

# Utah Pertussis Outbreak Recommendations in Child Care Settings and Schools

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## **Scope and Purpose**

These outbreak recommendations were developed in collaboration with representatives from the Utah Department of Health (UDOH) and Local Health Departments (LHD) to provide statewide consistency in situations involving pertussis outbreaks. The purpose of these guidelines is to provide effective management tools for pertussis outbreak situations. The primary goal of pertussis outbreak control efforts is to decrease morbidity (amount of disease) and mortality (death) among infants (children <1 year of age). A secondary goal is to decrease morbidity among persons of all ages. These guidelines provide researched materials and practices that support the important public health messages regarding pertussis outbreaks to schools, media and parents throughout the state (CDC, 2012; Preziosi, 2003; Kirkland, 2009; Schmidtke, 2012; Tossi, 2003; Wendelboe, 2005; Zhang, 2012). A unified approach across the state will ensure public health messaging and actions regarding pertussis are clear and consistent to aid in the prevention of pertussis.

## **Outbreak Definition (UDOH 2012)**

Two or more cases within the same school, preschool, or child care center within 20 days (two incubation periods) of each other by onset or diagnosis date. One of the cases must be laboratory confirmed.

## **Case Definitions (CSTE 2010)**

*Probable:* In the absence of a more likely diagnosis, a cough illness lasting  $\geq 2$  weeks, with at least one of the following symptoms:

- paroxysms of coughing;
- inspiratory "whoop," or
- post-tussive vomiting;
- AND
- absence of laboratory confirmation; and
- no epidemiologic linkage to a laboratory-confirmed case of pertussis.

*Confirmed:*

- Acute cough illness of any duration, with isolation of *B. pertussis* from a clinical specimen;
- OR
- Cough illness lasting  $\geq 2$  weeks, with at least one of the following symptoms:
  - paroxysms of coughing;
  - inspiratory "whoop," or
  - post-tussive vomiting
  - AND
  - polymerase chain reaction (PCR) positive for pertussis;
  - OR
- illness lasting  $\geq 2$  weeks, with at least one of the following symptoms:

- paroxysms of coughing;
  - inspiratory "whoop," or
  - post-tussive vomiting;
- AND contact with a laboratory-confirmed case of pertussis.

### **Case Investigation Process**

Cases of pertussis should be managed as follows:

- Encourage appropriate laboratory testing.
- Ensure appropriate antibiotic treatment.
  - Generally recommended for those who are within three weeks of the onset of their illness.
  - Infants <1 year of age, pregnant women, and persons with ongoing, close contact with infants <1 year of age or pregnant women (e.g., daycare workers, pediatricians) should be treated regardless of duration.
- Isolation should be imposed until 21 days after the onset of symptoms or 5 days after appropriate antibiotic therapy is begun.
- All case contacts should be identified and appropriately managed (explained in disease plan in detail).
- The investigation of cases should not be finalized at the local health department in UT-NEDSS until at least 2 weeks after the onset date to ensure the appropriate case status is assigned, according to the CSTE case definition. In many cases, this will require some follow up after the initial interview, depending on date of onset and when the interview is conducted.

### **Contact Definitions**

Close contact: person who has had direct contact with respiratory, oral, or nasal secretions from a symptomatic case (e.g., in the catarrhal or paroxysmal period of illness); or shared confined space (within 6 feet) for a prolonged period (>1 hour) of time with a symptomatic case.

High-risk contact: person who is at risk for developing severe disease and/or may transmit disease to other high-risk populations. High-risk contacts include:

- Infants <1 year of age
- Persons who have an immunodeficiency or other underlying severe disease such as chronic lung disease or cystic fibrosis
- Pregnant women in the third trimester
- Individuals, including parents and siblings, living in the same household with other high-risk populations
- Contacts who work with high-risk populations (e.g., healthcare worker, child care providers)

## **Outbreak Management**

The goal of intervention in schools and child care settings and the community as a whole is to reduce illness in infants younger than one year of age. When an outbreak has been identified in a school or child care setting, Public Health should work to ensure the following actions are taken:

### 1) Education and prevention messaging

The primary prevention strategy for pertussis is through vaccination. In order to protect infants <1 year of age who are at highest risk, vaccination should be focused on the following groups:

- Pregnant women in their third trimester
- Family members with an infant <1 year of age at home (fathers, brothers, sisters)
- Care givers of infants <1 year of age (grandmas, grandpas, aunts, uncles, child care providers, healthcare providers, etc.)

