STUDY OF PUBLIC SWIMMING POOLS AND SPA POOLS IN NSW, 1993

Neil Shaw, Senior Environmental Health Officer, Western Sector Public Health Unit

Environmental Health Officers of NSW Public Health Units surveyed 1,291 public swimming and spa pools during the 1992-93 financial year. Each pool was tested for compliance with the NSW guidelines on disinfection. While high failure rates of pool disinfection were found in all categories, the survey also identified factors which will be targeted in a response strategy.

INTRODUCTION

There is a wide range of pathogenic bacteria, fungi, viruses and protozoa that may be transmitted through inadequately disinfected swimming pools and spa pools. These microorganisms may cause infection in ears, eyes, skin, mouths, noses, respiratory systems, intestinal and uro-genital tracts or central nervous systems. A powerful and swift disinfection residual in the body of the pool water is necessary to prevent pathogen survival and transmission. Additionally, an oxidising agent is required to oxidise dissolved organic matter and reduce turbidity.

The Public Health Regulation 1991 states that people responsible for public swimming pools and spa pools must ensure the pool water has been disinfected to prevent the spread of certain diseases. Under the Public Health Act 1991, the NSW Health Department issued guidelines for disinfecting public swimming pools and spa pools. The guidelines provide pool owners with information about bacteriological and chemical standards for adequate pool disinfection.

During the 1992-93 financial year a Statewide survey of public swimming pools and spa pools was carried out to determine compliance with NSW Health Department guidelines for chemical parameters.

METHOD

The survey was conducted over 12 months between July 1, 1992 and June 30, 1993. This period allowed for inspection of pools which were operated either seasonally or continuously.

Environmental Health Officers (EHOs) of all 14 Public Health Units (PHUs) in NSW conducted the inspections and tests. Each PHU compiled a list of known public swimming pools and spa pools. A systematic random sample of pools in NSW stratified by PHU was used to select pools for inclusion in the study. A total of 1,291 pools was tested during the survey.

All PHUs were supplied with a new temperature meter and Palintest Photometer 5000 equipped to carry out the appropriate chemical tests of chemical parameters including free residual chlorine/bromine, total residual chlorine/bromine, combined residual chlorine, pH, reserve (total) alkalinity and cyanurate. Table 1 summarises the significance of each of these chemical parameters.

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Swimming pools and spa pools

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Tests followed the methods specified in the manual supplied with the photometer. All Senior EHOs received training on the use of the photometer and survey methods. Only one EHO from each PHU was asked to perform the inspections to ensure consistent inspection methods. A data checksheet was developed for ease of data collection and entry. Information was collected on pool classification, location (indoor or outdoor), water temperature, type of dosing, use of stabiliser, log book status and perceived inspection frequency. Completed checksheets were sent to the Western Sector PHU for data entry.

As the sampling fraction was not uniform in all PHUs, data were weighted by the inverse of the sampling fraction to provide adjusted point estimates for NSW as a whole. Tests of significance for proportions were assessed using the Chi-square test for independence. P-values are presented without adjustment for multiple comparisons. Although the sample size is large with a very high sampling fraction, a p-value of less than 0.01 is considered significant.

RESULTS

Failure rates for various parameters are contained in Table 2. The overall failure rate was 65 per cent. Free chlorine/bromine, which is a measure of the disinfection power in the pool and is proportional to the killing rate of pathogenic organisms, was the parameter with the highest failure rate.

Pool category results are contained in Table 3. For data analysis purposes municipal pools included municipal spa pools, because there were only nine, while business pools do not include spa pools. Business spa pools had the highest failure rate while municipal pools had the lowest failure rate.

The overall failure rate for all outdoor pools was 63 per cent, and for all indoor pools 71 per cent. No significant difference was found between total indoor and total outdoor pools ($\chi^2=6.30$, $p<0.01$). Significant differences were found between outdoor ($\chi^2=23.70$, $p<0.01$) but not indoor pool categories ($\chi^2=4.79$, $p>0.01$).

