

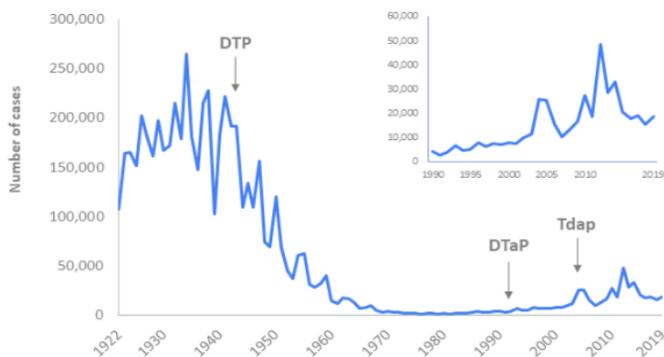
IN THIS ISSUE: PERTUSSIS (WHOOPIING COUGH)

Pertussis (Whooping Cough)

Introduction

Pertussis (whooping cough) is a vaccine-preventable disease caused by the bacterium *Bordetella pertussis*. Until a vaccine was available, pertussis was one of the most common causes of childhood morbidity and mortality.<sup>1</sup> Pertussis is considered highly communicable and since the early 1980's the number of cases has been climbing, increasing dramatically in more recent years [Fig. 1].<sup>1</sup>

Figure 1: Reported Pertussis Cases in the US, 1922-2019



Source: <https://www.cdc.gov/pertussis/surv-reporting.html>

Epidemiology

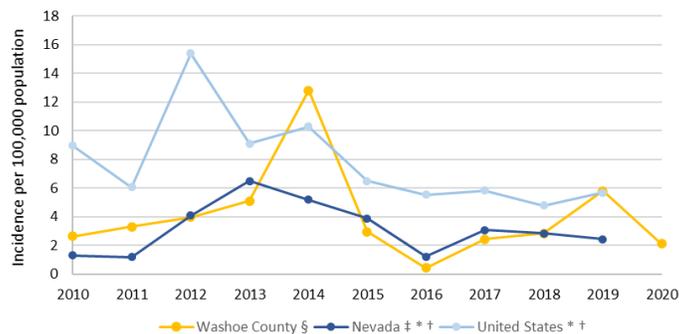
Pertussis spreads easily from person to person through respiratory aerosols and droplets. Other less common transmission modes include contact with airborne droplets of respiratory secretions and exposure to fomites.<sup>1</sup> Although not a distinctly seasonal disease, pertussis case numbers tend to increase typically in the summer and fall seasons.<sup>1</sup> However, pertussis is naturally cyclical, peaking every 3 to 5 years.<sup>1</sup>

An average of 2,900 cases per year were reported nationwide between 1980-1990, whereas in 2012 a staggering 48,277 pertussis cases were reported [Fig. 1].<sup>2</sup> In the last ten years, incidence rates (per 100,000 population) of pertussis in Washoe County have ranged from 0.45 cases in 2016 to 12.82 cases in 2014 [Fig. 2].

Pertussis can infect anyone, but typically is reported in its highest numbers amongst those under the age of 1. For babies and young children, complications from infection can lead to hospitalization or death.<sup>2</sup> For teens and adults,

complications are less serious, especially if they have been vaccinated against pertussis.<sup>2</sup>

Figure 2: Pertussis Incidence by Year and Geographic Location, 2010-2020



Note: Data not yet published for 2020 Nevada and United States.

Sources: \*<https://www.cdc.gov/pertussis/surv-reporting.html>,  
†[https://www.cdc.gov/mmwr/mmwr\\_nd/index.html](https://www.cdc.gov/mmwr/mmwr_nd/index.html),  
‡[https://dphh.nv.gov/Programs/OPHIE/dta/Publications/OPHIE - Communicable Disease Reports/](https://dphh.nv.gov/Programs/OPHIE/dta/Publications/OPHIE_-_Communicable_Disease_Reports/),

§ 2020/2021 Washoe County Annual CD Summary (data not yet published)

Prevention

Prevention of pertussis includes good respiratory hygiene, such as covering coughs and sneezes, washing hands with soap and water for at least 20 seconds, and staying away from others who are ill. Vaccination is the most effective preventive measure. Current immunization recommendations are provided here:<sup>2, 3</sup>

- DTaP at 2, 4, and 6 months, at 15 through 18 months, and at 4 through 6 years.
- Tdap as a single dose for those 11 through 18 years of age with preferred administration at 11 through 12 years of age.
- Any adult 19 years of age or older who has never received a dose of Tdap should get one as soon as feasible. This Tdap booster dose can replace one of the 10-year Td booster doses.
- Pregnant women should get a dose of Tdap during each pregnancy, preferably during the weeks 27 through 36 of pregnancy.

