Acute Flaccid Myelitis in West Virginia

2022 Influenza Kick-Off Webinar

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WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH

Disclosure

The West Virginia Department of Health and Human Resources (DHHR) has no financial interest or other relationship with the company who makes/provides this product/service.

Objectives

By the end of this session, participants will:

- Be able to describe the epidemiology of acute flaccid myelitis (AFM)
- Be familiar with DHHR's latest AFM investigation and reporting recommendations and requirements

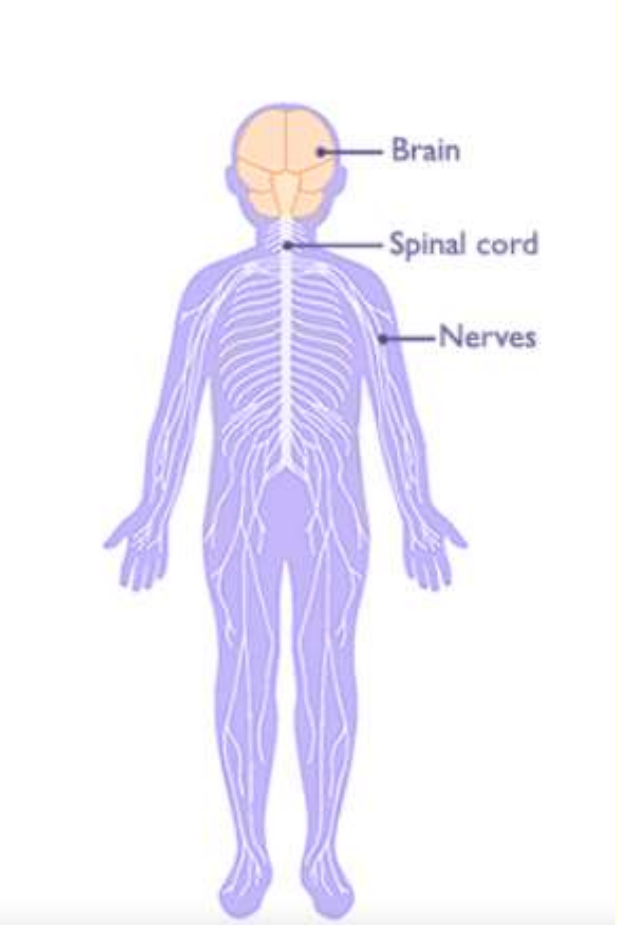
Acute Flaccid Myelitis (AFM)

- Neurologic syndrome with acute onset limb weakness and distinct abnormalities of the spinal cord gray matter

- Affects children

- Causes:
  - Non-polio enteroviruses (EV-D68, EV-A71)
  - Flavivirus (West Nile Virus, Japanese Encephalitis Virus)
  - Herpesvirus
  - Adenovirus

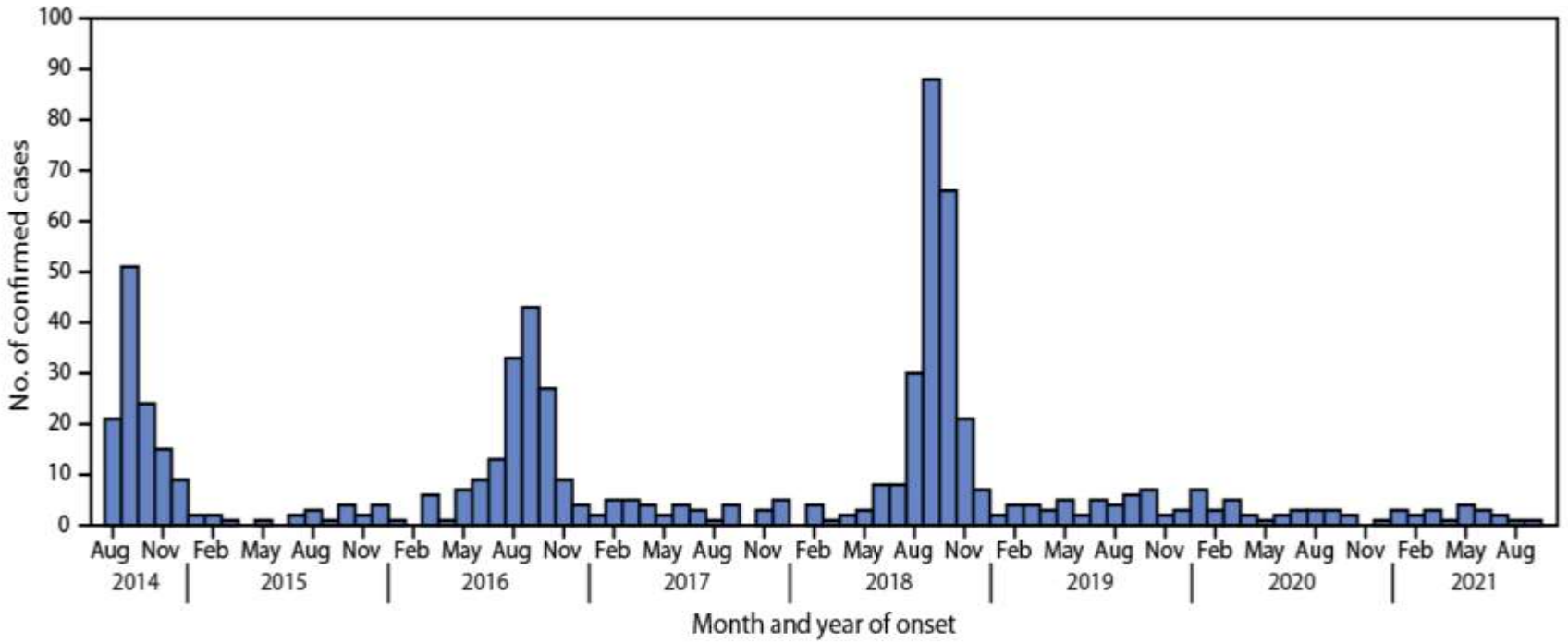
- Biennial occurrence
  - West Virginia 2014-2020: 3 cases



