Nebraska Department of Health and Human Services

Health Alert Network

Update

4/8/2025

Multisystem Inflammatory Syndrome (MIS), Acute Flaccid Myelitis (AFM), and Influenza-Associated Encephalopathy (IAE)

Background - Multisystem Inflammatory Syndrome (MIS)

MIS is a rare condition associated with a SARS-CoV-2 infection where parts of the body such as the heart, lungs, kidneys, skin, brain, eyes, or gastrointestinal organs become inflamed. It can occur in children (MIS-C). Since June 2020, 84 confirmed MIS-C cases have been reported to the Nebraska Department of Health and Human Services (DHHS). Nationally, 9,769 cases and 80 deaths have been reported to the Centers for Disease Control and Prevention (CDC) through Mar 1, 2025. There have not been any reported MIS-C related deaths in Nebraska.

CDC Case Definition

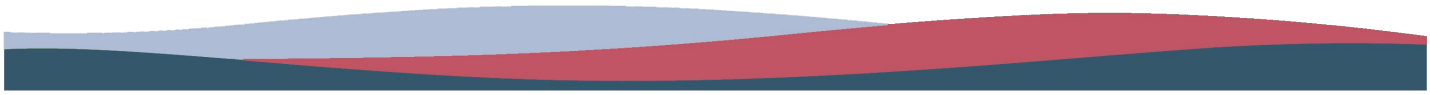
A patient aged <21 years with a subjective or documented fever greater than or equal to 100.4 along with laboratory evidence of inflammation and multisystem organ involvement severe enough to result in hospitalization or death. The patient must also have at least two of the following: cardiac involvement, mucocutaneous involvement, shock, gastrointestinal involvement, or hematologic involvement. Evidence of inflammation includes elevated C-reactive protein. The patient should not have a more likely alternative diagnosis and must have a confirmed SARS-CoV-2 infection in the 60 days prior to or during the hospitalization. Detection of SARS-CoV-2 antibodies in serum, plasma, or whole blood associated with the current illness is also acceptable. These symptoms can also be seen in adults.

Clinical Presentation

MIS-C usually presents with a persistent fever along with stomach pain, diarrhea, vomiting, skin rash, or conjunctivitis. Elevated C-reactive protein is found in those with MIS-C patients may have cardiac involvement, mucocutaneous involvement, shock, gastrointestinal involvement, or hematologic involvement. MIS-C may also resemble Kawasaki disease with the major difference being a SARS-CoV-2 infection. For more information please visit: https://www.cdc.gov/mis/hcp/clinical-overview/index.html.

Case Reporting

Healthcare providers are encouraged to report cases of MIS-C to their local health department (www.dhhs.ne.gov/lhd), or directly to DHHS at dhhs.epi@nebraska.gov, to facilitate adequate surveillance of the condition. MIS-C may resemble Kawasaki disease, which is a reportable condition, and patients with MIS-C may fulfill all or some of the criteria for Kawasaki disease with the major difference being a SARS-CoV-2 infection. Cases like this, where there is a SARS-CoV-2 infection, should be reported for MIS-C and not Kawasaki disease. The following case report form should be completed and forwarded to public health: MIS-C Case Report Form.



Background - Acute Flaccid Myelitis (AFM)
AFM is an uncommon but serious neurological condition characterized by acute onset of flaccid limb weakness with no other known cause and lesions to the spinal cord's gray matter (although some white matter can be involved).

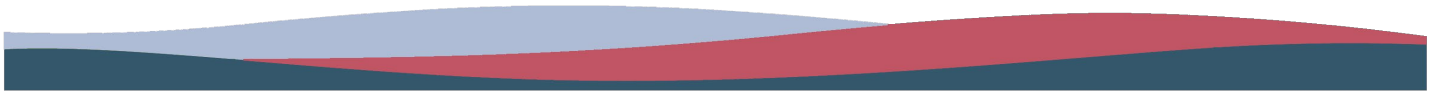
CDC Case Definition
Confirmed case: Meets clinical criteria with confirmatory laboratory/imaging evidence or meets other classification criteria.
Probable case: Meets clinical criteria with presumptive laboratory/imaging evidence.
Suspect case: Meets clinical criteria with supportive laboratory/imaging evidence and available information is insufficient to classify case as probable or confirmed.

