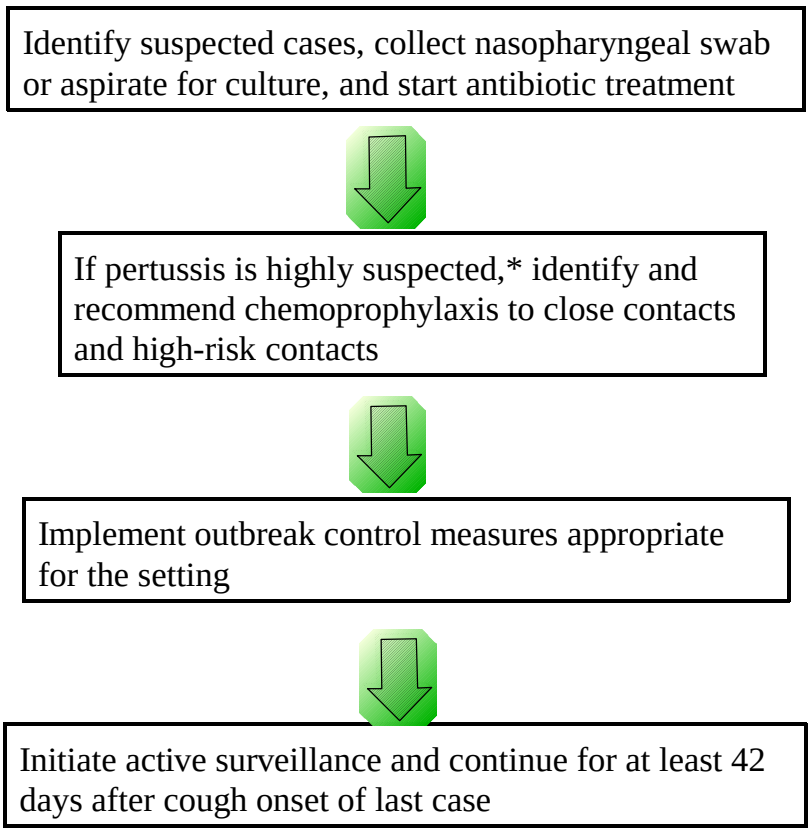
Chapter 6 — General Guidelines for Pertussis Case Investigation and Surveillance

Dalya Güriş, MD, MPH and Rebecca Martin, PhD

Revised April 2000

CASE INVESTIGATION

Pertussis cases are reported to local or state health departments by physicians, nurses, hospital or laboratory staff, or families. These suspected cases should be investigated as soon as they are reported. Following is a flow chart of pertussis case and contact investigation:



* If suspicion of pertussis is low (i.e., sporadic case, no epidemiologic linkage to a confirmed pertussis case, no paroxysms, etc.), investigators may wait for laboratory confirmation of the case to initiate contact search and recommendation for prophylaxis.

The Pertussis Surveillance Worksheet (see **Appendix 6-1**) may be used as a guideline for conducting a case investigation.[1] This form can also be used later by the state health department to report cases to the CDC. Information should be collected through interviews with the patient, his/her family, and health care providers. Laboratory, hospital, and clinic records can be reviewed as well. If laboratory tests have not been done, it is critical to collect nasopharyngeal specimens for culture or other recommended tests as soon as possible, because culture results are more likely to be positive in the early

stages of the disease and before antimicrobial treatment (see **Chapter 2: Diagnosis and Laboratory Methods**).

B. parapertussis and *B. bronchiseptica* are closely related to *B. pertussis* and may cause a pertussis-like illness. Parapertussis or bronchiseptica cases do not need to be investigated or reported.

The following data are epidemiologically important and should be collected in the course of a case investigation.[1] Additional information may be collected at the direction of the state health department.

Information to Collect:

- Demographic information
- Clinical data including
  - —Cough, date of cough onset, duration of cough
  - —Paroxysms, whoop, post-tussive vomiting, apnea
- Complications
  - —Pneumonia documented by chest x-ray
  - —Seizures
  - —Encephalopathy
  - —Hospitalization, number of days of hospitalization
  - —Death
- Treatment
  - —Antimicrobial agents used
  - —Duration of therapy
- Laboratory tests ordered and results
  - —Culture
  - —Direct fluorescent assay (DFA)
  - —Serology
  - —Polymerase chain reaction (PCR)
- Vaccine history
  - —Dates of administration of pertussis-containing vaccine
  - —Type of vaccine
  - —Manufacturer of vaccine
  - —Lot number
  - —Number of doses of pertussis-containing vaccine before illness onset
  - —Reason for non-vaccination
- Epidemiological information
  - —Date first reported to health department
  - —Date case investigation initiated
  - —Epidemiologic linkage to a laboratory confirmed case

