Australian Paediatric Surveillance Unit annual report, 2012

Marie Deverell, Yvonne Zurynski, Elizabeth Elliott, on behalf of all chief investigators of APSU surveillance studies

Introduction

This report provides an update on the surveillance conducted by the Australian Paediatric Surveillance Unit (APSU) during the period 1 January to 31 December 2012. The APSU, now in its 20th year of operation, continues to facilitate national active surveillance of uncommon communicable diseases of childhood. In 2012, the APSU conducted national surveillance for acute flaccid paralysis (AFP), congenital cytomegalovirus (cCMV), congenital rubella, perinatal exposure to HIV and HIV infection, neonatal herpes simplex virus (HSV) infection, congenital and neonatal varicella, severe complications of varicella and juvenile onset recurrent respiratory papillomatosis (JoRRP). Surveillance for the severe complications of influenza was undertaken during the influenza season June to September.

Methods

Australian Paediatric Surveillance Unit

The APSU uses standardised protocols and case definitions, which are developed in collaboration with the study investigators who provide specialised clinical expertise for each of the conditions studied. This methodology has been previously described in detail.[1] Protocols and case definitions for all conditions under surveillance are available from the APSU web site (www.apsu.org.au). Currently, 1,396 paediatricians and other child health clinicians participate in active reporting in response to a monthly report card sent by the APSU. Response rates for participating paediatricians in 2012 have remained above 90%.

Paediatric active enhanced disease surveillance

The Paediatric Active Enhanced Disease Surveillance (PAEDS) system is a joint initiative between the APSU and the National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases. PAEDS is a hospital-based surveillance system reliant on active case ascertainment by specialist surveillance nurses, has operated in four tertiary paediatric hospitals in four states since 2007: New South Wales, Victoria, South Australia and Western Australia. The Royal Children's Hospital, Brisbane joined PAEDS in mid 2013. PAEDS complements surveillance conducted by APSU for acute flaccid paralysis.[2]

Results

Acute flaccid paralysis

Data from APSU and the PAEDS system are pooled and submitted regularly to the Polio Expert Committee. The target of a non-polio AFP rate of ≥1 per 100,000 children less than 15 years of age has been reached for the last 5 years (2008–2012). These data have contributed to Australia fulfilling its requirements as stipulated by the World Health Organization (WHO) required AFP surveillance as part of the Global Polio Elimination Strategy and maintenance of Polio-Free Certification by the WHO.

Congenital cytomegalovirus

There was a total of 231 confirmed cases of cCMV by the end of 2012 for the total study period. Reports of cCMV have decreased over the last few years with 31 confirmed cases reported in 2010, 24 cases in 2011 and 16 cases in 2012. McMullan et al have reported that cCMV infection is underreported in Australia. Infected infants may be asymptomatic at birth and are unlikely to be identified without screening; therefore, early screening in pregnancy and neonates is vital.[4]

Congenital rubella

During 2012 there were no notifications of congenital rubella to the APSU. The last confirmed case of congenital rubella was reported to the APSU in 2008. However, the risk of congenital rubella remains, particularly among immigrant women born in countries with poorly developed vaccination programs. We need to remain vigilant with regards to vaccination to ensure there is no resurgence of disease in those unprotected in the community, as seen with the recent outbreak of measles in New South Wales. Even though there are high immunisation rates for measles, those who were unvaccinated were more susceptible to outbreaks.[5]

Table: Confirmed cases identified in 2012 and for the total study period for each condition, and reported rates per 100,000 for the relevant child population

Condition	Date study commenced	Questionnaire returned (%)	Number of confirmed cases 2012	Reported rate for 2012 (per 100,000)	Number of confirmed cases for total study period	Reported rate for total study period (per 100,000 per annum)
Acute flaccid paralysis*	Mar 1995	100	57	1.34†	717*	0.99†
Congenital cytomegalovirus	Jan 1999	71	16	5.30‡	231	6.59‡
Congenital rubella (with defects)	May 1993	No notifications	Nil	Nil	51	0.07§
Juvenile onset recurrent respiratory papillomatosis‖	Oct 2011	57	4	0.09†	4	0.05†
Perinatal exposure to HIV	May 1993	90	75	24.87‡	544	10.81‡
HIV Infection	May 1993	No notifications	Nil	Nil	83	0.11§
Neonatal herpes simplex virus infection	Jan 1997	73	9	2.98‡	138	3.45‡
Congenital varicella	May 2006	No notifications	Nil	Nil	2	0.11‡
Neonatal varicella	May 2006	50	1	0.33	19	1.09‡
Severe complications of varicella	May 2006	50	2	0.04†	49	0.17†
Severe complications of influenza¶	Influenza season each year since 2008	95	56	1.23†	276	1.29†

* Includes all cases of acute flaccid paralysis reported via the Australian Paediatric Surveillance Unit or the Paediatric Active Enhanced Disease Surveillance. All cases have been classified by the Polio Expert Panel as 'non-polio AFP' according to World Health Organization criteria.

