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Outbreak of Acute Flaccid Myelitis (AFM)
10/17/18 Update

The CDC continues to investigate a surge in cases of a rare syndrome (one in one million), called AFM, which causes inflammation in spinal cord and results in the sudden onset of a weakened limb or limbs that may lead to paralysis. The majority of cases (90%) are in children. In this current outbreak, the average age is four (4) years old.

Although the condition is not new, there was a significant increase in cases beginning in 2014, which coincided with a large outbreak of a particular enterovirus D68 (EV-D68), but samples of blood, spinal cord and stool have not yielded a common cause or pathogen (germ). All have tested negative for Polio. The CDC has also not been able to identify a particular geographic pattern either. Cases in the United States almost always occur in the summer and fall. Other countries have also reported cases of AFM but they do not follow the summer/fall outbreak pattern.

Interestingly, even years (2014 and 2016) have resulted in a greater number of cases than the odd years of 2015 and 2015. Based on the newly reported numbers, 2018 looks like it will have a large number of cases like the two previous even years, with the CDC confirming 62 confirmed cases of AFM through October 16, 2018, which are part of a total 127 patient cases under investigation (PUIs). Case investigation is being done by the CDC in partnership with local and state health departments and hospitals.

Occasional cases of AFM had previously been reported, but the first significant outbreak was in Aug -- Dec of 2014 with 120 cases throughout 34 states and coincided with an outbreak of D68 (EV-D68) but not all those with AFM showed exposure to D68 and that virus has not been seen nearly as often since 2014. In 2015, there were 22 cases in 17 states; 2016, there were 149 cases in 39 states, which includes Washington, DC., and last year (2017), there were 33 cases in 16 states.

There are several groups of viruses that can cause AFM, including enteroviruses (both polio and non-polio), West Nile virus, and some adenoviruses. All of these viruses are spread much like a cold or flu, except for West Nile Virus which typically is transmitted by mosquitos but can also be spread from mother to child in pregnancy, childbirth or breastfeeding. AFM has also been associated with environmental toxins and genetic disorders but, again, no common cause has been found. No person with AFM has had polio and all have been tested for it. No common virus or other organism has been found in the spinal fluid of those found with AFM; often, there is nothing significant found in the CSF (cerebral spinal fluid) at all, even though this is likely where a causative germ organism would be found. Researchers just released a medical study showing that D68 (EV-D68), in an animal model can invade and replicate in neuron cells (*Contemporary Circulating Enterovirus Strains*…; D.M. Brown et al, *mBIO*; American Society of Microbiology, September/October, 2018; Issue 5.) More investigation will be taking place to confirm these findings.

Exposure to the viruses may occur from close contact with infected individuals, particularly via sneezing or coughing, contact with contaminated surfaces or objects, or from mosquito bites. There may be other causes but these seem to be the most common. Environmental exposure and toxins have also been investigated.

Symptoms include a sudden onset of arm or leg weakness, with loss of reflexes and muscle tone; some may have trouble or be unable to urinate. Other symptoms that are reported include difficulty swallowing or having slurred speech, facial or eyelid droop, facial weakness, or difficulty moving the eyes. There is also the possibility of pain in the limbs though not usually numbness or tingling. The most ominous symptom is respiratory muscle spasm resulting in the ability to breathe on one's own.

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Prevention includes keeping an adequate distance from those that appear sick with a cold or flu, particularly if there has been reported limb or other muscle weakness. Frequent and, if young, supervised handwashing with soap and water, cough and sneeze etiquette (**https://www.youtube.com/watch?v=CtnEwvUWDo0**), and frequent disinfecting of common or contaminated surfaces, with an approved disinfectant capable of killing enteroviruses and adenoviruses, should be used. It is recommended that immunizations be kept up-to-date and follow current guidelines.

There is no known cure but most recover, although some need ongoing supportive care. Treatment is supportive and, generally, appropriate care is decided by a neurologist. If respiratory muscles are involved, management of airway and breathing, with intubation and a ventilator may be necessary. Many of these patients will be hospitalized and diagnosed with physical exam and MRI. The CDC recently reported one death related to a 2017 confirmed case.

What EMS should know: with AFM case numbers already high and in 22 states, EMS Workers should be aware of this syndrome and discuss management and transport with Medical Direction preferably ahead of the first case. The CDC is recommending to parents and caregivers that any child who complains of/shows signs of limb weakness have immediate evaluation by appropriate health care professionals; this would seem to be an appropriate approach for EMS as well.

There should be increased attention to infection control practices including the use of Standard Precautions plus any other pertinent PPE, based on contact and treatment of the patient, hand hygiene and particular attention paid to appropriate medical equipment & truck disinfection.

For more information on AFM, see **https://www.cdc.gov/acute-flaccid-myelitis/**
https://www.cdc.gov/acute-flaccid-myelitis/afm-surveillance.html
https://www.cdc.gov/acute-flaccid-myelitis/about-afm.html
https://www.cdc.gov/acute-flaccid-myelitis/references.html

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