



PERTUSSIS ALERT IN WASHOE COUNTY

The Washoe County Health District (WCHD) is sending this alert for all healthcare providers (HCP) in Washoe County because of an increase in pertussis. The purpose of this alert is to raise your awareness of the increased level of pertussis in Washoe County and to ask for your cooperation and assistance in our effort to control the further spread of pertussis through the following:

1. **Do** order the appropriate laboratory tests for your symptomatic patients. These tests include PCR or culture.
2. **Do not** order serology tests for diagnosis of pertussis.
3. **Do not** order laboratory testing for pertussis in asymptomatic patients.
4. **Do** collect appropriate clinical specimens in your office.
5. **Do not** send patients to commercial laboratories or the Health District for specimen collections.
6. **Do** keep specimen collection supplies on hand. Contact your laboratory provider to obtain supplies.
7. **Do** notify the WCHD within 24 hours of diagnosis of a case of pertussis.
8. **Do** notify patients with pertussis that they must be excluded from childcare, school, and other group activities until 5 days of effective antibiotic treatment.
9. **Do** consider providing appropriate antibiotic prophylaxis to household contacts of your patients once pertussis is diagnosed.
10. **Do** ask your patients with symptomatic cough to wear a mask while in your office or while in the office of any provider or clinic you refer them to.

The following sections will elaborate more in details on pertussis.

NATIONAL PERSPECTIVE

Pertussis cases are reported by local/state health authorities to the Centers for Disease Control and Prevention (CDC) through the National Notifiable Diseases Surveillance System (NNDSS). Figure 1 shows the trend of reported pertussis cases from 1922 to 2012. Although case numbers fell dramatically during 1940s, 1950s, 1960s, a gradual increase began during the 1980s. Provisional data for 2012 indicates that reported cases of pertussis exceed 41,000, which is higher than any previous year since 1955.

In 2010, the State of California had the highest incidence of pertussis in 52 years. In 2011, Washington State declared a statewide epidemic of pertussis.

Figure 1

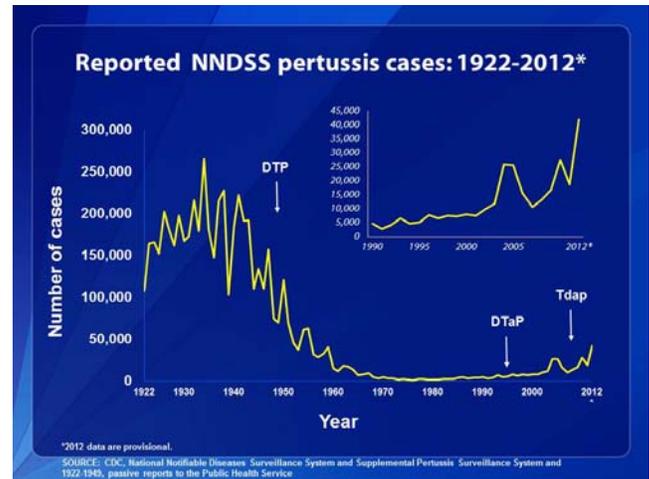


Figure 2

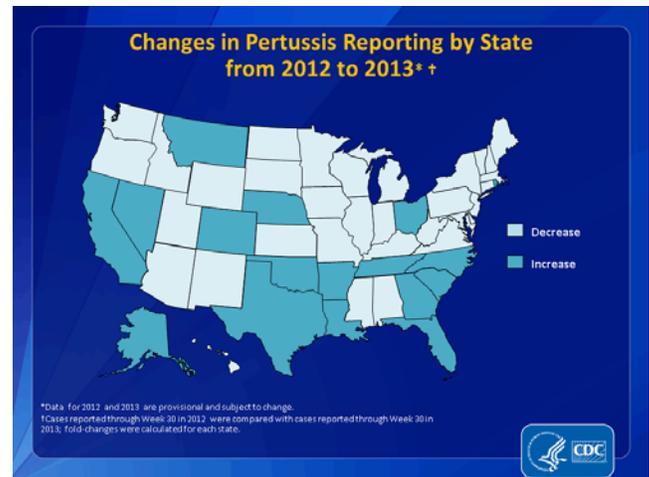


Figure 2 shows the changes in pertussis reporting by state from 2012 to 2013. Overall reporting of pertussis had declined during 2013; however, Nevada is one of 16 states which have reported an increase in pertussis cases compared with the same time period during 2012.

