A word from the Director...

2010 has been another year of activity and achievement across all spheres of NCIRS work — enough to make you want to “suit up” to quote my 15-year old son.

Some highlights and/or activity peaks have included confirmation of a new 4-year Funding Agreement with the Department of Health and Ageing (including the PAEDS active hospital surveillance network), the contribution of NCIRS staff to the success of the biannual National Immunisation Conference in Adelaide, rapid responses to the issue of febrile convulsions occurring post influenza vaccine and successful conduct of major investigator-led and sponsored clinical trials.

There has also been recognition through grant funding from the Foundation for Children (Dr Julie Leask, Dr Spring Cooper and Dr Nick Wood) and NHMRC (Professor Robert Booy and Dr Nick Wood).

We at NCIRS value the support of our research collaborators and the immunisation community as a whole. We wish you all a very happy Christmas and look forward to a great year in 2011.
The most recent data on the uptake of vaccines available to Australian children under the National Immunisation Program (NIP) have recently been published in the 2008 annual immunisation coverage report. The yearly report analyses data available through the Australian Childhood Immunisation Register (ACIR) and comments on the coverage of NIP listed vaccines at the different age milestones and trends in timeliness of vaccine delivery. Vaccine uptake is also assessed with respects to Indigenous status and geographical locations.

The 2008 report demonstrates the success of the Australian Childhood Immunisation Program, with national coverage for all vaccines recommended for children at 12 months and 24 months of age exceeding the Immunise Australia coverage target of 90%.

However, the report also identifies areas where immunisation coverage can be improved. The proportion of children who are fully immunised at 5 years of age is much lower than at 12 and 24 months. In addition, a disparity still exists in vaccine coverage between Indigenous and non-Indigenous children, especially with regards to timeliness of vaccine delivery. A number of geographical areas have also been identified throughout Australia where immunisation coverage is lower than the national average.


The report was prepared by the surveillance team at NCIRS and was highlighted in a recent ABC online blog which received more than 1,000 comments. To view this blog, go to: http://www.abc.net.au/unleashed/40620.html

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## 2009 report on adverse events following immunisation in Australia now available

Published in the September issue of Communicable Diseases Intelligence this report summarises Australian surveillance data for adverse events following immunisation (AEFI) reported to the Therapeutic Goods Administration (TGA) for 2009.

During 2009, there was an increase in the number of reported adverse events compared with previous years. This increase was attributed to the introduction of the pH1N1 influenza vaccine in September 2009. The high rate of reporting for pH1N1 influenza vaccine is partly due to greater reporting by members of the public as well as the known effect of enhanced reporting that occurs after the introduction of new vaccines. Reporting by members of the public and health professionals was actively encouraged at the start of the pH1N1 vaccination program.

The types of adverse events reported in 2009 were similar to those in previous years. The most common reported reactions were mild and included injection site reaction, fever, headache and nausea.

The monitoring of adverse events following immunisation by the TGA allows surveillance of the safety of vaccines used in Australia. Reports of suspected AEFI are notified to the TGA by state and territory health departments, health professionals, vaccine manufacturers and members of the public. All the reports are reviewed by the TGA and collated in a central database. NCIRS is funded by the Australian Government Department of Health and Ageing to analyse de-identified data and produce AEFI surveillance reports. The complete 2009 report can be found online at: http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3403-pdf-cnt.htm/$FILE/cdi3403d.pdf

## 2008 Annual immunisation coverage report now available

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On 13 October 2010, NCIRS hosted a pertussis meeting with an international invited speaker, Professor Alberto Tozzi, from the Hospital Bambino Gesù in Italy.

Attendees included (see photo from left to right): Associate Professor Ruitag Lan, Angela McKinnon, Paula Spokes, Andrew Marich, Jodie McVernon, Dr Kristine Macartney, Professor Terry Nolan, Professor Alberto Tozzi, Dr Rob Menzies, Professor Peter McIntyre, Patricia Campbell, Dr James Wood, Dr Helen Quinn and Dr Julie Leask.

Those not in the photo, but who attended and participated in the meeting were: Kerrie Wiley, Dr Jane Ho, Professor Lyn Gilbert, Dr Vitali Sintchenko, Dr Jodie McVernon and Dr Nicole Gilroy.

