



## VITAMIN K PROPHYLAXIS IN NEWBORN INFANTS

### VITAMIN K AND HAEMORRHAGIC DISEASE OF THE NEWBORN

In NSW the practice of giving vitamin K to neonates to prevent haemorrhagic disease of the newborn (HDN) began in the 1950s. Initially it was given only to neonates considered to be at increased risk of intracranial haemorrhage (e.g. after difficult instrumental deliveries). In 1971 the NSW Maternal and Perinatal Committee recommended that all newborn infants receive vitamin K1 prophylaxis, and in subsequent years the intramuscular (IM) administration of 1mg of vitamin K1 (phytomenadione) at birth became the universal regimen.

Before the widespread use of vitamin K, HDN was an important cause of infant morbidity and mortality. The incidence is difficult to assess, but 13 deaths were attributed to HDN in NSW in 1969 (15.1 per 100,000 live births), and 14 deaths each year in 1970-71 (15.8 and 14.2 per 100,000 live births respectively). Mortality from HDN declined sharply during the 1970s (Figure 1), and a total of only four deaths was recorded in the 10 years 1980-89 (0.5 per 100,000 live births). The incidence has also declined. That the condition is virtually unknown in NSW today testifies to the effectiveness of IM vitamin K in prevention.

Three types of HDN are recognised:

- **Early**, in the first 48 hours of life, and almost always related to maternal drug therapy (especially phenytoin)
- **Classical**, in the second to seventh day of life
- **Late**, occurring between one week and six months of age.

All three types present with a spectrum of severity ranging from slight bleeding to severe haemorrhage, and with a variety of possible bleeding sites including the skin, umbilicus, gastrointestinal tract, circumcision site, or intracranial. Late HDN is the most likely to be severe and to present with intracranial haemorrhage.

### VITAMIN K AND CHILDHOOD CANCER

In 1990 Golding et al published the results of a 10-year follow-up of a representative sample of 16,193 infants delivered in Great Britain in one week during 1970<sup>1</sup>. A case-control study of the 33 children identified as having cancer, with controls selected from the same cohort, suggested an association between cancer and prophylactic vitamin K given at birth to prevent HDN.

This unexpected finding led to a separate case-control study of children diagnosed with cancer between 1971 and 1991 and born in the two major Bristol maternity hospitals between 1965 and 1987. Exposure factors in this study were vitamin K administration at birth (oral or IM) and pethidine given to the mother in labour. The main findings, expressed as odds ratios and 95 per cent confidence intervals, were as follows<sup>2</sup>:

#### For all cancers:

Oral vs no vitamin K	1.15 (0.5-2.7)
IM vs oral or no vitamin K	1.97 (1.3-3.0)
Pethidine vs no pethidine	1.05 (0.7-1.5)

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## Vitamin K prophylaxis

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### For leukaemias:

IM vs oral or no vitamin K 2.65 (1.3-5.2)

Since the publication of these findings in August 1992<sup>2</sup> there has been much discussion of their implications and possible alternative vitamin K regimens. The debate has focused on:

- the validity and biological plausibility of the findings, and their consistency with observed childhood cancer incidence trends; and
- the nature and likely efficacy of oral vitamin K regimens, and the logistic difficulties of ensuring that all infants receive the repeated doses needed to prevent late HDN.

### Validity

In their case-control study Golding et al had difficulty in:

- reconstructing historical (1965-87) data on vitamin K administration (they relied on known hospital policy rather than individual records in an unstated proportion of subjects);
- obtaining comprehensive historical data on confounders for all cases and controls;
- and completely ascertaining all cases of cancer in the hypothetical cohort which yielded the cases and controls (i.e. in the infants born in the two major Bristol maternity hospitals during 1965-1987).

It is beyond the scope of this article to provide a full critical appreciation of the reported case-control study. In a circular to all doctors in England and relevant nursing and public health personnel<sup>3</sup>, the British Chief Medical Officer and Chief Nursing Officer weighed its contribution thus:

*Although the data analysed were consistent with intramuscular vitamin K being associated with an increased risk of childhood cancer, the study fell far short of providing conclusive evidence.*

### Biological plausibility

Golding et al cite three lines of evidence for this<sup>2</sup>. First, very high concentrations of vitamin K (such as the levels achieved in an infant's plasma 12-24 hours after an IM dose) have been shown to increase sister chromatid exchanges in human placental lymphocytes in vitro and sheep foetal lymphocytes in vivo. Second, vitamin K1 appears to play an adjuvant role in benzo(a)pyrene mutagenicity and carcinogenicity, and the injectable vitamin K preparation contains phenol as well as vitamin K1. Third, experimental vitamin K deficiency in rodents appears to reduce tumour growth.

### Consistency with observed childhood cancer incidence trends

Based on some assumptions about the extent of IM vitamin K use in England and Wales, Golding et al asserted that the increase in leukaemia incidence in children born during 1962-74 was compatible with a

FIGURE 1

### DEATHS FROM HAEMORRHAGIC DISEASE OF THE NEWBORN, NSW, 1969-88

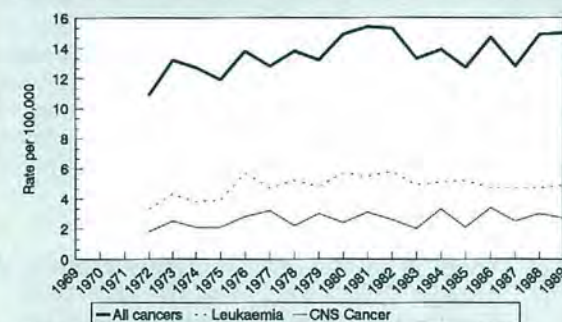


Note: No deaths from this disease occurred after the first year of life.  
Produced by Epidemiology Branch, NSW Health Department

FIGURE 2

### INCIDENCE OF CANCER IN CHILDREN AGED 0-14 YEARS, NSW, 1972-89

Rates per 100,000 population directly standardised by age and sex to WHO world population



