ACUTE FLACCID PARALYSIS (AFP)

Disease Overview

Symptoms

Acute Flaccid Paralysis (AFP) is a clinical syndrome defined as sudden onset of focal weakness or paralysis in children less than 15 years old; in the absence of other causes, such as trauma. The muscle weakness is typified as flaccid (low tone) with deep or absent hypoactive reflexes. The timeline of symptom development ranges from hours to weeks, depending upon the underlying cause. AFP does not include transient weakness (i.e., post-ictal weakness).

Once acute flaccid paralysis or muscle weakness is suspected, additional investigations are required to determine the causative agent. Acute flaccid paralysis may be caused by a poliovirus infection, as well as other viral or bacterial infections, autoimmune disorders, environmental toxin exposure, and Guillain-Barre Syndrome. Sometimes the causative agent is unknown.

In Canada, the most common cause of AFP is due to Guillain-Barré Syndrome (GBS). GBS is an immune-mediated condition that is often precipitated by *Campylobacter spp* enterobacterial infection; however, people may develop GBS after having the flu or other viral infections. The clinical presentation of GBS is likely to be symmetrical paralysis and may get worse for up to 10 days. However, AFP due to polio features an asymmetric distribution, which affects some muscle groups while sparing others; with fever present at the beginning. Most common presentation of AFP due to polio is one leg, or less commonly one arm. It is uncommon for both lower or both upper extremities to be impacted.

Other possible diagnoses in lieu of AFP include, but are not limited to, transverse myelitis, peripheral neuropathy, enteroviruses, acute non-bacterial meningitis, brain abscess, China Syndrome, and post-polio sequelae. Poliomyelitis must be distinguished from other paralytic conditions by isolation of polio virus from stool.

Acute flaccid myelitis (AFM) is a sub-type of AFP, where spinal cord lesions can be seen on magnetic resonance imaging (MRI). AFM has been linked to viral infections, principally enteroviruses EV-D68 and EV-A71; which can be transmitted through oral-fecal and respiratory pathways. Both AFM and AFP have been reported in Canada in a seasonal summer and fall distribution.

AFP remains a rare, but serious condition.

Reservoir

Depends upon causative agent.

Mode of Transmission

Depends upon causative agent.

Incubation Period

Depends upon causative agent.

Period of Communicability

Depends upon causative agent.

Risk Factors

Depends upon causative agent.

Surveillance Case Definitions

The objective of rigorous AFP surveillance is to ensure early detection of poliovirus in Canada. This surveillance is performed as a component of the *Canadian Acute Flaccid Paralysis Surveillance System (CAFPSS)* and the *Global Polio Eradication Initiative*; serving to rule out the possibility of poliovirus infection and to document the absence of polio virus. While polio has been eradicated from Canada for several decades, ongoing surveillance is needed due to the risk of importing wild-type polio from polio-endemic regions, vaccine-derived poliovirus from countries still using oral polio vaccine; and the presence of non-immunizing populations in Canada.

Case definition:

Acute onset of focal weakness or paralysis characterized as flaccid (reduced tone) without other obvious cause (e.g., trauma) in children less than 15 years old. Cases of Guillain-Barré Syndrome (GBS) should be included as cases of Acute Flaccid Paralysis (AFP). Transient weakness (e.g., post-ictal weakness) should not be reported.

NOTE: Other conditions present symptoms similar to paralytic poliomyelitis. A record is kept of all definitive diagnoses for all reported cases of AFP meeting the case definition. GBS is the most common cause of AFP in childhood, but other differential diagnoses include, but are not limited to, transverse myelitis, peripheral neuropathy, enteroviruses, acute non-bacterial meningitis, brain abscess, China Syndrome, and post-polio sequelae. Poliomyelitis must be distinguished from other paralytic conditions by isolation of polio virus from stool.

Diagnosis and Laboratory Guidelines

Diagnostic testing methodologies aim to determine the causative agent and to rule out or confirm polio:

Stool samples	**Required sample**- likelihood of poliovirus isolation is greatest from stool. Collect at least 2 stool samples (at least 24 hours apart, minimum 2 grams per sample). Stool sample should be collected within two weeks (up to six weeks) after the onset of paralysis for viral studies and campylobacter. *Note: A rectal swab is less sensitive; but acceptable in the absence of a stool sample. Wastewater samples that are suspected to contain poliovirus must be sent to the NML for testing, per guidance provided in Molecular detection of SARS-CoV-2 from wastewater - Guide to Services - CNPHI (canada.ca).

	Risk mitigation measures must be taken to prevent facility containment breaches per *World Health Organization (WHO) Potentially Infectious Materials PIM Guidance Document, 2nd edition (2021).*
Nasopharyngeal samples	Viral throat swab may be useful to identify non-polio causes of AFP.
Cerebrospinal Fluid samples	May be useful in ruling out non-polio causes of AFP.

