Public Health Brief

Dec 2011

Pertussis Testing Guidance for Healthcare Providers

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Recently, there has been an increase in the numbers of reported cases of pertussis in both the Tri-County Health Department jurisdiction and in Colorado as a whole. Further investigation of these revealed that a substantial proportion of these cases do not have clinically compatible illness, are deemed false positive, and subsequently deleted from state and local disease tracking systems.

1. **Identified specific causes of false positive pertussis tests:**
    a. Individual health care providers or practices are testing patients who have low likelihood of having pertussis.
    b. Pertussis Polymerase Chain Reaction (PCR) testing is not standardized across laboratories. Laboratories utilize differing cutoff values for what is reported as positive. Thus, what one lab would have potentially reported a result as "Indeterminate" or "Mildly Positive," another laboratory may definitively report as "Positive."
    c. Certain pertussis vaccines (e.g. Sanofi) contain pertussis DNA. Contamination of surfaces in health care settings with DNA from vaccines can render PCR tests falsely positive.
    d. Laboratory sampling media, specifically liquid transport media, enhances background environmental contamination in PCR testing and increases false positive test results.

2. **How do false positives affect the health of the population?**
    To limit the spread of disease and to protect high-risk groups, public health agencies follow up on **all** positive pertussis cases to ensure antibiotic treatment for cases as well as antibiotic prophylaxis for close contacts and high-risk individuals. In certain cases, letters may be sent to child care facilities and/or schools warning parents of pertussis exposures in children and cautioning for follow-up if children are symptomatic. If appropriate, public health agencies may recommend antibiotic prophylaxis for classrooms or facilities as needed. Therefore, **one false positive may lead to inappropriate antibiotic prophylaxis for many other individuals** in the community**.**

3. Steps to improve testing practices:

a. **Avoid testing of asymptomatic individuals.** Asymptomatic close contacts of confirmed cases should **not** be tested and testing should **not** be used to determine post-exposure prophylaxis.
b. PCR is optimal for testing when used in first **three** weeks of cough when bacterial DNA is present in nasopharynx.
c. Consider changing laboratory sample media to semisolid or **non-liquid transport media** or transport of dry swab without media especially if Sanofi vaccines are administered in that clinic.
d. Always wear **fresh gloves** before and during specimen collection, as well as during vaccine/syringe preparation and vaccination
e. **Wash hands** after handling specimens as well as after administering immunizations.
f. Routinely clean clinic areas using a **10% bleach solution** to reduce surface contamination with pertussis DNA from vaccines. (** To make 10% bleach solution: fill a quart size spray bottle of water with 1 teaspoon of plain, unscented bleach **)
g. When collecting a swab specimen for pertussis testing, make sure to sample the **posterior nasopharynx** (see diagram).

