis B - unspecified	1	–	–	–	–	–	–	–	–	–	1
Leptospirosis	–	–	–	–	–	–	–	1	–	–	1
Malaria	–	–	–	–	–	–	–	–	2	2	4
Measles	–	–	–	–	–	–	2	–	–	–	2
Meningococcal infection (NOS)	–	–	–	–	–	1	–	2	–	–	3
Mycobacterial infection (NOS)	–	–	3	3	–	–	–	–	1	–	7
Mycobacterial tuberculosis	–	1	–	–	–	–	–	–	–	–	1
Q Fever	–	–	–	–	–	–	–	3	1	–	4
Salmonella infection (NOS)	–	1	1	10	4	–	–	4	–	–	20
Syphilis	–	–	–	2	–	1	–	3	–	–	6
Tetanus	–	–	–	–	–	–	–	–	–	1	1
Total	3	4	10	41	10	8	13	20	15	5	129

Abbreviations used in this Bulletin:
CSA Central Sydney Health Area, ESA Eastern Sydney Health Area, SSA Southern Sydney Health Area, SWS South Western Sydney Health Area, WSA Western Sydney Health Area, WEN Wentworth Health Area, NSA Northern Sydney Health Area, CCA Central Coast Health Area, ILL Illawarra Health Area, HUN Hunter Health Area, NCR North Coast Health Region, NER New England Health Region, OFR Orana & Far West Health Region, CWR Central West Health Region, SWR South West Health Region, SER South East Health Region, IS Interstate, U/K Unknown, OS Overseas, NOS Not Otherwise Stated

Please note that the data contained in this Bulletin are provisional and subject to change because of late reports or changes in case classification. Data are tabulated where possible by area of residence and by the disease onset date and not simply the date of notification or receipt of such notification.

► *Continued from page 60*

TABLE 4

TOTAL CONFIRMED HIV POSITIVE CASES IN NSW BY RISK GROUP AND SEX, CUMULATIVE TO APRIL 30, 1991

Risk group	Male	Female	Transexual	Unknown	Total	(%)
Homo/bisexual	3679	15	1	127	3822	37.3
Heterosexual	100	51	1	2	154	1.5
Injecting drug user (IDU)	140	38	–	15	193	1.9
Transfusion	40	34	–	1	75	0.7
Haemophilia	57	–	–	–	57	0.6
Homo/bisexual + IDU	69	2	–	4	75	0.7
Heterosexual + IDU	12	15	–	–	27	0.3
Homosexual + transfusion	2	–	–	–	2	–
IDU + transfusion	1	1	–	–	2	–
Vertical transmission	11	6	–	4	21	0.2
Specified N.E.C.	51	11	0	16	78	0.8
Unknown	3535	221	–	1981	5737	56.0
Total	7697	394	2	2150	10243	100.0

Data from Prince of Wales, Royal Prince Alfred, St Vincent's and Westmead hospitals all to 30/4/91 inclusive.

NEW DIRECTOR OF PUBLIC HEALTH

Dr John Beard has been appointed the North Coast Region's first full-time Medical Director of Public Health and has also accepted the appointment of Medical Officer of Health.

During his three-year term as Director of Public Health, Dr Beard will be responsible for environmental health, health promotion, including Aboriginal health promotion, and a number of special programs, including AIDS/STDS, women's health and drug and alcohol. He will also co-ordinate public health policy and research for the Region.