For more vaccination information visit: <https://www.cdc.gov/vaccines/pubs/pinkbook/pert.html>

## Signs & Symptoms

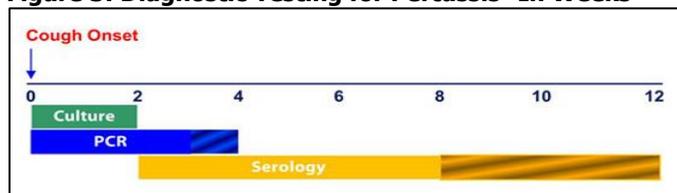
The incubation period for pertussis is 7 to 10 days, with a range of 4 to 21 days.<sup>1</sup> The clinical course of pertussis can be divided into 3 stages. The catarrhal stage (lasting 1-2 weeks) is characterized by coryza, sneezing, low-grade fever, and a mild cough, appearing similar to the common cold.<sup>1</sup> After a week, the cough becomes more severe and the infection enters the paroxysmal stage (lasting 1-6 weeks) of disease. This stage is characterized by paroxysms of coughing (bursts of many, rapid coughs more common at night), followed by a long inspiratory effort accompanied by a characteristic high-pitched whoop and/or posttussive vomiting.<sup>1</sup> The inspiratory whoop is generally not present in adults or in children who contract mild cases of illness.<sup>1</sup> Apnea (a pause in a child's breathing) is a common pertussis symptom in infants and might be the only sign of pertussis in young infants with no cough.<sup>1</sup> During the convalescent stage, recovery is gradual with a waning in cough over the course of weeks to months.<sup>1</sup>

Persons are most infectious during the catarrhal stage through the first 2 weeks of their illness, but remain infectious through the third week after onset of paroxysms if not treated.<sup>1,2</sup> Pertussis is a toxin-mediated disease, so the symptoms can persist even with treatment.<sup>1</sup>

## Diagnosis & Testing

Pertussis testing should be considered for persons with a severe or persistent cough, especially if there has been exposure to pertussis.<sup>2</sup> Culture is considered the gold standard if a nasopharyngeal (NP) specimen is collected during the first two weeks of cough.<sup>2</sup> Second to culture is polymerase chain reaction (PCR) testing, which should be done from NP specimens collected 0-4 weeks after cough onset.<sup>2</sup> **If PCR is utilized, it should be followed up with culture confirmation.**<sup>2</sup> Serology can be utilized in later stages of disease; serum may be collected 2 to 12 weeks after cough onset [Fig. 3].<sup>2</sup>

**Figure 3: Diagnostic Testing for Pertussis- In Weeks**



Source: <https://www.cdc.gov/pertussis/clinical/diagnostic-testing/diagnosis-confirmation.html>

## Treatment

Antimicrobial treatment for pertussis is most effective in minimizing the duration and severity of illness if

administered in the first week of symptom onset, during the prodromal period prior to the onset of paroxysmal cough.<sup>2</sup> **Do not delay treatment while waiting for laboratory results if there is no alternative diagnosis.**<sup>2</sup> A person is no longer considered to be infectious after having taken the appropriate antibiotic for 5 days.<sup>2</sup>

Antimicrobial postexposure prophylaxis (PEP) is effective in preventing illness in persons exposed to pertussis and should be provided within 21 days of exposure.<sup>2</sup> 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 (infants <1 year of age, pregnant women especially in their 3<sup>rd</sup> trimester, those with pre-existing health conditions such as those who are immunocompromised).<sup>2</sup>

Recommended antimicrobial treatments or chemoprophylaxis include azithromycin, clarithromycin, and erythromycin. Clinicians can consider the use of Trimethoprim-sulfamethoxazole.<sup>2</sup> Treatment is not recommended after 21 days from cough onset, with the following exceptions: infants <1 year of age and pregnant women in their third trimester should be treated up through 6 weeks after cough onset.<sup>2</sup> More information can be found here: <https://www.cdc.gov/pertussis/clinical/treatment.html>

## Reporting

The list of reportable communicable diseases and reporting forms can be found at:

<http://tinyurl.com/WashoeDiseaseReporting>

**Report communicable diseases to the Washoe County Health District. To report a communicable disease, please call 775-328-2447 or fax your report to the WCHD at 775-328-3764.**

## Acknowledgement

Thank you to all health care providers, infection control practitioners, laboratory staff, as well as schools and daycares for their reporting and collaboration to make this work possible.

## References

1 Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Accessed August 2021 <https://www.cdc.gov/vaccines/pubs/pinkbook/pert.html#pertussis>

2 Centers for Disease Control and Prevention. Pertussis (Whooping Cough): Various Sections. Accessed August 2021 <https://www.cdc.gov/pertussis/index.html>

3 Centers for Disease Control and Prevention. Pertussis: Summary of Vaccine Recommendations. Accessed August 2021 Available at <https://www.cdc.gov/vaccines/vpd/pertussis/recs-summary.html>.