

Acute Flaccid Myelitis

Organism: Acute flaccid myelitis (AFM) may be due to a myriad of viral pathogens, including poliovirus, non-polio enteroviruses (e.g., enterovirus-71), flaviviruses (e.g., West Nile virus, Japanese encephalitis virus, Saint Louis encephalitis virus), herpesviruses (cytomegalovirus and Epstein-Barr virus), certain strains of adenoviruses, and others (Figure 1).

Incubation period: Depends on which virus is causing the illness.

Infectious period: Variable, depending upon which virus is causing the illness

Transmission route: The viruses that are believed to cause AFM may be contagious from one person to another or may be spread by a mosquito or other vector depending on which virus causes the AFM.

Treatment: No specific treatment available for AFM other than supportive care to relieve symptoms. If a pathogen with a known definitive treatment is identified (e.g., herpesviruses), specific treatment, if available, for the identified infection should be given.

Information Needed for the Investigation

In Alaska, clinicians are encouraged to report cases that meet the clinical criteria for AFM regardless of any laboratory results or MRI finding. Report may be made to the Alaska Section of Epidemiology at (907) 269-8000 or afterhours at (800) 478-0084.

<https://www.cdc.gov/acute-flaccid-myelitis/downloads/job-aid-for-clinicians-508.pdf>

Verify the Diagnosis

Clinical picture: An illness with onset of acute flaccid weakness of one or more limbs with distinct abnormalities of the spinal cord gray matter on MRI.

Determine the Extent of Illness

- Confirmed cases will be rare; Alaska should have < 1 case/year.
- For the latest surveillance data from CDC visit <http://www.cdc.gov/acute-flaccid-myelitis/afm-surveillance.html>.

Case Classification

The review of case information and assignment of final case classification for all suspected AFM cases will be done by experts in national AFM surveillance. This is similar to the review required for final classification of paralytic polio cases.

Laboratory Specimens

Clinical specimens (Appendix A) from patients that meet the clinical picture should be collected as early as possible in the course of illness, preferably on the day of onset of limb weakness. Early specimen collection has the best chance to yield the cause of AFM.

Samples should be sent to CDC by overnight shipment for testing.

<https://www.cdc.gov/acute-flaccid-myelitis/hcp/specimen-collection.html#specimens-to-collect>

Hospital Considerations

Use Standard Precautions for patient.