About 74 per cent of pools were continuously dosed. Based on disinfectant levels alone, continuously dosed pools revealed a failure rate of 37 per cent and hand-dosed pools had a failure rate of 58 per cent ($\chi^2=47.48$, $p<0.01$).

Outdoor stabilised pools, containing cyanurate, had a higher free chlorine failure rate of 62 per cent than outdoor unstabilised pools which had a 43 per cent failure rate ($\chi^2=11.26$, $p<0.01$).

Log books were reported at about half the pools. Where log books were kept a lower free chlorine/bromine failure rate...
of 34 per cent was found compared with 54 per cent failure rate where a log book was not kept ($\chi^2=43.10, p<0.01$).

The failure rate in premises which were "regularly inspected" by an authority was 28 per cent, compared with 39 per cent in premises "infrequently inspected" and 53 per cent in premises "not inspected" ($\chi^2=55.26, p<0.01$).

**DISCUSSION**

The three main categories of public pools and spas were chosen to reflect the perceived level of understanding of pool operation by pool supervisors. Municipal pool supervisors receive training through a technical college course supplemented by a form of apprenticeship. Municipal pools therefore should have the lowest failure rate. Business pool and spa supervisors have little formal training, if any, in pool operation and chemistry.

The general trend was that lower failure rates were found in municipal pools. Other pool categories were far worse. The highest failure rates were due to a lack of disinfection agent. Lower failure rates were found when the following operational procedures were followed:

- pools used continuous disinfection rather than hand (slug) dosing;
- stabilising compounds were not used;
- log books were maintained; and
- regular inspections were carried out by an authority.

The high failure rates suggest the present approach based on self-regulation may need to be supplemented with other strategies such as the development of uniform education programs for presentation to non-municipal pool operators. There may also be a case for considering greater legislative control over pool disinfection.

The survey highlights the need for a corrective strategy to be developed. In particular, close attention should be paid to:

- educating pool operators, preferably at a local level;
- insisting on continuously and preferably automatically controlled dosing;
- insisting that log books be maintained by pool operators; and
- where staff resources allow, introduction of regular inspections.

**FOLLOW-UP ACTION**

A training package has been developed and presented to PHU EHOs. Many PHUs have presented the training package to local authorities and some have run training seminars for public pool operators. Simultaneously, the departmental pool guidelines are being reviewed to dovetail with suggested amendments to the Public Health Regulation, 1991.

Copies of the detailed report are available from the author, Western Sector Public Health Unit, 13 New St, North Parramatta, NSW, 2151, (02) 840 3795, fax (02) 840 3817.

**ACKNOWLEDGMENTS**

The data collection and inspections for this study were completed with the co-operation of all 14 NSW Health Department PHUs. The support of the PHU Directors, Senior Environmental Health Officers and Environmental Health Officers is gratefully acknowledged.

The contributions of the following staff from the Western Sector PHU are greatly appreciated: Tien Chey (biostatistician) and Wayne Smith (epidemiologist) for statistical guidance and support; Marea Mears (data entry operator) for accurate data entry; and Bin Jalaludin (Deputy Medical Officer of Health) and Louisa Jorm (epidemiologist) for reviewing the draft paper and making constructive suggestions.


**PUBLIC HEALTH EDITORIAL STAFF**

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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 a summary of 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, NSW Public Health Bulletin, Locked Mail Bag 961, North Sydney 2059. Facsimile (02) 391 9232.

Please contact your local Public Health Unit to obtain copies of the NSW Public Health Bulletin.
This report describes the activities and results of the Refugee Screening Program in the first 12 months of operation since its reorganisation and relocation to Liverpool.

Health screening of newly arrived South East Asian refugees migrating to NSW began in 1977 and was extended to include refugees from Central and South America in 1984. An evaluation of this service in 1985 led to some changes in the way screening, then based at Lidcombe Hospital, was conducted – for example, routine anti-malarial therapy was discontinued. A further Health Department review in 1991 supported many of the original recommendations that had not been implemented and made several new ones. As a result, the program was relocated to Liverpool Chest Clinic in April 1993. Various changes to the protocol have been made and a database has been set up to record results of screening.

