Welcome to the first edition of the Paediatric Active Enhanced Disease Surveillance (PAEDS) newsletter. Although excellent national laboratory and public health surveillance systems are currently operating in Australia, very few provide timely, detailed clinical data or the opportunity for simultaneous collection of biological specimens. To address this gap, the Australian Paediatric Surveillance Unit (APSU) and the National Centre for Immunisation Research and Surveillance (NCIRS) developed a hospital-based active surveillance system - PAEDS.

PAEDS commenced in 2007 as a pilot project and has grown substantially over the last 5 years. Landmark studies arising from PAEDS surveillance to date have demonstrated a small but significant risk of intussusception (a rare form of bowel blockage) following rotavirus vaccination, and described the clinical burden of pandemic influenza in children. We are currently in a growth phase, which has seen the introduction of a formal governance structure, the planned addition of a PAEDs site in Queensland and inclusion of new conditions under surveillance, such as pertussis. We hope you enjoy our introductory newsletter, and look forward to sharing more of our work with you.

Director APSU, Professor Elizabeth Elliott
Director NCIRS, Professor Peter McIntrye

OVERVIEW

The PAEDS network conducts active, hospital based surveillance to collect enhanced data on serious vaccine-related childhood conditions for which data are not readily available using existing surveillance mechanisms.

PAEDS consists of a network of clinicians and public health researchers in four Australian tertiary paediatric hospitals: The Children’s Hospital at Westmead, Sydney; Royal Children’s Hospital, Melbourne; Women’s and Children’s Hospital, Adelaide; and Princess Margaret Hospital, Perth. PAEDS is currently working with investigators in Queensland to establish a fifth PAEDs surveillance site at the Royal Children’s Hospital from July 2012.

The PAEDS system is based on the Canadian Immunisation Monitoring Program Active (IMPAct) which is well suited to the Australian environment. Similar to Canada, Australia has a geographically dispersed population but a large majority of children with serious illnesses are referred and admitted to large paediatric hospitals, enabling ease and completeness of case ascertainment.

PAEDS is funded by the Australian Government Department of Health and Ageing. In addition, from mid 2011, the state health departments of the participating sites, New South Wales, Victoria, Western Australia, South Australia also agreed to contribute annual funding to PAEDS. Queensland Health will join from mid 2012. This has enabled the expansion of PAEDS activities, including addition of new conditions for surveillance and increased capacity to rapidly respond to urgent issues.

KEY ACTIVITIES OF PAEDS

Conditions under surveillance

Acute flaccid paralysis

Surveillance for acute flaccid paralysis (AFP) has been conducted in PAEDS centres since 2007 and these centres contribute the majority of cases to the Polio Expert Panel of the Department of Health and Ageing. This data has contributed to Australia fulfilling requirements for WHO-required AFP surveillance as part of the Global Polio Elimination Strategy. It is planned that AFP surveillance be broadened to include potential...
has been submitted for publication.

Diseases (WSPID) in Melbourne in November 2011 and Congress of the World Society for Paediatric Infectious Analysis obtained to date was presented at the 7th World important means to estimate vaccine effectiveness. Immunisation Program in 2005 and is also a potentially since the introduction of varicella vaccines to the National for a better understanding of the epidemiology of varicella of biologic samples to perform virus genotyping, will allow and vaccination status. This, together with the collection and.EXCEPTED is the only systematic prospectively collected data on hospitalised varicella in Australia, including risk factors and vaccination status. This, together with the collection of biologic samples to perform virus genotyping, will allow for a better understanding of the epidemiology of varicella since the introduction of varicella vaccines to the National Immunisation Program in 2005 and is also a potentially important means to estimate vaccine effectiveness. Analysis obtained to date was presented at the 7th World Congress of the World Society for Paediatric Infectious Diseases (WSPID) in Melbourne in November 2011 and has been submitted for publication.

Hospitalised varicella
Approximately 90% of varicella cases occur in children less than 15 years of age with at least 1% of these experiencing severe complications including secondary bacterial infections, central nervous system manifestations, pneumonitis and death. PAEDS provides the only systematic prospectively collected data on hospitalised varicella in Australia, including risk factors and vaccination status. This, together with the collection of biologic samples to perform virus genotyping, will allow for a better understanding of the epidemiology of varicella since the introduction of varicella vaccines to the National Immunisation Program in 2005 and is also a potentially important means to estimate vaccine effectiveness. Analysis obtained to date was submitted for publication.

Hospitalised pertussis
During 2011, PAEDS investigators developed a protocol for active surveillance of hospitalised pertussis, including gathering data on the clinical and laboratory features of such cases. In addition, information on the vaccination history of pertussis cases and their contacts will be collected and analysed, and clinical samples will be obtained for genetic analysis (to be done at the University of New South Wales). Enhanced clinical and epidemiological data on pertussis is important to further inform vaccine strategies in the management of Australia’s sustained pertussis epidemic. Hospitalised Pertussis surveillance will commence at the PAEDS sites in 2012.

Additional surveillance activity
H1N1 Pandemic 2009
In June 2009 the PAEDS network was able to quickly respond to the H1N1 2009 Pandemic with the support of an NHMRC H1N1 Special Initiative Grant, and an additional grant from NSW Health which enabled surveillance in 2 additional hospitals in NSW, John Hunter Children’s Hospital, Newcastle and Sydney Children’s Hospital, Randwick. PAEDS demonstrated capacity to ramp-up the surveillance effort at relatively short notice, by bringing additional resources into play: in the 4 months June to September 601 children hospitalised with influenza were recruited. This is likely to be the largest case series of children admitted to hospital with laboratory confirmed influenza. A report was presented to the NHMRC in December 2009 and to date five publications have resulted.