Other prevention strategies through education include:

- Public messaging:
  - Educating and encouraging parents to keep sick children at home
  - Utilizing education campaigns such as ‘cover the cough’ in schools and medical settings
  - Utilizing posters at schools and other educational materials about signs and symptoms of pertussis
  - Utilizing posters or flyers with information about vaccination against pertussis
  - Letters to parents
- Medical providers:
  - Outreach to providers through listserv messages
  - State and local epidemiological updates through web postings

All of the above tools can be found at: <http://health.utah.gov/epi/diseases/pertussis/index.html>.

### 2) Letter of notification after exposure to a confirmed case

A letter of notification indicating exposure to pertussis should be sent to staff and parents of contacts as determined by the case investigation process. The letter of notification should address the exposure, information that those who are unvaccinated (including infants <1 year of age) are at higher risk, signs and symptoms of pertussis, when to expect symptoms to develop, what to do if symptoms develop and who to contact if symptoms develop. A template of this letter can be found at the end of this document (Attachment B).

### 3) Coordination with the school/facility:

Public Health should coordinate with the facility management and the school nurse to identify additional cases during the outbreak interval (20 days or more). Teachers of identified cases and other school staff can be used to assist in identifying additional cases consistent with pertussis. These individuals should be educated on the signs/symptoms of pertussis and who to notify when illness is suspected. A detailed letter describing the appropriate action steps should be distributed to the school. A template of this letter can be found at the end of this document (Attachment C).

#### 4) Exclusion of symptomatic contacts

Symptomatic contacts should be excluded from school through 5 days of antibiotic prophylaxis or 21 days after symptom onset if no antibiotics are given. Symptomatic contacts may be allowed back into school upon receipt of the 5 days of appropriate antimicrobial therapy. Parents of excluded students will receive a letter of explanation for exclusion as well as a letter of explanation to give to a medical provider with information regarding treatment. A template of these letters can be found at the end of this document (Attachments D & E).

#### 5) Exclusion of vaccine-exempt students

The purpose of exclusion of vaccine-exempt students is to assist in stopping transmission of pertussis. Once an outbreak in a school or child care setting has been established, exclusions shall follow the Outbreak Exclusions Algorithm (Attachment A).

Classroom exclusions. Excluded students identified as a close contact (exposed) of a case may return to school or activities after providing documentation of completion of 5 days of appropriate antibiotic prophylaxis or 21 days after last exposure if no antibiotics are given. Parents should be given education on preventing pertussis through vaccination. If a parent chooses to immunize their child after exposure, the child still must meet above return requirements. Immunization should be encouraged and may prevent the child from being excluded again if additional exposures occur. Parents should be educated that while their child is allowed to stay in school, the child may remain at a higher risk of disease due to a lower rate of protection. Parents of excluded students should receive a letter of explanation for exclusion as well as a medical evaluation form to give to a medical provider. A template of these documents can be found at the end of this document (Attachments D & E).

Schoolwide exclusions. Excluded students who are not close contacts (susceptible) may be allowed back to school 14 days after vaccination if the child is considered “up-to-date” per ACIP recommendations (e.g., one dose of Tdap for a child 7 years of age and older with no history of previous vaccination). If parents choose not to vaccinate, students will be excluded from school until public health determines transmission of pertussis is minimal at the school/child care center. Attachment A is a detailed algorithm to follow for exclusion of unimmunized students.

#### 6) Recommendations for when to give antibiotics as prophylaxis

Antibiotic prophylaxis is recommended for the following asymptomatic contacts of a confirmed pertussis case:

