

Pertussis Information Sheet

December 2013

Organism	<ul style="list-style-type: none"> • <i>Bordetella pertussis</i>- Gram negative bacillus; aerobic; fastidious and requires special media for isolation.
Route of Infection	<ul style="list-style-type: none"> • Person-to-person via large aerosolized respiratory droplets. • Direct contact with respiratory secretions of infected individuals. • Indirect spread through contaminated fomites occurs rarely, if at all.
Communicability	<ul style="list-style-type: none"> • Highly communicable during the catarrhal (early stage) and infectious during first 21 days of cough if not treated with an appropriate antibiotic. • No longer infectious after completion of 5 days of an appropriate antibiotic.
Pathogenesis	<ul style="list-style-type: none"> • Toxin-mediated disease; bacteria attach to cilia of respiratory epithelial cells; produce toxin that paralyzes cilia; causes inflammation of respiratory tract; interfere with clearing of pulmonary secretions.
Epidemiology	<ul style="list-style-type: none"> • Humans are the only known reservoir. • In 2012, there were 41,880 cases in the U.S. (provisional) and 1430 cases in Colorado during an epidemic year. • Even compared to an epidemic year, number of cases in US in the 1940's was much higher (200,000) prior to the development of vaccine. • Peaks every 3-5 years. • No seasonality in the US. • Secondary attack rates of 80% among susceptible household contacts. • Increasing pertussis rates in Colorado in the 11-14 year old age group, coinciding with the first cohort of children receiving DTaP exclusively without any DTP primer.
Prevention and Control of Outbreaks	<ul style="list-style-type: none"> • Vaccination is the safest and most effective tool against pertussis. • The primary objective of testing, treatment and exclusion of pertussis cases and prophylaxis for those exposed to pertussis, is to prevent illness in persons at increased risk* of severe illness or in persons who may expose those at high-risk of developing severe disease. • Antibiotic treatment for pertussis patients and antibiotic prophylaxis for household contacts and high-risk*exposed individuals. • Exclude any child or adult diagnosed with pertussis from school, child care, and extracurricular activities until they have completed 5 full days of antibiotics (return on 6th day after antibiotics were started) or until 21 days after the cough began if antibiotics are not taken. • Encourage social distancing, cough etiquette, frequent hand washing and staying home from school or work when ill. <p>*High risk persons-infants< 12 months of age, pregnant women, those with pre-existing health condition that may be exacerbated by pertussis-for example but not limited to, those with immunocompromising conditions, neuromuscular disease or moderate to severe lung disease.</p>
Treatment	<ul style="list-style-type: none"> • Antibiotic treatment indicated if patient has been coughing< 21 days. • First choice antibiotic-Azithromycin*, Clarithromycin. • Second choice antibiotic-Erythromycin • Third choice antibiotic-Trimethoprim-sulfamethoxazole (Bactrim or Septra) <p>*Unless Azithromycin contraindicated- see http://www.fda.gov/drugs/drugsafety/ucm341822.htm</p>
Vaccine/Immunity	<ul style="list-style-type: none"> • Neither infection nor immunization provides lifelong immunity. • Children should receive 5 doses of DTaP. One dose at 2, 4 and 6 months of age; a fourth dose at 15-18 months of age and a fifth dose at 4-6 years of age.

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	<ul style="list-style-type: none"> • Tdap is recommended between 11-12 years of age and for all adults aged 19 years and older who have not yet received a dose of Tdap. • Pregnant women should get one dose of Tdap during the third trimester or late second trimester during every pregnancy and Tdap is recommended in the immediate postpartum period for new mothers who were not previously vaccinated or whose vaccination status is unknown. • Parents, siblings, caregivers, and other potential visitors of infants should be up to date on pertussis immunizations before having contact with an infant. • When a tetanus booster is indicated, Tdap should be used in place of Td for wound management in adults aged 19 years and older who have not received Tdap previously. • DTaP is 80-90% effective but over time there is waning immunity. Five years after the last vaccine of the series is given, efficacy decreases to approximately 70%. • Vaccinated persons may develop pertussis, but is usually a milder disease course. • Unvaccinated children are almost 9 times more likely to develop pertussis as compared to vaccinated children that have received their complete set of 5 DTaP vaccines.
Incubation Period	<ul style="list-style-type: none"> • 7-10 days (range of 4 to 21 days), rarely as long as 42 days potentially in infants/pregnant/immunosuppressed individuals.
Symptoms	<ul style="list-style-type: none"> • Catarrhal stage (1-2 weeks)-onset of mild upper respiratory symptoms such as coryza, sneezing, low-grade fever. • Paroxysmal cough stage (1-6 weeks; may extend up to 10 weeks)-paroxysmal cough, post-tussive vomiting, whoop or apnea. Apnea may be only symptom exhibited by young infants. • Convalescence stage (2-3 weeks-months)-gradual recovery with decreasing paroxysmal coughing episodes. • Complications-pneumonia, encephalopathy, seizures, death. Most deaths and severe disease occur in infants < 6 months of age.
Differential Diagnosis	<ul style="list-style-type: none"> • Other <i>Bordetella</i> species, <i>Mycoplasma pneumoniae</i>, <i>Chlamydia</i>, Respiratory Syncytial Virus (RSV) and adenovirus.
Laboratory test (sample collection)	<ul style="list-style-type: none"> • PCR (nasal wash/swab)-collected 0-3 weeks after cough onset; up to 4 weeks. • Culture (nasal wash/swab)-collected 0-2 weeks after cough onset. • Serology (blood)-collected 2-8 weeks after cough onset; up to 12 weeks. -IgG+ (preferred), IgM+ and IgA+ all considered 'Probable' cases and are to be investigated.
Please report lab-confirmed as well as MD-diagnosed cases of pertussis (based on compatible symptoms) to your local health department or CDPHE	<p>Please use the following link to access your local health department's contact information: http://www.colorado.gov/cs/Satellite?c=Page&childpagename=CDPHE-Main%2FCBONLayout&cid=1251588365684&pagename=CBONWrapper</p> <p>Or report to CDPHE: CDPHE: 303.692.2700, After hours: 303.370.9395</p>