Epidemiology

National Surveillance for Acute Flaccid Myelitis — United States, 2018–2020

FIGURE. Confirmed cases of acute flaccid myelitis (N = 670), by month of onset — United States, August 2014–September 2021*



* As of October 23, 2021.

Source: Kidd S, Yee E, English R, et al. National Surveillance for Acute Flaccid Myelitis — United States, 2018–2020. MMWR Morb Mortal Wkly Rep 2021;70:1534–1538. DOI: dx.doi.org/10.15585/mmwr.mm7044a2external icon.

Clinical Presentation

- Febrile (respiratory or GI) illness 1-2 weeks before limb weakness
- Rapid onset of limb weakness (hours to few days): ≥1 more limbs, proximal limb weakness
- Cranial nerve abnormalities: face/eyelid droop, difficulty swallowing or talking, and weak cry
- Other findings: stiff neck, headache, and numbness or tingling

Source: CDC

Admit patients immediately to the hospital because AFM can progress rapidly and require urgent medical intervention.

Poliomyelitis (Polio)

June 2022:

Polio in unvaccinated New York resident.

Morbidity and Mortality Weekly Report (*MMWR*)

Public Health Response to a Case of Paralytic Poliomyelitis in an Unvaccinated Person and Detection of Poliovirus in Wastewater — New York, June–August 2022

- Disabling and life-threatening illness
- Poliovirus serotypes 1, 2, 3
- Transmission: person-to-person
- Presentation:
  - Flu-like symptoms – 25% of infected, duration: 2-5 days
  - Serious manifestation – small % of people
    - Paralysis – 1 in 200 to 1 in 2,000 infected people
    - Meningitis – 1-5 in 100 infected people
- Polio = paralytic disease

Evaluation and Reporting of AFM and Polio

Patient:
- Acute flaccid weakness, AND
- MRI: gray matter lesion in spinal cord

1. Complete the AFM Patient Summary Form
2. Collect MRI report and images
3. Collect specimens: CSF, respiratory, serum, stools (2 specimens taken at least 24 hours apart during the first 14 days after onset of limb weakness)

Assess for risk of POLIO:
- Un-/under vaccinated?
- Recent travel to areas of risk?
- Contact with person with recent travel to areas of risk?

If **YES**,
- Consider **URGENT** stool collection and testing
- Flag as suspect polio

Confirm through lab testing of stool

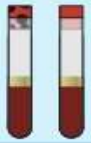
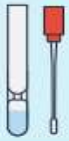
Poliovirus negative → Continue reporting process for **AFM**

Poliovirus positive → Continue reporting process for **POLIO**

Source: CDC, unpublished

Laboratory Testing

AFM Specimen Collection Instructions

SAMPLE	MINIMUM AMOUNT	TUBE TYPE	PROCESSING	STORAGE	SHIPPING
CSF	0.15 mL, 0.5-2 mL preferred (collect at same time or within 24hrs of serum if feasible)	Cryovial 	Spun and CSF removed to cryovial	Freeze at ≤-20°C	Frozen on dry ice.
Serum	0.5 mL, 1 mL preferred (collect at same time or within 24hrs of CSF if feasible)	Tiger/red top 	Spun and serum removed to tiger/ red top	Freeze at ≤-20°C	Frozen on dry ice.
Stool*	1 gram, 10 – 20 grams preferred (2 samples collected 24hrs apart)	Sterile container 	N/A	Freeze at ≤-20°C	Frozen on dry ice. Rectal swabs should not be sent in place of stool.
Respiratory (NP)/ Oropharangeal (OP) swab	0.5 mL, 1 mL preferred (minimum amount)	N/A 	Store in vial transport medium	Freeze at ≤-20°C	Frozen on dry ice.