† Based on population of children aged less than 15 years.

‡ Based on number of births.

§ Based on population of children aged less than 16 years.

‖ Cases confirmed by clinical diagnosis.

¶ Influenza surveillance was conducted each year since 2008 during the influenza season, July to September except in the pandemic year (2009) when surveillance occurred from June to October.

All reported rates based on child population estimates published by the Australian Bureau of Statistics.[3]

All of the figures were correct at the time of submission and agreed by the chief investigators for each condition. As additional information becomes available cases may be reclassified for the current year and for previous years.

Juvenile onset recurrent respiratory papillomatosis

The APSU commenced surveillance for JoRRP in 2011. To date there have been 7 notifications to the APSU with 4 confirmed clinical cases. JoRRP is a very rare condition which usually develops in childhood and is typically found in children aged less than 12 years, with a median age of 4 years. It is the most common cause of benign neoplasm of the larynx in children and is caused by human papillomavirus (HPV) infection, with HPV 6 and HPV 11 being the 2 most common causative genotypes.[6]

Perinatal exposure to HIV and HIV infection

During 2012, 75 confirmed cases of perinatal exposure to HIV were reported to the APSU. Since May 1993 there have been a total of 544 cases of perinatal exposure to HIV infection and 83 cases

of HIV infection in neonates. There were no reports of HIV infection in children reported to the APSU during 2012.

Neonatal herpes simplex virus

In 2012, there were a total of 9 cases of neonatal herpes simplex virus (HSV), and over the total study period (January 1997–December 2012) a total of 138 confirmed cases of HSV were reported to the APSU. During 2012, the HSV study results were reviewed and the case definition was amended to include disease in infants up to 1 year of age, whereas the previous study definition only included newborns. This will enable capture of late presentations and re-presentations of HSV disease.[7]

Congenital, neonatal and severe complications of varicella

No cases of congenital varicella were reported to the APSU during 2012. There was 1 confirmed case of neonatal varicella and 2 confirmed cases of children hospitalised with severe complications of varicella reported to APSU during this period, supporting the effectiveness of the varicella vaccination program which commenced in 2005.

Severe complications of influenza

A total of 56 cases of severe complications of influenza were reported to the APSU and of these 40 (71%) were male. Most cases (70%) had influenza A. A range of complications were reported: pneumonia, encephalitis, rhabdomyolysis and seizures. Fifty-four per cent of cases were admitted to the paediatric intensive care unit and a total of 6 deaths were reported in 2012 compared with 3 deaths in 2011 and 6 deaths reported to APSU in 2009 during the H1N1 pandemic. Only 4 reported paediatric cases were vaccinated for influenza in 2012. Twenty-one cases (37.5%) had received Oseltamivir in 2012; this is much lower than during the H1N1 2009 pandemic (64%).

Conclusions and future directions

Next year will mark 20 years of national surveillance by the APSU. The APSU continues to provide valuable national surveillance data on a number of serious rare childhood diseases and in some cases is the only source of national data. The information collected by the APSU informs clinicians, policy makers and the wider community.

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Author details

Marie Deverell[1,2]
Yvonne Zurynski[1,2]
Elizabeth Elliott[1,2,3]

1. Australian Paediatric Surveillance Unit, Kids Research Institute, Westmead, New South Wales
2. Discipline of Paediatrics and Child Health, Sydney Medical School, The University of Sydney, New South Wales
3. The Sydney Children's Hospitals Network (Randwick and Westmead), New South Wales

Corresponding author: Dr Yvonne Zurynski, Assistant Director, Australian Paediatric Surveillance Unit, The Children's Hospital at Westmead, Locked Bag 4001, WESTMEAD NSW 2145. Telephone: +61 2 9845 1202/3005. Facsimile: +61 2 9845 3082. Email: yvonne.zurynski@health.nsw.gov.au

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