<http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html>

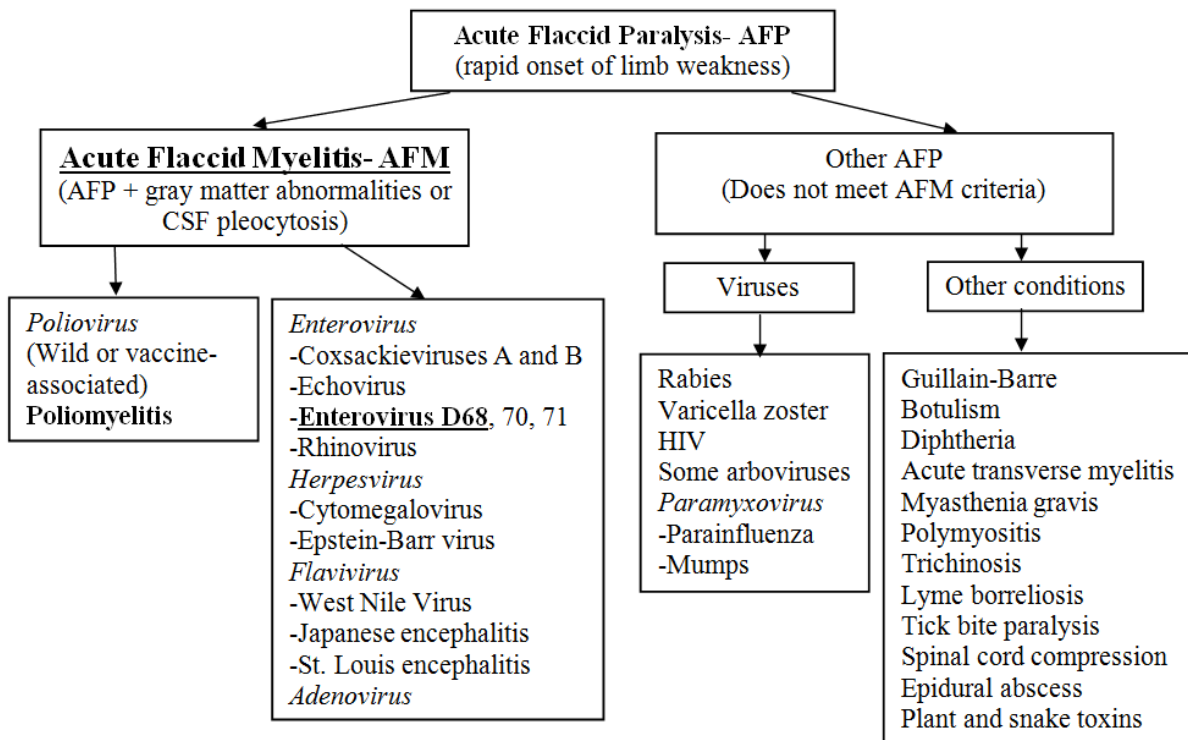
Contact and Control Measures

- Being up to date on all recommended vaccinations, including poliovirus, is one way to protect yourself and your family from a disease that can cause acute flaccid myelitis. Check with your doctor to make sure your family is up to date on all recommended vaccines.
- You can protect yourself from mosquito-borne viruses such as West Nile virus—another known cause of AFM—
by using mosquito repellent and staying indoors at dusk and dawn, which is the prime period that mosquitoes bite. Remove standing or stagnant water from nearby property to minimize the number of mosquitoes.
- Protect yourself from other known causes of AFM by:
 - Washing hands often with soap and water
 - Avoid close contact with sick people, and
 - Cleaning surfaces with a disinfectant, especially those that an ill person has touched.

Reporting Requirements

- Complete AFM Patient Summary Form (Appendix B) and submit to CDC by email at limbweakness@cdc.gov or via secure fax at 404-471-8442 for each patient that meets the clinical case definition.
- FTR: write up investigation(s)

Figure 1. Acute Flaccid Paralysis and Acute Flaccid Myelitis most common etiologies.
Reprinted from Washington State Department of Health by Liliana Sanchez, August 2016.



Job Aid for Clinicians

How to send information to the health department about a patient under investigation (PUI) for AFM

1


Identify PUI for AFM: patient with onset of acute flaccid limb weakness

2

Contact your health department when you identify a PUI for AFM. For health department contact information, call the CDC Emergency Operations Center at 770-488-7100.

SPECIMEN COLLECTION

Collect specimens as close to onset of limb weakness as possible and store as directed (see table on reverse side)



CSF Serum Stool NP swab

↓

Work with your health department to coordinate submission of specimens for testing at CDC.

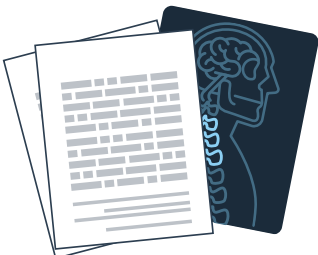
- Specimens should be shipped overnight to arrive at CDC Tuesday through Friday.
- Specimen submission form ([DASH](#)) should be completed for each specimen submitted.

AND

INFORMATION SHARING

Send copies of the following to your health department for sharing with CDC:

- admission and discharge notes
- neurology and infectious disease consult notes
- MRI report
- MRI images
- vaccination history
- laboratory test results



SEND TO

HEALTH DEPARTMENT







3

Health department completes [AFM Patient Summary Form](#), compiles medical records, and sends information to CDC. Patient will be classified by national AFM experts.

4

After expert review, patient classification is given back to health department and relayed to clinician by health department.

Specimens to collect and send to CDC for testing for AFM PUIs

SAMPLE	AMOUNT	TUBE TYPE	PROCESSING	STORAGE	SHIPPING
CSF	1mL (collect at same time or within 24hrs of serum)	Cryovial 	Spun and CSF removed to cryovial	Freeze at -70°C	Ship on dry ice
Serum	≥0.4mL (collect at same time or within 24 hours of CSF)	Tiger/red top 	Spun and serum removed to tiger/red top.	Freeze at -70°C	Ship on dry ice
Stool	≥1 gram (2 samples collected 24hrs apart)	Sterile container 	n/a	Freeze at -20°C *	Ship on dry ice. Rectal swabs should not be sent in place of stool.
Respiratory (NP)/ Oropharyngeal (OP) swab	1ml (minimum amount)	n/a 	Store in viral transport medium	Freeze at -20°C *	Ship on dry ice

*All specimens may be stored at -70°C for ease of shipping.

Coordinate with your health department to send information about PUIs and ship specimens to CDC. For health department contact information, call the CDC Emergency Operations Center at 770-488-7100.