Produced by Epidemiology Branch, NSW Health Department.  
Data supplied by NSW Central Cancer Registry, NSW State Cancer Council

vitamin K effect<sup>2</sup>. While in the UK sales of 1mg vitamin K ampoules increased steadily from 1958 to 1983, the cumulative incidence of childhood leukaemia increased in birth cohorts only until the early 1970s, and was fairly constant in subsequent birth cohorts. This pattern militates against an association with vitamin K<sup>1</sup>. Data from the US cities of Atlanta, Detroit and San Francisco-Oakland and the States of Connecticut and Iowa showed no increase in childhood leukaemia in 1969-84 compared with 1947-50, yet almost all newborns in the US received IM vitamin K after 1961<sup>5</sup>. In NSW cancer incidence data are available for the period 1972-90. A detailed analysis of these data will be published in a forthcoming issue of the NSW Public Health Bulletin. Initial analysis suggests the total cancer incidence in children under 14 years of age increased slightly, but the incidences of leukaemia and central nervous system cancers (the major solid tissue tumour in children) were fairly constant (Figure 2).

### Oral vitamin K regimens

In January 1993 the National Health and Medical Research Council (NHMRC), the Australian College of

Paediatrics (ACP) and the Royal Australian College of Obstetricians and Gynaecologists (RACOG), issued a joint statement on vitamin K prophylaxis<sup>6</sup>. While recognising that the epidemiological evidence for an association between IM vitamin K and childhood cancer was limited, the statement pointed out that the evidence could not be ignored, and that a non-invasive form of prophylaxis was preferable in any situation. The interim recommendation therefore was that vitamin K could be given orally to healthy full-term infants.

A single oral dose of vitamin K effectively protects against early and classical HDN, but may not protect against late HDN. Additional doses are needed for the latter. The interim NHMRC/ACP/RACOG recommendation was for three 1mg oral doses: the first at birth, the second at three-five days of age, and the last in the fourth week of life. This regimen could be adjusted for infants who were preterm, sick or unable to tolerate oral vitamin K; such infants could be given an 0.1mg IM vitamin K dose at birth, with subsequent doses to be either 1mg orally or 0.1mg IM, depending on the clinical condition.

The oral use of vitamin K is common in some countries, including Japan. However, there is little information on the pharmacodynamics of vitamin K, and the suggested oral regimens have been proposed by overseas and Australian expert panels extrapolating from the available data. It is unclear whether the lack of an association between oral vitamin K and childhood cancer reported by Golding et al was based on one dose of vitamin K at birth, repeated doses, or a variety of different regimens among the cases and controls.

As infant formulas contain vitamin K, it is unlikely that fully formula-fed infants require the third oral dose.

#### **Logistic difficulties of oral vitamin K administration**

The NHMRC/ACP/RACOG recommendations present two difficulties as regards implementation.

First, no approved preparation suitable for oral administration to infants is available in Australia. Vitamin K can be administered orally using the IM injectate solution taken from glass ampoules. Alternatively, hospital pharmacists can make up extemporaneous solutions of appropriate strength for oral administration. Neither of these preparations is approved by the Australian Drug Evaluation Committee for oral use, and there are only limited data on their pharmacodynamics following oral administration.

Second, even if a suitable preparation were to be approved, there would be a need to ensure infants received the full course, i.e. three doses. The first and second doses do not present a problem - the first can be given shortly after birth, and the second at the time of newborn screening (either in hospital or as part of an early discharge program). However, there is no scheduled regular encounter with a health professional during the fourth week of life, when the last dose is due.

The NSW Health Department has urged the Commonwealth to approve an oral preparation for infants as soon as possible. Pending this, the Department

has had preliminary discussions with relevant professional organisations about service arrangements for administration of the repeated oral doses. If vitamin K is to be given orally, it is likely that maternity units will be responsible for informing parents of the importance of completing the course. An information sheet will be prepared. It is imperative that the date, dose and route of vitamin K administration be recorded in the Personal Health Record.

#### **THE PUBLIC HEALTH DILEMMAS**

The 1992 report<sup>2</sup> of the association between IM vitamin K and childhood cancer has created a situation which is unusual in public health. An important clinical policy change is being considered in Australia and elsewhere largely on the basis of a single study. The effectiveness of IM vitamin K in preventing HDN is established, and it is easy to administer as a single large dose that can be given routinely by the birth attendant. Following the 1992 report, the **certainty** of preventing HDN in the first six months of life must be balanced against the **possibility** of a doubling of the risk of cancer throughout childhood. If IM vitamin K caused cancer, the resulting number of childhood cancer deaths would be much greater than the number of HDN deaths prevented. This poses a major problem of risk communication to the public.

The NHMRC/ACP/RACOG joint statement also poses a dilemma for a State Health Department which would ordinarily take immediate steps to implement a national clinical policy recommendation. If the NSW Health Department were to implement the interim recommendations, the Department would have to advise health professionals to use a drug in a manner other than that for which it was approved. Individual medical practitioners can legally prescribe any registered drug by any route, whether approved or not. However, if the Department were to recommend the non-approved use of a drug, this would undermine the national drug evaluation process. On the other hand, if the Department were to avoid implementing the interim recommendations, it would implicitly endorse the continuation of a clinical practice which could possibly have adverse effects.

Until an effective vitamin K preparation approved for oral use is available, parents, in consultation with clinicians, will have to decide whether to:

- decline vitamin K (and take the attendant risk of HDN);
- agree to IM administration of vitamin K, accepting that there may be a small but real risk of cancer to the child, which must be balanced against the certain benefit of protection against HDN; or
- agree to oral administration of vitamin K, recognising that no approved preparation for oral administration to infants is available in Australia.

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# STRATEGY AIMS TO LIFT ORGAN DONATIONS

The Australian Coordinating Committee on Organ Registries and Donation (ACCORD) was formed by the Australian Health Ministers' Advisory Council in October 1989 to develop and implement strategies and provide national coordination to try to overcome the low organ donation rate in Australia.