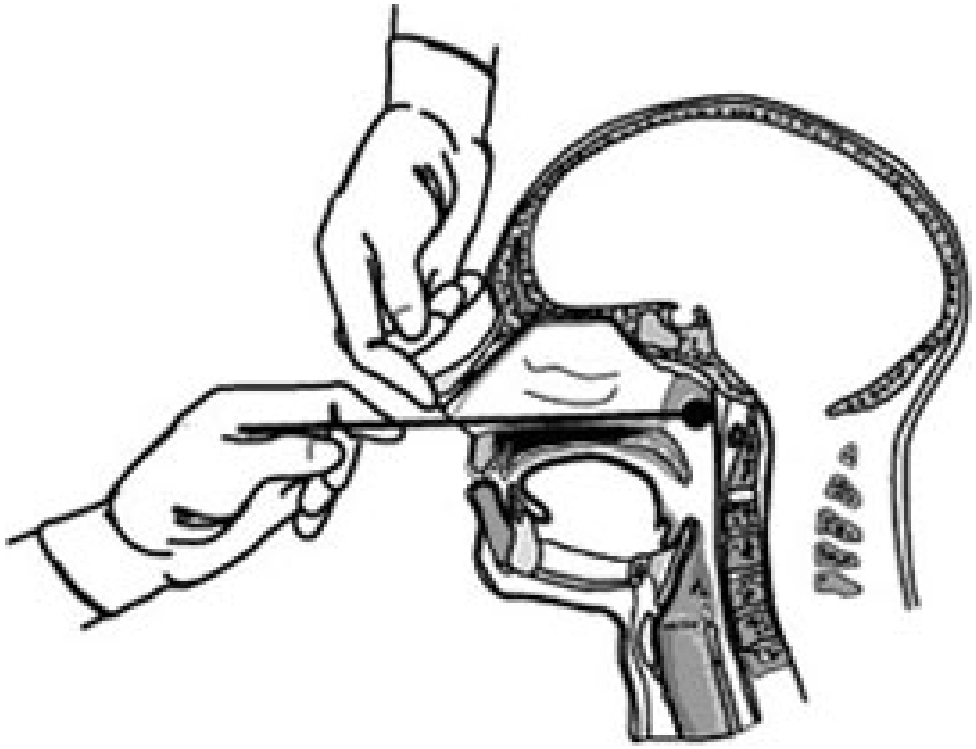
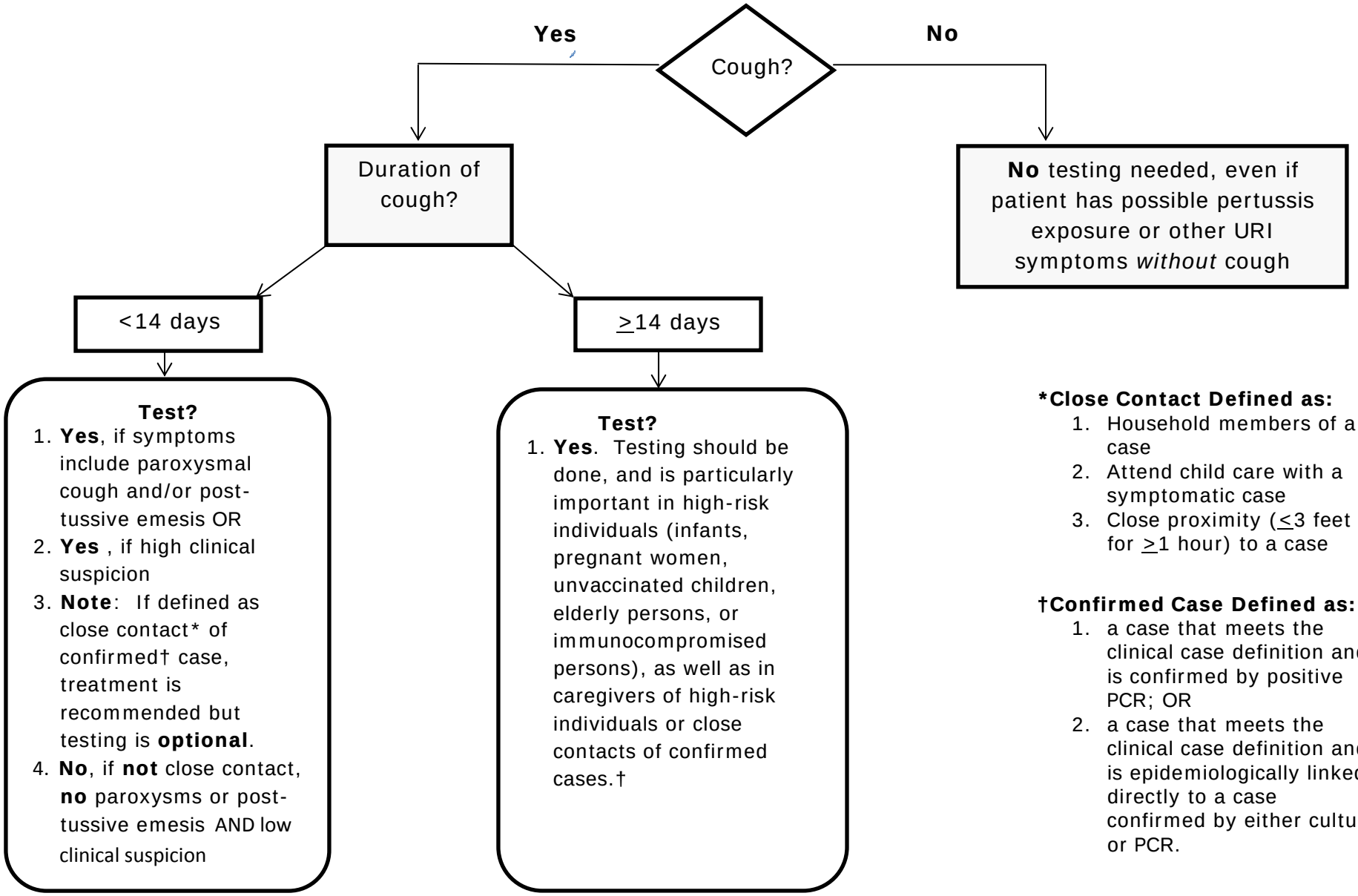