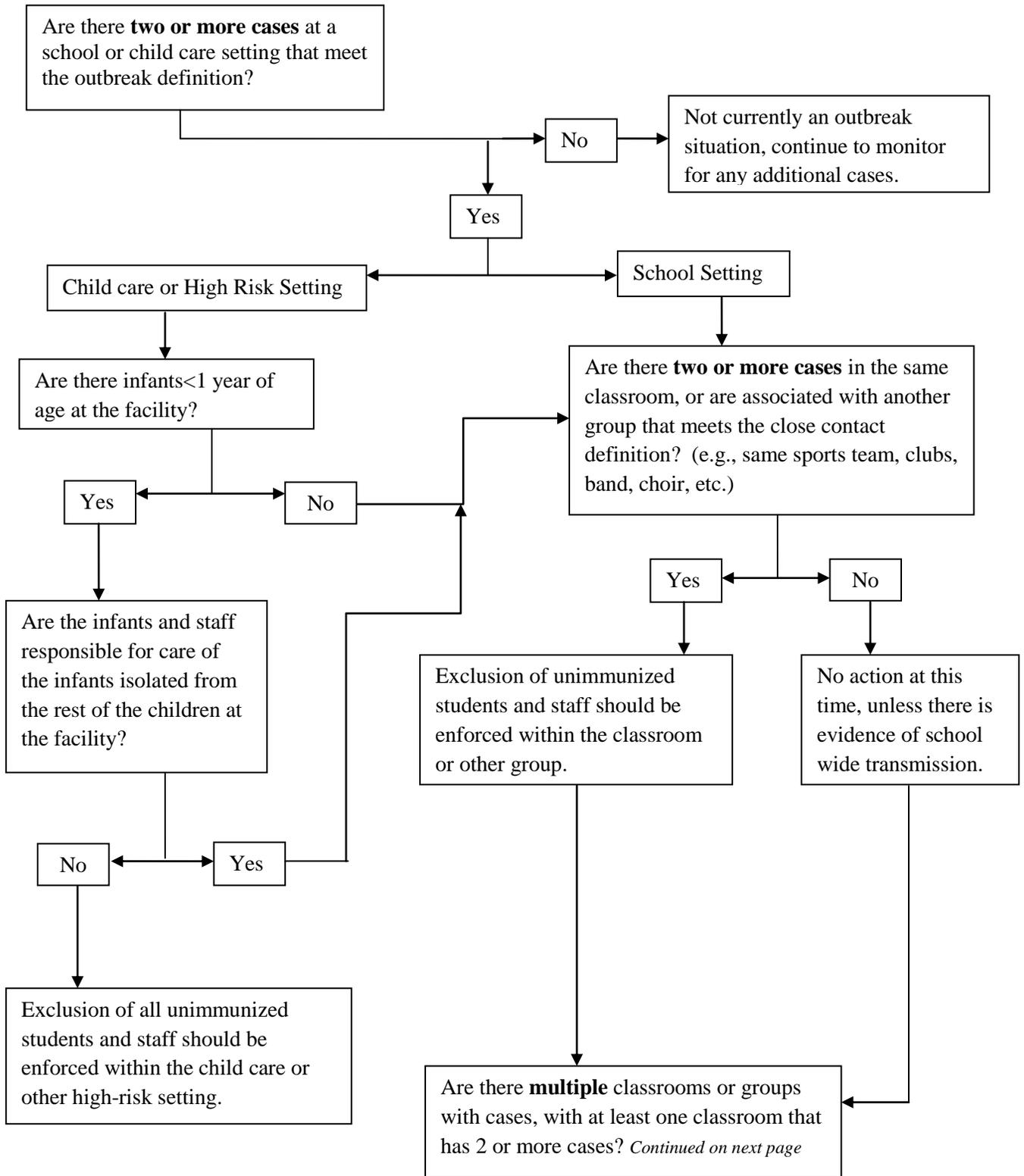
- All household contacts
- Pregnant women in their third trimester
- Infants <1 year of age
- Close contacts who have infants <1 year of age at home
- Close contacts who work with or have frequent contact with infants <1 year of age (e.g., child care workers, healthcare workers with direct patient contact)
- Close contacts who are unvaccinated