**SCREENING PROTOCOL**

The current screening protocol consists of:

- A brief medical history and physical examination (both focusing on communicable diseases);
- Tuberculin test (unless prior tuberculosis or under three months old);
- Chest x-ray (15 years and over);
- Venepuncture for syphilis and hepatitis B (15 years and over);
- Immunisation as required (as per National Health and Medical Research Council guidelines).

Certain migrants, such as those with a history of tuberculosis (TB), have signed a conditional entry permit called a health undertaking (known as a TBU). People on TBUs undergo x-ray at a later time at their nearest Chest Clinic, when pre-migration films are available for comparison. Tuberculin tests are read after 72 hours at the nearest Chest Clinic. Results are explained and information about the health care system and available services is provided. A NSW Personal Health Record is given to children aged under five years, while others receive a card listing test results and vaccinations given.

**METHODS**

Since April 1993 routine data collection, recorded using Epi Info, has provided a reference source about individuals and a means of measuring disease detection rates. For each person screened, demographic details, test results and vaccines given are recorded. Clinical diagnoses for those referred for abnormal chest x-rays or positive syphilis serology are sought from the appropriate clinic. Data about diseases with less public health significance (e.g. scabies, otitis) are not collated.

Tuberculin positivity was defined as induration of 10mm or greater for children under 15 years, regardless of BCG status; for those 15 years and over, 10mm or greater if no BCG scar, and 15mm or greater for those with a BCG scar.

**RESULTS**

Attendance

In the 12-month period from April 1993, 1,006 people were eligible for screening, of whom 989 (98.3 per cent) attended screening. Three of the 17 refugees who did not attend had signed a TBU pre-migration. Of the 922 people who had tuberculin tests, 839 (91 per cent) had a result recorded.

Demographic details

Ninety-five per cent of refugees screened in this period were Vietnamese, the majority of whom came from camps in Indonesia or the Philippines. The remainder of refugees seen originated from Cambodia, Somalia and El Salvador.

More than 85 per cent of those seen were under 40 years of age. The male:female ratio was 1.1.

**Disease detection**

1. Tuberculosis

Ninety-five people seen (almost 10 per cent) had signed health undertakings before embarkation. Reasons for these are shown in Table 4. Chest x-ray abnormalities, most of which were detected by the Commonwealth’s Migrant Medical Clearances Unit, were generally minor in nature. Information about 18 TBUs was unavailable at the time of screening.

Screening chest x-rays are taken using small (100mm size) films. There were 639 such x-rays taken; 23 (4 per cent) were reported as abnormal. Follow-up of these abnormalities revealed that nine of them (39 per cent) were false positives, the large film being normal. Two abnormalities were non-tuberculous (a bony mass and a vascular abnormality), and the remainder were being

![TABLE 4]

**REASONS FOR REFUGEES SIGNING HEALTH UNDERTAKINGS**

<table>
<thead>
<tr>
<th>TBU reason</th>
<th>No.</th>
<th>%</th>
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<tr>
<td>TB in past</td>
<td>30</td>
<td>(32)</td>
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<tr>
<td>Contact of TB</td>
<td>19</td>
<td>(20)</td>
</tr>
<tr>
<td>Abnormal CXR *</td>
<td>25</td>
<td>(26)</td>
</tr>
<tr>
<td>Poor quality CXR</td>
<td>3</td>
<td>(3 )</td>
</tr>
<tr>
<td>Unknown</td>
<td>18</td>
<td>(19)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>95</td>
<td>(100)</td>
</tr>
</tbody>
</table>

* = chest x-ray
monitored with Chest Clinic follow-up. No cases of active pulmonary tuberculosis were found among those x-rayed. Outcomes for five people with an abnormal small film were unknown.