AFP laboratory testing process may vary according to causative agent. For information related to lab testing process for polio, campylobacter, or other specific causative agents under investigation, refer to the relevant guidance for that organism.

Samples should be sent to the Regional Laboratory and may be forwarded to the National Reference Centre for Enteroviruses (National Microbiology Laboratory, Winnipeg, Manitoba) for further investigation, if required. Samples that test positive for poliovirus will be assessed to determine whether the isolated virus is wild or vaccine-like. Comparing the sample to a reference bank of the molecular structure of known viruses allows the geographic origin on new isolates to be traced.

Neurologic investigations, as deemed appropriate by the patient's clinical care provider, should also take place (electromyography, nerve conduction studies, MRI, CT). MRI is essential for the confirmation of AFM.

Reporting

AFP became reportable in New Brunswick in 2024; however, syndromic surveillance has been carried out since 1996 through the Canadian Pediatric Surveillance Program (CPSP) and through the Immunization Monitoring Program, Active (IMPACT).

Per policy 2.2 Disease and Event Notification to the Office of the Chief Medical Officer of Health and Epidemiology (OCMOHE), for all cases meeting the case definition:

- Complete a CD Urgent Notification and send it to OCMOHE (via confidential fax or CDC Unit e-mail)
- Enhanced Surveillance: Send the "AFP Canadian Pediatric Surveillance Program Form" (completed by the health care provider from this link: https://cpsp.cps.ca/uploads/studies/acute-flaccid-paralysis-questionnaire.pdf) to OCMOHE (via confidential fax or CDC Unit e-mail).
- Enter cases meeting case definition into the Reportable Disease Surveillance System (RDSS).

Case Management

Education

Depends upon causative agent.

Investigation

These guidelines apply to cases of AFP in children younger than 15 years; and suspected or confirmed paralytic poliomyelitis or the incidental finding of wild poliovirus with paralysis in individuals of any age. The investigation of a cluster of cases as part of an outbreak should be reviewed by local and appropriate provincial public-health authorities to determine the extent of contact investigation.

- **Immunization:** Determine polio immunization status (total number of doses of oral and/or inactivated polio vaccine received). Verify receipt of any immunizations within 30 days prior to the onset of current illness, including oral polio vaccine. For household members and other close contacts, ascertain if they received oral polio vaccine within 90 days prior to onset of case's illness.
- **Relevant Medical History:** Obtain medical history including immunocompromised status or abnormal neurological history. Assess for acute respiratory illness within the home 30 days prior to onset of current illness.
- **Current Clinical Presentation:** Describe clinical presentation, course of illness and final clinical diagnosis of current illness, if available. Document results of stool culture, results of electromyography and/or nerve conduction studies, if available (indicate if tests were not done).
- **Travel History:** Determine travel to or residing in another country 7-30 days prior to the onset of illness. Identify household members or other close contacts that have traveled to or resided in another country 7-30 days prior to the onset of this child's illness.

Perform or arrange follow-up assessment of the outcome of paralysis 60 days after its onset. A follow-up report should be submitted when the information is available.

Note: The initial report should not be delayed because of incomplete information; however, all relevant information should be sent in a follow-up report as soon as it is available.

Exclusion/Social Distancing

Exclusion depends on the causative agent.

Treatment

Supportive /symptomatic treatment will depend on the causative agent if one is identified.

Immunization

AFP may be caused by many different causative agents; including poliovirus, which is vaccine preventable. Check the immunization records of index case and household contacts. IPV should be used to immunize for polio, when indicated.

Contact Management

Investigation

Contact management depends on the causative agent.

- If the AFP is caused by a reportable organism, refer to the Notifiable Disease and Event Guide for that organism.
- If unable to identify the causative organism, ensure investigation rules out polio as a possible cause.

Social Distancing/Exclusion

Exclusion depends on the causative agent.

Prophylaxis

Post-exposure prophylaxis measures vary according to the causative agent.

Immunization

There is no vaccine to prevent AFP; however, there is a vaccine to prevent polio. Contacts who have incomplete polio immunization per the NB Immunization Schedule, will be offered Inactivated Polio Vaccine (IPV).

Outbreak Management

Investigation

Outbreak management investigation depends on the causative agent.

Social Distancing/Exclusion

Exclusion depends on the causative agent.

Treatment/Prophylaxis

Treatment/prophylaxis will depend on the causative agent (if one is identified).

Those deemed contacts of AFP and those who have recently returned from international travel should seek immediate medical attention if they experience sudden onset muscle weakness or paralysis.

Immunization

There is no vaccine to prevent AFP; however, there is a vaccine to prevent polio. Contacts who have incomplete polio immunization per the NB Immunization Schedule, will be offered Inactivated Polio Vaccine (IPV).