The meeting started with an overview of pertussis epidemiology in Australia and then continued with presentations on the Australian serosurveillance program for pertussis and the role of disease modelling for pertussis. There were several presentations describing laboratory work identifying strain variation in pertussis isolates and then Professor Tozzi provided us with an interesting talk describing past and present pertussis epidemiology and immunisation in Italy. The day finished with a round table discussion on current pertussis epidemiology in Australia.

**UPDATE ON RECENT MEETINGS**

**Pertussis epidemiology and vaccine programs – Australia and Italy**

On 13 October 2010, NCIRS hosted a pertussis meeting with an international invited speaker, Professor Alberto Tozzi, from the Hospital Bambino Gesù in Italy.

NCIRS STAFF NEWS

**Congratulations to ...**

Dr Kristine Macartney was recently awarded the conjoint title of Associate Professor in the Sydney Medical School – The Children’s Hospital at Westmead Clinical School. Kristine is a paediatric infectious diseases specialist with special interest in rotavirus and vaccine safety. She is Deputy Director – Government Programs at NCIRS and was appointed the vaccine expert on the Advisory Committee on the Safety of Medicines in 2010.

NCIRS and CHW have commenced a multicentre randomised controlled trial to investigate safety and immune responses following vaccination with acellular pertussis vaccine at birth. To date, 126 infants have been enrolled and recruitment is progressing well, with a total target of 440 infants. This study is very important as infants who are too young to be protected by the current vaccine schedule, which currently begins at 6 weeks old, are the ones most likely to end up in hospital if they catch pertussis. It is possible that a birth dose of pertussis vaccine may protect these vulnerable infants.

For more information – contact Dr Nick Wood ph 9845 1434

Dr Rob Menzies was recently awarded the conjoint title of Senior Lecturer in the Sydney Medical School – The Children’s Hospital at Westmead Clinical School. In addition, Rob was also awarded his PhD. His thesis focused on “Using routine data in vaccination policy development for Aboriginal and Torres Strait Islander people.”

Rob is also Deputy Director – Surveillance at NCIRS.

This year, Professor Robert Booy along with others received an NHRMC Centre for Research Excellence in Critical Infection grant.

**Synopsis**

The critically ill are the most vulnerable people in our health system and their care is highly resource intensive. Most admissions to intensive care units are precipitated or complicated by infection, which is the commonest cause of preventable mortality and adds billions of dollars to the annual cost of health care. This CRE will improve health care systems, patient safety and management of critical infections, by integrating innovative microbiological, clinical, informatics and ethico-legal approaches to their diagnosis, surveillance and management. We will increase capacity in multidisciplinary infectious diseases research in the critically ill and in the effective translation of advances in biotechnology and informatics systems into practice and policy.
NCIRS conducts a variety of research regarding Aboriginal and Torres Strait Islander people and vaccine preventable diseases, across surveillance, evaluation and vaccine relevance.

Projects can be generated due to federal programs/policies, state and territory initiatives or from consultation with health professionals working within the National Aboriginal Community Controlled Health Service and their affiliates. Collaboration also occurs with other centres such as the SAX Institute, Menzies School of Health Research, Women’s Hospital Melbourne and state and territory Departments of Health.

Examples of collaborating projects

• A cluster of vulvar cancer and vulvar intraepithelial neoplasia in young Australian Indigenous women (Royal Women’s Hospital, Melbourne)

• The Study of Environment on Aboriginal Resilience and Child Health (SEARCH) (SAX Institute, Sydney)

• Women, Human papillomavirus, Indigenous, Non-Indigenous, Urban, Rural Study (WHINURs) (Royal Women’s Hospital, Melbourne)

Evaluation of the Indigenous VPD report

NCIRS are looking to improve the way they publish national data on vaccine preventable disease (VPD) and vaccination coverage in Aboriginal and Torres Strait Islander people.

NCIRS would like to find out how national reports on VPDs and vaccine coverage in Australia are being used and ways to improve them.