Overall, 93 per cent of refugees screened had a tuberculin test. Results are shown in Figure 1. Missing data (9 per cent of tests done) reflect either failures to return for readings, or results not forwarded from other Chest Clinics.

Of 15 tuberculin-positive children (0-14 years) for whom follow-up is known, preventive therapy was judged necessary for only one child.

**i) Syphilis**
Forty-two people aged 15 years and over (5.9 per cent) had a reactive Treponema Pallidum Haemagglutination (TPHA) test. The prevalence was higher in males (8.1 per cent) than in females (3.3 per cent).

In contrast, the Reactive Plasma Reagin (RPR) test is used for overseas screening of intending refugee migrants. Only 8 of the above 42 people (20 per cent) had a positive RPR test overseas.

The 42 people with a reactive TPHA test were followed up at Sexual Health Clinics (Table 5). Twenty-six of these (62 per cent) received daily penicillin for 15 days as treatment for presumptive late latent syphilis. Seven of these cases had been detected and treated in the camps overseas, where a weekly regime of penicillin therapy is used. These individuals were treated again to ensure adequate clearance of infection.

**ii) Hepatitis B**
Routine testing for hepatitis B began in January 1994. For those seen during the four months from January to April 1994 (n=184), the overall prevalence of surface antigen carriage was 15 per cent. Half the carriers were e antigen positive, indicating greater infectivity.

Carriers ranged in age from 15 to 46 years, and 20 of 27 (74 per cent) were male. The stored sera from family members of carriers are tested for hepatitis B surface antibodies. There were 23 such contacts aged 15 years and over, of whom 10 (43 per cent) were non-immune to hepatitis B.

**iv) Immunisation status**
Vaccination records were available for 83 per cent of refugees seen. Immunisation status of children with records is shown in Table 6.

Hepatitis B vaccination status was not included when measuring completeness of immunisations. However, it was found that 57 of the 79 under-fives (72 per cent) with documentation had received hepatitis B vaccine. In contrast, only 24 of 141 children aged 5-14 years (17 per cent) had received this. There were 296 women of child-bearing age (15-40 years). Rubella vaccine was required by 131 of these (44 per cent).

**v) Leprosy**
No confirmed cases were detected.

**DISCUSSION**
The attendance rate for screening was very high during these 12 months, despite initial concerns that the program's move to Liverpool may affect this. In addition, more than 90 per cent of those given a tuberculin test had their result read; this was a reasonable follow-up rate.

There is often a delay of 6-12 months from the pre-migration chest x-ray until the refugee's departure for Australia. Despite this, no new cases of active TB were detected here in screened refugees. In addition, a high false positive rate for miniature x-rays was seen. An evaluation should be made of routine chest x-ray use at the initial visit versus x-ray according to tuberculin test result (as occurs at the six-month refugee follow-up).

Overall tuberculin positivity was just over 50 per cent, and tended to increase with age. Children with a positive tuberculin test are generally recalled for assessment by a physician. Available data show that most were not given preventive therapy, as has been found in other settings.

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* TABLE 5

<table>
<thead>
<tr>
<th>Syphilis</th>
<th>No.</th>
<th>%</th>
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<tr>
<td>Inactive</td>
<td>11</td>
<td>(26)</td>
</tr>
<tr>
<td>Latent</td>
<td>19</td>
<td>(45)</td>
</tr>
<tr>
<td>Partly treated</td>
<td>7</td>
<td>(17)</td>
</tr>
<tr>
<td>False positive</td>
<td>2</td>
<td>(5 )</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>(7 )</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>(100)</td>
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</table>

* TABLE 6

<table>
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<tr>
<th>Fully immunised for age</th>
<th>Age group</th>
<th>Yes (%)</th>
<th>No. (%)</th>
<th>Unk* (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-4</td>
<td>66 (84)</td>
<td>12 (15)</td>
<td>1 (1)</td>
<td>79 (100)</td>
</tr>
<tr>
<td></td>
<td>5-14</td>
<td>109 (77)</td>
<td>26 (18)</td>
<td>6 (4)</td>
<td>141 (100)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>175 (79)</td>
<td>38 (17)</td>
<td>7 (3)</td>
<td>220 (100)</td>
</tr>
</tbody>
</table>