The committee consists of a chairman, NSW Chief Health Officer Dr Sue Morey, and seven members. An executive officer, Mrs Michael McBride, and a part-time secretary, Mrs Suzanne Bowers, are employed in the secretariat, which is in the office of the Chief Health Officer, NSW Health Department.

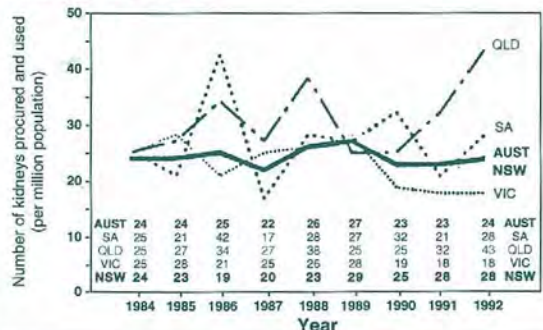
A publicity officer was employed for a 12-month term to develop and implement a national publicity and marketing strategy to raise awareness of organ donation, targeting both the public and health professionals. This campaign involved:

- creating the ACCORD profile as a reference point for organ donation issues;
- producing a quarterly newsletter (sponsored by Sandoz Aust). Five thousand copies are distributed nationally to people on the ACCORD mailing list;
- establishing a resource list of speakers for authoritative information;
- establishing an extensive mailing list;
- maintaining a monthly media log to measure interest in organ donation. It averaged 30 entries a month except for June 1992, when there were 117 entries in response to a national television advertisement and the inaugural National Organ Donation Awareness Day;
- a 24-hour toll-free donor information line - 018 018995 which received 1200 calls in the first two months and is sponsored by Telecom Mobilenet;
- launching a TV advertising campaign - *GIVE & LET LIVE* - to make the subject of organ donation 'acceptable' and generate discussion. It included supporting printed materials (leaflets, posters and bumper stickers), carrying a consistent national message: **decide to be an organ donor and tell your family**. This message was agreed to by relevant groups, including the Australian Kidney Foundation, National Heart Foundation, Road Traffic Authorities, Health Department and professional organisations;
- National Organ Donation Awareness Day, on the first Friday in June each year, with activities including thanksgiving services in all States;
- utilising religious and ethnic specialised media; and
- developing a recipient information kit, with up-to-date information on organ and tissue donation and transplantation in Australia.

ACCORD facilitated public and professional research surveys to identify reasons for the low donor rate in Australia. Results received from a study conducted in NSW hospitals (supported by grants from the NSW

FIGURE 3

## CADAVER DONOR KIDNEY PROCUREMENT, AUSTRALIA AND STATES 1984-92



Health Department and Sandoz Aust) suggest that donor organ shortage is due not to a lack of potential donors, but rather to a failure to turn potential donors into actual donors<sup>1</sup>.

Australia, with a voluntary system for organ donation (opting in), has one of the lowest donation rates in the developed world - 12 per million population (pmp) in 1990 and 1991. This equates to 204-209 actual organ donors, respectively.

As seen on the graph produced by the Renal Transplant Unit at Princess Alexandra Hospital in Brisbane (Figure 1), rates vary between the States. Based on cadaveric kidneys procured and transplanted, Queensland has the highest rate, with 32 pmp in 1991 and 43 pmp in the first six months of 1992, giving an organ donation rate of 16 pmp and 22 pmp respectively.

Victoria has the lowest rate of kidney procurement (18 pmp), giving an organ donation rate of 9 pmp.

Rates of organ donation also vary in overseas countries, e.g. in 1991<sup>2</sup>

- countries with an opting in system:

Netherlands 24.3 donors pmp

United Kingdom 15.8 donors pmp

- countries with an opting out system:

Belgium 20.0 donors pmp

Denmark 1.7 donors pmp

Regardless of the system in place for organ donation, constant publicity and education are required to keep both the public and health professionals aware of the need for organs and tissue for transplantation. Waiting lists continue to grow and in Australia there are about 3000 people waiting for transplantation. Of those needing heart or liver replacement, about 20 per cent will die while waiting for a suitable donor.

In 1992 ACCORD conducted an extensive review of progress in improving organ donation in Australia. This review culminated in the development of a national strategic management plan for raising organ donation rates over the next three to five years.

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## Vitamin K prophylaxis

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The dilemma confronting the Department also faces clinicians and parents of newborn infants. There is no clear immediate solution. The NHMRC/ACP/RACOG statement acknowledges the need for more information. It recommends that epidemiological surveillance of HDN and childhood cancer be enhanced and that research be undertaken into the pharmacology and potential carcinogenicity of vitamin K preparations. The Epidemiology and Health Services Evaluation Branch has a major role in the former.

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*Elisabeth Murphy, Medical Officer, Family and Child Health, Service Development and Planning Branch, NSW Health Department*

*Timothy Churches, Medical Epidemiologist, Epidemiology and Health Services Evaluation Branch, NSW Health Department*

*David Henderson-Smart, Head, Department of Perinatal Medicine, King George V Hospital, Sydney, and Professor of Perinatal Medicine, The University of Sydney*

1 Golding J, Paterson M, Kinlen LJ. Factors associated with childhood cancer in a national cohort study. *Br J of Cancer*, 1990; 62:304-8.

2 Golding J, Greenwood R, Birmingham K, Mott M. Childhood cancer, intramuscular vitamin K, and pethidine given during labour. *Br Med J*, 1992; 305:341-346.

3 Calman KC, Moores T. Circular: Prophylaxis against Vitamin K Deficiency Bleeding in Infants. Numbers FL/CMO(92)20 and FL/CNO(92)14. Department of Health, London, December 1992.

4 Draper GJ, Stiller CA. Letter: Intramuscular vitamin K and childhood cancer. *Br Med J*, 1992, 305:709.

5 Miller RW. Letter: Vitamin K and childhood cancer. *Br Med J*, 1992, 305:1016-7.

6 National Health and Medical Research Council, Australian College of Paediatrics and Royal Australian College of Obstetricians and Gynaecologists. Joint Statement and Interim Recommendations on Vitamin K Prophylaxis for Haemorrhagic Disease in Infancy. NH&MRC, Canberra, January 1993.