These reports are published in Communicable Diseases Intelligence about every 3 years. The current report ‘Vaccine preventable diseases and vaccination coverage in Aboriginal and Torres Strait Islander people, Australia, 2003 to 2006’ can be viewed online at: http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi32suppl.htm

NCIRS would greatly appreciate you taking a moment to complete our brief online survey. All information provided is anonymous and will remain confidential.

To begin this survey, please click on the following link: http://www.surveymonkey.com/s/evaluationindigenousVPDreport
Recent Journal Club presentations

The early kinetics of circulating pneumococcal-specific memory B cells following pneumococcal conjugate and plain polysaccharide vaccines in the elderly

Baxendale HE, Keating SM, Johnson M, et al
Vaccine 2010;28(30):4763-70

Two types of pneumococcal vaccines have been developed, both premised on the use of the pneumococcal serotype-specific capsular polysaccharides: the pneumococcal conjugate vaccines (PCV) contain polysaccharides that are coupled to a carrier protein, whereas the plain polysaccharide vaccines (PPV) do not utilise a carrier protein. In Australia the PCV Prevenar™ is indicated for use in infants and children, whereas the PPV Pneumovax™ is recommended for adults aged ≥65 years (≥50 years in Aboriginal and Torres Strait Islander people). However, Pneumovax™ induces a short-term immune response in the elderly, which is believed to be due to the fact that polysaccharides are T-independent antigens which induce a weak and shorter antibody response and no immune memory. On the other hand, PCVs have been shown to be highly immunogenic in young children and can prime long-lived memory cells. Recently the potential of using PCVs for increased protection against invasive pneumococcal disease (IPD) in the elderly is being considered; however, the results are conflicting.

This paper aims to compare whether immunisation with the PCV Prevenar™ compared with PPV Pneumovax™ results in enhanced recruitment of PPS-specific plasma and memory B cells to the circulation in an elderly cohort up to 1 month after immunisation, to assess the feasibility of their use in the elderly population. The study recruited 37 adult participants (52–74 years of age) who were randomly allocated to receive either Prevenar™ or Pneumovax™. Blood samples were taken on days 0, 7 and 28 and used to determine the serotype-specific serum antibody response (IgA, IgM and IgG) as well as quantification and polyclonal antibody secreting plasma or memory B cells. Following vaccination, there was a statistically significant increase in IgG, IgA and IgM concentrations for most vaccine serotypes at day 7 and a further increase at day 28. There was no significant difference in serotype-specific IgG, IgA or IgM concentration between the two vaccine groups at each bleed point. In addition, as determined by ELISPOT, the authors reported no difference between the kinetics of the early PBMC-derived B cell response following immunisation between the two groups and concluded that pneumococcal conjugate vaccines may not quantitatively enhance the generation of memory response in the elderly.

A number of limitations were identified in this study and should be taken into consideration. These include the small number of study participants; the limited number of PPV samples that were available for analysis at the day 28 bleed; the feasibility of using PBMC-derived B cells to establish antigen-specific memory response in the elderly; and that functionality of vaccine-induced antibodies was not assessed. The authors suggested larger and longer studies of this type in the elderly to provide further evidence on the use of PCV in this population.

Presented by Dr Melina Georgousakis, Research Officer, NCIRS

Pentavalent rotavirus vaccine and prevention of gastroenteritis hospitalizations in Australia