* TABLE 7

<table>
<thead>
<tr>
<th>SUMMARY OF DISEASES DETECTED</th>
<th>Disease</th>
<th>No. tested</th>
<th>No. positive</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active pulmonary TB</td>
<td>639</td>
<td>0</td>
<td></td>
<td>(0 )</td>
</tr>
<tr>
<td>Tuberculin positivity</td>
<td>922</td>
<td>477</td>
<td></td>
<td>(51.7)</td>
</tr>
<tr>
<td>Preventive TB therapy in child &lt;15 years</td>
<td>253</td>
<td>1</td>
<td>(0.4)</td>
<td></td>
</tr>
<tr>
<td>Latent syphilis</td>
<td>715</td>
<td>26</td>
<td></td>
<td>(3.6)</td>
</tr>
<tr>
<td>Hepatitis B carriage</td>
<td>184</td>
<td>27</td>
<td></td>
<td>(14.7)</td>
</tr>
</tbody>
</table>

* missing data
MEASLES EPIDEMIC, SOUTH COAST NSW

Greg Sam and Paul Van Buynder
South East NSW Public Health Unit
Shanti Raman
National Centre for Epidemiology and Population Health
John Skinner
North Sydney Public Health Unit

Between August 20 and November 8, 1994, 214 measles notifications were received by the South Eastern Public Health Unit from the South Coast District of NSW. The epidemic was centred in the Bega Valley area, with 43 per cent of known cases occurring in students at Bega High School. The outbreak peaked during the week beginning September 25, which was the first week of the Term 3 school holidays (Figure 2).

Measles cases were defined as people having an illness characterised by:

- a generalised maculopapular rash resembling measles
- a high fever (>38°C)
- one or more of the following: cough, coryza, conjunctivitis or Koplik spots.

Case notifications

On September 22, two days before the end of the school term, a South Coast general practitioner notified the South Eastern NSW PHU of two cases of clinically diagnosed measles in Bega High School students. Follow-up with the school identified a high level of measles-related absenteeism in the preceding two weeks.

Potential sources for further case identification were contacted throughout the area, including hospitals, GPs, schools, and preschool and child care centres. The need for prompt notification of cases was stressed.

A high attack rate among high school-aged children was identified and questionnaires were distributed to the two local high schools to ascertain the degree of under-reporting of cases.

Serological confirmation was obtained from 35 cases.

Immunisation campaign

The need for measles vaccination for all unimmunised children as well as a recommendation for a booster dose for children aged 10-17 years who had been previously vaccinated was highlighted in school letters and through the local media.

The current screening program is routinely offered to refugees from South East Asia and Central and South America only. While small numbers from other areas are starting to be seen, routine screening of refugees from Africa, Eastern Europe and the Middle East should be introduced, based on known rates of tuberculosis in the country of origin.

In summary, most of the major recommendations of the 1991 review of refugee screening have been implemented, including relocation to a Chest Clinic, increased emphasis on diseases of public health significance, introduction of hepatitis B testing and upgraded data collection. In addition, the program has been streamlined: those with personal health problems are referred to general practitioners as much as possible; there is rapid feedback of results; and routine treatment for intestinal parasites is no longer given, as nearly all South East Asian refugees have received treatment with pyrantel just before their departure for Australia.

Improved data collection on the proportion of tuberculin-positive children screened who receive preventive therapy is recommended.

The RPR screening test for syphilis used pre-migration has been shown here to miss 50 per cent of refugees with evidence of past treponemal disease, as previously reported. The TPiA test is more sensitive in this situation as it usually remains reactive lifelong. Some positive TPiA results among refugees may be due to other treponemal diseases such as yaws or pinta, which are indistinguishable from syphilis on serological grounds. However, those who do have latent syphilis are at risk of progression to tertiary disease. The detection of these cases, with assessment for therapy, is therefore important in personal and public health terms.