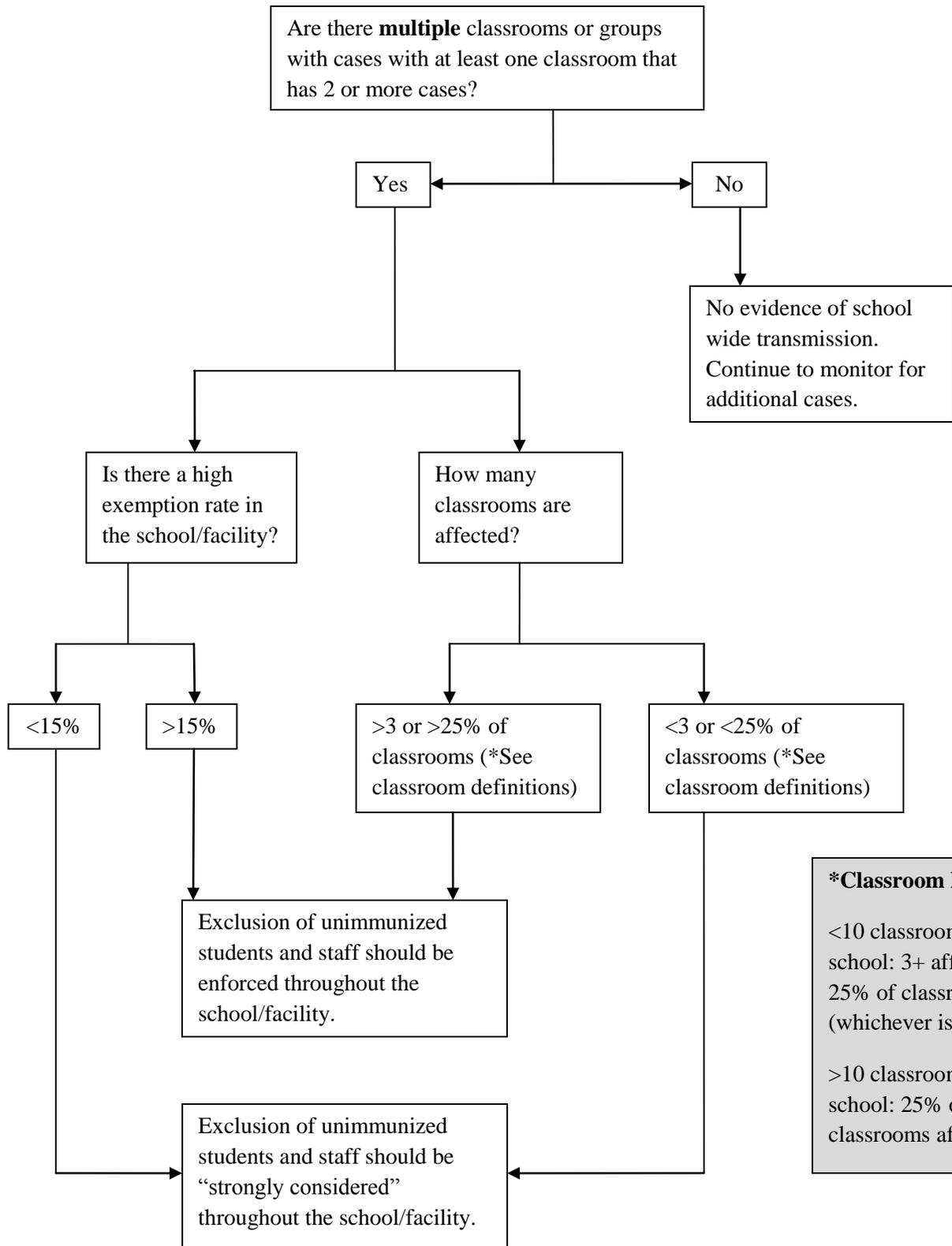
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**Utah Department of Health  
Bureau of Epidemiology  
Communicable Disease Investigation and Response Program  
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## ATTACHMENT A – Pertussis Vaccine-Exempt Exclusion Algorithm





**\*Classroom Definitions**

<10 classrooms at school: 3+ affected or 25% of classrooms (whichever is greater)

>10 classrooms at school: 25% of classrooms affected

## ATTACHMENT B – Outbreak Parent Education Letter

[http://health.utah.gov/epi/diseases/pertussis/AttachB\\_outbreak\\_parent\\_edu\\_ltr.docx](http://health.utah.gov/epi/diseases/pertussis/AttachB_outbreak_parent_edu_ltr.docx)

Date:

Dear Parent(s) and/or Guardian(s):

Your child's school has been identified as recently having two or more cases of pertussis (whooping cough), which is defined by Utah State and local health departments as a pertussis outbreak. This letter is to let you know what actions are being taken in order to help control the outbreak.

The primary goal of pertussis outbreak control efforts is to decrease the amount of disease and death among infants less than one year of age. A secondary goal is to decrease the amount of disease among persons of all ages.