## Organ donations

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The plan's priorities are to:

- develop and implement health professional education/information programs;
- increase public awareness and acceptance for organ donation; and
- provide national coordination and linkage to these activities.

ACCORD is developing a national Australian donor hospital information program involving organisations concerned with health professionals' educational processes.

*Michael McBride, Executive Officer.*

1. Hibberd AD et al. *Br Med J*, May 1992; 304:1339-43.

2. Transplant. Council of Europe. Vol 04, July 1992.

# INFECTIOUS DISEASES

## TIMELINESS AND COMPLETENESS OF REPORTING

The following table lists the number of weekly reports made to the Epidemiology and Health Services Evaluation Branch in the past month, i.e. from Epiweek 1 to Epiweek 3.

Several Public Health Units experienced network problems during January. Although this affected their ability to transfer notification data centrally, it did not affect response to each notification.

TABLE 5

### NUMBER OF WEEKLY REPORTS MADE TO EPIDEMIOLOGY BRANCH, JANUARY 1993

Public Health Unit	Number	Status
Central/Southern Sydney	2	Complete
Eastern Sydney	2	Complete
South Western Sydney	1	Incomplete
Western Sector	2	Complete
Northern Sydney	2	Complete
Central Coast	0	Incomplete
Illawarra	0	Incomplete
Hunter	2	Complete
North Coast	1	Complete
New England	1	Incomplete
Orana and Far West	1	Incomplete
Central West	2	Complete
South-West	2	Complete
South-East	2	Complete

## TYPHOID FEVER IN NORTH COAST REGION

A woman aged 30 was admitted to a North Coast hospital on January 14, 1993 with fever, diarrhoea and a history of vomiting for two days. No rash was observed. The woman had returned from a visit to India with her husband and three children. The youngest child, aged 10 months, had similar symptoms and was also admitted to hospital.

Stool cultures from the mother grew *Salmonella typhi*, and the case was notified to the Public Health Unit on January 18. Antibiotic therapy was initiated for both mother and child. Stool specimens were taken from all family members. The infant was notified to the PHU on January 20 when a positive stool specimen result became available.

It was thought unnecessary to contact the airline as the neither case was thought to be contagious until after their return home. Hospital infection control staff advised other concerned relatives in close contact with the family of the necessary precautions. Hospital staff were advised that isolation was not required.

It could not be confirmed whether typhoid immunisation had been received. The source of the infection was thought to be a contaminated water supply in India. (Contributed by Tim Sladden, North Coast Public Health Unit)

TABLE 6

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

Public Health Unit	Age	Sex	Aboriginality*	Ethnicity*
Central Sydney	Complete	Complete	Complete	Complete
Southern Sydney	Complete	Complete	Complete	Complete
Eastern Sydney	Complete	6.6	50.0	50.0
South Western Sydney	Complete	Complete	100.0	100.0
Western Sydney	Complete	Complete	Complete	7.7
Wentworth	Complete	Complete	Complete	16.7
Northern Sydney	5.6	Complete	100.0	100.0
Central Coast	N/A	N/A	N/A	N/A
Illawarra	N/A	N/A	N/A	N/A
Hunter	Complete	Complete	100.0	83.4
North Coast	Complete	Complete	Complete	10.0
New England	Complete	Complete	Complete	50.0
Orana and Far West	N/A	N/A	N/A	N/A
Central West	Complete	Complete	Complete	Complete
South-West	Complete	Complete	Complete	Complete
South-East	Complete	Complete	Complete	Complete

\*Reportable only from medical practitioners and hospital Chief Executive Officers N/A Not available for this reporting period.

#### POSSIBLE TYPHOID ON INTERNATIONAL AIRLINER

During January the Epidemiology and Health Services Evaluation Branch was told of the possible importation of typhoid on an international airliner. One hour before landing at Sydney Airport the airline office informed the Australian Quarantine Inspection Service (AQIS) of an ill passenger. At the time it was thought the passenger may have had typhoid.

Operating under newly devised surveillance guidelines, AQIS informed the NSW Health Department. Within one hour an information sheet was produced for disembarking passengers. All Public Health Units in the State were notified that passengers may contact them for further information. Additionally, the Victorian Health Department was told of the situation, as the ill passenger continued on to Melbourne.

It is now thought unlikely that the passenger had typhoid, although tests are continuing. Over the ensuing week only four inquiries from passengers were received by four different State health authorities. No linked cases of typhoid have been notified to the NSW or Victorian Health Departments.

#### TETANUS DEATH

The death of a male aged 74 years from tetanus has been notified to the New England Public Health Unit. Three deaths have occurred in NSW due to tetanus in the period 1985-1992.

Tetanus remains a problem of unimmunised elderly people. The NSW Health Department has recommended that tetanus immunisation status be reviewed at every opportunity. Influenza immunisation provides an opportunity for this review to take place. Diphtheria-tetanus toxoid can be given at the same time as influenza vaccine, but at different sites. Tetanus immunisation should be routinely boosted every 10 years, using

diphtheria-tetanus toxoid. A booster dose should be given to anyone who has a tetanus-prone wound and who has not received immunisation in the preceding five years.

#### MEASLES

Thirty cases of measles have been notified for January 1993. Notifications were received by seven Areas and Regions, indicating widespread transmission of the virus throughout the State. Twenty-three cases occurred in individuals over the age of 12 months. Of these, 77 per cent of cases were preventable by adherence to the recommended immunisation schedule (i.e. immunisation at the age of 12 months).