Hepatitis B tests are not performed pre-migration. Because serum is collected for syphilis testing from those 15 years and older, it was decided to limit hepatitis B tests to the same age group. The prevalence of the carrier state is, as expected, high. Testing allows appropriate advice to be given to carriers and their families; further serological testing of adult contacts determines their need for vaccination. Catch-up immunisation against hepatitis B is offered to all children under 15 years old not previously vaccinated. This is done without prior serological testing, based on cost calculations and the known safety of the vaccine.

Immunisation status is well documented for arriving refugees, and coverage for children is high. The screening visit is an excellent opportunity for catch-up vaccination in adults and children. For example, HIB vaccine is not given in the camps, and most adults have never received Sabin.
Community Health immunisation clinics were made available after hours and on weekends during the peak of the epidemic. The clinics were well attended and more than 1,200 children were vaccinated over a four-week period. GPs reported large attendances for measles vaccination.

To date, only two notifications of adverse reactions to MMR vaccine have been notified. Both cases were reported as persistent screaming and high fever, and recovered without hospitalisation.

**Epidemic demography**

During the outbreak, cases were reported from almost all population centres in the South Coast District (Table 8). The epidemic began in, and was initially confined to, the Bega Valley area, but as time progressed cases were reported further north in the Eurobodalla shire. Overall, 76 per cent (n=163) of cases were reported from the Bega Valley area, and 18 per cent (n=39) from Eurobodalla. Secondary cases were subsequently reported in the Monaro and Southern Tablelands Districts.

For the six weeks from the onset of the outbreak, cases occurred mainly in high school-aged children. As the epidemic progressed, the proportion of cases in primary school-aged children increased. The age and sex distribution is shown in Figure 3. There were similar proportions of males and females in each age group.

**Hospitalisations**

During the epidemic there were 29 hospital admissions. The main reasons for hospital admission were pneumonia/respiratory infection and dehydration. There have been no deaths to date.

**Immunisation status**

Reporting of the immunisation status of cases during the outbreak was based on parental recall, with 22 per cent of high school-aged children reported as immunised, 36 per cent reported as not immunised and 42 per cent unknown. The large proportion of cases reported as “immunisation status unknown” reflects the inadequacy of parental recall as a measure of immunisation status of children. Data based on questionnaires distributed to high school students will be reported in a follow-up report.

**Discussion**

The characteristics of this epidemic are similar to other recently described measles outbreaks with the highest attack rate occurring in high school students in the Bega Valley area. In the absence of reliable data on the immunisation status of high school students at the time of reporting, the role of vaccine efficacy in determining susceptibility to contracting measles cannot be examined in this report.

Under-reporting was found to occur at all stages of the epidemic despite continued active surveillance. Many GPs were unaware of the requirement to notify measles immediately and some were not aware of the requirement to notify. The importance of prompt notifications for the success of school exclusion policies was also poorly understood. Of eight cases diagnosed in an emergency department, none was notified by the hospital. The delay in notification of early cases until the onset of the school holiday period also made control measures more difficult.

The rapid deployment of immunisation clinics during the early phase of the epidemic by Community Health staff...
EDITORIAL COMMENT

In recent years, measles outbreaks have occurred in discrete geographic areas in NSW. The outbreak reported above is an example, and outbreaks have also occurred recently in the Lower and Mid North Coast and Clarence Districts. In 1993, measles outbreaks occurred in the Western Sydney, South Western Sydney and Wentworth Areas. In 1993, measles outbreaks occurred in the Western Sydney, South Western Sydney and Wentworth Areas. In 1993, measles outbreaks occurred in the Western Sydney, South Western Sydney and Wentworth Areas.

Further clusters of cases continue to occur on the South Coast and a full report will follow.

Infectious diseases

enabled large numbers of children throughout a large area to be vaccinated in a relatively short period.