Field EJ, Vally H, Grimwood K, Lambert SB
Pediatrics 2010;126(3):e506-e512

Rotavirus is the leading cause of severe acute gastroenteritis (AGE) in early childhood. A publicly funded, universal infant pentavalent rotavirus vaccine (RV5) program was implemented in Queensland on 1 July 2007. The study determined the vaccine effectiveness (VE) of three doses of RV5 for preventing acute rotavirus and non-rotavirus gastroenteritis (AGE) hospitalisation in the first annual birth cohort of eligible children and explored the impact on hospitalisations in all other age groups. Furthermore, the study compared hospitalisation rates before and after RV5 introduction for rotavirus and non-rotavirus AGE in all age groups. Data was collected from routinely collected, publicly funded state-based and national data sets for vaccine coverage, hospitalisation and vaccination status. In addition, data linkage was performed to calculate three-dose VE for preventing hospitalisation in the eligible age group. The study found very high three-dose VE (89.3%–93.9% for any/primary diagnosis) for preventing rotavirus hospitalisation and 62.2%–63.9% (for any/primary diagnosis) VE for preventing non-rotavirus AGE hospitalisation. There were reductions in rates of rotavirus hospitalisation in those younger than 20 years and non-rotavirus AGE hospitalisation in those younger than 5 years. This study provided ecological evidence of reductions in hospitalisation rates in older, unvaccinated children and adolescents (rotavirus and non-rotavirus AGE) and recommended that additional post-implementation research was required to identify means to improve three-dose vaccine coverage and to understand better the effectiveness variations in other settings.

Presented by Dr Aditi Dey, Epidemiologist, NCIRS
NOW AVAILABLE

Fact sheet for immunisation providers:
Adult vaccination

NCIRS has released a new fact sheet for immunisation providers on adult vaccination.

The fact sheet provides a summary of the current national recommendations on vaccines required during adulthood, including those funded under the National Immunisation Program (NIP) and those that are recommended in the current (9th) edition of *The Australian Immunisation Handbook*. It also highlights adults who may be at higher risk of certain vaccine preventable diseases and need additional vaccines, such as pregnant women, immigrants and healthcare workers.

A summary table is also provided in the fact sheet which can be used as a quick reference for providers in the clinical setting. This is to be used in conjunction with the *Handbook*.

The fact sheet is available on the Immunisation Resources page on the NCIRS website along with a number of other resources for immunisation providers including: fact sheets, coverage information, and educational tools.

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Supporting parental decision-making for MMR: a cluster RCT assessing the effectiveness of a web-based decision aid, originally developed by NCIRS


*University of Leeds, UK; ^Glasgow Caledonian University, UK; **NHS Leeds, UK; ^^Health Protection Agency, UK

This trial has been carried out in collaboration with NCIRS and the original aid developed by NCIRS is available on the website at: http://www.ncirs.edu.au/immunisation/education/mmr-decision/index.php

In the UK, public concern about the safety of the MMR vaccine continues to impact on coverage although the sharp decline in uptake has begun to level out. First and second dose uptake rates remain short of that required for population immunity and research consistently shows that parents lack confidence in making an informed MMR decision. Decision aids are evidence-based tools designed to support informed decision-making. This parent-centred approach is consistent with UK health policy.

This cluster RCT aimed to test whether a web-based MMR decision aid (developed by NCIRS) when compared with an MMR leaflet and usual care improved informed parental decision-making and vaccine uptake. The cluster RCT recruited 250 parents of a first child aged 3 to 12 months via GP practices across five Primary Care Trusts in West Yorkshire. GP practices were randomised to MMR decision aid or MMR information leaflet or usual care. Parents completed postal questionnaires at baseline and 2 weeks post intervention to record informed decision-making (decisional conflict), the primary outcome. Vaccine uptake data (i.e. the secondary outcome) is currently being collected from GP practices.

Preliminary analysis suggests a greater decrease in decisional conflict for the decision aid group compared to the information leaflet and usual care groups. If the web based decision aid is found to be effective in supporting decision-making and improving uptake, it could be made routinely available to parents via primary care.

This work was funded in the UK by the National Institute for Health Research, Research for Patient Benefit Programme (PB-PG-0107-12048).

For further details, please contact Dr. C Jackson, Senior Research Fellow, School of Healthcare, University of Leeds, UK c.j.jackson@leeds.ac.uk
Some recent publications


Booy R, Van Der Meeren O, Ng SP, Celzo F, Ramakrishnan G, Jacquet JM. A decennial booster dose of reduced antigen content diphtheria, tetanus, acellular pertussis vaccine (Boostrix™) is immunogenic and well tolerated in adults. Vaccine 2010;29:45-50.


Ward K, Seale H, Zwar N, Leask J, McIntyre CR. Annual influenza vaccination: coverage and attitudes of primary care staff in Australia. Influenza and Other Respiratory Viruses October 2010 [Epub ahead of print].

Complete list available at www.ncirs.edu.au