

Enhanced surveillance for enterovirus-associated neurological disease in children.

Report 6 – Includes surveillance data for the week ending 2 June 2013, and historical data since 1 January 2013.

Background

Enhanced surveillance to monitor neurological complications associated with enterovirus infections in children commenced in mid-April 2013 following reports of children from Northern and Eastern Sydney hospitalised with severe neurological complications of enterovirus infections, isolation of EV71 from some of these cases, and following an expert panel discussion.

The aims of the enhanced surveillance are: (1) to better describe the state-wide picture of the outbreak for the benefit of public and clinician updates; (2) to better describe the clinical presentation and progression of paediatric cases for the benefit of clinicians and to aid best practice in the early management of cases (including warning signs of severe disease and when to transfer patients), and; (3) to better describe the contribution of EV71 relative to other enteroviruses in the development of neurological complications in children with enterovirus infections.

In summary we report:

- Paediatric admissions from ED for meningitis/encephalitis remained above the yearly average for this time period.
- ED presentations (all ages) for meningitis/encephalitis were just above the usual range for this time of year.
- Three cases were admitted to the Sydney Children's Hospitals Network surveillance this week, a reduction from four admissions last week.
- Since 1 January 2013, there have been 120 cases which have met the surveillance case definition; 99 were enterovirus positive and so far 18 have had EV71 detected.
- Three deaths in children were reported between late December 2012 and early April 2013 where testing EV71 infection was detected.

Emergency Department surveillance (PHREDSS)

Surveillance focuses on patients less than 10 years of age admitted to one of the 59 NSW Emergency Departments (EDs) under PHREDSS surveillance and assigned a diagnosis of "meningitis or encephalitis".

There were 29 ED presentations diagnosed as meningitis or encephalitis, which is just above the usual range for this time of year (

Figure 1). Four of the presentations were in children under 10 years (

Figure 2), down from eight last week and just above the historical weekly average of three cases. All four cases were admitted (

Figure 3).

Presentations for hand, foot, and mouth disease (HFMD) continued to above the usual range but well below the peak in late March. Presentations were mainly in children under 10 years (Figure 4). There was an increase in HFMD of a similar scale in 2011 (Figure 4).

Figure 1. Total weekly counts of ED presentations for meningitis or encephalitis, for 2013 (black line), compared with each of the 5 previous years (coloured lines), persons of all ages, for 59 NSW hospitals.

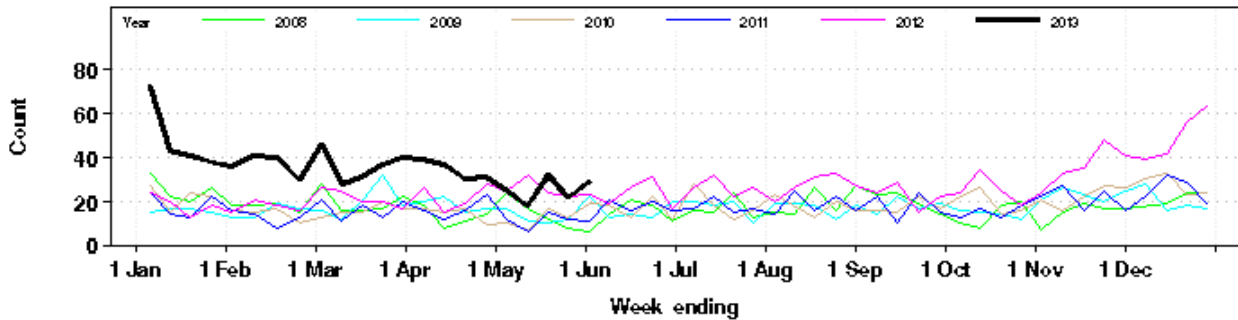


Figure 2. Total weekly counts of ED presentations for meningitis or encephalitis, for 2013 (black line), compared with each of the 5 previous years (coloured lines), children aged under 10 years, for 59 NSW hospitals.

