Current issues in immunisation

This is the first of an occasional series in Communicable Diseases Intelligence providing commentary on topical immunisation issues from the National Centre for Immunisation Research and Surveillance of Vaccine Preventive Diseases (NCIRS).

The NCIRS, which is based at the Royal Alexandra Hospital for Children, Westmead, New South Wales, was established in 1997 by the National Centre for Disease Control of the Commonwealth Department of Health and Family Services. The Centre analyses, interprets and evaluates national surveillance data on immunisation coverage and vaccine preventable diseases. It also identifies research priorities and initiates and coordinates research on immunisation issues and the epidemiology of vaccine preventable diseases in Australia.

Immunisation and asthma

Peter B. McIntyre[1],
Edward D. O'Brien[2], Timothy C. Heath[1]

Two recent studies have addressed the issue of whether immunisation contributes to the development of atopy, but they have differed in their conclusions[1,2]. The publication of a third study by a New Zealand group[3] in November 1997 has unfortunately not provided a definitive answer to this question.

The study examined infant immunisation history as a risk factor for the subsequent development of allergic disease in a birth cohort of 1,265 children, established in Christchurch in 1977 and followed to the age of 16 years. Information on immunisations and asthma (and other allergic diseases such as eczema, rhinitis, food allergies and urticaria) was collected from mothers, and vague or inconsistent responses were cross checked with the family doctor.

Children were assessed at ages 5, 10 and 16 years and were categorised as having consultations (reported medical contacts) or episodes (consultations plus reported episodes not medically seen). If any consultation for, or episode of, an allergic condition was reported, the child was considered positive for that condition. Children were considered to be nonimmunised only if they had received neither of the two scheduled doses of DTP due at 3 and 5 months of age.

Of the 1,207 children allocated an immunisation category, only 23 were nonimmunised. Of the 17 nonimmunised children for whom data were collected to age 16 years, none reported asthma by age 10 years and 2 reported asthma by age 16 years. This compares with reported asthma consultations for 227 (23%) of the 1,009 immunised children for whom data were collected at age 10 years, and 297 (32%) of the 938 immunised children for whom data were collected at age 16 years. The study found a statistically significant association (RR = ∞, CI_{95} = 1.03 to ∞) between receipt of one DTP immunisation prior to age 15 months and at least one consultation for asthma by the age 10 years. However, by the age 16 years, the association had become non-significant (RR = 2.7, CI_{95} = 0.7 to 22.3). The authors reported no association of asthma with measles immunisation or disease.

The findings of this study should be treated with caution. Statistical significance was very vulnerable to misclassification; if only one nonimmunised child had developed asthma, statistical significance would have been lost. In this context, the lack of data for 6 (26%) of the 23 nonimmunised children, and 246 (21%) of the immunised children is extremely important. It is also notable that the nonimmunised group differed markedly from the immunised children in ethnicity, socio-economic status and parental smoking history. The authors argue that this did not influence the result, but the effect of these potential confounders was difficult to examine because of the small numbers in the nonimmunised group.

Thus, there remains insufficient evidence to establish a causal link, or even a clear association, between pertussis immunisation in infancy and the later development of asthma. By contrast, the risks of omitting pertussis immunisation are very evident to all health professionals. The findings of this article should not influence pertussis recommendations and practices in any way. Health professionals should continue to emphasise that the benefits of immunisation against pertussis greatly exceed the risks.

1. Odent MR, Culpin EE, Kimmel T. Pertussis vaccination and asthma: is there a link? *JAMA* 1994; 272:592-593
2. Nilsson L, Kjellman NI, Storsaeter J, et al. Lack of association between pertussis vaccination and symptoms of asthma and allergy. *JAMA* 1996; 275:760
3. Kemp T, Pearce N, Fitzharris P, et al. Is infant immunisation a risk factor for childhood asthma or allergy? *Epidemiology* 1997;8:678-80.

1. National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (NCIRS), Royal Alexandra Hospital for Children, Westmead, New South Wales.
2. National Centre for Disease Control, GPO Box 9848, Canberra, Australian Capital Territory 2601