A large epidemic of Enterovirus 71 associated Hand, Foot and Mouth Disease in southern Vietnam, 2011

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Background:
Enterovirus 71 has emerged as a frequent cause of hand, foot and mouth disease (HFMD) outbreaks in Asia, and is associated with neurologic and cardiopulmonary complications, especially in children under 4 years of age. In 2011, a large outbreak of HFMD hit southern Vietnam from March onward: 110,897 cases and 166 deaths were reported across 63 provinces.

A grading system based on clinical symptoms is used to guide interventions. Children with no neurological involvement are classified as grade 1 HFMD and are usually not admitted. Children with myoclonus, observed by parents (grade 2a) or by medical staff (grade 2b) are admitted. Grade 3 and 4 is reserved for children with more severe neurological and cardiopulmonary involvement.

Methods:
Data were collected prospectively on patients with a clinical diagnosis of HFMD admitted to Children's Hospital 1 in Ho Chi Minh City, between 28th September and 30th November 2011. RT-PCR for enteroviruses, EV71 and Coxsackievirus A16 (CVA16) was performed on a subset.

Results:
Data from 3972 children were collected. 2364 (62%) of admissions were male. The median age was 20 months with 95% of cases aged under 4. On admission 2740 (72%)
were grade 2a and 322 (8.8%) were grade 2b. 134 (3.5%) admissions were grade 3 or 4 or progressed to grade 3 or 4 in hospital. There were 6 (0.16%) deaths. Virological data was collected on samples from 174 (4.5%) children with severe disease. 132 (76%) of these were EV71 RT-PCR positive in throat or rectal swabs. In contrast to previous annual epidemics in southern Vietnam, viruses belonged to genogroup C4, and CVA16 was not detected. While efficacy data are lacking, severe cases (443, 11.6%) were treated with intravenous immunoglobulin (IVIg) and hemofiltration (22, 0.6%).

**Conclusion:**
EV71 has emerged as a frequent cause of large epidemics of more severe HFMD. Management of is not evidence based. IVIg administration is not without risk, costly and no randomized controlled trials have been done to substantiate its use. There is an urgent need for such a trial in light of a rising prevalence of EV71 and its pandemic potential.