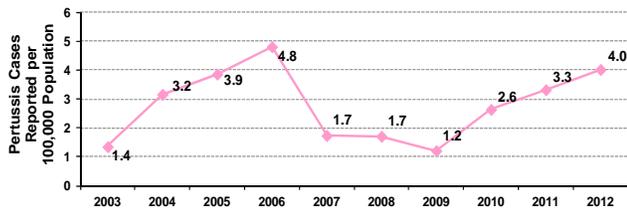
LOCAL PERSPECTIVE

In Washoe County, 5 to 19 cases were reported each year from 2003 to 2012 with a median number of 11 reported cases per year. As of August 22, 2013, Washoe County has already reached the median number with 11 cases having been reported in Washoe County.

Of the 11 cases reported in 2013, six (6) were from two separate clusters and one (1) individual case were investigated in the past three weeks and the remaining four (4) sporadic cases were reported between January and July. Both source cases of the two recently identified clusters were children under 2 years of age. One of them was <2 months old. The individual case was an adolescent child. Among seven cases reported in the past three weeks, six were laboratory confirmed. Of these seven cases, two didn't receive pertussis containing vaccine due to non-eligible age and allergy; four (4) received the appropriate numbers of doses of vaccines but were not timed consistent with the Advisory Committee on Immunization Practices (ACIP) recommended schedule. Only one of seven received DTaP vaccine consistent with the ACIP recommended schedule.

Figure 3 shows a trend of reported incidence of pertussis from 2003 to 2012. The median age of reported case was 14 years in 2012 and 16 years in 2013, to date. Nationally, rates in adolescents 13 and 14 years of age have also increased; the highest incidence in infants and in 7-10 years old age group.

Figure 3. Rate of Reported Cases of Pertussis, Washoe County, 2003-2012



TRANSMISSION

Transmission occurs through contact with respiratory droplets. Pertussis is highly communicable, as evidenced by secondary attack rates of 80% among susceptible household contacts. The basic reproductive number (R_0) is the number of secondary cases expected to be caused by a single, typical infected individual in a susceptible population. The R_0 is the primary metric used to quantify the transmission of a disease in infectious disease dynamics. The greater the R_0 , the more communicable the disease is. In comparison with other infectious diseases, the R_0 for pertussis is 12-17. This is similar to the communicability of measles for which the R_0 is 12-18, higher than other well-known infectious diseases. The R_0 is 6-7 for diphtheria; 5-7 for smallpox, polio, rubella; 4-7 for mumps; 2-5 for HIV and SARS; 2-3 for influenza.

LABORATORY TESTING

Pertussis testing should be considered in anybody with a severe or persistent cough. It is appropriate to order testing up to 3 weeks after the onset of paroxysmal coughing. **Testing asymptomatic individuals is NOT**

recommended. There are several tests that can be used for the diagnosis of pertussis (Table 1). Culture is considered the gold standard and is the most specific of the available tests. However, culture may take as long as two weeks, limiting the usefulness of the results in a clinical setting. Polymerase Chain Reaction (PCR) testing is more sensitive than culture, and can give results much sooner. The CDC recommends that PCR testing be performed **in addition to, not instead of,** culture. DFA testing, although widely available, has very poor specificity and should not be used for laboratory confirmation of disease. **Serological testing on antibody against pertussis for diagnosis is NOT recommended.**

Specimens should be collected from the posterior nasopharynx (NP) using a flexible Dacron nasopharyngeal swab. For PCR testing, **do not** use calcium alginate swabs as they may contain substances that inhibit PCR. To avoid contamination of clinical specimens with pertussis containing vaccines, change gloves between vaccine administration and clinical specimen collection, and process clinical specimens in an area separate from pertussis containing vaccine storage and administration. Contact the reference laboratory to identify the appropriate swab and transport media to be used for the test ordered. Additional information on sample collection and best practices for healthcare professionals on the use of PCR for diagnosing pertussis is available on the CDC's website at: <http://www.cdc.gov/pertussis/clinical/diagnostic-testing/index.html>. Good videos to demonstrate the specimen collection steps are also available.

Table 1. Pertussis Laboratory Testing*

Laboratory Name	Test Code
LabCorp	
<i>B. pertussis</i> and <i>B. parapertussis</i> , real-time DNA PCR	138677
<i>B. pertussis</i> culture	180224
Quest	
<i>B. pertussis</i> and <i>B. parapertussis</i> , DNA, Qualitative, real-time PCR	11365
<i>B. pertussis</i> culture	151555
Nevada State Public Health Laboratory	
<i>B. pertussis</i> , nasopharyngeal culture	No code
<i>B. pertussis</i> and <i>B. parapertussis</i> real time PCR	No Code

*Contact reference laboratory for their specimen collection and transport media requirements

TREATMENT

Antimicrobial treatment for pertussis is most effective in minimizing the duration and severity of illness if administered during the prodromal period prior to the onset of paroxysmal cough. Table 3.44 contains the treatment and post-exposure prophylaxis recommendations by the American Academy of Pediatrics (AAP) and CDC. **A patient is no longer considered to be infectious after having taken the appropriate antibiotic for 5 days. Exclude patients with suspect, probable, or confirmed pertussis from**

childcare, school, and other group activities until 5 days of effective antibiotic treatment (Table 3.44).

