

Pertussis

Important Notice:

All public health recommendations for routine investigations are based on the “Control of Communicable Diseases Manual, 20th edition, 2015” (CCDM) unless otherwise stated. Use the CCDM as the primary resource for case investigations that require routine follow up. In cases of complicated situations or unique issues not addressed by this manual, please refer to the Administrative Rules of Montana (ARM) Chapter [37.114](#) or contact the designated Subject Matter Expert at the Communicable Disease Epidemiology section at the Montana DPHHS for further clarification.

PROTOCOL CHECKLIST

- Confirm diagnosis, see case definition (see section 3.2 and 4.1)
- Verify submission for lab confirmation, if applicable (see section 4.2)
- Review background information on the disease and its epidemiology (see section 2)
- Prioritize reported cases for follow up, investigate and interview as appropriate (see section 1.2)
- Contact provider to gather more information, if necessary
- Notify state health department of case by entering available information into the Montana Infectious Disease Information System (MIDIS) within 7 days per (ARM) [37.114.204](#) (see section 1.3)
- Retrieve disease specific form per the Montana Communicable Disease Reporting Reference for Local Public Health Jurisdictions (see SharePoint → CDEpi → CDEpi Disease Forms)
- Review for use, specific technical assistance guidance documents (see SharePoint →CDEpi →CDEpi Technical Guidance [Diseases A to Z] → disease name → Guidance Documents)
- Interview patient, cover the following:
 - Review disease facts with patient (see section 2.2)
 - Educate patient on prevention (see section 6)
 - Ask about exposures to relevant risk factors (see section 4.3)
 - Determine sensitive occupation (see section 4.3)
 - Identify symptomatic contacts (see section 4.4)
 - Implement Control Measures (see section 5.1)
 - Address patient’s questions or concerns
- Follow-up on special situations, including outbreaks or infected persons in sensitive situations (see section 5 and CCDM, review references and additional information or contact CDEpi at 406-444-0273)
- Enter additional data obtained from interview into MIDIS (fax completed form to DPHHS if indicated on the CD Reporting Reference form)
- Attach any additional lab reports to case investigation (a step in MIDIS)
- When done with investigation, close case in MIDIS

1 DISEASE REPORTING

1.1 Provider notification to Public Health Authorities

Any person, including, but not limited to a physician, dentist, nurse, medical examiner, other health care practitioner, administrator of a health care facility or laboratory, public or private school administrator, or laboratory professional who knows or has reason to believe that a case exists of a reportable disease or condition defined in the Administrative Rules of Montana (ARM) [37.114.203](#) must immediately report to the local health officer.

1.2 Local Health Department Follow-up Responsibilities

Immediately after being notified of a case or a potential outbreak of pertussis, a local health officer must investigate and implement control measures as indicated by CCDM to prevent or control the transmission of disease per ARM [37.114.314](#).

1.3 Local Health Department Reporting to State Public Health Authorities

Pertussis must be reported to DPHHS within seven days. The disease specific form does not need to be submitted to DPHHS as part of the disease investigation process. Local health officers are required to report information about a case to the Montana Department of Public Health and Human Services (DPHHS) within the timeframes established in ARM [37.114.204](#).

2 THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Public Health Significance in Montana

Pertussis (whooping cough) can cause serious and sometimes life-threatening complications in infants and young children, especially those who are not fully vaccinated.

In infants younger than 1 year of age who get pertussis, about half are hospitalized. The younger the infant, the more likely treatment in the hospital will be needed. Of those infants who are hospitalized with pertussis about:

- 1 in 4 (23%) get pneumonia (lung infection)
- 1 or 2 in 100 (1.6%) will have convulsions (violent, uncontrolled shaking)
- Two thirds (67%) will have apnea (slowed or stopped breathing)
- 1 in 300 (0.4%) will have encephalopathy (disease of the brain)
- 1 or 2 in 100 (1.6%) will die

Montana has recently reported high rates of illness.

2.2 Clinical Description of Illness

Refer to CCDM for relevant disease information and its epidemiology.

3 CASE DEFINITION

3.1 Clinical Description

In the absence of a more likely diagnosis, a cough illness lasting ≥ 2 weeks, with at least one of the following signs or symptoms:

- Paroxysms of coughing; **OR**
- Inspiratory whoop; **OR**
- post-tussive vomiting; **OR**
- Apnea (with or without cyanosis) (FOR INFANTS AGED <1 YEAR ONLY)

3.2 Case Classification

Probable

In the absence of a more likely diagnosis, a cough illness lasting \geq two weeks, with at least one of the following symptoms:

- Paroxysms of coughing;
- Inspiratory “whoop”; or
- Post-tussive vomiting; and
- Absence of laboratory confirmation; and
- No epidemiologic linkage to a laboratory-confirmed case of pertussis.