Analysis of influenza vaccine adverse events
The PAEDS network helped gather data on fever and febrile convulsions in children presenting to the four participating hospitals in March–April 2010 to contribute to the analyses conducted during the investigation into the unexpected adverse events following seasonal influenza vaccine in 2010. The high risk of fever and febrile convulsions was only associated with one brand of influenza vaccine (Fluvax®, CSL Biotherapies), which is now no longer recommended for use in young children.

New analysis of this data using the self-controlled case series method will also be presented at the Public Health Association of Australia National Immunisation Conference in July 2012; this method provides an excellent model for conducting assessment of the incidence of serious adverse events related to influenza or other vaccines in children.

Guillain Barré syndrome
The World Health Organization (WHO), in collaboration with the US Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA), began a novel worldwide collaborative study on the incidence of Guillain Barré syndrome (GBS) following pandemic
H1N1 vaccine in early 2010. As part of this study, the PAEDS group has submitted data on GBS cases (confirmed using Brighton criteria) from each PAEDS site. It is anticipated that data from more than a dozen countries will be included in the final data set; results of the analysis are expected in 2012.

Planning for new studies

Acute Childhood Encephalitis

Encephalitis is a complex neurological syndrome caused by inflammation of the brain, which is usually infection-related ("infectious encephalitis"). Children are among those most severely affected. However, there is limited contemporary information about the causes of encephalitis in children worldwide. It is critical to collect this information actively and prospectively because while viruses are the major known cause of infectious encephalitis, using current standard methodologies, a diagnosis is not made in up to 70% of cases. This study will provide information on psychological and physical disease burden, with scope for studies of long term outcome, economic impact and genetic susceptibility.

PAEDS team past and present

The PAEDS team includes staff at The Children’s Hospital at Westmead (CHW), the Royal Children’s Hospital Melbourne (RCH), the Women’s and Children’s Hospital Adelaide (WCH), Princess Margaret Hospital Perth (PMH) and the Royal Children’s Hospital Brisbane (From July 2012). The Coordinating centre for PAEDS is located at the Children’ Hospital Westmead, Sydney.

PAEDS warmly welcomes new staff members Dr Marie Deverell, Ms Jenny Murphy and Ms Jocelynne McRae who have joined the PAEDS coordinating centre at the Children’s Hospital Westmead. Marie joined the PAEDS group in January 2012 as a Senior Research Officer for PAEDS and the Australian Paediatric Surveillance Unit (APSU). Marie hails from Western Australia and has a PhD in Paediatrics and Child health. She has previously worked at the Public Health Advocacy Institute of Western Australia, the Western Australia Audit of Surgical Mortality and the Telethon Institute for Child health Research. Ms Jenny Murphy has been acting in the role of PAEDS Nurse Coordinator since December 2011. She holds a Bachelor of Applied Science from Sydney University. Jenny has an extensive background in Immunisation research, and has worked at the Children’s Hospital Westmead for over 20 years. Ms Jocelynne McRae joined PAEDS in May 2012. Jocelynne has held recent clinical research appointments in areas including infectious diseases and childhood cancer. Jocelynne holds a Master of Health Science (Clinical data management, University Sydney) and is currently part way through a Master of Public Health (University Sydney). Jocelynne’s clinical background includes over 10 years as an intensive care nurse and laboratory science.

PAEDS would also like to acknowledge the valued contribution of our founding Nurse Coordinator, Mrs Margie Pym (2007 – 2008, pictured right) and also Ms Leanne Vidler (left) who was much valued in the role of PAEDS nurse coordinator from 2009 – 2011.

Publications & Presentations

Publications

Publications Including PAEDs Data

**Presentations**


**Current PAEDS staff members**

**Children’s Hospital Westmead, Sydney**

Professor Peter McIntyre - Director, NCIRS, Professor Elizabeth Elliott - Director, APSU, Professor Robert Booy - Head of Clinical Research, NCIRS, A/Professor Kristine Macartney - Deputy Director, of Government Programs, NCIRS
Dr Nick Wood - Clinical Research Fellow, NCIRS, A/Professor Yvonne Zurynski - Assistant Director, APSU
Ms Jenny Murphy - Research Nurse Coordinator, PAEDS, Ms Jocelynne McRae – Research Nurse Coordinator, PAEDS, Dr Marie Deverell - Senior Research Officer, APSU/PAEDS, Mr Manos Visvikis - Database Manager, APSU/PAEDS

**Royal Children’s Hospital, Melbourne**

Dr Jim Buttery, Immunisation CCRE, Dr Jenny Royle, Paediatrician, Dr Nigel Crawford, Consultant Paediatrician, Alissa McMinn, Research Assistant, Julie Quinn, Surveillance nurse, Georgie Lewis, Surveillance nurse
Leonie Hickie, Surveillance nurse, Donna Lee, Surveillance nurse, Tammy Hutchinson, Surveillance nurse, Victoria Scott, Administration Assistant

**Women’s and Children’s Hospital, Adelaide**

A/Professor Mike Gold, Senior Lecturer, University, Department of Paediatrics, A/Professor Helen Marshall, Director Vaccinology & Immunology Research Trials Unit, Ms Christine Heath, Surveillance Nurse, Ms Mary Walker, Surveillance Nurse

**Princess Margaret Hospital, Perth**

A/Professor Peter Richmond, Dr Christopher Blyth, Paediatrician, Ms Caroline Talbott, Surveillance Nurse
Ms Christine Robbins, Surveillance Nurse

**Royal Children’s Hospital, Brisbane**

Associate Professor Michael Nissen.
Other personnel to be advised.

**For More Information:**

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