Further clusters of cases continue to occur on the South Coast and a full report will follow.

Infectious diseases

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Infectious diseases

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Hydatid disease

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Centre for Infectious Diseases and Microbiology
Westmead Hospital

Human hydatid disease results from infection with the larval stages of tapeworms of the genus Echinococcus. In Australia the species involved is E. granulosus, which has a cycle of development usually involving dogs and sheep. The adult worms occur in dogs and the larval stages, hydatid cysts, are found in herbivores which become infected by eating eggs passed in dog faeces. Human infection occurs in the same manner, by the ingestion of eggs, not by eating raw meat or offal containing cysts. In humans the most common sites for development of hydatid cysts are the liver and lungs, but cysts may be found in virtually any organ. Factors such as the site of cysts, their size and number and whether they leak or rupture, determine if infected individuals become symptomatic. Surgery generally is the only reliable method of treatment of hydatid disease but this may not be possible when cysts occur in inaccessible sites. Obviously, prevention of infection is preferable to surgery, especially as there is a significant rate of recurrence of the disease.

Because hydatid disease is a zoonosis usually involving dogs and sheep in Australia, most cases occur in people resident in country regions, especially the relatively cool and moist highlands of south-eastern Australia. This infection was previously highly prevalent in Tasmania, with rates of around 27/100,000, but a control campaign begun in the 1960s has virtually eliminated the parasite from that State. Attempts to mount similar campaigns in mainland States have never been successful and rates of infection as high as 32/100,000 have been reported in some regions, particularly in the Southern Highlands of NSW.

Experience in New Zealand, Tasmania and many other parts of the world has shown that hydatid disease can be controlled with public health measures. A symposium on hydatid disease, its clinical management, epidemiology and prevention was held in New Zealand in 1986.
control will be held at Westmead Hospital, Sydney, on Friday, March 3, 1995. For more information, phone (02) 633 7191 or fax (02) 893 8659.

SYPHILIS
In the October 1994 edition of the NSW Public Health Bulletin it was noted that the notification rate for syphilis was higher this year than last year. The notification rate for the period to the end of November was 11.2 in 1993 and 14.0 in 1994. Consultations with staff from Public Health Units, sexual health clinics and laboratories confirm the increase is probably the result of improved surveillance. There has been no increase in reported cases of newly acquired syphilis.

PERTUSSIS ON THE NORTH COAST
North Coast PHU reports larger than average numbers of pertussis in the Casino area in recent months. The notification rate for the North Coast in 1994 is 86.9/100,000 compared to 19.6/100,000 for NSW. Eight-six per cent of cases in the Casino area occurred in people aged more than five years, most of whom were fully immunised. Pertussis-related mortality and morbidity is greatest in infants, while in adults symptoms can be limited to a persistent cough.

An accelerated immunisation program has been advised in families during the outbreak. A study is planned to examine the transmission of pertussis for infants in the Casino area while the outbreak continues.

Pertussis-related mortality and morbidity is greatest in infants, while in adults symptoms can be limited to a persistent cough.

An accelerated immunisation program has been advised in families during the outbreak. A study is planned to examine the transmission of pertussis for infants in the Casino area while the outbreak continues. In 1994 the National Health and Medical Research Council recommended that a pertussis vaccine booster be added to the combined diphtheria and tetanus toxoid (CDT) vaccine given as a preschool booster. The resulting boosted immunity in primary and secondary school age children should result in a decrease in cases in these age groups in future.
TABLE 12

INFECTION DISEASE NOTIFICATIONS FOR 1994
BY PUBLIC HEALTH UNIT, RECEIVED BY NOVEMBER 30, 1994

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<tr>
<th>Condition</th>
<th>CSA</th>
<th>SSA</th>
<th>ESA</th>
<th>SWS</th>
<th>WSA</th>
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TABLE 13

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BY PUBLIC HEALTH UNIT, RECEIVED BY NOVEMBER 30, 1994

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TABLE 14

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Vol. 5 No. 12 140