OR, FOR INFANTS AGED <1 YEAR ONLY:

- Acute cough illness of any duration, with
 - At least one of the following symptoms:
 - Paroxysms of coughing; or
 - Inspiratory “whoop”; or
 - Apnea (with or without cyanosis)

And

- Polymerase chain reaction (PCR) positive for pertussis

OR, FOR INFANTS AGED <1 YEAR ONLY:

- Acute cough illness of any duration, with
 - At least one of the following symptoms:
 - Paroxysms of coughing; or
 - Inspiratory “whoop”; or
 - Apnea (with or without cyanosis)

And

- Contact with a laboratory-confirmed case of pertussis

Confirmed

An acute cough illness of any duration, with isolation of *B. pertussis* from a clinical specimen;

OR

- cough illness lasting \geq two weeks, with at least one of the following symptoms:
 - Paroxysms of coughing; or
 - Inspiratory “whoop”; or
 - Post-tussive vomiting; or
 - Apnea (with or without cyanosis) (FOR INFANTS AGED <1 YEAR ONLY)

AND

- Polymerase chain reaction (PCR) positive for pertussis.

OR

- cough illness lasting \geq two weeks, with:
 - Paroxysms of coughing; or
 - Inspiratory “whoop”; or
 - Post-tussive vomiting; or
 - Apnea (with or without cyanosis) (FOR INFANTS AGED <1 YEAR ONLY)

AND

- Contact with a laboratory-confirmed case of pertussis*

Comment

*Note: An illness meeting the clinical case definition should be classified as "probable" rather than "confirmed" if it occurs in a patient who has contact with an infant aged <1 year who is Polymerase Chain Reacton (PCR) positive for pertussis and has \geq 1 sign or symptom and cough duration <14 days (classified as "probable" case).

4 ROUTINE CASE INVESTIGATION

In accordance with ARM [37.114.314](#) conduct an epidemiologic investigation to determine the source and possible transmission of infection. Refer to the CCDM regarding additional aspects related to investigation.

4.1 Confirm the Diagnosis

Review the clinical presentation and laboratory results in relation to the case definition under section 3 above to confirm the diagnosis. Pay particular attention to Manual of Vaccine Preventable Diseases Manual Chapters 10 “Pertussis” and 22, “Laboratory Support for the Surveillance of Vaccine-Preventable Diseases” at <http://www.cdc.gov/vaccines/pubs/surv-manual/index.html>

4.2 Laboratory Requirements

An isolate of *B. pertussis* or a specimen suitable for PCR testing needs to be sent to MTPHL for confirmation as identified in ARM [37.114.313](#). As noted in the ARM, it is not always necessary to test all specimens after a disease organism is determined by the department and generally ONLY test patients who are symptomatic. Confer with DPHHS Communicable Disease staff at 406-444-0273 regarding testing.

For more information on analysis and specimen collection, please contact the laboratory conducting the test or the Montana Public Health Laboratory (MTPHL) at 1-800-821-7284. The MTPHL Laboratory Services Manual can be accessed <http://dphhs.mt.gov/publichealth/LaboratoryServices/PublicHealthLabTesting>

4.3 Case Investigation

- a. Contact the medical provider who ordered testing or is attending the case. Utilize the CDC Pertussis Surveillance Worksheet to assist in obtaining all information necessary to fulfill the reporting requirements outlined in ARM [37.114.205](#) and meet the minimum required data elements needed for MIDIS entry.
- b. Contact and interview the patient to determine source of exposure in the 6 to 21 days prior to symptom onset.

Ask about possible exposures in the 6 to 21 days before symptom onset.

- Travel history
 - Contact with any acquaintance or household member with a similar illness.
 - High risk contacts (see High-risk contacts under contact investigation)
- c. Create a line listing of contacts in cases involving large numbers of potential contacts.

4.4 Contact Investigation

Close contact: direct contact with respiratory, oral, or nasal secretions from a symptomatic case-patient; direct face-to-face contact, regardless of duration, with a case-patient who is symptomatic (e.g., in the catarrhal or paroxysmal period of illness); or shared confined space in close proximity for a prolonged period of time with a symptomatic case-patient.

High-risk contact: persons at risk for developing severe disease and adverse outcomes. All high risk individuals should be identified as part of the contact investigation in order to determine appropriate use of post exposure prophylaxis (PEP). High risk contacts include:

- Infants and women in their third trimester of pregnancy – severe and sometimes fatal pertussis-related complications occur in infants aged <12 months, especially among infants

aged <4 months. Women in their third trimester of pregnancy may be a source of pertussis to their newborn infant.

- All persons with pre-existing health conditions that may be exacerbated by a pertussis infection (for example, but not limited to immunocompromised persons and patients with moderate to severe medically treated asthma).
- Contacts who themselves have close contact with either infants under 12 months, pregnant women or individuals with pre-existing health conditions at risk of severe illness or complications.
- All contacts in high risk settings that include infants aged <12 months or women in the third trimester of pregnancy. These include, but are not limited to neonatal intensive care units, childcare settings, and maternity wards.

4.5 Environmental Evaluation

Not applicable

5 CONTROL MEASURES

In accordance with ARM [37.114.501](#) utilize the control measures indicated in the CCDM for pertussis. Contact DPHHS CDEpi for consultation and questions at 406-444-0273.