FOR LOCAL USE ONLY

Name of person completing form: _____ State assigned patient ID: _____
 Affiliation _____ Phone: _____ Email: _____
 Name of physician who can provide additional clinical/lab information, if needed _____
 Affiliation _____ Phone: _____ Email: _____
 Name of main hospital that provided patient’s care: _____ State: _____ County: _____
 -----DETACH and transmit only lower portion to AFMInfo@cdc.gov if sending to CDC-----

Acute Flaccid Myelitis: Patient Summary Form

Form Approved
 OMB No. 0920-0009
 Exp Date: 08/31/2022

Please send the following information along with the patient summary form: MRI report MRI images

1. Today’s date ___/___/___ (mm/dd/yyyy)
2. State assigned patient ID: _____
3. Sex: M F
4. Date of birth ___/___/___ Residence: 5. State _____ 6. County _____
7. Race: American Indian or Alaska Native Asian Black or African American Native Hawaiian or Other Pacific Islander White (check all that apply)
8. Ethnicity: Hispanic or Latino Not Hispanic or Latino
9. Date of onset of limb weakness ___/___/___ (mm/dd/yyyy)
10. Was patient admitted to a hospital? yes no unknown
11. Date of admission to first hospital ___/___/___
12. Date of discharge from last hospital ___/___/___ (or still hospitalized at time of form submission)
13. Did the patient die from this illness? yes no unknown
14. If yes, date of death ___/___/___

SIGNS/SYMPTOMS/CONDITION:												
	Right Arm			Left Arm			Right Leg			Left Leg		
15. Weakness? [indicate yes(y), no (n), unknown (u) for each limb]	Y	N	U	Y	N	U	Y	N	U	Y	N	U
15a. Tone in affected limb(s) [flaccid, spastic, normal for each limb]	<input type="checkbox"/> flaccid			<input type="checkbox"/> flaccid			<input type="checkbox"/> flaccid			<input type="checkbox"/> flaccid		
	<input type="checkbox"/> spastic			<input type="checkbox"/> spastic			<input type="checkbox"/> spastic			<input type="checkbox"/> spastic		
	<input type="checkbox"/> normal			<input type="checkbox"/> normal			<input type="checkbox"/> normal			<input type="checkbox"/> normal		
	<input type="checkbox"/> unknown			<input type="checkbox"/> unknown			<input type="checkbox"/> unknown			<input type="checkbox"/> unknown		
	Yes	No	Unk									
16. Was patient admitted to ICU?				17. If yes, admit date: ___/___/___								
In the 4-weeks BEFORE onset of limb weakness, did patient:	Yes	No	Unk									
18. Have a respiratory illness?				19. If yes, onset date ___/___/___								
20. Have a gastrointestinal illness (e.g., diarrhea or vomiting)?				21. If yes, onset date ___/___/___								
22. Have a fever, measured by parent or provider ≥38.0°C/100.4°F?				23. If yes, onset date ___/___/___								
24. Have pain in neck or back?				25. If yes, onset date ___/___/___								
26. At onset of limb weakness, does patient have any underlying illnesses?				27. If yes, list:								

Magnetic Resonance Imaging:

28. Was MRI of spinal cord performed? yes no unknown
29. If yes, date of spine MRI: ___/___/___
30. Did the spinal MRI show a lesion in at least some spinal cord gray matter? yes no unknown
31. Was MRI of brain performed? yes no unknown
32. If yes, date of brain MRI: ___/___/___

CSF examination: 33. Was a lumbar puncture performed? yes no unknown
 If yes, complete 33 (a,b) (If more than 2 CSF examinations, list the first 2 performed)

	Date of lumbar puncture	WBC/mm ³	% neutrophils	% lymphocytes	% monocytes	% eosinophils	RBC/mm ³	Glucose mg/dl	Protein mg/dl
33a. CSF from LP1									
33b. CSF from LP2									

Public reporting burden of this collection of information is estimated to average 12 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information including suggestions for reducing this burden to CDC/ATSDR Reports Clearance Officer, 1600 Clifton Road NE, MS D-74 Atlanta, Georgia 30333.