** Please include stool specimens along with CSF, serum, and NP/OP swabs to help with identification of pathogens and to support poliovirus surveillance*

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

Diagnostic Studies

Diagnostic Test	AFM Findings	Notes
MRI of spine and brain with and without contrast.	Involve multiple spinal cord levels, predominantly gray matter. Some patients have white matter involvement.	Imaging within first 72 hours of limb weakness may be normal; repeated if indicated.
Nerve conduction studies	Weakness	
Blood - PCR	EV-D68	
CSF - EV PCR, other pathogens	Coxsackie A16, EV-A71, EV-D68	
Respiratory (NP or OP swabs) - multiplex testing and EV PCR.	EV-D68	Most common virus detected in AFM patients.
Stool	Poliovirus negative	

Treatment and Prevention

Treatment:

- No specific treatment
- Clinical Guidance for the Medical Treatment of AFM: https://www.cdc.gov/acute-flaccid-myelitis/hcp/clinical-management.html

Prevention:

- Wash hands with soap and water often
- Avoid touching your face with unwashed hands
- Avoid close contact with people who are sick
- Stay up to date on recommended vaccinations
- Clean and disinfect frequently touched surfaces, like toys, mobile devices, and doorknobs
- Cover coughs and sneezes with a tissue or upper shirt sleeve
- Stay at home if you or your child are sick

Polio Vaccination

Polio Vaccination Recommendations

Children – 4 doses of IPV at:

- 2 months old
- 4 months old
- 6 to 18 months old
- 4 to 6 years old

Adults – if unvaccinated, give IPV at:

- 1st dose: anytime
- 2nd dose: 1 to 2 months later
- 3rd dose: 6 to 12 months after 2nd dose

Healthcare Providers: Reporting PUI AFM

AFM is a reportable condition in West Virginia.

Identify PUI (patients under investigation)

Identify PUI for AFM:

- Onset of acute flaccid limb weakness
- MRI showing spinal cord lesions in at least some gray matter

Contact Health Department

Promptly contact the local health department to coordinate submission of specimens and information, including copies of:

- Clinical records – AFM Report Form
- Neurology consult notes
- MRI images and report
- Death information

Collect Specimens

Collect specimens as close to onset of limb weakness as possible and store as directed (freeze as soon as possible after collection)

Autopsy Findings

- Autopsy findings that include histopathologic evidence of **inflammation largely involving the anterior horn of the spinal cord spanning one or more vertebral segments**