#### HEPATITIS A OUTBREAK

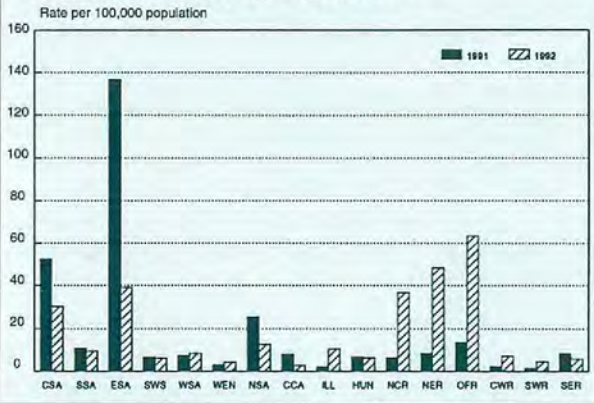
Following an investigation of three apparently unrelated cases of hepatitis A (two adults and one child), staff from the Central and Southern Sydney Public Health Unit identified a further five cases in a child care centre at Redfern. Two children who were household contacts of index cases were subsequently found to have positive hepatitis A serology. There had been no history of clinical illness. Both children attended a holiday program during January. Positive serology was also identified in two adults, who gave a history of clinical illness. A further case was reported in a staff member at a nearby centre in Waterloo who had a child attending the Redfern centre.

The Public Health Units from Eastern Sydney Area and Northern Sydney Area collaborated in the follow-up action, as children from the holiday program at the Redfern centre returned to their usual child care centres. Letters were sent to parents urging immunoglobulin for the children attending the centre and for household contacts. Parents of children at the Redfern and Waterloo centres were also asked to attend their GP for a test for hepatitis A serology. These results are not yet available.

(Contributed by Kerry Goldston, Central and Southern Sydney Public Health Unit)

**FIGURE 4**

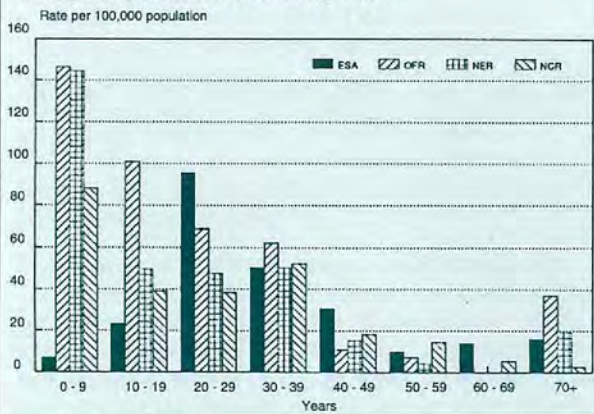
**HEPATITIS A NOTIFICATIONS BY AREA/REGION, NSW 1991-1992**



Source: IDSS as at 25 January 1993

**FIGURE 5**

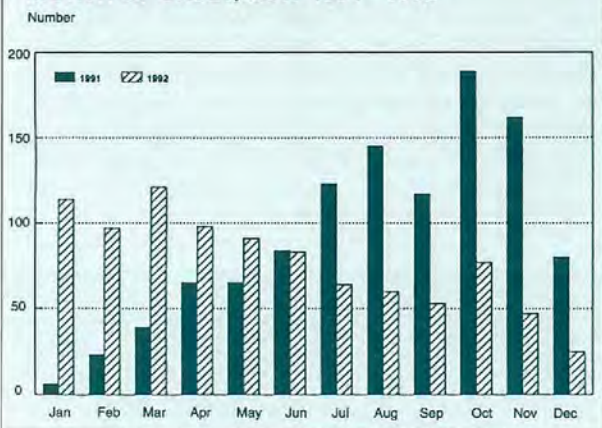
**HEPATITIS A NOTIFICATIONS BY AGE, FOUR AREA/REGIONS, 1992**



Source: IDSS as at 25 January 1993

**FIGURE 6**

**HEPATITIS A NOTIFICATIONS BY MONTH OF ONSET, NSW 1991 - 1992**



Source: IDSS as at 25 January 1993

**HEPATITIS A - THE CHANGING EPIDEMIOLOGY**

Since November 1991 hepatitis A has been notifiable as acute viral hepatitis by medical practitioners and as positive IgM anti-hepatitis A, by laboratories.

During 1992, 930 notifications were received for hepatitis A. Of these, 305 (33 per cent) were for males aged 20-39 years, and 197 (21 per cent) were for children aged 0-9 years. Comparative figures for 1991 were: total population 1100; males aged 20-39, 634 (58 per cent); children 46 (4 per cent).

Eastern Sydney Area had the highest rate of notification in 1991 (136 per 100,000 population) while in 1992 the highest rate of notification was for Orana and Far West Region (63.4 per 100,000 population) (Figure 1). Of the Areas and Regions with the higher rates of hepatitis A notifications in 1992 the pattern for rate of notification by age differed. The highest rate of notification for Orana and Far West Region was in the 0-9 age group and for Eastern Sydney Area the 20-29 age group (Figure 2).

During 1991 the number of hepatitis A notifications by month of onset rose from six in January to 189 in October (Figure 3). The increased number of notifications continued into 1992, peaking in March (121 cases) and remaining over 40 cases until November.

In 1992 the 20-29 age group had the highest rate of hepatitis A notifications (26.7 per 100,000 population) followed by the 0-9 age group (22.7 per 100,000). This compares to notification rates of 45.1 and 5.3 per 100,000 population respectively for 1991 (Figure 4).

The ratio of male to female cases was 1.7:1 in 1992, compared to 4.3:1 in 1991.

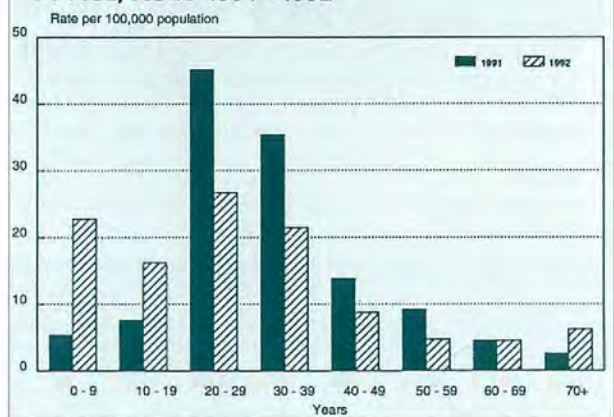
Anicteric infection in children is common and occurs in 80 per cent of children infected in the 2-3 year age group and 50 per cent of those infected in the 4-6 age group. In contrast, about 75 per cent of adults have apparent jaundice and other symptoms<sup>1</sup>.