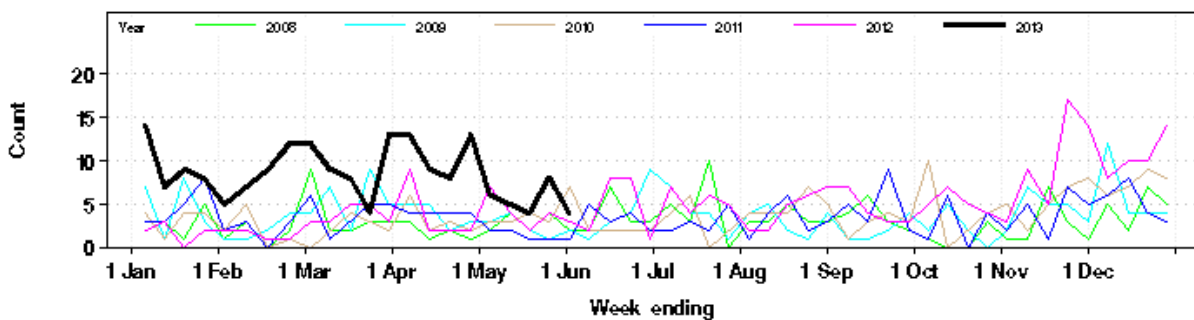


Figure 3. Total weekly counts of ED presentations for meningitis or encephalitis that were admitted, for 2013 (black line), compared with each of the 5 previous years (coloured lines), children aged under 10 years, for 59 NSW hospitals.

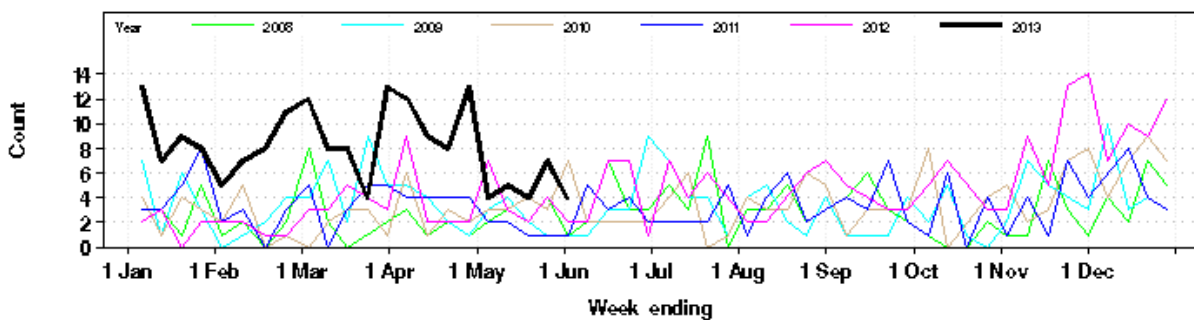
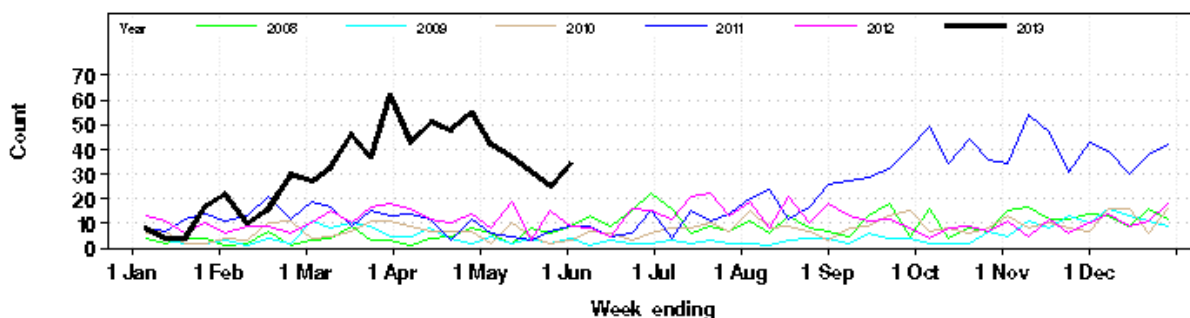


Figure 4. Total weekly counts of ED presentations for HFMD, for 2013 (black line), compared with each of the 5 previous years (coloured lines), children aged under 10 years, for 59 NSW hospitals.