Based on pertussis case investigations at WCHD, it was noted that some physicians told their patients that they could return to the school after taking antibiotics for a couple of days, which is not acceptable. If you have questions about exclusions, please contact the WCHD Communicable Disease Program at 775-328-2447.

POSTEXPOSURE PROPHYLAXIS

Antimicrobial postexposure prophylaxis (PEP) is effective in preventing illness in persons exposed to pertussis (Table 3.44). PEP should be administered to close contacts who are at high risk for severe pertussis or who could transmit the disease to persons at high risk for severe pertussis. These individuals include:

- ◆ Household contacts of the case. Due to the high attack rate among household contacts and reporting lag for pertussis, WCHD strongly recommends that HCPs prescribe antibiotic prophylaxis to household contacts of patients once pertussis is diagnosed.
- ◆ Infants <1 year of age;
- ◆ Pregnant women (particularly in their 3rd trimesters);
- ◆ Anybody who could expose infants or pregnant women to pertussis;

Initiation of PEP >3weeks after exposure is probably of no benefit.

VACCINATION

Although most children have been vaccinated, immunity wanes with age, and some who are fully

vaccinated can become infected. Adults and vaccinated children with pertussis can present with milder symptoms and hence have become a major reservoir for pertussis. In summary,

- ◆ Children need five does of DTaP by kindergarten and an adolescent booster. Please follow the ACIP recommended schedule.
- ◆ Adults 19 through 64 years of age should receive a single dose of Tdap to replace a single dose of Td for booster immunization against tetanus, diphtheria, and pertussis. Provisionally, the ACIP has recommended extending the Tdap recommendation to persons of all ages. This recommendation is currently under review by CDC.
- ◆ Pregnant females should receive a single Tdap dose immediately after delivery, if not vaccinated prior to or during pregnancy. If administered during pregnancy the AAP, ACIP, and American College of Obstetricians and Gynecologists recommend that administration occur after 20 weeks gestation to minimize the coincidental association with adverse outcomes, which occur most often during the first trimester.
- ◆ Adults of all ages (e.g., parents, grandparents, child care providers, healthcare personnel) in contact with infants under the age of one should receive a single dose of Tdap.

Please refer to 2013 ACIP recommendation for detailed schedules at CDC’s website <http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html>

Per Nevada Administrative Code 441A, all known or suspected cases of pertussis should be reported to the WCHD CD Program by calling (775) 328-2447 or faxing (775) 328-3764.

Table 3.44. Recommended Antimicrobial Therapy and Postexposure Prophylaxis for Pertussis in Infants, Children, Adolescents, and Adults^a

Age	Recommended Drugs			Alternative TMP-SMX
	Azithromycin	Erythromycin	Clarithromycin	
Younger than 1 mo	10 mg/kg/day as a single dose for 5 days ^b	40 mg/kg/day in 4 divided doses for 14 days	Not recommended	Contraindicated at younger than 2 mo of age
1 through 5 mo	see above	see above	15 mg/kg per day in 2 divided doses for 7 days	2 mo of age or older; TMP, 8 mg/kg/day; SMX, 40 mg/kg/day in 2 doses for 14 days
6 mo or older and children	10 mg/kg as a single dose on day 1 (maximum 500 mg); then 5 mg/kg/day as a single dose on days 2 through 5 (maximum 250 mg/day)	40 mg/kg/day in 4 divided doses for 14 days (maximum 2 g/day)	15 mg/kg/day in 2 divided doses for 7 days (maximum 1 g/day)	see above
Adolescents and adults	500 mg as a single dose on day 1, then 250 mg as a single dose on days 2 through 5	2 g/day in 4 divided doses for 14 days	1 g/day in 2 divided doses for 7 days	TMP, 200 mg/day; SMX, 1600 mg/day in 2 divided doses for 14 days

TMP indicates trimethoprim; SMX, sulfamethoxazole.

Last updated: July 12, 2012, accessed electronically 8/21/13 at <http://www.unboundmedicine.com/redbook>