Assuming complete notification and that 50 per cent of children in the 0-9 year age group experience anicteric infection then the number of children infected with hepatitis A during 1992 could have been as high as 394 (45.5 cases per 100,000 population). Similarly, if 75 per cent of males in the 20-39 age group experienced overt infection with hepatitis A, 407 (43.6 cases per 100,000 population) cases may have occurred during 1992.

1. Report of the Committee on Infectious Diseases. American Academy of Pediatrics. Twenty-first edition. 1988

**FIGURE 7**

**HEPATITIS A NOTIFICATIONS BY AGE, NSW 1991 - 1992**



Source: IDSS as at 25 January 1993

TABLE 7

**NOTIFICATIONS OF NON-NOTIFIABLE SEXUALLY TRANSMITTED INFECTIONS JANUARY-DECEMBER 1992**

(Clinical diagnoses from sexual health centres unless otherwise stated in footnote).

AHS Infection	CSA	SSA <sup>1</sup>	ESA <sup>2</sup>	SWS <sup>3</sup>	WSA <sup>4</sup> +WEN	NSA <sup>5</sup>	CCA <sup>6</sup>	ILL <sup>7</sup>	HUN <sup>8</sup>	NCR <sup>9</sup>	NER <sup>10</sup>	OFR <sup>11</sup>	CWR <sup>12</sup>	SWR <sup>13</sup>	SER <sup>14</sup>
<i>Chlamydia trachomatis</i>	-	8	157	34	44	5	3	16	40	2	6	8	-	34	-
Donovanosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Genital herpes	-	12	406	24	53	20	6	31	50	3	9	14	-	18	-
Genital warts	-	105	907	-	260	64	8	211	159	28	21	10	-	-	-
Non-specific urethritis	-	9	577	80	274	28	1	84	68	9	8	5	-	-	-
Lymphogranuloma venereum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup> 1/192-31/8/92<sup>2</sup> 1/192-31/8/92<sup>3</sup> Laboratory confirmed cases from sexual health centre, 1/192-31/12/92<sup>4</sup> 1/1/92-30/9/92<sup>5</sup> 1/3/92-31/12/92<sup>6</sup> 1/5/92-30/11/92<sup>7</sup> 1/1/92-30/9/92<sup>76</sup> 1/3/92-30/9/92<sup>9</sup> 1/7/92-31/12/92<sup>10</sup> 14/5/92-30/11/92<sup>11</sup> 1/7/92-31/12/92<sup>12</sup> No SHC in the Region<sup>13</sup> No sexual health centre in Region, laboratory data provided for 1/4/92-30/11/92.<sup>14</sup> No SHC in the Region

TABLE 8

**INFECTIOUS DISEASE NOTIFICATIONS BY HEALTH AREA AND REGION JANUARY 1993**

Condition	CSA	SSA	ESA	SWS <sup>1</sup>	WSA	WEN	NSA	HUN	NCR	NER	CWR	SWR	SER	U/K	Total
AIDS	-	-	1	-	-	-	-	-	-	1	1	-	-	-	3
Arboviral infection	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ross River Fever	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Gonorrhoea	-	-	2	-	1	-	1	-	-	-	-	-	-	-	4
H. influenzae epiglottitis	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
H. influenzae meningitis	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
H. influenzae infection (NOS)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Hepatitis A - acute viral	-	1	-	-	4	-	3	-	-	-	-	-	1	-	9
Hepatitis B - unspecified	15	8	-	-	13	-	13	-	-	-	-	-	-	-	49
Hepatitis C - unspecified	12	1	7	-	2	-	5	11	3	-	-	1	-	-	42
HIV	2	-	9	-	-	-	2	-	-	-	-	-	-	-	12
Listeriosis	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Meningococcal meningitis	-	-	-	-	-	-	1	-	1	-	-	-	-	-	2
Mycobacterial tuberculosis	1	-	-	-	-	1	-	-	-	-	-	-	-	-	2
Mycobacterial infection (NOS)	1	-	-	-	-	-	1	1	-	-	-	-	-	-	3
Q Fever	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2
Salmonella (NOS)	-	1	2	-	-	-	-	10	-	2	-	1	-	-	16
Syphilis	-	-	3	-	-	-	1	-	3	1	-	-	-	-	8
Typhoid and paratyphoid	1	-	-	-	-	-	2	-	-	-	-	-	-	-	3

TABLE 9

**NOTIFICATIONS FOR VACCINE PREVENTABLE DISEASES BY HEALTH AREA AND REGION JANUARY 1993**

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	HUN	NCR	NER	CWR	SWR	SER	U/K	Total
Measles	5	2	-	2	6	5	-	2	8	-	-	-	-	-	30
Pertussis	-	-	-	-	-	2	2	2	-	-	-	-	-	-	6
Rubella	-	-	-	-	2	-	7	2	-	-	-	-	-	-	11

Abbreviations used in this Bulletin:

CSA Central Sydney Health Area, SSA Southern Sydney Health Area, ESA Eastern 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 &amp; Far West Health Region, CWR Central West Health Region, SWR South West Health Region, SER South East Health Region, OTH Interstate/Overseas, U/K Unknown, 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.



# PUBLIC HEALTH ABSTRACTS

The following abstracts were prepared for the NSW Public Health Network Conference in Sydney in November. The presenting author's name is underlined.

## LEGIONELLA

In 1991 two new cooling towers were commissioned in service at St George Hospital. Subsequently *legionella* testing was carried. Results showed that the towers contained *legionella* counts. Due to persisting contamination, a more intensive sampling program was undertaken.

