Key Points—Acute Flaccid Myelitis in the U.S., 2014-2018

Note: Newly added information is in red.

Topline Points

- CDC continues to receive information about cases of acute flaccid myelitis (AFM), a serious condition that causes weakness in the arms or legs. So far in 2018, CDC has confirmed 38 cases of sudden onset AFM in 16 states. Of these, 35 cases are 18 years old and younger.
- CDC does not know the causes of most of these AFM cases despite extensive lab testing. All of the AFM cases have tested negative for poliovirus.
- AFM is a serious condition, and there is no specific treatment. AFM remains very rare (less than one in a million) even with an increase in cases.
- There are several possible causes of AFM such as viruses (e.g., poliovirus, non-polio enteroviruses such as EV-A71, adenoviruses, and West Nile virus), environmental toxins, and genetic disorders. A condition where the body's immune system attacks and destroys body tissue that it mistakes for foreign material may also cause AFM.
- CDC continues to actively investigate the AFM cases, test specimens, and monitor disease activity. We are working closely with health professionals to increase awareness, provide guidance, and conduct lab testing to better understand the AFM cases, risk factors, and possible causes.
- CDC understands that people, especially parents, may be concerned about AFM. Severe illnesses like AFM are always a concern for CDC. We'll continue sharing information as soon as we have it, and post updates on our AFM website.
- Since poliovirus and West Nile virus can sometimes cause AFM, CDC recommends being up to date on polio vaccination and protecting yourself against mosquito bites. While we don't know if effective in preventing AFM, washing your hands often is one of the best ways to avoid getting sick and spreading germs to other people.

Additional Points

AFM case information and investigations

CDC's process for classifying suspect cases of AFM according to the Council of State and Territorial Epidemiologist (CSTE) case definition requires thorough review of medical and radiologic information by at least two AFM medical experts. Case classifications generally take up to a month to complete due to the time it takes to collect and review the clinical information. However, clinical diagnosis, management, and treatment of the patient should not rely on the case classification process.

Number of confirmed cases by year

- In 2018, CDC confirmed 38 cases of AFM in 16 states.
  - CDC and states are investigating additional reports to determine whether they are confirmed AFM cases.
  - Since it takes about a month to confirm AFM, the case counts provided by CDC do not represent the situation in real-time. Also, any increases in AFM cases do not reflect changes in real time or mean that the situation is getting worse.
- In 2017, CDC confirmed 33 cases of AFM in 16 states. There was one death in a case with confirmed AFM although it is unclear what role AFM played in the death.
- In 2016, a total of 149 people in 39 states and DC were confirmed to have AFM.
- In 2015, 22 people in 17 states were confirmed to have AFM.
- From August 1 to December 31, 2014, CDC confirmed 120 children in 34 states with AFM. Most of these cases occurred between August 1 and October 31, 2014.

Symptoms

- Most patients will have sudden onset of weakness and loss of muscle tone and reflexes in the arms and legs. Some patients, in addition to the limb weakness, will experience:
    - facial droop or weakness,
    - difficulty moving the eyes,
    - drooping eyelids, or
    - difficulty with swallowing or slurred speech.
- Numbness or tingling is rare in patients with AFM, though some patients have pain in their arms or legs. Some patients with AFM may be unable to pass urine. The most severe symptom of AFM is respiratory failure that can happen when the muscles involved with breathing become weak. This can require urgent ventilator support (breathing machines).

Causes

- The specific causes of most AFM cases are still being investigated.
- Poliovirus is not the cause of these AFM cases.
    - CDC tests every stool specimen from the AFM patients that is sent to us; none of the specimens have tested positive for poliovirus.
    - Because of high vaccination coverage against polio in the United States and globally, we no longer see cases of poliomyelitis in the United States.
- There are a variety of possible causes of AFM such as viruses (e.g., poliovirus, non-polio enteroviruses such as EV-A71, adenoviruses, and West Nile virus), environmental toxins, and genetic disorders. A condition where the body's immune system attacks and destroys body tissue that it mistakes for foreign material may also cause AFM.
- CDC has not found a clear association between enterovirus D68 (EV-D68) and the AFM cases reported since 2014.
    - CDC is testing all specimens from suspected cases of AFM for enteroviruses, including EV-D68 and EV-A71.
    - The increase in AFM cases in 2014 coincided with a national outbreak of severe respiratory illness caused by EV-D68. CDC did not consistently detect EV-D68 in patients confirmed to have AFM.
    - CDC observed another increase of AFM cases in 2016. During that year, we were informed of only a few localized clusters of EV-D68 in the United States.
    - Non-polio enteroviruses most commonly cause mild illness, such as rash illness in children. They can also cause neurologic illness, such as meningitis, encephalitis, and AFM, but these are uncommon.
- In 2018, the Colorado Department of Public Health and Environment and the Children's Hospital Colorado notified CDC of an increase in neurologic illness, including 3 cases of AFM due to EV-A71, a known cause of AFM (*Notes from the Field:* https://www.cdc.gov/mmwr/volumes/67/wr/mm6736a5.htm).

