Welcome to the third issue of the PAEDS network newsletter. PAEDS continues to grow and develop rapidly with many achievements over the last year. One exciting accomplishment has been the launch of our new website: www.paeds.edu.au. Please visit us there for copies of this newsletter and more information on PAEDS.

In this issue you will find updates on current conditions and new conditions under surveillance through PAEDS. These updates demonstrate the exceptional value of PAEDS, which enables timely collection of detailed clinical data, vaccination history and laboratory results in the same child. This breadth of information is typically not available through other surveillance systems.

PAEDS has recently entered into a collaboration with the Influenza Complications Alert Network (FluCAN). Princess Margaret Hospital in Perth and the Children’s Hospital at Westmead in Sydney will join FluCAN in an important initiative to contribute influenza complications data in children. Thank you to Associate Professors Allen Cheng, Kristine Macartney and Christopher Blyth for their efforts in establishing this new partnership.

Influenza surveillance is not new to PAEDS. Our NHMRC-funded project, which provided valuable data on influenza hospitalisations in children during the 2009 H1N1 pandemic, was selected as one of NHMRC’s “10 of the Best Research Projects for 2013” – a prestigious national recognition.

After a successful pilot at the Children’s Hospital Westmead site, the Australian Childhood Encephalitis study (ACE) has now been rolled out to all 5 PAEDS sites. A first for Australia, this study will describe the aetiology, clinical characteristics, risk factors and outcomes of encephalitis to inform diagnostic guidelines. The pilot attests to the exceptional efficiency of using surveillance nurses to identify relevant cases of childhood encephalitis. Congratulations to the study leaders Professor Cheryl Jones and Dr Philip Britton and the PAEDS surveillance nurses!

PAEDS further refined its governance structure, by establishing the PAEDS Reference Group to provide strategic advice to the PAEDS network. We are pleased that Professor Robert Hall from Monash University, an esteemed epidemiologist, has agreed to take on the role of independent chair. The Reference Group consists of state and commonwealth government representatives, PAEDS investigators and independent members with expertise in disease surveillance. This group met for the first time in October 2013, and again in May 2014.

In November, the PAEDS network held its annual face to face meeting in Sydney where PAEDS investigators and surveillance nurses were joined by representatives from the departments of health participating in PAEDS. The annual face-to-face meeting enables PAEDS to report on achievements and to plan for the coming year. The value of PAEDS in informing national immunisation policy and in monitoring specific adverse events following immunisation was clearly apparent. However, long-term sustainability of PAEDS infrastructure remains a challenge for PAEDS and its stakeholders, and is being explored through a range of initiatives.

In early 2014, PAEDS began data collection via a new web-based database, built specifically for PAEDS using the WebSpirit platform, housed at the Kids Research Institute at the Children’s Hospital at Westmead. This provides important infrastructure to facilitate more timely data entry and reporting. We thank Dr Lieu Thinh and Mr Michael Emanooeden for their assistance in this important initiative. Most importantly we would like to thank our PAEDS network manager, Ms Jocelynne McRae, who led the project and developed all of the electronic case report forms now used by all PAEDS sites. A big thank you also to all of the surveillance nurses for trialling the data entry forms and providing advice for improvements. A very impressive effort by all!

Finally we are proud to report that the PAEDS network will have a significant presence at the Public Health Association of Australia (PHAA) 14th National Immunisation Conference, 17 - 19 June, 2014 in Melbourne. Seven PAEDS abstracts will be presented as well as a brief face-to-face meeting for network members.

We look forward to more exciting developments for PAEDS in the future.
**PRESENTATIONS at the PHAA 14th National Immunisation Conference, Melbourne 2014**

**Febrile seizures following measles and varicella containing vaccines in young Australian children**
Authors: Nicholas Wood, Lieu Trinh, Heather Gidding, Han Wang, Jocelynne McRae, Peter Richmond, Helen Marshall, Chris Blyth, Mike Gold, Jim Buttery, Nigel Crawford, Michael Nissen and Kristine Macartney

**Febrile seizures following MMRV combination vaccine in young Australian children**
Authors: Nicholas Wood, Lieu Trinh, Han Wang, Heather Gidding, Jocelynne McRae, Jim Buttery, Nigel Crawford, Helen Marshall, Mike Gold, Peter Richmond, Chris Blyth, Michael Nissen, Yvonne Zurynski, Elizabeth Elliot and Kristine Macartney

**Intussusception following the introduction of rotavirus vaccine in Australia: clinical features and outcomes**

**Paediatric Active Enhanced Disease Surveillance (PAEDS) within our hospitals: A nurse’s view of successes and challenges**
Authors: J Murphy, J McRae, C Heath, A McMinn, C Robins, S Dougherty, K Orr, D Lee, M Walker, C Orr