Enhanced clinical surveillance - Sydney Children’s Hospitals Network

Sites: Sydney Children’s Hospital Randwick, The Children’s Hospital Westmead

Surveillance focuses on daily review for patients less than 10 years admitted with a diagnosis of meningitis/encephalitis/meningoencephalitis OR acute flaccid paralysis/transverse myelitis due to a suspected or confirmed enterovirus infection.

Three cases were reported in the week ending 2 June, down from nine cases the previous week (Figure 6). Table 1 summarises the demographic features, laboratory results and treatment outcomes for cases from the week ending 2 June and all cases since the beginning of enhanced surveillance. The most common clinical features this week were fever (three cases) and lethargy (two cases). Clinical features and discharge diagnosis for all cases since the beginning of active surveillance are shown in Figure 4 and Figure 5 respectively.

Table 1. Summary of the demographic features, laboratory results and treatment outcomes for cases admitted week ending 2 June and cumulative since 14 April, 2013

	Week ending 2 June 2013	Cumulative 14 April – 2 June 2013
Facility	3 - CHW	SCH -21 cases; CHW – 27 cases
Gender	2/3 Female (66%)	21/48 Female (44%)
Average age	9 months (range 1-24 months)	23 months (median 16 months, range 0-129 months)
Enterovirus testing	2/3 enterovirus positive (2 CSF) All pending typing	42/48 enterovirus positive, 2 pending, 3 negative 6 confirmed EV71, 37 pending
ICU Admission	0/3	5/48 (average stay 2.5 days, 3 intubated)
IVIG treatment	0/3	2/48
Other treatment	0/3 corticosteroids	7/48 corticosteroids
Outcomes (to date)	0 deaths Average LOS: 3 days	0 deaths Average LOS: 4.3 days
LHD of residence	2 x Western Sydney LHD 1 x Northern Sydney LHD	17 x Western Sydney LHD 11 x South Eastern Sydney LHD 9 x Northern Sydney LHD 4 x South Western Sydney LHD 4 x Sydney LHD 1 x Nepean Blue Mountains LHD 1 x Western NSW LHD 1 x Hunter New England LHD

Figure 4. Reported clinical features for 48 cases admitted 14 April – 2 June 2013