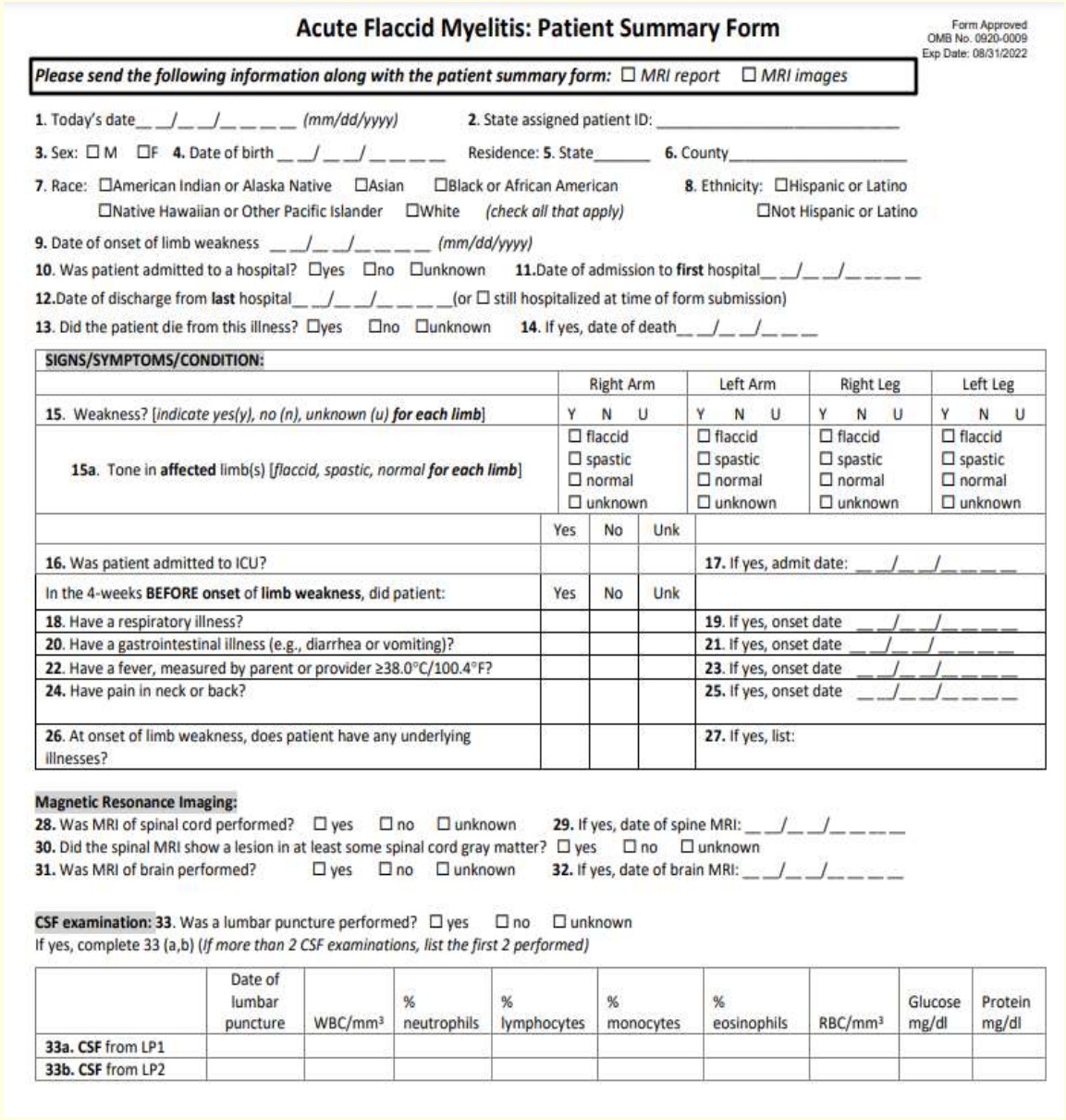
AND

- **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

Reporting AFM



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***]	☐ flaccid ☐ spastic ☐ normal ☐ unknown	☐ flaccid ☐ spastic ☐ normal ☐ unknown	☐ flaccid ☐ spastic ☐ normal ☐ unknown	☐ flaccid ☐ spastic ☐ normal ☐ 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/mm³	% neutrophils	% lymphocytes	% monocytes	% eosinophils	RBC/mm³	Glucose mg/dl	Protein mg/dl
33a. CSF from LP1									
33b. CSF from LP2									

- AFM Patient Summary Form: https://www.cdc.gov/acute-flaccid-myelitis/downloads/patient-summary-form.pdf
- Local and State Health Department will coordinate with healthcare provider and send information to the Centers for Disease Control and Prevention (CDC)

AFM Case Definition

Clinical Criteria
Onset of acute flaccid weakness of one or more limbs, **AND**
Absence of a clear alternative diagnosis attributable to a nationally notifiable condition
Laboratory Criteria
CONFIRMATORY
MRI showing spinal cord lesion with predominant gray matter involvement† and spanning one or more vertebral segments, **AND**
Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic
PRESUMPTIVE
MRI showing spinal cord lesion where gray matter involvement† is present but predominance cannot be determined, **AND**
Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic
SUPPORTIVE
MRI showing a spinal cord lesion in at least some gray matter† and spanning one or more vertebral segments, **AND**
Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic abnormalities

AFM Case Classification

SUSPECT CASE
Meets clinical criteria with supportive laboratory/imaging evidence, **AND**
Available information is insufficient to classify case as probable or confirmed.
PROBABLE CASE
Meets clinical criteria with presumptive laboratory/imaging evidence.
CONFIRMED CASE
Meets clinical criteria with confirmatory laboratory/imaging evidence, **OR**
Autopsy findings that include histopathologic evidence of inflammation largely involving the anterior horn of the spinal cord spanning one or more vertebral segments, **AND**
Excluding persons with gray matter lesions in the spinal cord resulting from physician diagnosed malignancy, vascular disease, or anatomic abnormalities (2022), **AND**
Absence of a clear alternative diagnosis attributable to a nationally notifiable condition. (2022)

