State of Alaska Epidemiology **Bulletin**

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Pertussis Outbreak in the Interior Region — Alaska, Fall 2014

Background

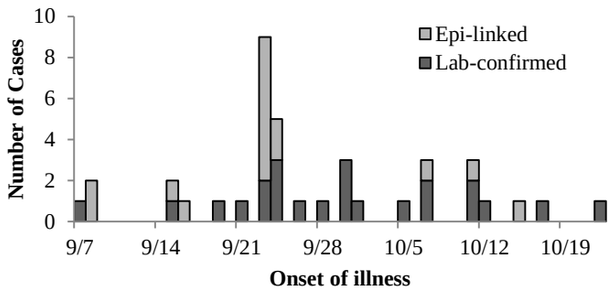
A vaccine-preventable disease, pertussis (or whooping cough) remains endemic nationally, with cyclical peaks in disease incidence occurring every 3–5 years.[1] Before pertussis vaccines became widely available in the 1940s, about 200,000 U.S. children became ill with pertussis annually, and about 9,000 died. Currently, 10,000–40,000 U.S. cases and 10–20 deaths are reported annually.[1] Many states, including Alaska, have experienced pertussis outbreaks and increased case counts since 2012.[2,3] In 2014, over 160 cases of pertussis were reported to the Alaska Section of Epidemiology (SOE).

This *Bulletin* describes a pertussis outbreak in a remote Interior region community (Community A) that accounted for nearly 25% of Alaska's cases during 2014. The *Bulletin* also reviews current pertussis vaccination recommendations and describes laboratory testing available at the Alaska State Public Health Laboratory (ASPHL).

Pertussis Outbreak

In October 2014, SOE epidemiologists traveled to Community A to investigate a pertussis outbreak. Of the 39 cases identified, 23 (59%) were laboratory-confirmed by polymerase chain reaction (PCR) testing (Figure). Case-patients' ages ranged from 2 months to 72 years (median: 10 years). Twenty-one (54%) cases were female. All ill persons were treated with antibiotics. None of the ill persons were hospitalized or died.

Figure. Pertussis Cases (N=39) by Laboratory Confirmation Status — Interior Alaska, September 7 to October 22, 2014



Contact investigations were performed; close contacts who were at increased risk for adverse sequelae from pertussis infection were identified for antibiotic prophylaxis.[1] Valid vaccination records were available for 36 (92%) of the ill persons; of these, 35 (90%) ill persons were up-to-date on their recommended vaccines (Table).[4]

Table. Pertussis Cases and Patients' Vaccination Status, by Age Group — Community A, Fall 2014

Age	Number of Cases (%)	# Up-to-Date for DTaP/Tdap (%)
<6 months	2 (5%)	2 (100%)
6–11 months	1 (3%)	1 (100%)
1–6 years	8 (21%)	6 (75%)*
7–10 years	10 (26%)	10 (100%)
11–19 years	11(28%)	10 (91%)
20+ years	7 (18%)	6 (86%)*
Total	39	35 (97%)

**Vaccination records were missing for some persons.*

Discussion

This outbreak occurred in a small community and persisted for several months. Notably, many of the infected persons were up-to-date on their vaccinations—an occurrence that has been documented in other recent outbreaks.[1,3,5] Factors driving outbreaks of pertussis involving vaccinated persons are the topic of ongoing research. Molecular surveillance for evolving strains of the bacterium may be critical in developing more efficacious vaccines.[6] Continued outbreaks in communities are likely to occur when pertussis is widely circulating. At present, age-appropriate pertussis vaccinations with DTaP and Tdap are still the best protection against infection and severe disease. If pertussis has flares in a community, prompt antibiotic treatment and prophylaxis may limit spread.

Pertussis is most serious for infants aged <12 months and can cause serious complications such as cyanosis, apnea, pneumonia, encephalopathy, and death. The majority of hospitalizations and deaths occur in infants aged ≤2 months who are too young to be vaccinated. Thus, CDC recommends Tdap vaccination for pregnant women during each pregnancy; Tdap may be given at any time during pregnancy, but to maximize the maternal antibody response and passive antibody transfer to the infant, optimal timing for Tdap administration is from 27–36 weeks gestation.[7]

Pertussis prevention and outbreak control efforts aimed at protecting vulnerable infants include the following:

- vaccinating pregnant women with Tdap during *each* pregnancy;
- assuring that all close contacts to infants who are aged ≥10 years are up-to-date on their Tdap vaccination; and
- promptly treating pertussis cases and providing antibiotic prophylaxis to high-risk contacts.[8]

Recommendations

1. To reduce the risk of pertussis in new mothers and their young infants, pregnant women should receive Tdap vaccine during each pregnancy.
2. Health care providers may submit diagnostic specimens to ASPHL for testing. Due to the low recovery of pertussis by culture and excellent sensitivity of PCR, ASPHL no longer performs pertussis culture testing. Guidelines for submission of laboratory specimens are available at: http://www.dhss.alaska.gov/dph/Labs/Documents/LaboratoryTests.pdf
3. Laboratories must report all positive pertussis test results to the Section of Epidemiology (7 AAC 27.007).
4. Effective December 29, 2013, health care providers must report all administered immunizations to VacTrAK within 14 days of administration (7 AAC 27.650).
5. Health care providers must report clusters of respiratory illness or suspected pertussis cases to SOE by calling 907-269-8000 during work hours or 800-470-0084 after-hours.

References

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8. SOE *Bulletin*. "Pertussis Identified Across Alaska Updated Pertussis Treatment and Prophylaxis Guidelines". No. 20, August 24, 2005. Available at: http://www.epi.alaska.gov/bulletins/docs/b2005_20.pdf

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