

# Polio (Paralytic and Non-paralytic Infection) rev Jan 2014

## BASIC EPIDEMIOLOGY

### Infectious Agent

Poliovirus (genus *Enterovirus*) types, 1, 2, and 3

### Transmission

Poliovirus is transmitted by person-to-person contact, primarily via the fecal-oral route. Virus proliferates in both the pharynx (throat) and intestines. Infection may occur following inhalation of contaminated salivary droplets or ingestion of contaminated food products. It should be made clear that poliovirus is disseminated via droplet spread and is not airborne. Virus may persist in the feces of those with and without symptoms for 3-6 weeks post-infection.

### Incubation Period

Commonly 7-14 days for paralytic cases; reported range of up to 35 days

### Communicability

Not precisely defined, but transmission is possible as long as the virus is excreted.

### Clinical Illness

The virus infects the throat and intestine, with invasion of local lymph nodes. Up to 95% of polio infections are asymptomatic or unapparent. Some persons have nonspecific mild illnesses including fever, sore throat, or gastrointestinal symptoms. In rare cases poliovirus infects the spinal cord or brain stem resulting in aseptic meningitis or acute asymmetric flaccid paralysis.

## DEFINITIONS

### Clinical Case Definition

Paralytic polio: Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss.

Non-paralytic poliovirus infection: Most poliovirus infections are asymptomatic or cause mild febrile illness.

### Laboratory Confirmation

- Paralytic polio
  - Isolation of poliovirus type 1, 2, or 3 from a clinical specimen (stool or CSF)
- Non-paralytic poliovirus infection
  - Poliovirus isolate identified in an appropriate clinical specimen, with confirmatory typing and sequencing performed by the CDC Poliovirus Laboratory

## Case Classifications

- **Confirmed paralytic polio:** A case that meets the clinical case definition in which the patient has a neurological deficit 60 days after onset of initial symptoms, has died, or has unknown follow-up status.
- **Probable paralytic polio:** A case that meets the clinical case definition.
- **Confirmed non-paralytic poliovirus infection:** Laboratory confirmed poliovirus infection in a person without symptoms of paralytic poliomyelitis.

**Note:** All suspected cases of paralytic poliomyelitis are reviewed by a panel of expert consultants at the Centers for Disease Control and Prevention (CDC) before final case classification occurs. Final case classification could take 6 to 12 months.

## SURVEILLANCE AND CASE INVESTIGATION

### Case Investigation

Local and regional health departments should immediately investigate any reported suspect cases of polio. Identify and evaluate close contacts. Implement control measures and provide education to prevent further spread of disease. Report all cases of paralytic polio immediately to DSHS EAIDB.

### Case Investigation Checklist

- Notify DSHS EAIDB immediately.
- Confirm that the clinical and laboratory results meet the case definition. See Polio Reports among a Recently Vaccinated Child below.
- Review medical records or speak to an infection preventionist or physician to verify case definition, underlying health conditions, course of illness, vaccination status and travel history.
  - Collect full demographics (name, age, sex, race, complete address, and occupation of patient).
  - Request copies of admission and discharge summaries and laboratory results.
  - Clinical summary should include sites of paralysis and any complications of illness.
  - If patient dies, request copies of the autopsy report, death summary and death certificate.
  - Record information on the Suspected Polio Case Worksheet available at <http://www.cdc.gov/vaccines/pubs/surv-manual/appx/appendix14-2-polio-wrsht.pdf>
- Determine vaccination history of the case.
  - Collect the dates, and lot numbers of all previous doses of polio vaccine
    - Sources of vaccination status that should be checked include: case (or parent), ImmTrac, school nurse records, primary care provider, etc.
- Verify immunologic status
  - If any doubt exists about the patient's status, an immunologic evaluation of quantitative immunoglobulin, T and B cell quantification, lymphocyte transformation, etc. should be considered.
- Interview the case to get a detailed exposure history.
  - Recent travel of patient or a close contact outside of the US.
  - Contact with any known case of poliomyelitis.
  - Please note that polio only occurs in very limited locations throughout the world.