It appeared that the water of the towers was free from growth soon after decontamination procedures had been carried out. Despite extensive decontamination procedures undertaken, *legionella* were found to multiply to significant levels within a short space of time. This may be attributed to inadequate cleaning procedures and/or *legionella* being contained within *acanthamoebae* cysts allowing the bacteria to survive decontamination procedures and re-seed the system.

Steven Hatzi

## INEQUALITIES IN UTILISATION OF HEALTH SERVICES

It appeared will examine data from the 1989-90 National Health Survey to assess the existence of socioeconomic and gender inequalities in the utilisation of health care services. The study is to use standard methods of analysis being applied in a number of European countries under a European Community COMAC-HSR project on Equity in the Finance and Delivery of Health Care.

Inequalities in health continue to be issue of health and social policy and both Commonwealth and State governments are committed to their reduction. An important element of health care policy, reflected more or less explicitly in (health adjusted) population-based formulae for the allocation of resources, is equality in access and utilisation. The success of the Australian health care system in meeting this objective has not been evaluated extensively. Results from Britain (which has a similar equity objective) are contradictory though this may reflect differences in method rather than fact.

Good data on the utilisation of services is contained in the 1989-90 National Health Survey. This has allowed consideration of differences in the utilisation of services by socioeconomic status and gender after controlling for differences in need. It is proposed to replicate the analysis carried out to date in a number of European countries in the COMAC-HSR project, to assess the extent to which the Australian health care system meets its equity criteria. Preliminary results will be presented.

Stephen Jan

## A 'SYSTEMS APPROACH' TO IMPROVED ASTHMA MANAGEMENT

Asthma is being increasingly recognised as a major public health problem in Australia, and a significant contributor to total health care costs. To date, most

attempts to improve asthma management have been essentially "top down" in nature, e.g. the National Asthma Campaign, development of the six-point plan, and the draft strategy for the prevention and management of asthma in NSW produced by the NSW Health Department. More recently there has been increasing interest in "bottom up" or community development approaches such as have been tried in Campbelltown (SW Sydney), Auburn (Western Sydney), and Royal North Shore (Northern Sydney).

Following public health enhancement funding from the NSW Health Department, the Illawarra has combined both these approaches in developing a "systems approach" designed to provide a broad cross-sectional overview of current services, to define weaknesses in these, and the interfaces between them, and to develop strategies to address identified deficiencies on a priority basis. This has involved analysis of broad mortality and morbidity patterns in the Illawarra, consideration of current management amongst hospital A&E departments, general practitioners, community pharmacists, and other health care providers, and also the role of local asthma support groups.

The data from these studies will be summarised, and the strengths and disadvantages of this approach in developing a regional strategy for improved asthma management will be considered.

David Jeffs

## INFECTIOUS DISEASE OUTBREAKS IN LONG DAY CARE CENTRES

We conducted a telephone survey of the directors of all long day care centres (LDCs) in Western Sydney in June 1992 to investigate the occurrence of infectious disease outbreaks. Ninety-four of the 95 LDCs operating (98.8 per cent) participated in the survey. A total of 6,318 children was enrolled at the 94 LDCs, including almost 26 per cent of children in the 2-4 year age range in Western Sydney.

In the six-month period January to June 1992, infectious disease outbreaks occurred in 63 of the 94 centres (67.0 per cent). There were 152 outbreaks and 1,059 outbreak cases. Diarrhoea was the most common outbreak type (46 outbreaks and 282 cases), followed by conjunctivitis (33 outbreaks, 142 cases), head louse infestation (27 outbreaks, 168 cases) and chicken pox (13 outbreaks, 158 cases). Most outbreaks (91.1 per cent) were managed "in-house". The Public Health Unit was contacted on only two occasions (1.3 per cent).

This survey shows that infectious disease outbreaks are common in LDCs. Consequences include exclusion of sick children from LDCs, a requirement for parents to take time off work, and disease transmission to family members and LDC staff. Prompted by these findings, we are starting a detailed study of diarrhoea in 50 LDCs.

Louise Jorm, Jane Bell, John Ferguson, Pam Whithead and Anthony Capon.

## PUBLIC HEALTH EDITORIAL STAFF

The Bulletin's editorial advisory panel is as follows:

Dr Sue Morey, Chief Health Officer, Public Health Division, NSW Health Department; Professor Stephen Leeder, Director, Department of Community Medicine, Westmead Hospital; Professor Geoffrey Berry, Head, Department of Public Health, University of Sydney; Dr Christine Bennett, General Manager, Royal Hospital for Women; Dr Michael Frommer, Deputy Director, Epidemiology and Health Services Evaluation Branch, NSW Health Department; Ms Jane Hall, Director, Centre for Health Economics Research and Evaluation; and Mr Michael Ward, Manager, Health Promotion Unit.

The editor is Dr George Rubin, Director, Epidemiology and Health Services Evaluation Branch, NSW Health Department.

The Bulletin aims to provide its readers with population health data and information to motivate effective public health action. Articles, news and comments should be 1,000 words or less in length and include the key points to be made in the first paragraph. Please submit items in hard copy and on diskette, preferably using WordPerfect 5.1, to the editor, Public Health Bulletin, Locked Mail Bag 961, North Sydney 2059. Facsimile (02) 391 9232.

Design - Health Public Affairs Unit, NSW Health Department. Suggestions for improving the content and format of the Bulletin are most welcome.

Please contact your local Public Health Unit to obtain copies of the NSW Public Health Bulletin.

## ERRATUM - HEALTH INDICATORS FOR NSW

In the October 1992 NSW Public Health Bulletin Supplement (Vol 3/No.S-3) a table showing Diagnosis Related Groups (DRGs) for the New England Health Region was repeated on page 28 for the North Coast Health Region. The correct table for the North Coast Health Region appears below.