Clinical Presentation
An illness with onset of low muscle tone, limp, hanging loosely, not spastic or contracted limb weakness. AFM clinically presents like poliomyelitis, but no poliovirus has been identified in AFM cases. AFM may also resemble: Synovitis, Neuritis, Limb injury, Guillain-Barre syndrome (GBS), Transverse myelitis, Stroke, Tumor, Acute cord compression, or Conversion disorder. Although no specific cause has been identified, the following viruses have been identified in AFM cases: Non-polio enteroviruses (EV-D68 and EV-A71), Flaviviruses (West Nile virus, and Japanese encephalitis virus), Herpesviruses, and Adenoviruses. For information on how to evaluate please visit: https://www.cdc.gov/acute-flaccid-myelitis/hcp/clinical-overview/index.html.

Laboratory/Imaging Criteria
MRI showing a spinal cord lesion in at least some gray matter and spanning one or more vertebral segments. This excludes patients with gray matter lesions in the spinal cord from previously physician diagnosed malignancy, vascular disease, or anatomic abnormalities.

Reporting & Lab Information
1. Recognize AFM early: Be on alert for patients meeting clinical and laboratory criteria mentioned above. Consider AFM on your differential diagnosis.
2. Report to LHD: Contact the LHD as soon as you identify a possible AFM case. Report patient information and compile clinical information.
3. Collect specimens: Collect cerebrospinal fluid, serum, stool, and respiratory swabs, preferably on the day of limb weakness onset.
4. Coordination and Care: Information and specimen collection will be sent to CDC for classification. Confirmed and probable cases are monitored for one year.

Classification will be relayed from the CDC to the local or state health department to the clinician. If your patient is a confirmed or probable AFM case, the local or state health department will conduct a long-term follow-up with the patient at 2, 6, and 12 months after onset of limb weakness. At the two month follow-up, the local or state health department will need more documentation from the clinician, which can be found here: https://www.cdc.gov/acute-flaccid-myelitis/php/reporting-patient/index.html.



Pediatric Influenza-Associated Encephalopathy (IAE)

On February 24, 2025, CDC requested state public health departments to report cases of pediatric influenza-associated encephalopathy (IAE) due to increased reports of pediatric IAE cases nationally. It is not known whether reported cases are within or above expected ranges. Pediatric IAE cases must meet the following criteria as outlined by CDC:

1. Age <18 years
2. Admitted to an acute care hospital or pronounced dead in an emergency department between October 1, 2024, and May 30, 2025, in the US and US territories
3. Laboratory-confirmed influenza virus infection within 14 days preceding hospital presentation, during hospitalization, or in respiratory specimens collected post-mortem
4. Documented neurologic abnormalities (meets one or more of the following):
    a. Diagnosis of encephalopathy or encephalitis
    b. Neurologic signs or symptoms including but not limited to seizures, altered mental status, delirium, decreased level of consciousness, lethargy, hallucinations, or personality changes lasting >24 hours
    c. Neuroimaging abnormalities such as brain edema, brain inflammation, or brain lesions
    d. Electroencephalogram abnormalities
    e. Abnormal brain autopsy findings, if available, for children who died

DHHS is requesting healthcare providers to report suspected cases of pediatric IAE, based on the criteria above, to your local health department (LHD) or DHHS. To find your LHD, please visit https://dhhs.ne.gov/Pages/local-health-departments.aspx. For information on IAE, CDC recently shared the following report: https://www.cdc.gov/mmwr/volumes/74/wr/mm7406a3.htm.

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