Image: Manual for the Surveillance of Vaccine-Preventable Diseases, 4th ed, 2008

TCHD Recommendations for Pertussis Testing

Objective: Prevent pertussis illness in persons with increased risk of severe and/or complicated illness, including infants aged <12 months, elderly, and persons with chronic respiratory conditions or immunocompromised status.



***Close Contact Defined as:**

1. Household members of a case
2. Attend child care with a symptomatic case
3. Close proximity (≤3 feet for ≥1 hour) to a case

†Confirmed Case Defined as:

1. a case that meets the clinical case definition and is confirmed by positive PCR; OR
2. a case that meets the clinical case definition and is epidemiologically linked directly to a case confirmed by either culture or PCR.

Clinical Case Definition*

A cough illness lasting at least **2 weeks** with at least **one** of the following, without other apparent cause:

a) paroxysms of coughing
b) inspiratory "whoop"
c) post-tussive emesis

This clinical case definition is appropriate for endemic (present in a community at all times but at relatively low levels) or sporadic cases. In outbreak settings, a case may be defined as a cough illness lasting at least 2 weeks.

*Source: Centers for Disease Control, http://www.cdc.gov/pertussis/surv-reporting.html.

Symptoms:

1. **Fever** may be absent or minimal
2. Clinical **presentation varies** with age and vaccination status

Stage	Typical Length	Clinical Features
1: Catarrhal (considered most infectious period)	7-10 days; range 4-21 days	Coryza, low-grade fever, mild cough
2: Paroxysmal	1-6 weeks; may last up to 10 weeks	Paroxysmal cough, whoop, possible cyanosis, post-tussive emesis, fatigue
3: Convalescent	7-10 days; range 4-21 days	Gradual recovery, less persistent paroxysms

Courtesy: CDC Pertussis http://www.cdc.gov/pertussis/clinical/features.html.

Implications of Positive Test:

1. Cases are **excluded from school and child care** for 21 days after onset of cough OR until completion of 5 days of antibiotics.
2. **Antibiotic prophylaxis recommended** to household members and close contacts if exposure occurred <21 days prior to cough onset.
3. Local Health Departments interview **all** cases and may send letters regarding possible exposure to schools and child care facilities.

Additional Resources from the Centers for Disease Control and Prevention –

www.cdc.gov/pertussis/clinical/index.html

www.cdc.gov/pertussis/clinical/diagnostic-testing/diagnosis-pcr-bestpractices.html

For more information or questions, please contact:

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Selected Diseases by Date of Report
Adams, Arapahoe, and Douglas Counties
2011 Year-to-date Through November