

Outbreak of Pertussis in a Community
Associated with a Private School—
Douglas County, July 2017



Background

On July 12, 2017, the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section (KDHE) was notified by the Lawrence-Douglas County Health Department (LDCHD) of a person suspected of having pertussis. Initial investigation revealed that this person had been in contact with two other cases of pertussis that attended a private school. LDCHD, with support from KDHE, began an outbreak investigation to identify additional cases and exposed individuals, and to implement prevention and control measures.

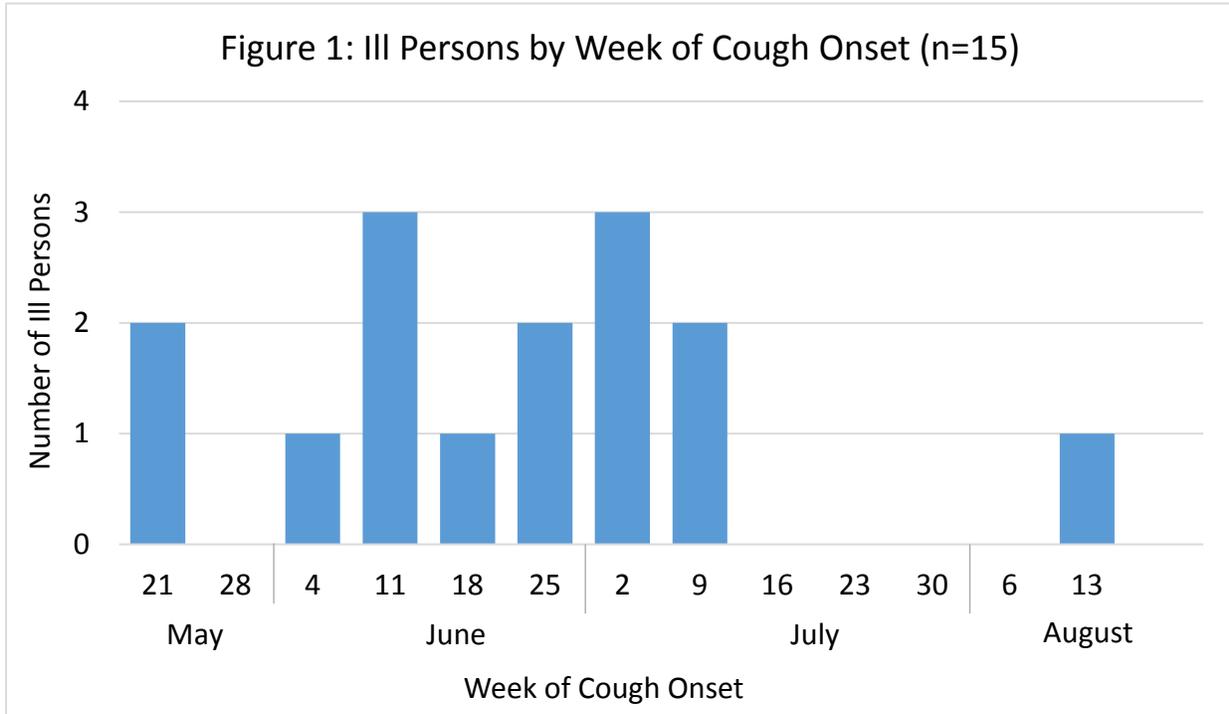
Key Investigation Findings

- A confirmed pertussis case was defined as:
 - a cough illness lasting ≥ 2 weeks with paroxysms of coughing and/or post-tussive vomiting, and/or inspiratory whoop in a person with an epidemiological link to the school from May 23 to August 19, 2017, and
 - laboratory confirmation via polymerase chain reaction (PCR) testing, or
 - an epidemiological link to a lab-confirmed case.
- A probable pertussis case was defined as:
 - a cough illness lasting ≥ 2 weeks with paroxysms of coughing and/or post-tussive vomiting, and/or inspiratory whoop, in a person with an epidemiological link to the school from May 23 to August 19, 2017 and
 - absence of laboratory confirmation, and
 - no epidemiological link to a lab-confirmed case.
- Fifteen individuals met case definition, five confirmed and ten probable. Two persons were likely exposed at school and 13 were exposed outside of school (i.e. household, play dates, family functions).
- The median age of ill persons was ten years (range: 2-64 years).
- The most frequently reported symptoms were cough (100%), paroxysmal cough (100%), and whoop (53%) (Table 1).

Table 1: Clinical Symptoms Reported Among Ill Persons (n=15)

<i>Symptoms</i>	<i># of Ill Persons/Total</i>	<i>% of Ill Persons</i>
Cough	15/15	100%
Paroxysmal cough	15/15	100%
Whoop	8/15	53%
Post-tussive vomiting	6/15	40%
Apnea	4/15	27%
Cyanosis	1/15	7%

- Duration of cough was recorded for all ill individuals with a median of 30 days (range: 14-59 days).
- Cough onset dates ranged from May 23 to August 19, 2017 (Figure 1).



- Majority (53%) of ill persons had not received a pertussis-containing vaccine prior to illness onset. Five cases (33%) reported receipt of at least one pertussis-containing vaccine, with two persons (13%) having received five doses (Table 2). Vaccination status was unknown for two persons.

Table 2: History of Pertussis-Containing Vaccine Among Ill Persons (n=15)

<i>Doses Received</i>	<i>Number Reported/Total</i>	<i>% of Ill Persons</i>
Five doses	2/15	13%
One dose	3/15	20%
No doses	8/15	53%
Unknown	2/15	13%

Conclusion

During the course of the outbreak, 15 cases of pertussis were identified among school students, staff, and family members; several of which were found retroactively through contact tracing performed by LDCHD. Initial transmission likely occurred at the school; however, most of the

transmission occurred at several events outside of school, including a family trip, wedding, and various play dates.

A challenge in managing the outbreak was that many of the cases identified were found retroactively or while in the middle of their infectious periods, so implementing control measures was of limited use in preventing transmission. In addition, most persons had not received any doses of pertussis-containing vaccine which could have contributed to the spread of disease. Even though the pertussis vaccine is not 100% effective at preventing disease, it has been shown to shorten duration and lessen severity of symptoms¹.

The LDCHD continuously followed up with the school director and parents of ill persons throughout the duration of this outbreak to determine if there was any ongoing spread of illness in attempt to stop transmission before school resumed in August. Consistent outreach resulted in the identification of additional ill persons with both household and social exposures to previously reported cases of pertussis. After implementation of control recommendations, such as proper antibiotic treatment and isolation of infectious persons, the outbreak was declared over on September 30, 2017.

Report by:

Allison Zaldivar, Kansas Department of Health and Environment

Publication Date:

November 15, 2017

Investigation by:

Lawrence-Douglas County Health Department

200 Maine Street

Lawrence, KS 66044

<http://ldchealth.org/>

Kansas Department of Health and Environment

Bureau of Epidemiology and Public Health Informatics

1000 SW Jackson Street, Suite 075

Topeka, KS 66612

<http://www.kdheks.gov/epi/>

¹Centers for Disease Control and Prevention. Pertussis: Frequently Asked Questions. Accessed May 5, 2015. <http://www.cdc.gov/pertussis/about/faqs.html>