At time of 60 day follow-up please collect and send the following information:

- Discharge summary History and physical (H&P) Neurology consult notes EMG report (if done)
 Infectious disease consult notes (if available) Vaccine registry record Diagnostic laboratory reports

Acute Flaccid Myelitis Outcome – follow-up of confirmed and probable AFM cases (completed at 60 days, 6 months and 12 months after onset of limb weakness)

33. Date of follow-up: ___/___/____ (mm/dd/yyyy)

34. Impairment: None Minor (any minor involvement) Significant (≤ 2 extremities, major involvement)
 Severe (≥ 3 extremities and respiratory involvement) Death Unknown

34a. Date of death: ___/___/____ (mm/dd/yyyy)

35. **Physical condition** (includes cardiovascular, gastrointestinal, urologic, endocrine as well as neurologic disorders):

- i. Medical problems sufficiently stable that medical or nursing monitoring is not required more often than 3-month intervals
- ii. Medical or nurse monitoring is needed more often than 3-month intervals but not each week.
- iii. Medical problems are sufficiently unstable as to require medical and/or nursing attention at least weekly.
- iv. Medical problems require intensive medical and/or nursing attention at least daily (excluding personal care assistance)

36. **Upper limb functions:** Self-care activities (drink/feed, dress upper/lower, brace/prosthesis, groom, wash, perineal care) dependent mainly upon upper limb function:

- i. Age-appropriate independence in self-care without impairment of upper limbs
- ii. Age-appropriate independence in self-care with some impairment of upper limbs
- iii. Dependent upon assistance in self-care with or without impairment of upper limbs.
- iv. Dependent totally in self-care with marked impairment of upper limbs.

37. **Lower limb functions:** Mobility (walk, stairs, wheelchair, transfer chair/toilet/tub or shower) dependent mainly upon lower limb function:

- i. Independent in mobility without impairment of lower limbs
- ii. Independent of mobility with some impairment of lower limbs, such as needing ambulatory aids, a brace or prosthesis
- iii. Dependent upon assistance or supervision in mobility with or without impairment of lower limbs.
- iv. Dependent totally in mobility with marked impairment of lower limbs.

38. **Sensory components:** Relating to communication (speech and hearing) and vision:

- i. Age-appropriate independence in communication and vision without impairment
- ii. Age-appropriate independence in communication and vision with some impairment such as mild dysarthria, mild aphasia or need for eyeglasses or hearing aid.
- iii. Dependent upon assistance, an interpreter, or supervision in communication or vision
- iv. Dependent totally in communication or vision

39. **Excretory functions** (bladder and bowel control, age-appropriate):

- i. Complete voluntary control of bladder and bowel sphincters
- ii. Control of sphincters allows normal social activities despite urgency or need for catheter, appliance, suppositories, etc.
- iii. Dependent upon assistance in sphincter management
- iv. Frequent wetting or soiling from bowel or bladder incontinence

40. **Support factors:**

- i. Able to fulfil usual age-appropriate roles and perform customary tasks
- ii. Must make some modifications in usual age-appropriate roles and performance of customary tasks
- iii. Dependent upon assistance, supervision, and encouragement from an adult due to any of the above considerations
- iv. Dependent upon long-term institutional care (chronic hospitalization, residential rehabilitation, etc. Excluding time-limited hospitalization for specific evaluation or treatment)

Acute Flaccid Myelitis case definition (https://cdn.ymaws.com/www.cste.org/resource/resmgr/2019ps/final/19-ID-05_AFM_final_7.31.19.pdf)

Clinical Criteria

- An illness with onset of acute flaccid limb weakness AND

Laboratory/imaging Criteria

- A magnetic resonance image (MRI) showing spinal cord lesion in at least some gray matter and spanning one or more spinal segments, AND
- Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic abnormalities.

Case Classification

Confirmed:

- An illness with onset of acute flaccid limb weakness AND
- MRI showing spinal cord lesion largely restricted to gray matter and spanning one or more spinal segments
 - Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic abnormalities AND
- Absence of a clear alternative diagnosis attributable to a nationally notifiable condition.

Probable:

- An illness with onset of acute flaccid limb weakness AND
- MRI showing spinal cord lesion where gray matter involvement is present but predominance cannot be determined,
 - Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic abnormalities AND
- Absence of a clear alternative diagnosis attributable to a nationally notifiable condition.

Suspect:

- An illness with onset of acute flaccid limb weakness AND
- MRI showing spinal cord lesion in at least some gray matter and spanning one or more spinal segments,
 - Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic abnormalities AND
 - Available information is insufficient to classify case as probable or confirmed AND
- Absence of a clear alternative diagnosis attributable to a nationally notifiable condition.

Acute Flaccid Myelitis specimen collection information

(<https://www.cdc.gov/acute-flaccid-myelitis/hcp/specimen-collection.html>)

Acute Flaccid Myelitis job aid

(<https://www.cdc.gov/acute-flaccid-myelitis/downloads/job-aid-for-clinicians-508.pdf>)