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Immunisation in NSW

NSW immunisation performance: continuing progress but no room for complacency

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Complacency is the greatest threat to successful immunisation programs. This has recently been demonstrated in many countries in Europe with resurgence of vaccine preventable diseases that were previously well controlled, particularly measles.¹ Thus in New South Wales (NSW), despite having a successful immunisation program, we must continue to review performance carefully, identify signals of complacency and strive to protect vulnerable members of our community with the wide range of vaccines that we have at our disposal.

This issue of the *NSW Public Health Bulletin* presents the second in a series of annual reports which provide a comprehensive overview of the current epidemiology of vaccine-preventable diseases in NSW and the status of our immunisation program. 2010 was the third year of NSW's second immunisation strategy (in place from 2008 to 2011)² and saw further progress in a number of areas such as vaccine coverage and timeliness. Changes in vaccine recommendations, the ongoing pertussis challenge and the adverse events associated with seasonal influenza vaccine use in young children, are some of the features highlighted.

In the *NSW Annual Vaccine Preventable Disease Report, 2010*, by Spokes and Gilmour, it is gratifying to see that most notifiable vaccine preventable diseases in NSW remain under good control. For example, cases of *Haemophilus influenzae* serotype B (Hib), meningococcal C and pneumococcal disease remain at low levels. Although rates of invasive pneumococcal disease are still highest in children below 5 years of age, almost all strains (94%) identified in cases were those not covered by the 7-valent conjugate pneumococcal vaccine (7vPCV). The introduction of a

13-valent PCV nationally in 2011, to replace the 7-valent vaccine, holds promise for further decline in disease incidence due to the additional six vaccine serotypes.

The ongoing pertussis epidemic poses important challenges.³ 2010 saw changes in the epidemiology of the disease; notification rates decreased in children under 4 years of age (although these rates continue to be high) and increased in the 5–14-year age group. As seen in the Annual Coverage report by Hull et al, two high school-based cohorts of adolescents were provided with the adult and adolescent formulation of the diphtheria, tetanus and acellular pertussis-containing (dTpa) vaccine in 2010 (year 7 and year 10). This immunisation program aimed to increase and bring forward protection for adolescents, in whom immunity may be waning after the fourth booster dose (at 4 years of age). It was reassuring to see a more than 50% decline in notification rates among infants below 12 months of age. Earlier receipt of the first dose of pertussis-containing vaccine for infants (at 6 weeks rather than 2 months of age) has been recommended in NSW since 2009 in response to the current epidemic.⁴ As reported by Hull et al, this earlier schedule has resulted in a large increase in the proportion of babies (over 60%) receiving the first dose before 8 weeks of age and thus being afforded at least partial protection against severe disease. Another strategy has been the provision of free vaccine to the parents and carers of young infants, funded in NSW as the 'cocoon program'.⁴ This strategy is currently being formally evaluated for its impact on infant disease which should inform ongoing policy in this area. Clearly the focus of pertussis vaccination efforts must remain on preventing disease in those most vulnerable to severe morbidity and mortality – infants, especially those below 6 months of age.

Cases of measles, often introduced by young unimmunised Australians returning from travel overseas to measles endemic areas, or visitors from these areas, led to sporadic outbreaks of the disease across NSW in 2010, particularly in those aged 10–19 years. Index cases (the first to contract disease in an outbreak) often passed

the infection to unvaccinated family members. However, due to high population immunity and rapid public health responses, these outbreaks were usually quickly contained and, consequently, the re-establishment of endemic measles virus was prevented. This rapid containment is in contrast to the experience of other countries, such as New Zealand, the UK and Europe where measles outbreaks have been sustained and the endemic circulation of measles has been re-established.^{1,5} These situations highlight the importance of ensuring that two doses of measles-mumps-rubella (MMR) vaccine are given to all non-immune persons: as adolescents and young adults are less likely to have received a second dose, and should therefore be targeted for vaccination. It is encouraging that since 2009, there has been sustained improvement in the timeliness of the second childhood dose of MMR vaccine, scheduled at 4 years of age, including in Aboriginal children. Australia is rapidly approaching the elimination of measles and should develop a specific measles elimination plan to build on the legacy of the enhanced control already achieved.

The *NSW Immunisation Coverage Report, 2010*, has extensive data on coverage and timeliness for all vaccines funded through the National Immunisation Program (NIP), for each Local Health District. NSW has reached coverage benchmarks of 90% for children at 12 and 24 months of age in almost all areas, with a substantial increase in coverage at 5 years to just below 90%. This latter improvement has occurred nationally, and probably arises from changes in overdue rules (the rules guiding when children are overdue for receipt of vaccinations), linked to incentive payments for parents and immunisation providers. Coverage of vaccines delivered to secondary school students remained steady, although at lower levels than for early childhood vaccines. These data are valuable to inform practitioners and programs, particularly in areas where coverage remains low, such as the Mid North Coast and Northern NSW. Across NSW, vaccine coverage continues to remain lower in Aboriginal compared with non-Aboriginal children in the first year of life, when children are generally most vulnerable to severe disease. However, the disparity in receipt of infant vaccines has almost disappeared by 24 months, suggesting further attention to timeliness could reap rewards in this population.

As described by Mahajan et al. in the *NSW Annual Report on Adverse Events Following Immunisation, 2010*, 2010 saw some landmark events in the field of vaccine safety. High reporting rates for adverse events following immunisation (AEFI) with influenza vaccine both within NSW and nationally reflect the major unexpected increased risk of fever and febrile convulsions in young children following the introduction of the 2010 seasonal influenza vaccine, Fluvax[®] (CSL Biotherapies).⁶ Although reporting to passive surveillance systems for AEFI cannot provide population attributable rates of AEFI or determine

causality, signal detection can occur. In 2010, signal detection led to the rapid suspension of the use of influenza vaccines in children under 5 years of age, and the detailed epidemiological investigations which followed identified the administration of the CSL vaccine in young children as the cause.⁶ Overall, reports of AEFI with the two influenza vaccine types available in 2010, Panvax[®] (monovalent pandemic influenza vaccine, CSL Biotherapies) and seasonal influenza vaccines, dominated, representing 65% of all reports. Many reports for Panvax[®] were received directly from members of the public, as this was encouraged by the Therapeutic Goods Administration (TGA). However, most reports were of mild or expected events. This level of severity is consistent with that expected following the introduction of a new vaccine, as historical data in the Annual Report shows. Overall, after excluding reports for influenza vaccines, there was a three-fold decrease in reports of AEFI due to routine vaccines in children below 7 years of age. The comprehensive data and interpretation of reporting trends for AEFI within NSW provided by Mahajan et al are important to continually assess and ensure the safe, as well as effective, use of vaccines. The increased reporting by community members highlights the public's interest in participating in, and being informed about, vaccine safety signals. An open dialogue with the public to ensure ongoing trust is crucial to the success of the program.

Immunisation programs in NSW continue to make important contributions to the health of our state's population. Although some challenges remain, such as the control of pertussis, the detailed reports provided in this issue of the Bulletin will inform the delivery of the NSW immunisation strategy.

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