5.1 Case Management

Infection control precautions must be imposed upon a case of pertussis for five days after the start of antibiotic therapy, or 21 days after the date of symptom onset if no antibiotic therapy is started. Refer to ARM [37.114.563](#) for additional guidance on control measures.

5.2 Contact Management

A symptomatic contact who meets the probable case definition should be investigated as a case (epi-linked) and be referred for testing. Control measures should be implemented until testing rules out the contact as a case. *Asymptomatic contacts should NOT be tested.*

Prophylaxis

Provide Post Exposure Prophylaxis (PEP) to:

- *all household contacts of a pertussis cases within 21 days of onset of cough in the index patient*
- *all persons exposed to a case who are at high risk of severe illness*
- *all persons who will have close contact with a person at high risk of severe illness including:*
 - *infants and women in their third trimester of pregnancy*
 - *all persons with pre-existing health conditions that may be exacerbated by a pertussis infection (including but not limited to, immunocompromised individuals and individuals with moderate to severe asthma)*

- *contacts who have close contact with high-risk individuals (see 4.4 above)*
- *all contacts in high risk “settings” where high-risk individuals (see 4.4 above) are co-located including but not limited to neonatal intensive care units, childcare settings, and maternity wards.*
- *All close contacts in limited closed settings when the number of identified cases is small and ongoing transmission within the larger setting is not ongoing.*

(Multiple rounds of antibiotics are NOT recommended when individuals already having received antibiotics are renamed as contacts at a later date and ongoing transmission is evident. Healthcare provider judgment should be utilized in cases where high risk individuals are exposed or are at risk of exposure. Generally, individuals in this category should be monitored for 21 days after exposure with further control measures contingent upon the development of symptoms. Antibiotics are considered to still be effective up to 10 days after the last day of treatment.)

5.3 Environmental Measures

Not applicable

5.4 Special Circumstances

Outbreaks of pertussis may occur due to the waning of vaccine-induced immunity over time (beginning approximately four years after the last dose). Outbreaks may also occur when persons are under-or unimmunized (including those with religious exemptions). Because pertussis tends to be a milder disease in older and vaccinated persons, it may not be recognized in a timely manner. In addition, adolescents and adults may play an important role in transmitting pertussis to young infants who are too young to have received three or more doses of a pertussis-containing vaccine.

For additional information on the management of pertussis outbreaks refer to the CDC’s Vaccine Preventable Disease Surveillance Manual at <http://www.cdc.gov/pertussis/pubs.html>.

6 ROUTINE PREVENTION

6.1 Immunization Recommendations

The recommended pertussis vaccine for infants and children is called DTaP. This is a combination vaccine that protects against three diseases: diphtheria, tetanus and pertussis.

Vaccine protection for these three diseases fades with time. Before 2005, the only booster available contained protection against tetanus and diphtheria (called Td), and was recommended for teens and adults every 10 years. Today there is a booster for preteens, teens and adults that contains protection against tetanus, diphtheria and pertussis (Tdap).

Adults should receive Tdap instead of their next regular 10 year tetanus booster unless individual specific contraindications are noted by a provider. The dose of Tdap can be given earlier than the 10-year mark. Individuals should discuss this with their healthcare provider.

6.2 Prevention Recommendations

The best way to prevent pertussis (whooping cough) is to get vaccinated in accordance with recommendations. Also, practice good hand hygiene and stay home from school or work when sick.

7 ESCALATION/ACTIVATION OF EMERGENCY OPERATIONAL PLANNING

Investigation guidelines are designed to assist local health jurisdictions in the steps and actions needed to report, investigate and control reported cases of communicable diseases. In the event individual case investigations or other reported cases lead to clusters and/or outbreaks, or investigations outside of a local health jurisdiction, local health jurisdictions need to contact DPHHS under the Administrative Rules of Montana [37.114.314](#) and [37.114.315](#) so DPHHS can consider emergency operational escalation or activation under the Communicable Disease Annex to the DPHHS Emergency Operation Plan.

8 REFERENCES AND ADDITIONAL INFORMATION

Important references:

- A. "Control of Communicable Diseases Manual, 20th edition, 2015" (CCDM) American Public Health Association <https://secure.apha.org/imis/ItemDetail?iProductCode=978-087553-0185&CATEGORY=BK>
- B. Manual for the surveillance of Vaccine-Preventable Diseases, Chapter 10: "Pertussis", Centers for Disease Control and Prevention; <http://www.cdc.gov/vaccines/pubs/surv-manual/chpt10-pertussis.html>
- C. Manual for the surveillance of Vaccine-Preventable Diseases, Chapter 22: "Laboratory Support for Surveillance of Vaccine-Preventable Diseases", Centers for Disease Control and Prevention; <http://www.cdc.gov/vaccines/pubs/surv-manual/chpt22-lab-support.html>
- D. CDC Pertussis (Whooping Cough) website <http://www.cdc.gov/pertussis/index.html>
- E. DPHHS Pertussis website <http://dphhs.mt.gov/publichealth/cdepi/diseases/pertussis.aspx>