

Immunisation at the crossroads: 9th National Immunisation/1st Asia–Pacific Vaccine Preventable Diseases Conference

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A stocktake of vaccination strategies and challenges

The 9th National Immunisation Conference of the Public Health Association of Australia was held in August 2004 in Cairns, Queensland, in conjunction with the 1st Asia–Pacific Vaccine Preventable Diseases Conference. The conference was attended by more than 400 delegates, predominantly from the Asia–Pacific region. A theme of the conference was the potential of vaccines to achieve greater equity in health outcomes. A session on the Australian recommended immunisation schedule generated vigorous discussion, highlighting the difficulty of dealing with a schedule that includes vaccines not funded for universal use.

Meningococcal disease

The epidemiology of meningococcal disease differs substantially around the world, with variation in both incidence and predominant serogroups. In parts of Africa, serogroup A causes regular epidemics. New Zealand has experienced a serogroup B epidemic for more than a decade, focused on the Maori–Pacific Islander community. In Australia, serogroup C has caused about 50%–70% of cases in Victoria and Tasmania since 2000, while serogroup B has been more common elsewhere.^{1,2} Serogroup C has also emerged as a significant problem in the United Kingdom and parts of Europe, especially in older children and adolescents.

Mary Ramsay (Communicable Diseases Surveillance Centre, UK) provided an overview of the European experience of meningococcal disease, comparing vaccine schedules and outcomes. Use of meningococcal C conjugate vaccines, which provide more predictable and long-lasting immunity than polysaccharide vaccines, was pioneered in the UK with a national campaign beginning in 1999. Following the UK success, other European Union countries have begun programs, but schedules differ. In the UK, the vaccine is given at 2, 3 and 4 months; in Spain, at 2, 4 and 6 months; while, in The Netherlands, a single dose is given at 12 months. The last schedule, identical to that in Australia, was chosen because serogroup C is uncommon under the age of 12 months, and a single dose is sufficient for protection over this age. Preliminary data suggest that immunity persists longer when the last dose is given after 5 months of age.³

As outlined by Rosemary Lester (Department of Human Services, Victoria), meningococcal C conjugate vaccine was funded in

Australia for children at age 12 months from 1 January 2003, and was accompanied by a catch-up program for children and adolescents aged 1–19 years. The school-based component of the catch-up program achieved good coverage across Australia in 2003–2004. Data on disease impact will be available in subsequent years.

While a polysaccharide vaccine protects against meningococcal serogroups A, C, W135 and Y, and a conjugate vaccine protects against serogroup C, there is no commercially available vaccine against serogroup B. Since 1990, New Zealand has experienced a prolonged meningococcal epidemic thought to be attributable to a specific strain of serogroup B, combined with crowding and exposure to tobacco smoke. In response to this epidemic, and in partnership with the Norwegian Institute for Public Health and Chiron Vaccines, the New Zealand government has sponsored development of a vaccine for the New Zealand strain (MeNZB). After demonstration of adequate immune responses, a national rollout of this vaccine began in July 2004. Because of the unique nature of this program, assuring vaccine safety is critical. Stewart Reid (Chair of the New Zealand vaccine advisory committee) described a national safety monitoring program which, in scope and comprehensiveness, is at the level of world's best practice.

Pneumococcal disease

Kim Mulholland (Centre for International Child Health, University of Melbourne) gave an overview of the rapid and varied developments in conjugate pneumococcal vaccine trials around the world. Use of the polysaccharide pneumococcal vaccine was shown over 20 years ago in Papua New Guinea to reduce deaths, but neither this vaccine nor the newly available conjugate vaccine is used in any country with high death rates from childhood pneumonia. Although the current conjugate pneumococcal vaccine covers only seven serotypes, this vaccine, with two additional serotypes, has been shown to prevent invasive pneumococcal disease (IPD) and non-bacteraemic pneumonia in children from Soweto, South Africa.⁴

Peter McIntyre (National Centre for Immunisation Research and Surveillance, Sydney) and Vicki Krause (Centre for Disease Control, Northern Territory) outlined vaccine programs to control pneumococcal disease in Australian adults and children. Since the late 1990s, the 23-valent polysaccharide pneumococcal vaccine has been funded nationally for Indigenous adults aged 50 years and over and, in Victoria, for all adults aged 65 years and over. There is now convincing evidence from north Queensland of a decrease in IPD among Indigenous adults. Among the elderly, recent data have also shown a greater reduction in IPD in Victoria than in New South Wales, where there is no funded program for this age group.⁵ The polysaccharide vaccine will be funded for all adults aged 65 years and over from January 2005.