**Paediatric Active Enhanced Disease Surveillance (PAEDS) can validate ICD-coded hospitalisation data on serious paediatric conditions**
Authors: Lieu Trinh, Jocelynne McRae, Yvonne Zurynski, Kristine Macartney, Peter McIntyre, Robert Booy, Nicholas Wood, Peter Richmond, Christopher Blyth, Mike Gold, Helen Marshall, Nigel Crawford, Jim Buttery, Michael Nissen and Elizabeth Elliott

**Aetiology of childhood encephalitis in Australia: results from a 7-month pilot study in NSW**
Authors: Britton PN, Dale RC, Elliott E, Festa M, Macartney K, Booy R, Jones CA

**Surveillance for childhood encephalitis in Australia: evaluation of NSW pilot study**
Authors: Britton PN, Dale RC, Elliott E, Festa M, Macartney K, Booy R, Jones CA

**PAEDS CONDITIONS UNDER SURVEILLANCE**

PAEDS continues to conduct surveillance for acute flaccid paralysis (AFP), varicella and herpes zoster, pertussis and intussusception (IS). Since our last newsletter, publication of a second landmark Australian paper (Carlin et al, CID 2013) demonstrating the increased but still relatively low risk of intussusception following rotavirus vaccines has occurred, including some data obtained by PAEDS and building on the original PAEDS analysis. PAEDS is currently undertaking new analyses on the clinical characteristics of the approximately 500 IS cases collected to date. Associate Professor Jim Buttery will present preliminary findings at the National Immunisation Conference in Melbourne in June 2014.

A more detailed update on 3 of our more recently added PAEDS conditions follows:

1. **Febrile seizures**

Febrile seizures (FS) usually occur in children aged 6 months to 6 years, peaking in the second year of life and are triggered by a sudden change in temperature. Approximately 2-5% of children in this age group will have a FS at some time. Most FS are caused by a high temperature due to a viral illness, however in some cases FS may occur in association with recent vaccination.

The study involves 2 components:

- Retrospective FS surveillance from January 2012 to April 30th 2013 gathering data on ICD-coded cases, with the aim of analysing the risk of FS post MMR and monovalent varicella vaccines using the self-controlled case series method, and;
- Prospective FS surveillance from May 1st 2013 with the aim of analysing the risk of FS post MMRV, the 4-in-1 combination vaccine which was added to the National Immunisation Program from July 1 2013 at the scheduled age of 18 months.

FS is a common condition and PAEDS surveillance nurses have been very busy prospectively identifying FS cases in children aged up to 5 years. For these cases, enhanced clinical and epidemiological information is gathered, including timing of the seizure in relation to vaccination.

In the retrospective surveillance, data on 1,946 unique FS episodes in children aged 0-5 years have been collected with a peak age of 18 months. Preliminary findings are consistent with the already known increased risk of FS shortly after MMR vaccination, and will be presented at the National Immunisation Conference.

Prospective surveillance from May 1st 2013 to January 31st 2014 identified 1331 FS cases – an enormous effort! More cases have been gathered since and analysis has commenced. Stay tuned for findings from this data in future editions of the PAEDS newsletter.
Children with FS will also be approached for entry into a study led by Dr Nick Wood (NHMRC Project Grant 1049557) that aims to determine the risk of post vaccination FS (PVFS) and to comprehensively categorise and describe the clinical, genetic and developmental outcomes among children who have experienced a PVFS.

2. Australian Childhood Encephalitis

PAEDS commenced national surveillance for childhood encephalitis in 2014 under the leadership of Professor Cheryl Jones and Professor Robert Booy. All PAEDS sites have received ethics approval and started recruiting between February and April. In addition to clinical surveillance, consent is being sought for specimen collection and neuro-developmental follow-up. The study is administered through the PAEDS coordinating centre (NSW) and the Australian Childhood Encephalitis (ACE) study team including Dr Philip Britton, Dr Gulam Khandaker and Ms Uet Yu.

Twenty-two cases have been recruited to the study to May 2014 and most with clinical specimens salvaged. This is fantastic progress. Findings from this study will also be presented at the upcoming National Immunisation Conference.