TABLE 2.2

### DIAGNOSIS RELATED GROUPS (DRGS) - NORTH COAST HEALTH REGION

Diagnosis Related Group	Local hospital separations	Per cent in local private hospitals	Average length of stay (days)	Per cent of cases trimmed	Separations for residents	Standardised separation rate
317 Renal failure with dialysis	1693	0.0	0.5	0.1	2545	641 ↓
373 Vaginal delivery w/o complicating diagnoses	4126	3.3	4.6 ↑	0.7	3945	1097
183 Gastroenteritis & misc. digestive dis., age 18-69 w/o CC	2290	22.2	1.7 ↑	2.4 ↑	2251	602 ↓
467 Other factors influencing health status	1846	18.7	6.0 ↑	0.2	1880	479 ↓
98 Bronchitis & asthma, age 0-17	1464	1.4	2.3	2.0	1386	366 ↑
184 Gastroenteritis & misc. digestive dis., age 0-17	1458	2.2	2.1	1.1	1408	375 ↑
381 Abortion with D&C	982	27.2	0.9	0.7	888	248 ↓
410 Chemotherapy	126	2.4	1.7 ↑	0.8	316	81 ↓
182 Gastroenteritis & misc. digestive dis., age ≥70 or CC	1239	24.3	3.4 ↑	2.0	1212	275
140 Angina pectoris	1171	6.1	3.7 ↓	0.6	1081	254 ↑
371 Caesarean section w/o CC	815	4.2	7.2 ↓	0.6	787	218
243 Medical back problems	1321	15.5	5.9 ↑	1.9	1451	377 ↑
270 Other skin & breast OR procedure age <70 w/o CC	1121	19.5	0.9	1.0	1171	317 ↓
372 Vaginal delivery with complicating diagnoses	294	0.0	6.0	1.5	299	83
127 Heart failure & shock	995	12.4	8.2 ↓	0.6	936	210
364 D&C, conization, except for malignancy	875	29.1	0.7	0.5	807	221 ↓
360 Vagina, cervix & vulva procedures	1007	19.4	0.8 ↑	0.8	979	270
88 Chronic obstructive pulmonary disease	905	10.6	8.5 ↓	0.3	862	194 ↑
143 Chest pain	744	8.7	2.8	1.2	703	178 ↑
383 Other antepartum diagnoses with medical complications	465	1.9	2.9	1.0	439	123

CC = Complications or comorbidities, w/o = without

# PUBLIC HEALTH BULLETIN READER SURVEY

The Public Health Bulletin first appeared in May 1990 to improve dissemination of information on public health issues. Since then its circulation has increased to almost 6000.

Please help improve the quality of the Public Health Bulletin by completing the following brief questionnaire, folding it along the dotted lines and sending the completed questionnaire to the Editor of the Bulletin.

Please tick the most appropriate box for each question.

(1) **Which of the following best describes your work:**

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> public health professional | <input type="checkbox"/> university staff           | <input type="checkbox"/> general medical practitioner |
| <input type="checkbox"/> library                    | <input type="checkbox"/> other medical practitioner | <input type="checkbox"/> other (please specify) _____ |

(2) **You work in the:**

- |   |  |
|---|--|
| <input type="checkbox"/> public sector  | <input type="checkbox"/> community/non government organisation |
| <input type="checkbox"/> private sector | <input type="checkbox"/> other (please specify) _____          |

(3) **Your main area of interest is:**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> infectious diseases       | <input type="checkbox"/> chronic diseases             | <input type="checkbox"/> environmental health |
| <input type="checkbox"/> health service evaluation | <input type="checkbox"/> trauma                       | <input type="checkbox"/> health economics     |
| <input type="checkbox"/> maternal and child care   | <input type="checkbox"/> other (please specify) _____ |   |

(4) **Do you read the Public Health Bulletin:**

- |  |   |
|--|---|
| <input type="checkbox"/> from cover to cover | <input type="checkbox"/> skim articles of interest only |
| <input type="checkbox"/> selected articles   | <input type="checkbox"/> none of the material           |

(5) **Which section(s) interest you most? Please rate your preference in order of 1 to 5 (1=low interest, 5=high interest):**

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> reports of investigations | <input type="checkbox"/> news and comments | <input type="checkbox"/> policy recommendations        |
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| <input type="checkbox"/> meeting reports           |  |  |

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|--|--|--|
| <input type="checkbox"/> reports of investigations | <input type="checkbox"/> news and comments | <input type="checkbox"/> policy recommendations        |
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| <input type="checkbox"/> meeting reports           |  |  |

(7) **Which of the following sections need expanding:**

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> reports of investigations | <input type="checkbox"/> news and comments | <input type="checkbox"/> policy recommendations        |
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| <input type="checkbox"/> meeting reports           | <input type="checkbox"/> none              |  |

(8) **What material should be added to the Bulletin:**

Please specify \_\_\_\_\_  
\_\_\_\_\_

(9) **Which of the following PHB supplements did you find interesting or useful:**

- |  |  |
|--|--|
| <input type="checkbox"/> Trends in Major Causes of Death; NSW, 1971-1987 | <input type="checkbox"/> Health Indicators for NSW |
| <input type="checkbox"/> 1991 infectious Diseases Notifications          | <input type="checkbox"/> none                      |

(10) **Should we include at the beginning of each article a brief summary of its contents:**

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

(11) **To help cover the production cost, would you be prepared to pay an annual subscription fee of:**

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| <input type="checkbox"/> amount (please specify) \$ _____ | <input type="checkbox"/> Would not be prepared to subscribe |                                |

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(13) **If yes, how much would you be prepared to pay for a plastic folder or hard cover folder:**

- |  |  |                               |
|--|--|-------------------------------|
| <input type="checkbox"/> \$10                            | <input type="checkbox"/> \$15          | <input type="checkbox"/> \$20 |
| <input type="checkbox"/> other (please specify) \$ _____ | <input type="checkbox"/> not necessary |                               |

(14) How would you rate the quality/appearance of the Bulletin:

excellent

good

average

(15) How would you rate the content in the Bulletin:

excellent

good

average

(16) Do you have any further comments or ideas about how we can better meet your requirements?

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