10 year celebration

In June 2017 PAEDS investigators, nurses and key stakeholders came together in Melbourne to discuss and present their work of 10 years in an anniversary showcase. PAEDS, originally founded through a collaboration between the Australian Paediatric Surveillance Unit (APSU) and NCIRS has grown to surveillance at 7 sites across Australia, focusing on vaccine preventable diseases and serious childhood conditions of public health importance: Acute Flaccid Paralysis, intussusception, pertussis, varicella, febrile seizures, encephalitis, influenza, and most, recently meningococcal disease and group A streptococcal disease. Progress and outcomes from research into these conditions was presented at the showcase.

PAEDS warmly welcomed Karina Top from IMPACT as a guest. Karina shared the challenges and successes of IMPACT from 25 years of surveillance of vaccine preventable diseases and adverse events following immunisation. This was a wonderful opportunity for PAEDS to learn from our Canadian colleagues’ experiences. PAEDS also celebrated Dr Philip Britton’s PhD award for investigation of acute childhood encephalitis. We also celebrated our NHMRC partnership grant that will support additional research into understanding why children become unwell with influenza and pertussis. This grant focuses on the reasons for both vaccine failures and improves our understanding of why there may be failure to vaccinate in some cases.

Congratulations to PAEDS on 10 years and many wonderful achievements yet to come.

New PAEDS condition in 2018: Kawasaki Disease (Dr Ryan Lucas PhD student)

Kawasaki Disease (KD) is a relatively common vasculitic disease of childhood, the underlying cause of which remains elusive. The disease presents with a constellation of non-specific signs and symptoms (fever accompanied by rash, non-purulent conjunctivitis, lymphadenitis and mucosal changes, among others), but progresses to involve the coronary arteries of the heart in up to a quarter of untreated children. Timely treatment with intravenous immunoglobulin is highly efficacious at preventing the cardiac sequelae, however this treatment is resource-intensive and carries its own risks. Diagnosis of KD remains clinical and can be challenging –empiric therapy is often given on suspicion alone. We intend to undertook the largest epidemiological study of KD in Australia to date. We will be combining an analysis of a retrospective dataset collected over the previous decade with the prospective surveillance undertaken by the PAEDS network. This will be combined with an ongoing investigation into physician attitudes towards diagnosis and management to construct the clearest picture of KD epidemiology, diagnosis and management in Australia. We look forward to collaborating with the PAEDS network to help shed light on this important condition. This study is led by Dr Davinder Singh Grewal and Dr David Burgner and is supported by the Australian Red Cross Blood Service.
Flu Update (Professor Allen Cheng and Associate Professor Chris Blyth)

In 2017, with the assistance of the NHMRC and FlUCAN, PAEDS is now providing unique, timely sentinel data from all PAEDS hospitals, significantly enhancing our ability to report on influenza hospitalisations, complications and deaths. By collecting data on test-negative controls, we have the capacity to estimate vaccine effectiveness in children and significantly contribute to our understanding of vaccine effectiveness nationally. Following the biggest influenza season on record, these data are critical to informing influenza prevention strategies of the future. Analysis of the 2017 data is currently underway but early results suggest that the risk of influenza is still underestimated in the community and, despite being recommended, there is inadequate use of influenza vaccines in children, particularly high-risk children.

Social Research (Sami Carlson)

This year we undertaken a qualitative study to hear from parents whose children had been hospitalised for influenza or pertussis, to understand their reasons for the vaccination status of their child or during pregnancy if the child was less than 6 months old. We interviewed 31 parents from 3 different PAEDS sites. Recruitment of pertussis cases continues, while flu recruitment has ceased and analysis is now being undertaken. Findings from the interviews will be used to develop a questionnaire that will be distributed in all PAEDS hospitals for a case-control study in 2018 to determine the factors associated with under- or no vaccination against influenza or pertussis in children and pregnant women.

Pertussis VE (Professor Nick Wood and Dr Helen Quine)

Pertussis remains one of the most challenging vaccine preventable diseases to control. The burden of severe disease and mortality lies with unimmunised infants. Maternal vaccination is the lead strategy for current pertussis control in this group. Our PAEDS study aims to report the first nationally representative estimate of maternal vaccine effectiveness (VE) against pertussis hospitalisation using a test-negative design. Each infant case aged <6 months, hospitalised between July 2016 and December 2018 was matched to 1–3 controls by date of birth and date of laboratory testing. Maternal vaccination status was verified. The unadjusted vaccine effectiveness against hospitalised pertussis in infants aged <6 months was 69.9% (95% CI: 6.4–89.7%). Further case ascertainment is planned to allow for more detailed analysis in subgroups such as infants born to mothers requiring ICU admission. This result is comparable to a recent Australian vaccine effectiveness estimate in children under 6 months old. Importantly maternal vaccination is known to be higher in protecting children under 2 months old.