—Association with an outbreak
—Transmission settings
—Further documented spread and setting for this
—Source of infection for patients aged <1 year
—Type of outbreak the case is linked to

Once clinical information and available laboratory test results are obtained, a decision should be made (in collaboration with the health care provider) on how to classify the case. If it is a suspected, probable or confirmed pertussis case (see **Chapter 11: Definitions**)., the date of onset of symptoms should be evaluated. This information is important to implement treatment and preventive measures (see **Chapter 3: Treatment and Chemoprophylaxis**). For example, if the patient has had a cough illness for two months, use of antibiotics at the time of the case investigation would have virtually no benefit to the patient or his contacts. For recommendations on treatment of the case patient, see **Chapter 3: Treatment and Chemoprophylaxis**.

It is important to also collect details of vaccination history (dates of each pertussis vaccination, type of vaccine, lot number, and manufacturer). This information is critical to monitor effectiveness of different pertussis vaccines (see **Chapter 4: Use of Pertussis Vaccine in Outbreaks**).

A line listing of individuals with symptoms (suspected, probable or confirmed cases) is helpful to maintain. The line listing should include name, duration of cough, location, cough onset and other symptoms. This line listing can be used to monitor the outbreak and analyzed to identify groups at high risk for developing pertussis and target preventive measures (i.e., vaccination, education, etc.).

CONTACT INVESTIGATION

Although data from controlled clinical trials are lacking, prophylaxis of all household members, other close contacts, and high-risk contacts may prevent or minimize transmission (see **Chapter 3: Treatment and Chemoprophylaxis**). Defining "close contacts" outside the household is especially challenging (see **Chapter 11: Definitions**). Therefore, outside household environments, the risk for secondary transmission of pertussis should be evaluated on a case-by-case basis and decisions to recommend prophylaxis should be based on infectiousness of the case, transmission setting, risk for transmission to others, and risk status of the contacts. See Chapters 7-10 for recommendations on control of outbreaks occurring in different settings.

Pertussis may spread in environments other than the home, school or health care setting (i.e., offices, restaurants, etc.). Recommendations for these settings have not been

specified in these guidelines. However, basic principles of case and contact investigation, treatment of cases, and chemoprophylaxis of close and high-risk contacts apply to these settings as well.

There are no published data on risk of transmission of pertussis in aircraft. In addition, retrospectively identifying and locating passengers who traveled in an aircraft are difficult and time consuming. Therefore, in general it is not recommended to investigate aircraft contacts of cases who traveled during their infectious period.

REPORTING OF CASES

All states, along with Puerto Rico and Guam, include pertussis among those diseases for which reporting is mandatory.[2] Regulations and/or laws describe those persons or institutions who are responsible for reporting, such as health care providers, hospitals, laboratories, schools, day care facilities, and other institutions.

Once cases are investigated, provisional reports should be sent to the state health department. Once case investigation is completed, probable and confirmed cases should be reported to CDC via the National Electronic Telecommunications System for Surveillance (NETSS) using the supplemental pertussis screens.[1] Information on the Pertussis Report Form (see Appendix 1) may be used for reporting. Reporting should not be delayed because of incomplete information or lack of confirmation; following completion of case investigations, data previously submitted to NETSS should be updated with the available new information.

Cases reported to CDC are analyzed on a regular basis to identify groups at high risk for experiencing outbreaks of pertussis and targeting preventive measures. For the same purpose, clusters of cases need to be investigated at the state level as they are identified. Each state should have a system to identify cases that are linked to each other. One method may be by using the variable called "Outbreak Name" listed on the Pertussis Surveillance Worksheet. A suggested format is as follows:

Example: 2000001

___ ___ ___ ___	___ ___ ___
4-digit year	3-digit outbreak number

The code above is easily interpreted as the first outbreak in 2000 and its use allows investigators to group cases linked to the same outbreak.

REFERENCES

1. Guris D, Martin R, Wharton M. Chapter 8: Pertussis. In: Manual for the surveillance of vaccine-preventable diseases. Centers for Disease Control and Prevention: Atlanta, GA, 1999.

2. Roush S, Birkhead G, Koo D, et al. Mandatory reporting of diseases and conditions by health care professionals and laboratories. JAMA 1999;282(2):164-70.