Pertussis is a highly contagious bacterial infection that causes serious and long lasting coughing spells. The symptoms of pertussis usually occur in two stages. The first stage begins with cold-like symptoms, which may include a runny nose, sneezing, occasional cough and possibly, a low-grade fever. This stage may last for 1-2 weeks. The cough gradually becomes more severe as the disease moves to the second stage. Symptoms of the second stage of pertussis include uncontrolled coughing spells or fits. Breathing may become so difficult that the child may make a high-pitched whooping noise, may turn blue and/or experience vomiting from coughing. The second stage can last for 1-10 weeks. Infants and small children are at high risk of developing complications resulting in hospitalization or even death from pertussis. Often adults and older children unknowingly spread pertussis to vulnerable infants.

The incubation period for pertussis (the time from when a person is exposed to the disease to the beginning of symptoms) can be anywhere from 4-21 days. If your child was exposed to students or staff with pertussis, he/she may be at risk of developing this illness during the next 4-20 days. If your child is unvaccinated, he/she may be eight times more likely to develop pertussis than children who are vaccinated. If your child does get pertussis, he/she could infect other children, infants or adults who may not have adequate protection against pertussis. Infants and small children are especially at risk of developing serious illness which may result in hospitalization or death.

The best way to prevent pertussis among infants, children, teens, and adults is to get vaccinated. Two pertussis vaccines are currently available: DTaP and Tdap. The DTaP vaccine series is for younger children. DTaP is normally given at 2, 4, and 6 months of age, with boosters at 15-18 months and again at 4-6 years of age. Tdap vaccine can be given to persons seven years of age and older, but is required prior to seventh grade entry in Utah. A Tdap booster is normally given at 11-12 years of age. It is recommended that adults or children greater than 12 years of age receive a onetime booster of Tdap if they have not received one before. Vaccination protects your child's health, your family's health, and the health of other students and their families.

**The health department encourages you to watch your child for the signs or symptoms of pertussis.** If your child is ill with any of the symptoms described above, please keep your child home and contact your healthcare provider as soon as possible. There is an effective antibiotic therapy for pertussis if it is diagnosed and treated in a timely fashion. Students who are showing symptoms of pertussis will be excluded from school. Students who have a personal, religious, or medical exemption against pertussis vaccination, that are known to have potentially been exposed to pertussis through close contact of ill students or staff may be excluded from school. For either reason, excluded students will not be allowed back into school until 21 days after the beginning of symptoms OR until they have received five days of appropriate antibiotic therapy. Although students may still show symptoms after treatment, they are not considered infectious after a five day course of appropriate antibiotic therapy. Please refer to the attached fact sheet for more information about pertussis, or you may visit the Utah Department of Health website at <http://health.utah.gov/epi/diseases/pertussis/index.html>.

Please contact the Health Department to discuss any questions you have regarding this outbreak. By being aware of the symptoms of pertussis, and taking the right actions if your child develops symptoms of concern, you can help in preventing spread of infection, and helping to protect infants/other high-risk individuals in your community during this outbreak.

Thank you for your time and cooperation.

LHD Signature



## ATTACHMENT C- School Coordination Letter

[http://health.utah.gov/epi/diseases/pertussis/AttachC\\_sch\\_coord\\_ltr.docx](http://health.utah.gov/epi/diseases/pertussis/AttachC_sch_coord_ltr.docx)

(Name of School)  
(Address of School)

Date

Your school has been identified as recently having two or more cases of pertussis (whooping cough), which is defined by Utah State and local health departments as a pertussis outbreak. The primary goal of pertussis outbreak control efforts is to decrease morbidity (amount of disease) and mortality (death) among infants (children less than one year of age). A secondary goal is to decrease morbidity among persons of all ages. Pertussis is a highly contagious bacterial infection that causes severe coughing fits, and can lead to vomiting from coughing, whooping (high-pitched sound during coughing) and/or spells of difficulty breathing. These symptoms can greatly interfere with children's learning environments. We understand that you are doing more with less, and have many demands on your time. The Health Department is asking for your assistance in identifying additional cases (students/staff) in your school to facilitate early diagnosis and treatment. With your help, we can work together to create a healthier and more conducive learning environment.

