Oklahoma State Department of Health
Acute Disease Service
Public Health Fact Sheet

Acute Flaccid Myelitis (AFM): Information for Clinicians

Acute Flaccid Myelitis (AFM) Background
Acute flaccid myelitis (AFM) is a syndrome characterized by rapid onset of weakness in one or more limbs and distinct abnormalities of the spinal cord gray matter on magnetic resonance imaging (MRI). AFM is a subset of acute flaccid paralysis (AFP). AFP is the acute onset of weakness absent signs of spasticity or other signs indicating a central nervous system disorder, and includes AFM, Guillain-Barré syndrome (GBS), toxic neuropathy, and muscle disorders. While AFM is most commonly attributable to poliovirus or West Nile virus and other flaviviruses; other viruses, including non-polio enteroviruses, may rarely cause AFM.

Since the summer of 2014, an apparent increase in reports of AFM occurring in the United States was identified. Interpreting the increase in reports of AFM in 2014 has been challenging in the absence of baseline incidence of AFM. Most cases identified by states have occurred among children. Symptoms have been most similar to complications of infection with certain viruses, including poliovirus, non-polio enteroviruses, adenoviruses, and West Nile virus. Enteroviruses can cause neurologic illness, including meningitis. However, more severe disease, such as encephalitis and AFM, is not common.

Despite investigations conducted by state public health officials, and testing conducted by the state public health laboratories and the Centers for Disease Control and Prevention (CDC) labs, a clear etiology has not been determined.

AFM Case Definition
In June 2015, the Council of State and Territorial Epidemiologists (CSTE) adopted a standard case definition for AFM.

Confirmed case
1. Acute onset of focal limb weakness, AND
2. An MRI showing a spinal cord lesion largely restricted to gray matter and spanning one or more spinal segments.

Probable case
1. Acute onset of focal limb weakness, AND
2. Cerebrospinal fluid (CSF) with pleocytosis (white blood cell count >5 cells/mm^3, adjusting for presence of red blood cells by subtracting 1 white blood cell for every 500 red blood cells present).

Note: The changes in the case definition (removal of an age limit and addition of CSF findings to identify a “probable” case), were made for several reasons:

- The removal of the age limit was done to more accurately determine the overall occurrence of AFM, recognizing that certain etiologies of AFM (e.g., West Nile virus, herpesviruses) more often affect older people than children (though children still represent the majority of AFM cases overall).
- The addition of CSF findings was included to add additional sensitivity to the case definition, recognizing that some patients may not undergo MRI, or MRI findings may be normal despite the presence of AFM, when the MRI is performed early in the illness.

Clinicians should contact the Acute Disease Service (ADS) epidemiologist-on-call at (405) 271-4060 to report suspected cases of AFM that meet either the confirmed or probable case criteria outlined above. The ADS epi-on-call will work with the clinician to gather required demographic and clinical history for the investigation and coordinate specimen collection for laboratory testing.

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AFM Specimen Collection and Submission

As of December 1, 2016, state public health officials and the CDC have expanded the search for potential causes of AFM by broadening laboratory approaches that test for potential infectious and noninfectious causes, including possibly immune-mediated mechanisms. Despite extensive pathogen-specific testing of many specimens since 2014, a single, clear etiology has not been identified for AFM cases. Therefore, CDC will no longer be performing clinical diagnostics for enteroviruses or metagenomic sequencing on specimens collected from suspect cases of AFM.

Pathogen-specific testing should continue at hospital or state public health laboratories and may include cerebrospinal fluid, sera or whole blood, stool, and respiratory specimens. CDC will prioritize testing of sterile site specimens (i.e., cerebrospinal fluid, blood) using these new protocols to optimize yield of an etiologic agent or possible mechanism for AFM. Non-sterile site specimens, such as respiratory samples, will not be routinely tested at CDC. Stool or fecal specimens may be requested by OSDH and sent to CDC to rule out the presence of poliovirus. Specimens that are positive for enteroviruses/rhinoviruses at external laboratories may be sent to CDC for further characterization.

Note: Some AFM testing at CDC uses assays that are not CLIA-approved and are not intended for clinical diagnosis. CDC will not be able to provide specific test results for individual samples. However, results that indicate a possible cause of AFM will be reported to state health officials and the clinician.

If testing is indicated by the Oklahoma State Department of Health Public Health Laboratory and/or CDC, the ADS epi-on-call will work with the clinician and hospital laboratory to collect and ship the following specimens:

- Cerebrospinal fluid
- Blood (serum and whole blood)
- Stool, preferably two stool specimens collected as soon after onset of limb weakness and separated by 24 hours
- Upper respiratory tract, preferably nasopharyngeal (NP) or nasal (mid-turbinate [MT]) and oropharyngeal (OP) swab

Detailed specimen collection instructions can be accessed at https://www.cdc.gov/acute-flaccid-myelitis/hcp/specimens.html

Clinical management

The CDC published *Acute Flaccid Myelitis: Interim Considerations for Clinical Management* on November 7, 2014. This resource can be accessed at https://www.cdc.gov/acute-flaccid-myelitis/hcp/clinical-management.html