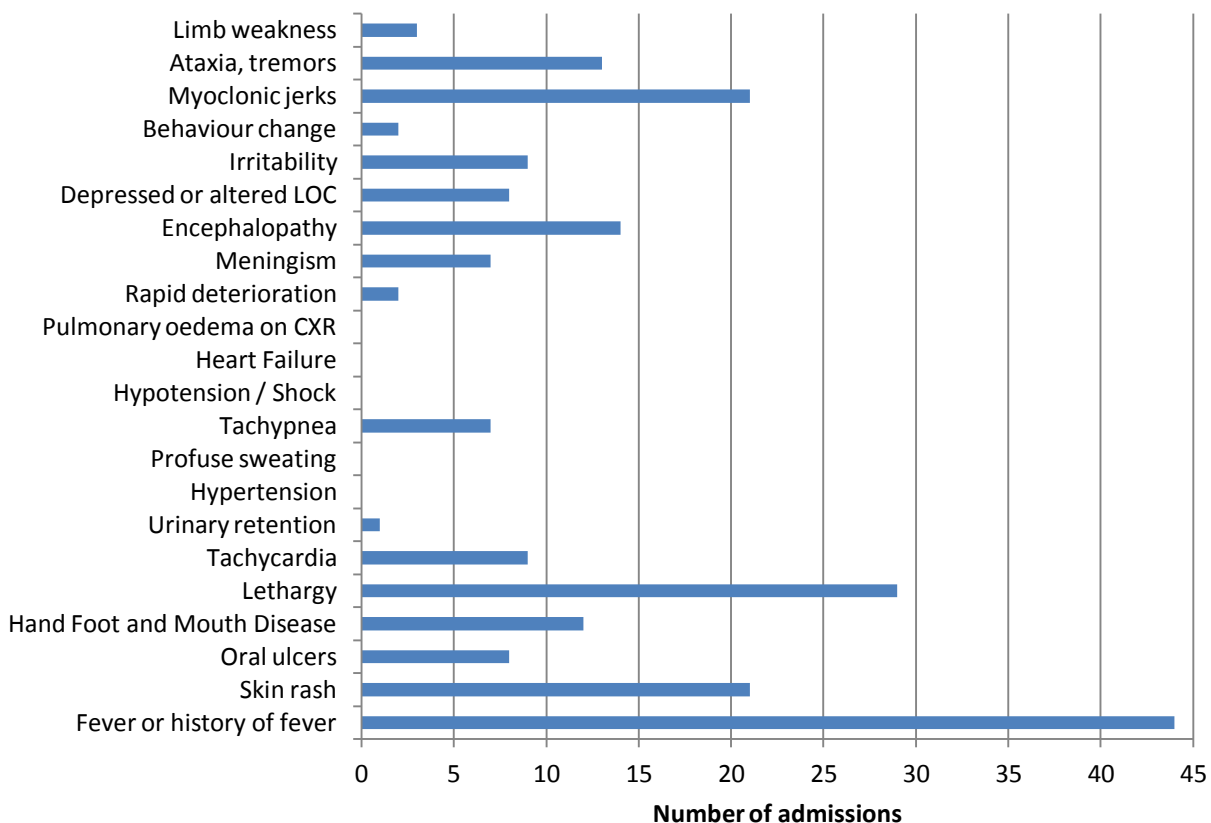
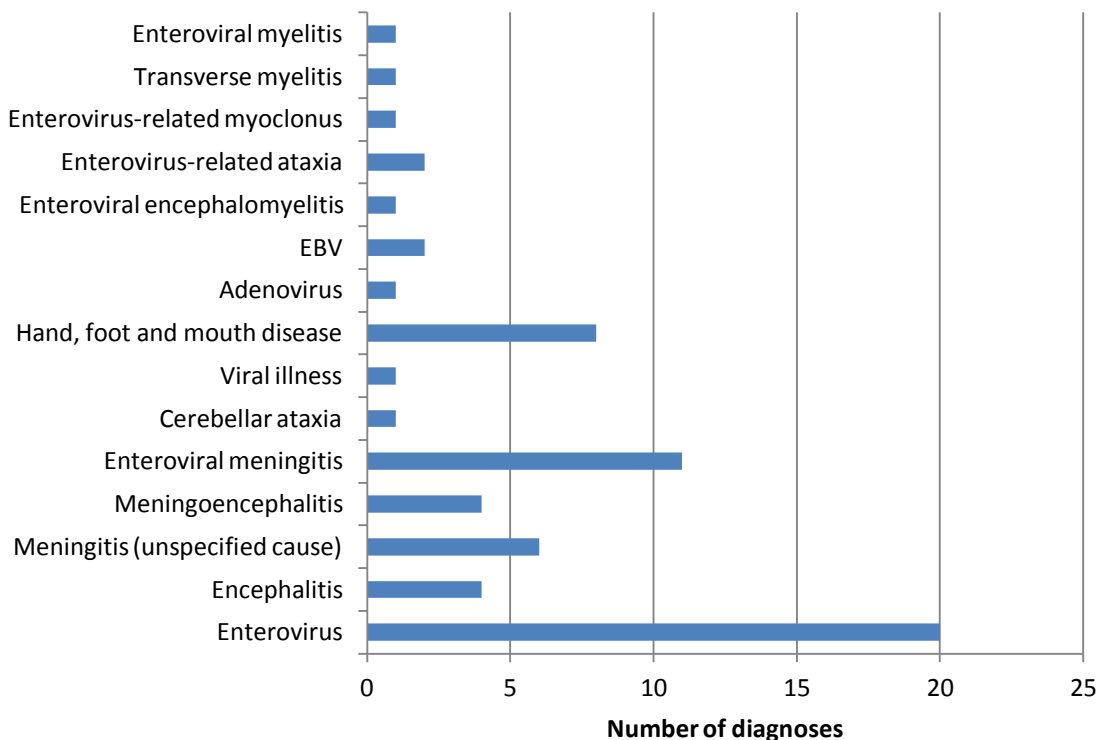