Pertussis usually starts with cold-like symptoms: runny nose, sneezing, low-grade fever, and/or mild cough. Symptoms then progress to severe coughing which can last for weeks. Infants and small children are at high risk of developing complications resulting in hospitalization or even death. Often adults and older children unknowingly spread pertussis to vulnerable infants.

The bacteria that cause pertussis are found in the mouths, noses and throats of infected people. The bacteria are spread in the air by droplets produced during sneezing or coughing. Once a person is exposed, symptoms usually begin within 7-10 days, but it can take up to 21 days before the first symptoms appear. Your help is requested through your daily interaction with students at your school. Please be aware and watch all students for the following symptoms:

- Cold like symptoms – runny nose, sore throat, sneezing or congestion
- Vomiting from coughing hard
- Low-grade fever (100°F-101°F)
- Uncontrolled coughing spells
- Whooping noise while coughing

If students have a **persistent cough** with one or more of the symptoms described above, they should be excluded from school and referred to their private provider for evaluation and/or treatment. Students will only be allowed back into school after five days of appropriate antibiotic therapy OR after 21 days without antibiotic therapy. Students who are evaluated by a physician and are determined not to have pertussis may be allowed back to school with a doctor's note and do not need to be excluded.

The best way to prevent pertussis among infants, children, teens, and adults is to get vaccinated. Two pertussis vaccines are currently available: DTaP and Tdap. The DTaP vaccine is a series for children given between two months of age and kindergarten. Tdap vaccine can be given to persons seven years of age and older and is required prior to seventh grade entry in Utah. It is recommended that adults or children older than 12 years of age receive a onetime booster of Tdap if they have not received one before.

If you identify an ill student with symptoms consistent with pertussis, please contact your school nurse or designated administrator. The designated person, in consultation with the health department, will decide if exclusion is appropriate. You may contact your local health department with any questions/concerns. Your assistance in preventing spread of infection and helping to protect infants/other high-risk individuals in our community during this outbreak is greatly appreciated. Again, we understand the limited budgets and resources that education and public health face, and hope that by working together we can keep attendance in classrooms and maintain a safe, healthy and effective school environment for you and your students.

Sincerely,

LHD Signature



## ATTACHMENT D- Exclusion Notification Letter

[http://health.utah.gov/epi/diseases/pertussis/AttachD\\_excl\\_notification\\_ltr.docx](http://health.utah.gov/epi/diseases/pertussis/AttachD_excl_notification_ltr.docx)

Date:

Name of Student/Staff member:

School:

To parents and/or school staff members,

The named school has been identified as recently having two or more cases of pertussis (whooping cough), which is defined by Utah State and local health departments as an outbreak. The primary goal of pertussis outbreak control efforts is to decrease the amount of disease and death among children less than one year of age. A secondary goal is to decrease the amount of disease among persons of all ages. Pertussis is a highly contagious bacterial infection that causes severe coughing fits, and can lead to vomiting from coughing, whooping (high-pitched sound during coughing) and/or spells of difficulty breathing. Because of potential exposures, students and staff who are not up-to-date on pertussis vaccinations and/or are showing symptoms of pertussis are currently being excluded. The exclusion is based on one of the following:

- Based on vaccination exemption records, your child has not completed the vaccinations required by Utah State Law (R396-100). According to Utah State Law, when an immunization exemption form is signed for personal, religious or medical reasons, the student must be excluded from school during a disease outbreak. In this case, it means that **your child may not return to school for at least 21 days**. The incubation period for pertussis can be anywhere from 5-21 days. If your child was exposed to students with pertussis, he/she may be at a risk of developing this illness during the next 4-20 days. The Health Department will notify the school when exclusion is no longer required. The duration of exclusion from school may be shortened through consultation with your healthcare provider to discuss options of antibiotic treatment and/or vaccination. The best way to prevent pertussis infection is through vaccination. Choosing to update your child's vaccinations against pertussis will allow future participation in school activities if additional cases are identified and further exclusions are required.
- The named person above has symptoms consistent with pertussis (persistent cough, whooping noise when breathing in, vomiting after severe coughing spells, etc). **The named person may not return to school until:**
  - **after completing five days of appropriate antibiotic therapy, OR**
  - **21 days after symptoms started if no antibiotics are given, OR**
  - **receiving a medical clearance after evaluation by a healthcare provider.**

In order to return to school, the included medical evaluation form should be completed by your healthcare provider and submitted to the school office.