IGAS Update of first year (Dr Nigel Crawford)

Surveillance of Invasive Group A Streptococcus Disease (IGAS) rolled out to all PAEDS sites in 2016 - 2017. For the period 1st July 2016 to 31st December 2016 there were 45 children hospitalised with laboratory confirmed Invasive Group A Streptococcus across all PAEDS sites. 31 (69%) cases were male, and 31 (69%) were under the age of 5-years. 3 (6%) were of Aboriginal or Torres Strait Islander background. The most common site for positive Group A Streptococcus disease detection was blood (71%), pleural fluid (13%), joint fluid (2%), and 8 cases (18%) from ‘other’ sites including bone and a brain abscess. 19 children (42%) were admitted to ICU. Two patients (4%) sadly died and eight patients (18%) were reported to have an ongoing deficit (neurological or physical).

The IGAS PAEDS data is being used as part of a co-ordinated effort to make it a national notifiable condition; currently it is only notifiable in two jurisdictions (Queensland and the Northern Territory).

We would like to thank the Shepherd Foundation for their generous grant which has allowed us to pilot the study at RCH Melbourne as well as expansion to all PAEDS sites.

IMD Update of first year (Associate Professor Helen Marshall)

The aim of meningococcal disease surveillance is to provide detailed clinical outcomes (sequelae) from meningococcal disease as this is not usually collected by other surveillance programs. We will identify any associations with sequelae and monitor any changes in disease with the increase in serogroup W and Y disease and also monitor the effects of introduction of the meningococcal vaccine programs. From 2016-2017, 26 children with meningococcal disease have been enrolled into the study nationally. 15 cases were due to serogroup B, six due to serogroup W, one due to serogroup Y and four were due to unknown types. The majority (77.2% 2016) were in the 0-4 year age group. Sequelae included deafness, skin lump, amputation/deformity and arthritis, neurological problems and seizures.

RSV pilot site – Melbourne (Dr Nigel Crawford)

Respiratory Syncytial Virus (RSV) is a common viral infection, most frequently seen in young infants as the clinical presentation of ‘bronchiolitis’. There are a number of RSV vaccines in the pipeline. In August 2017, with support from the WHO Influenza Collaborating Centre, we commenced RSV surveillance at The Royal Children’s Hospital, Melbourne (RCH). The main aims are to:
1. Establish a hospital based RSV sentinel surveillance site, contributing to WHO led global data collection
2. Determine the proportion of severe acute respiratory infections (SARI) cases hospitalised at RCH, that are RSV positive.

The first three months of pilot data (1 Aug-30 Oct 2017) identified 16% (88/536) of SARI cases as being caused by RSV, including 24 intensive care admissions. We will continue RSV surveillance at RCH in 2018 and aim to expand to more PAEDS sites.

PAEDS-Vietnam

A recent article published in BMJ described the implementation of PAEDS-Vietnam, a new active hospital-based surveillance system. This system has been modelled based on the PAEDS network in Australia. It is wonderful to see PAEDS creating a successful platform that is being leveraged across the globe. More information can be found at: http://bmjopen.bmj.com/content/bmjopen/7/11/ e017742.full.pdf

New Members/PHD Students

The PAEDS network welcomes the following new staff members:

Gowri Selvaraj (Monash Children’s Hospital)

Gowri Selvaraj is a study coordinator based at Monash Kids Research at Monash Children’s Hospital Victoria. She has a Bachelor of Science (Hons) (Microbiology & Immunology) and a Master of Public Health (Epidemiology & Biostatistics). She has over 10 years’ experience as a research scientist working in infectious diseases. She has worked in population health research for the last 8 years namely vaccine safety surveillance at SAEVEC. Gowri is happy to be involved and learn more about the PAEDS project and collaborate with all those involved.

Karen Bellamy (Monash Children’s Hospital)

Karen Bellamy is a midwife, immunisation nurse, maternal and child health nurse and research nurse as well as working in travel medicine. Karen has a Masters in Child Family and Community and is passionate about childhood and neonatal immunisation.

Lauren Francis (Royal Darwin Hospital)

Lauren is a registered nurse with a background in PICU and experience in immunisation. She holds post graduate qualifications in Paediatric Intensive Care Nursing and has an interest in infectious diseases and childhood sepsis. Beck began working in research 5 years ago and was excited to join the PAEDS team earlier this year.

Dr Ryan Lucas (The Children’s Hospital at Westmead)

Ryan is a paediatric registrar based at The Children’s Hospital at Westmead in Sydney. He is enthusiastic about general paediatric medicine, with a strong focus on bringing sound biomedical and epidemiological principles to the bedside. Ryan is undertaking a PhD at Sydney University investigating the state of Kawasaki Disease in Australia. He is keenly looking forward to joining the PAEDS team in 2018.
PAEDS publications* (2016-2017)

* This list includes all recent primary PAEDS publications and selected studies that include PAEDS data or are related to PAEDS studies. For a full list of all PAEDS publications please visit our website (paeds.edu.au).

- Cheng AC, Macartney KK, Waterer GW, Kotsimbos T, Kelly PM, Blyth CC. Repeated vaccination does not appear to impact upon influenza vaccine effectiveness against hospitalization with confirmed influenza. Clinical Infectious Diseases 2017;64:1564-72
- McRae J, Quinn HE, Macartney K. Paediatric Active Enhanced Disease Surveillance (PAEDS) annual report 2015: prospective hospital-based surveillance for select vaccine preventable diseases and adverse events following immunisation. Communicable Diseases Intelligence In press

For more information
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