WHOOPING COUGH IN THE NORTH COAST REGION

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On March 27, 1992 a case of whooping cough (pertussis) was notified to the North Coast PHU by a general practitioner. Over the subsequent weeks, the PHU was notified of 10 more cases of whooping cough from the same area. The index case was a 10-year-old girl who attended a primary school of 31 children aged 5-11 years, in a mountainous area about 35 kilometres inland.

PHU staff undertook active surveillance for further cases of whooping cough by contacting GPs, schools and the media in the northern part of the Region. Fifty schools were contacted and informed of the outbreak and asked to be vigilant for further cases. No more cases were identified through this process.

Of the 11 cases, eight were female and three male. Nine cases (aged 5-11 years) attended the school. The other two (both female) were two and four years old and lived close to the school. The notifying GP was asked for details of immunisation status of cases and laboratory results. Positive serology was notified to the PHU for the first three cases. All further cases were diagnosed on clinical criteria by the attending doctor. The recorded dates of onset were between March 3 and 28.

The immunisation status of the cases was as follows:
- three were fully immunised, having had four doses of triple antigen (TA);
- two were partially immunised;
- one case was immunised, but the completeness of immunisation was unknown, while in another case the immunisation status was completely unknown;
- one case had received homeopathic immunisation; and
- three cases were not immunised.

The school attended by nine of the cases was closed one week before the Easter school holidays in April to prevent further spread of whooping cough among the children and staff.

Information on antibiotic treatment and immunisation for whooping cough was circulated to GPs, community health centres and community groups.

During the outbreak two press releases were made by the North Coast Director of Public Health, in addition to four television interviews, many radio interviews and several local newspaper reports. The objectives were to promote immunisation in the community, and to advise correct treatment for people who contracted whooping cough.

FURTHER INVESTIGATION

A case-control study was conducted with the aim of determining the efficacy of:
- whooping cough immunisation using TA; and
- homeopathic immunisation for whooping cough.

In addition, the magnitude of whooping cough-related morbidity in the community was assessed, as indicated by the number of days away from school or work. The study sample comprised all teachers, pupils who attended the school and members of their households. Cases were defined as either having been diagnosed with whooping cough or having had a cough lasting 14 days or more during the previous three months. Controls were those individuals who did not have an illness consistent with the case definition.

A questionnaire was devised, distributed through the school and collected a week later. Data were analysed with Epilinfo version 5.01, using univariate and bivariate statistical methods (chi square). Permission was granted by the School Education Department Cluster Director for the PHU to investigate the outbreak further.

RESULTS

Questionnaire data were received from 20 families, covering 79 individuals. One family with children at the school did not participate. Two families supplied information for children, but not adult household members. Overall 95 per cent of families participated in the study. However, because of the anonymity of respondents, it was not possible to determine whether the questionnaire was completed for all members of each household.

The ages of study participants ranged from five months to 70 years (mean age 19 years). Sixty-five per cent of respondents had close contact with someone with whooping cough. Forty-three per cent stated they had taken antibiotics for 10 days or more to prevent whooping cough.

The immunisation status of cases identified in the study was as follows:
- six per cent were fully immunised (having had four doses of TA);
- 46 per cent were partially immunised (less than four doses of TA);
- 14 per cent were homeopathically immunised;
- 11 per cent were not immunised; and
- 23 per cent had immunisation status unknown.

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**Whooping cough**

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**Efficacy of whooping cough vaccine**
People fully immunised were five times less likely to contract whooping cough compared with people with other immunisation status (i.e. partially immunised, homeopathically immunised, unimmunised or unknown immunisation status). OR = 2.08; 95%CI 0.2-1.18. This is a statistically lower risk in fully immunised people.

**Efficacy of homeopathic immunisation**
The comparison of the efficacy of homeopathic immunisation with no immunisation showed no difference in controlling whooping cough. (OR = 2.08; 95%CI 0.21-22.15). While not statistically significant, the results suggest that TA immunisation is more protective against whooping cough than homeopathic immunisation. (OR = 0.13; 95%CI 0.01-1.18).

**Effect of whooping cough morbidity on the community**
During the outbreak, 24 per cent of respondents stayed away from school or work because they had whooping cough and 5 per cent stayed away in order to avoid catching it. The average number of days away from school or work during the outbreak was 3.7.

**DISCUSSION**
The Public Health Act 1991 requires medical practitioners, hospital chief executive officers and laboratories to notify cases of whooping cough to the local PHU, but in this study only one-third of cases of whooping cough were notified by a medical practitioner. The other cases were detected by means of the study questionnaire.

The study suggested that TA immunisation was an effective means of protecting people against whooping cough. However, three respondents who were fully immunised with TA did contract the disease. It is estimated that TA immunisation provides about 80 per cent protection against whooping cough and this protection is known to wane over time. Infants aged under one year (who are most at risk of serious consequences from whooping cough) obtain the highest level of protection from immunisation. Older children and teenagers have an increased risk of acquiring and transmitting disease.

The study results suggested that homeopathic immunisation was no more effective in protecting against whooping cough than no immunisation at all.

Limitations of the validity of the findings were:

- Possible recall bias. Respondents were required to recall events which had occurred at least six weeks previously.
- Self-report of immunisation status. It was not possible to verify self-reported immunisation.
- Power of the study. The sample size was too small to demonstrate possibly significant effects.

**CONCLUSIONS**
To minimise the transmission of whooping cough in school-age children, a fifth dose of whooping cough vaccine at the time of the pre-school booster may be warranted. Whooping cough immunisation of adolescents and adults could also be considered with the routine 10-year tetanus and diphtheria boosters.

Evidence from this study suggested homeopathic immunisation was not effective in preventing whooping cough, in contrast to TA.

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**Public health abstracts**

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with considerable skepticism despite its apparent scientific rigour. Only time will tell whether this skepticism is justified.


**HIGH DIETARY CALCIUM REDUCES THE INCIDENCE OF KIDNEY STONES**
Kidney stones are a major cause of morbidity. A high dietary calcium intake is thought to be effective in preventing kidney stones. An example, a recent study involving more than 45,000 men in the United States demonstrated that the average intake was 1000 mg per day, which is low and perhaps counter-intuitive. A possible explanation involves the role of calcium in the gut. Accordingly, the general policy of calcium restriction for patients who have had kidney stones containing calcium should be re-examined.


**ELDERLY DONORS CAN OFFER RENAL TRANSPLANTS**
Renal transplantation is the treatment of choice for end-stage renal failure providing a vastly improved quality of life. An Australian group at the Royal Melbourne Hospital has demonstrated that the use of elderly patients, most of whom have died from stroke, is an excellent source of effective renal donors. In this context, there are thought to be more than 1000 patients awaiting renal transplantation, with fewer than 500 being performed each year.