Follow-Up of AFM Cases

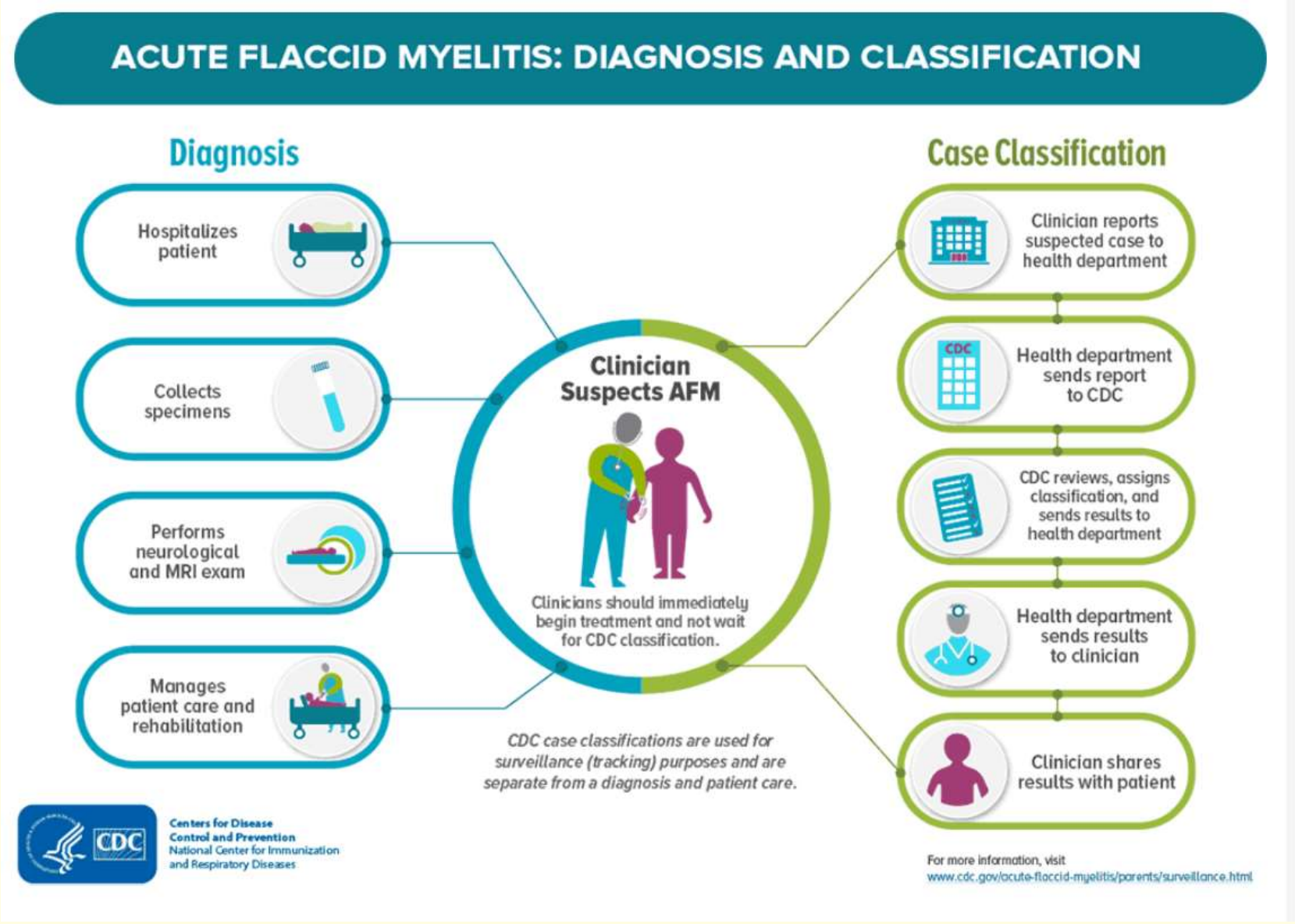
Patients with confirmed or probable AFM will be contacted by the local health department at **2, 6,** and **12 months** after the onset of limb weakness to collect information on outcomes after their AFM illness.

2-month (60 days) follow-up: Local health department will collect complete medical records and send to DHHR's Division of Infectious Disease Epidemiology (DIDE):

- Admission and discharge notes
- Neurology and infectious disease consult notes
- MRI report
- Vaccination registry data
- Laboratory test results
- Discharge summary

DIDE will send complete medical information for each confirmed and probable case of AFM to CDC.

Partnership



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