In addition to not attending school, the Health Department strongly recommends that the named person be excluded from attending other public gatherings, including church, sporting events, and community events until this outbreak is contained.

The symptoms of pertussis usually occur in two stages. The first stage begins like a cold, with a runny nose, sneezing and possibly a low-grade fever. The second stage of pertussis includes uncontrolled coughing spells or fits. When a child breathes in, the child may give a whooping noise. The second stage can last for 6-10 weeks. If you or your child is ill with respiratory symptoms, contact your healthcare provider as soon as possible. There is an effective antibiotic therapy for pertussis if it is diagnosed and treated in a timely fashion. Vaccination provides the best protection against pertussis.

If you have questions concerning this exclusion, please contact the \_\_\_\_\_ Health Department at \_\_\_\_\_.

**ATTACHMENT E- Letter to Health Care Providers**

[http://health.utah.gov/epi/diseases/pertussis/AttachE\\_HCP\\_ltr.docx](http://health.utah.gov/epi/diseases/pertussis/AttachE_HCP_ltr.docx)

Date:

Name of Student/staff member:

School:

Dear Healthcare Provider,

The above school has been identified as recently having two or more cases of pertussis (whooping cough), which is defined by Utah State and local health departments as a pertussis outbreak. The named student or staff member has been identified as:

- Exposed to a confirmed case of pertussis, is currently asymptomatic, and is recommended for treatment with appropriate prophylactic antibiotics.
- Having symptoms compatible with pertussis and is recommended for evaluation and treatment as necessary with appropriate antibiotics.

The following is a table from the 2009 Red Book prophylaxis and treatment recommendations for pertussis:

<b>Drug</b>	<b>Infants &lt;1 month</b>	<b>Children 1-5 months</b>	<b>Children ≥ 6 months</b>	<b>Adults</b>
Azithromycin	10 mg/kg per day in a single daily dose for 5 days **Recommended treatment**	10 mg/kg per day in a single daily dose for 5 days	10 mg/kg in a single dose on day 1 (maximum 500 mg); then 5 mg/kg per day in a single dose on days 2-5 (maximum 250 mg/day)	500 mg in a single dose on day one; then 250 mg per day in a single dose on days 2-5
Erythromycin	40-50 mg/kg per day in 4 divided doses for 14 days	40-50 mg/kg per day in 4 divided doses for 14 days	40-50 mg/kg per day in 4 divided doses for 14 days (maximum 2 g/day)	2 g per day in 4 divided doses for 14 days
Clarithromycin	Not recommended	15 mg/kg per day in 2 divided doses for 7 days	15 mg/kg per day in 2 divided doses for 7 days (maximum 1 g per day)	1 g per day in 2 divided doses for 7 days
TMP/SMZ	Contraindicated for infants < 2 months	Contraindicated for infants < 2 months; for infants aged ≥ 2 months, 8 mg/kg per day (TMP), 40 mg/kg per day (SMZ) in 2 divided doses for 14 days	8 mg/kg per day (TMP), 40 mg/kg per day (SMZ) in 2 divided doses for 14 days	200 mg per day (TMP), 1,600 mg per day (SMZ) in 2 divided doses for 14 days

Detailed information about pertussis symptoms, epidemiology, treatment and vaccination can be found on the Clinician Pertussis Fact Sheet at <http://health.utah.gov/epi/diseases/pertussis/index.html>. Additional information can be found on the Centers for Disease Control and Preventions website: <http://www.cdc.gov/pertussis/clinical/index.html>.

The primary goal of pertussis outbreak control efforts is to decrease morbidity and mortality among infants (children less than one year of age). A secondary goal is to decrease morbidity among persons of all ages. Students showing symptoms of pertussis are currently being excluded and will not be allowed back into school until 21 days after the onset of symptoms OR until they have completed five days of appropriate antibiotic therapy.

Please mark appropriate box after completing medical evaluation:

- Symptomatic for pertussis, antibiotic: \_\_\_\_\_ given on \_\_\_/\_\_\_/\_\_\_
- Asymptomatic for pertussis, prophylactic antibiotic: \_\_\_\_\_ given on \_\_\_/\_\_\_/\_\_\_
- Tested negative
- Clinical presentation not consistent with pertussis infection
- Parents elected to exclude for 21 days
- Other \_\_\_\_\_

Healthcare Provider Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Health Department