Figure 5. Diagnosis at discharge for 48 cases admitted 14 April – 2 June 2013*



*N.B. Some cases have multiple discharge diagnoses

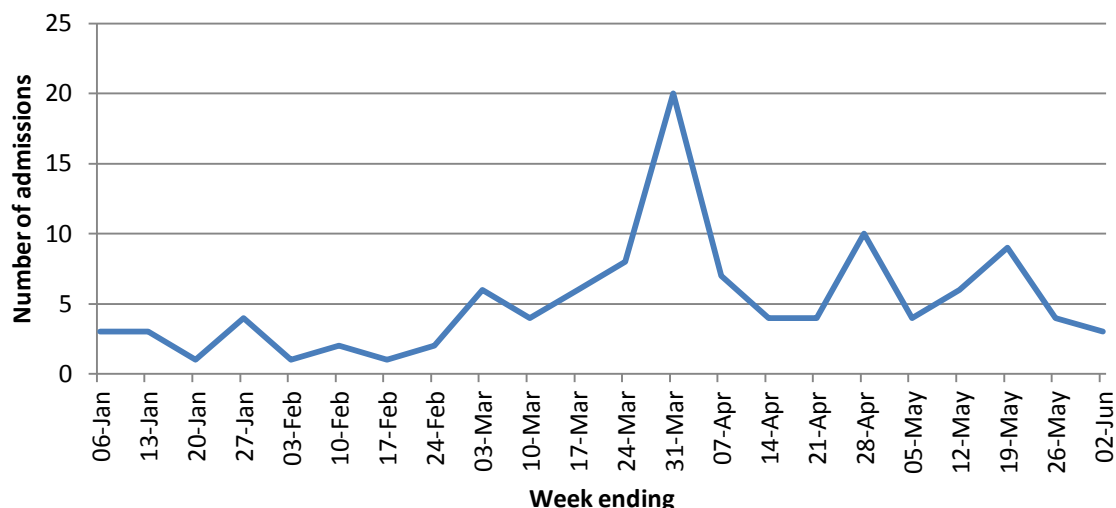
Laboratory surveillance – Enterovirus 71

Samples from all 42 enterovirus-positive cases have been referred for reference laboratory testing for the EV71 strain. EV71 was detected in eight cases and not detected in three cases, with remaining 31 typing results pending.

Cases to date in 2013

Figure 6 shows admissions to Sydney Children's Hospitals Network since 1 January, 2013 for children who met the enhanced surveillance case definition. The epidemic peaked in the week ending 31 March, and has remained lower and relatively stable until the week ending 2 June.

Figure 6. Paediatric admissions to Sydney Children's Hospitals Network with severe neurological complications suspected or confirmed enterovirus*, by week of admission.



* 99/120 cases confirmed EV. 18 cases are confirmed EV71

Laboratory surveillance of all 2013 cases

Of the 120 cases meeting enhanced surveillance case definition since 1 January 2013, 99 had laboratory-confirmed enterovirus infections, six were enterovirus negative, 13 had missing laboratory results, and two have lab results pending. Eighteen cases are confirmed EV71. It should be noted that prior to the enhanced surveillance system further typing of enterovirus results was not routine practice. Therefore, most of the typed results are from cases admitted since the beginning of enhanced surveillance on 14 April 2013.

Fatal cases

While no deaths have been reported through the enhanced surveillance system, EV71 infections have been linked to three young children who have died since December 2012.

The children were all aged under two years. The first death occurred in late December 2012 and was followed by deaths in early January 2013 and in early April 2013. EV71 infection was considered to be the cause of death in two of the cases, while the cause of death for the third case remains under investigation.