

Key Points — Investigation of Acute Flaccid Myelitis in U.S. Children, 2014

Note: Newly added information is in red.

Acute Flaccid Myelitis Investigation in the United States, 2014

- CDC is working with healthcare professionals and state and local health departments to investigate reports of children across the United States who developed a sudden onset of weakness in one or more arms or legs and had MRI scans that showed an inflammation predominantly of the gray matter—nerve cells—in the spinal cord. This illness is now being referred to as acute flaccid myelitis.
- From August 2, 2014, to **April 14, 2015**, CDC has verified reports of **118** children in 34 states who developed acute flaccid myelitis that meets CDC's case definition (<http://www.cdc.gov/ncird/investigation/viral/Sep2014.html>). **Most of these cases occurred between August 1 and October 31, 2014.**
 - The median age of the children was about **7** years.
 - Nearly all were hospitalized; some were put on breathing machines.
 - Most patients had fever and/or respiratory illness before onset of neurologic symptoms.
 - About two thirds of the children who have been observed (median 19 days) after their illness reported some improvement in symptoms, though it is not clear what amount of improvement occurred. About one third showed no improvement. Only two of the children have fully recovered.
 - We continue to test specimens from these patients for a wide range of pathogens that can result in this syndrome.
- CDC continues to collaborate with partners nationally to investigate reported cases, risk factors, and possible causes of this condition.
- The specific causes of this illness are still under investigation. However, these cases are most similar to illnesses caused by viruses, including poliovirus, other enteroviruses, adenoviruses, West Nile virus, and herpesviruses.
 - Among possible causes, we're investigating whether the cases of acute flaccid myelitis may be linked to an outbreak of severe respiratory illness caused by enterovirus D68 (EV-D68) that the U.S. experienced in 2014. However, enteroviruses only rarely cause neurologic illness, including meningitis, encephalitis, and acute flaccid myelitis. Rather, they most commonly cause mild illness.
 - We are aware of only two published reports of children with neurologic illnesses confirmed as EV-D68 infection from cerebrospinal fluid testing.
- Every year, children in the United States develop neurologic illness with limb weakness, and often the causes are not identified.
 - Such illnesses can result from a variety of causes, including viral infections, environmental toxins, genetic disorders, and Guillain-Barré syndrome, a neurologic disorder caused by an abnormal immune response that attacks the body's nerves.
- CDC understands that Americans may be concerned about these illnesses. Severe illness is always a concern to us, especially when children are affected. We will continue to share information as soon as we have it, and post updates on our website (<http://www.cdc.gov/ncird/investigation/viral/sep2014.html>).

CDC Health Advisory

- On September 26, 2014, CDC issued a Health Advisory to healthcare professionals nationwide to be vigilant for and report cases of acute flaccid myelitis that meet CDC's case definition.
 - CDC issued this Health Advisory after receiving a report on September 12, 2014 from the Colorado Department of Public Health and Environment (CDPHE) about a cluster of nine children at a hospital who developed a sudden unexplained onset of this illness.

Guidance for Healthcare Professionals

Clinicians should

- be vigilant for and immediately report to their state or local health department any patients who meet the following case definition, using a patient summary form available on CDC's website (<http://www.cdc.gov/ncird/investigation/viral/sep2014/hcp.html>):

1. Patients \leq 21 years of age,
 2. Acute onset of focal limb weakness,
 3. Occurring on or after August 1, 2014, **and**
 4. A magnetic resonance image (MRI) showing a spinal cord lesion largely restricted to gray matter.
- consult with their local and state health department for laboratory testing of stool, respiratory and cerebrospinal fluid specimens for enteroviruses (including poliovirus), West Nile virus and other known infectious etiologies for patients meeting the above case definition.
 - refer to CDC's "Interim Considerations for Clinical Management of Patients with Acute Flaccid Myelitis," released November 7 with consensus from experts in infectious diseases, neurology, pediatrics, critical care medicine, public health epidemiology and virology (<http://www.cdc.gov/ncird/downloads/acute-flaccid-myelitis.pdf>).

Health departments should

- report patients meeting the case definition to CDC using a brief patient summary form available on the CDC website (<http://www.cdc.gov/ncird/investigation/viral/sep2014/health-departments.html>).
- ship available clinical specimens to CDC as soon as possible after case identification, so that CDC can test and monitor these cases in as real time as possible.
- contact CDC by email to arrange further laboratory testing or to discuss any additional questions (limbweakness@cdc.gov).

Guidance for the General Public

- If a child appears to have a sudden onset of weakness in arms or legs, caregivers should contact a healthcare provider to have the child assessed for possible neurologic illness.
- Being up to date on all recommended vaccinations is essential to prevent a number of severe diseases including polio, which can cause acute flaccid paralysis, and numerous other vaccine-preventable diseases that can cause severe illness and death.
- You can help protect yourself and others from viral infections in general by
 - washing your hands often with soap and water,
 - avoiding close contact with sick people, and
 - disinfecting frequently touched surfaces.
- You can protect yourself from mosquito-borne viruses, such as West Nile virus, by using mosquito repellent, and staying indoors at dusk and dawn, which is the prime period that mosquitoes bite.

What CDC is Doing

CDC is

- requesting that healthcare professionals be vigilant for and report cases of acute flaccid myelitis to CDC through their state or local health department
- verifying reports of cases of acute flaccid myelitis using our case definition
- working with healthcare professionals and state and local health departments to investigate and better understand the cases of acute flaccid myelitis, including potential causes and how often the illness occurs
- testing specimens, including stool, respiratory and cerebrospinal fluid, from the children with acute flaccid myelitis
- providing information to healthcare professionals, policymakers, general public, and partners in various formats, such as the Morbidity and Mortality Weekly Report, health alerts, websites, social media, and presentations.
- pursuing a multi-pronged approach to further explore the potential association of acute flaccid myelitis (AFM) with enterovirus D68 (EV-D68) and other etiologies as well as risk factors for AFM. This includes
 - working with colleagues within the Council of State and Territorial Epidemiologists (CSTE) to standardize a national case definition for AFM,

- working with sentinel states to prospectively identify cases of AFM to better understand the baseline rate for AFM,
- planning, in collaboration with several academic institutions, a study to retrospectively review pediatric spinal MRIs from the past 10 years to determine the past occurrence of MRIs consistent with AFM,
- planning to work with state and local health partners and clinicians to gather data on the eventual long-term neurologic and functional outcomes of these children to determine whether or not they recover from their limb weakness. Protocols for these activities are under development.

More information

- *Notes from the Field: Acute Flaccid Myelitis Among Persons Aged ≤21 Years— United States, August 1– November 13, 2014*, MMWR, January 9, 2015 (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6353a3.htm?s_cid=mm6353a3_w)
- CDC Investigation of Acute Flaccid Myelitis in U.S. Children, 2014 website: <http://www.cdc.gov/ncird/investigation/viral/sep2014.html>
- Acute Neurologic Illness of Unknown Etiology in Children — Colorado, August—September, 2014, MMWR, October 3, 2014 (<http://www.cdc.gov/mmwr/>)
- Acute Neurologic Illness with Focal Limb Weakness of Unknown Etiology in Children, Health Alert Network, September 26, 2014 (<http://emergency.cdc.gov/han/han00370.asp>)
- Neurologic Illness with Limb Weakness in Children, COCA Call, October 3, 2014 (http://emergency.cdc.gov/coca/calls/2014/callinfo_100314.asp)