Guidance for Health Professionals

Clinicians should

- be vigilant for and immediately report to their state or local health department any patients who meet the clinical criteria for AFM (sudden onset of flaccid limb weakness) regardless of any laboratory results or MRI findings using the patient summary form available on CDC's website (www.cdc.gov/acute-flaccid-myelitis/hcp/data.html)
- consult with their local and state health department for laboratory testing of stool, respiratory, sera, and cerebrospinal fluid specimens for enteroviruses (including poliovirus), West Nile virus, and other known infectious etiologies for patients meeting the AFM clinical criteria
- collect specimens from patients suspected of having AFM as early as possible in the course of illness. Additional instructions regarding specimen collection and shipping can be found at: www.cdc.gov/acute-flaccid-myelitis/hcp/instructions.html
- refer to CDC's "Interim Considerations for Clinical Management of Patients with Acute Flaccid Myelitis," released November 7, 2014 with consensus from experts in infectious diseases, neurology, pediatrics, critical care medicine, public health epidemiology, and virology (www.cdc.gov/acute-flaccid-myelitis/downloads/acute-flaccid-myelitis.pdf). CDC is currently updating this guidance with input from national experts
- consult with infectious diseases and neurology experts to assist with diagnostic and treatment recommendations

Health departments should

- inform CDC about patients with suspected AFM using the brief patient summary form available on the CDC website (www.cdc.gov/acute-flaccid-myelitis/hcp/data.html). Information about suspect cases should be shared with CDC regardless of any laboratory or MRI results
- ship available clinical specimens to CDC as soon as possible after case identification to optimize likelihood for identifying a cause
- contact CDC by email at limbweakness@cdc.gov or via secure fax at 404-471-8442 to arrange further laboratory testing or to discuss any additional questions

Guidance for the General Public

- You should seek medical care right away if you or your child develops any of these symptoms: weakness or loss of muscle tone and reflexes in the arms or legs, facial droop or weakness, difficulty moving the eyes, drooping eyelids, or difficulty with swallowing or slurred speech.
- There are no specific ways to prevent most cases of AFM. Since poliovirus and West Nile virus can sometimes cause AFM, CDC recommends the following:
    - Be up to date on polio vaccination. Polio vaccine contains inactivated (not live) virus, and protects against poliovirus. This vaccine does not protect against other viruses that may cause AFM.
    - Protect yourself from mosquito-borne viruses, such as West Nile virus, by using mosquito repellent, staying indoors at dusk and dawn, which is the prime period that mosquitoes bite, and removing standing or stagnant water near your home (where mosquitoes can breed).

  While we don't know if effective in preventing AFM, washing your hands often is one of the best ways to avoid getting sick and spreading germs to other people.

What CDC is Doing

CDC has closely monitored the AFM situation since August 2014, when we first received information about cases of AFM from hospitals and health departments. We are actively working with healthcare professionals and state and local health departments to increase awareness and sharing of information about suspected AFM cases with CDC, and investigate the AFM cases, risk factors, and possible causes of this condition.

Activities that CDC is doing include:

- urging healthcare providers to be vigilant for AFM among their patients, and to send information about suspected cases to their health departments
- verifying clinical information of suspected AFM cases submitted by health departments, and working with health departments and neurologists to classify cases using a case definition adopted by the CSTE
- testing specimens, including stool, blood, respiratory, and cerebrospinal fluid, from suspected AFM cases
- working with healthcare providers, experts, and state and local health departments to investigate and better understand the AFM cases, including potential causes and how often the condition occurs
- providing new and updated information to healthcare providers, health departments, policymakers, the public, and partners in various formats, such as scientific journals and meetings, and CDC's AFM website and social media
- using multiple research methods to further explore the potential association of AFM with possible causes as well as risk factors for AFM

More information

- AFM website: www.cdc.gov/acute-flaccid-myelitis/index.html
- AFM Investigation page: www.cdc.gov/acute-flaccid-myelitis/afm-surveillance.html
- For Clinicians and Health Departments: www.cdc.gov/acute-flaccid-myelitis/hcp/index.html