3. Influenza

From April 2014, two PAEDS sites – The Children’s Hospital at Westmead (Sydney) and Princess Margaret Hospital (Perth) – are participating in active hospital-based surveillance for influenza with FluCAN (the Influenza Complications Alert Network). FluCAN is a rapid alert system for severe respiratory illness that commenced in 2009 and maintains a real-time sentinel hospital surveillance system for acute respiratory disease requiring hospitalisation. It currently operates across approximately 15 hospitals and has mainly assessed influenza in adult patients. Given the high burden of influenza in children, this surveillance promises to provide much needed, enhanced data on the complications of influenza in children, as well as to assess vaccine effectiveness in this age group. Of note, PAEDS investigators (A/Prof Chris Blyth and Prof Peter Richmond) were lead investigators on a recent WA study reporting high influenza vaccine effectiveness in children < 5 years of age, including those < 2 years of age (Blyth, Pediatrics 2014).

This exciting new collaboration between FluCAN and PAEDS promises to even further grow our national expertise in the areas of influenza and influenza vaccine research. We particularly thank A/Prof Allen Cheng from FluCAN and the Australian Government Department of Health’s Surveillance Branch for helping build this important new partnership.

CELEBRATING PAEDS SUCCESS

NHMRC’s 10 of the Best Research Projects for 2013

The team involved in the PAEDS influenza study undertaken during the 2009 H1N1 pandemic has been recognised as leading one of NHMRC’s “10 of the Best Research Projects 2013.” PAEDS was able to rapidly respond to the 2009 influenza pandemic by adapting the existing Australian Paediatric Surveillance Unit influenza surveillance protocol and case report form. With funding via an NHMRC pandemic special initiative grant and additional funding from NSW Health, information on 601 hospitalised influenza cases were collected through the following PAEDS hospitals: The Children’s Hospital at Westmead, Sydney; Royal Children’s Hospital, Melbourne; Women’s and Children’s Hospital in Adelaide; and Princess Margaret Hospital in Perth. With additional funding from NSW Health, two non-PAEDS hospitals were included: the John Hunter Children’s Hospital in Newcastle and the Sydney Children’s Hospital in Randwick.

The study demonstrated poor seasonal influenza vaccination rates among children with predisposing chronic conditions for whom influenza vaccination is recommended and funded under the National Immunisation Program. Serious neurological, cardiac and respiratory complications occurred not only in children with predisposing chronic conditions, but also in previously healthy children. The use of antibiotics was high, in the context of delayed confirmation of influenza infection by laboratory testing and absence of confirmed bacterial co-infection in many cases. The use of influenza specific antivirals was infrequent, and when used they were given late in the course of illness, often after severe complications had developed, suggesting a reluctance to use these treatments in children.

Investigators on the NHMRC grant included Elizabeth Elliott, Robert Booy, Peter McIntyre, Yvonne Zurynski, Jim Buttery, Peter Richmond, Michael Gold, Helen Marshall, Jennifer Royle, and Nicholas Wood. We would like to acknowledge the support provided by Dr Gulam Khandaker, Dr Greta Ridley, Dr Tony Walls and Dr Bruce Whitehead in the surveillance efforts and analysis and interpretation of data for this project.


ANNUAL PAEDS MEETING

The annual PAEDS face-to-face meeting will be held once again towards the end of 2014. This meeting will include all PAEDS Investigators, PAEDS staff and representatives of the PAEDS stakeholders, including various Department of Health representatives.

Left: PAEDS F2F meeting held in November 2013
PAEDS DATA MANAGEMENT

In February 2014, PAEDS launched a new data management platform, WebSpirit, supported by the Paediatric Trials Network of Australia. This new PAEDS data capture system was developed and extensively tested in 2013 to create electronic case report forms and secure data storage. The user interface provides a high quality platform that allows for data to be entered by nurses at each site in real time and for data extraction by the coordinating centre for reporting and analysis. WebSpirit replaces the previously used Access database; it removes the need for data uploads from sites into the master database and provides special built in features for quality assurance monitoring and maintenance of a high level of data integrity.

WEBSITE LAUNCHED

PAEDS recently launched our brand new website www.paeds.edu.au which went live on the 7th of May. The website features information about the aims of PAEDS, conditions under surveillance and who makes up PAEDS network. Our important funder partners and collaborators are acknowledged.

In addition, there is a helpful list of PAEDS-related publications categorised conditions under surveillance and our newsletters. We welcome your feedback on the website and look forward to adding more content and updates over time.

WELCOME NEW STAFF

The PAEDS network welcomes the following new staff members:

Margie Gibson  Cazz Finucane  Sharon Tan  Helen Knight  Vyoma Patel
Registered Nurse  Registered Nurse  Clinical Nurse Specialist, NSW  Registered Nurse  Data Entry
VIC  WA  NSW  NSW

PAEDS publications* (2013 & 2014)

*Citing all primary PAEDS publications and selected studies that include PAEDS data. For a full list of all PAEDS publications please visit our website: www.paeds.edu.au


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