Since 2001, the seven-valent pneumococcal conjugate vaccine has been funded only for Indigenous children and for others with

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specified medical conditions. From January 2005, it will be funded for all children under 2 years of age. Data from national surveillance of IPD for 2003, presented for the first time at the conference, show a measurable decrease in IPD in Indigenous children, so that the incidence in these children is now below that in non-Indigenous children. It is clear that universal funding is timely, and that vaccination has contributed to greater equity in health outcomes between Indigenous and non-Indigenous children in Australia, as previously shown for black children and white children in the United States.⁶

Immunisation in the Pacific

Viliame Sotutu (Fiji School of Medicine) and Rob Condon (Public Health Physician, Fiji) highlighted the problems in providing vaccines to children in the 22 countries and territories in the Pacific, most of which are small and separated by vast distances. Many of the countries have young, growing populations with low living standards and high unemployment rates. Health status is variable, and political instability is not uncommon. The Expanded Programme on Immunization was introduced in 1977, jointly funded by the World Health Organization and individual countries. However, immunisation schedules vary between countries, and procurement and logistic strategies are often inefficient. Recent outbreaks of measles in Papua New Guinea and the Solomon Islands, with high death rates, and outbreaks of rubella in Samoa, with cases of encephalitis, highlight the fragility of control of vaccine-preventable diseases in the Pacific. More emphasis should be placed on vaccine delivery to island communities, and Australia can make an important contribution to this effort.

Haemophilus influenzae type b disease

Agustinus Sutanto (Catholic Hospital in Ampenan, Lombok, Indonesia) presented the results of a recently completed randomised controlled trial of the *Haemophilus influenzae* type b (Hib) vaccine PRP-T on the Indonesian island of Lombok. The trial, which enrolled 55 000 children aged under 2 years and was randomised by hamlet, produced evidence of a substantial, unrecognised burden of Hib disease. This type of “vaccine probe” study, pioneered in Gambia, is able to measure disease burden through differential vaccine impact, where routine data on disease notification and hospitalisation are not available.⁷

Mary Ramsay (Communicable Diseases Surveillance Centre, UK) presented the results of a series of studies, including seroepidemiology, nasopharyngeal Hib colonisation and routine measurement of disease frequency, to explore reasons for a resurgence of Hib disease in the UK. First, herd immunity, resulting from the 1992–1993 national catch-up program for children up to 5 years of age, had waned because no booster dose had been given in the second year. Second, this effect was exacerbated by the introduction of a less immunogenic vaccine combination. This resulted in an increase in cases among children aged 1–4 years, who were consequently targeted by a national booster campaign. The UK experience emphasised the importance of maintaining high-quality surveillance in order to rapidly assess unexpected problems, which may emerge even in apparently very successful vaccination programs.⁸

New vaccines

Graham Barnes (Gastroenterology Department, Royal Children's Hospital, Melbourne) is involved in developing an Australian candidate rotavirus vaccine. The first licensed vaccine was withdrawn from the US market in 1999, after identification of a small but definite increased risk of intussusception. Following this experience, trials of new vaccine candidates have needed to be large enough to exclude any significant increased risk of intussusception. Two new candidate vaccines appear to have achieved this goal, one of which was recently licensed in Mexico.

Terry Nolan (School of Population Health, University of Melbourne) described progress with vaccines against human papillomavirus (HPV), the major cause of cervical cancer worldwide. It is now established that these vaccines prevent HPV infection, and long-term studies will determine their impact on cancer. The potential availability of HPV vaccines has raised new issues of timing of vaccination and communication of the rationale to parents, who may not appreciate the risk of sexually acquired infections during adolescence.

Both rotavirus and HPV vaccines are likely to be available in Australia within the next 3–5 years.

Conference themes and resolutions

Traditionally, the final session of the conference is devoted to developing resolutions, many of which have been implemented. On the basis of public health benefit, the Australian Technical Advisory Group on Immunisation and the National Health and Medical Research Council recommend vaccines for inclusion in the Australian Standard Vaccination Schedule. Conference resolutions were dominated by the strong feeling that the Australian government should fund all vaccines that have been recommended by these two bodies.

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