- Contact within previous 30 days with any person who received oral poliovirus vaccine (OPV) within the last 60 days (include date of contact, nature of contact, date contact received OPV, lot number of vaccine, age of contact, and relationship to patient). Please note that OPV is no longer used in the United States, but is routinely used in other countries.
- Identify and follow-up with all close contacts.
  - Monitor the close contacts for symptoms.
  - If the contact was exposed to the case's stool or may be exposed to the case's stool then vaccinate as appropriate.
- Submit specimens from case and close contacts to the DSHS laboratory.
  - Testing will be performed at CDC for case confirmation.
- Obtain copy of 60-day follow-up report to ascertain if there is any residual paralysis.
- Fax a detailed summary report along with hospital records, vaccination records, laboratory results and the Suspected Polio Case Worksheet to DSHS EAIDB.
- All confirmed and probable case investigations must be entered and submitted for notification in the NEDSS Base System (NBS). Please refer to the *NBS Data Entry Guidelines* for disease specific entry rules.

### Control Measures

- Educate the public on the advantages of immunization in early childhood.

### Polio Reports among a Recently Vaccinated Child

It is not uncommon for a poliovirus to be identified in a clinical specimen from an infant or young child who has recently received a dose of OPV. If you receive a laboratory report indicating that a poliovirus has been identified, obtain the following information on the patient:

- Complete immunization history (the number, dates, and lot numbers of all previous doses of OPV and inactivated poliovirus vaccine (IPV) vaccine)
- Clinical history (were there any clinical signs of paralysis?), and
- Diagnosis
- Obtain isolate to submit to CDC for further testing.

If the patient is suspected of having paralytic poliomyelitis, investigate case according to paralytic poliomyelitis guidelines.

## REPORTING AND DATA ENTRY REQUIREMENTS

### Provider, School, Child-Care Facility, and General Public Reporting Requirements

Confirmed, probable and clinically suspected cases are required to be reported **immediately** to the local or regional health department or to DSHS EAIDB at **(800) 252-8239** or **(512) 776-7676**.

### Local and Regional Reporting and Follow-up Responsibilities

Local and regional health departments should:

- Call DSHS EAIDB immediately when a polio investigation is being done or considered.
- Enter the case into NBS and submit an NBS notification on all **confirmed and probable** cases to DSHS within 30 days of receiving a report of confirmed case.
  - Please refer to the *NBS Data Entry Guidelines* for disease-specific entry rules.
  - A notification can be sent as soon as the case criteria have been met. Additional information from the investigation may be entered upon completing the investigation.

- **Final confirmation of case status can only be done by the CDC. Cases may be in NBS pending case status designation until CDC makes a ruling on the case status.**
- Fax (or mail) the Suspected Polio Case Worksheet, all hospital records, vaccination records and laboratory results within 30 days of completing the investigation.
  - **In the event of a death, copies of the hospital discharge summary, death certificate, and autopsy report should also be sent to DSHS EAIDB.**
  - Investigation forms may be faxed to **512-776-7616** or mailed to:
    - Infected Disease Control Unit
    - Texas Department of State Health Services
    - Mail Code: 1960
    - PO Box 149347
    - Austin, TX 78714-9347

## LABORATORY PROCEDURES

Before shipping specimens, be sure to notify DSHS EAIDB VPD staff at **(512) 776-7676**. The CDC will conduct all poliovirus testing but specimen submission is coordinated through the DSHS laboratory. It is essential to notify DSHS EAIDB VPD staff before sending specimens because the CDC may request additional types of specimens.

### Virus Isolation Specimen Collection and Submission

#### Enterovirus Culture - Isolation

- Preferred specimen and quantity:
  - CSF - 2-5 mL
  - Stool - 2-4g - place in viral transport media.
  - Nasopharyngeal (NP) Swab - in viral transport media
  - Tissue in enough viral transport media to prevent drying

#### Submission Form

- Use a G-2V Specimen Submission Form.
- Make sure the patient's name and date of birth or social security number match exactly what is written on the transport tubes.
- Fill in the date of collection, date of onset, and diagnosis/symptoms.

#### Specimen Shipping

- Transport temperature: Keep at 2-8°C (refrigerated).
- If specimen will arrive at lab > 48 hours from collection, store at -70° C and send on dry ice.
- DO NOT mail on a Friday unless special arrangements have been pre-arranged with DSHS Laboratory.
- Ship specimens to:

Laboratory Services Section, MC-1947  
Texas Department of State Health Services  
Attn. Walter Douglass (512) 776-7569  
1100 West 49th Street  
Austin, TX 78756-3199

#### Causes for Rejection:

- Specimen submitted on a preservative, such as formalin
- Discrepancy between name on tube and name on form