

Responses to Audience Questions
Los Angeles County Department of Public Health Pertussis Webinar
July 23, 2015

Please find below questions from audience members and responses compiled by the Los Angeles County Department of Public Health, Immunization Program based upon input from the speakers, Dr. James Cherry and Kathleen Winter, MPH.

IMMUNIZATION AND NEW VACCINE CONSIDERATION

Q: Given the routine risk of exposure to patients with pertussis, would it be advisable for a health care worker (HCW) to get a Tdap dose every 10 years, more frequently than the 10 year mark or just continue with the recommended one dose of Tdap in adulthood followed by TD boosters every 10 years?

A: The Advisory Committee on Immunization Practices has looked at this issue in depth, including disease incidence in HCWs, safety and efficacy data, and cost-analysis of revaccination efforts, and determined that there is insufficient evidence to make an evidence-based recommendation for Tdap revaccination. However, individuals may choose revaccination with Tdap in order to offer short term protection against pertussis upon considering the possibility of increased local reactions due to the tetanus component of the vaccine. At the present time, of most importance is to see that all pregnant women receive Tdap and when possible, encourage Tdap in all those who will have contact with infants too young to receive DTaP. This would include health care workers who have contact with young infants.

Q: Why not give newborns a DTaP vaccination at birth along with the Hepatitis B vaccination?

A: Currently, there is no safety and efficacy data available to support administering DTaP at birth. A single-antigen pertussis vaccine (aP) given at birth has been studied in other countries; however, it is unknown if or when such a vaccine might become available in the United States. Fortunately, Tdap vaccination of all pregnant women makes this approach unnecessary.

Q: If the first DTaP vaccination is still recommended at 2 months of age, under what circumstances do you recommend the accelerated vaccination schedule beginning at 6 weeks?

A: The first dose of DTaP, along with all other 2 month vaccinations, may be given as early as 6 weeks of age as recommended by the American Academy of Pediatrics when pertussis is present in the community. Even one dose of DTaP vaccine has shown to be protective against severe disease and death caused by pertussis in young infants. Early vaccination with DTaP is most important when an infant's mother did not receive Tdap vaccine during the pregnancy. Some experts, including Dr. James Cherry, would recommend that all infants receive the first dose at 6 weeks of age since B pertussis is circulating at all times, with subsequent doses to be given at 4 and 6 months of age.

Q: Since many providers now use combination vaccine products, can you confirm that giving these combinations at 6 weeks is also appropriate (i.e., Hib & IPV)?

A: Yes, it's acceptable to administer Pediarix (DTap, Hep B, and Polio) and Pentacel (DTaP-IPV and Hib) at 6 weeks of age. Both vaccines are licensed and approved for use in infants as early as 6 weeks of age. Neither vaccine should be used for the booster dose (5th dose) of DTaP.



Responses to Audience Questions
Los Angeles County Department of Public Health Pertussis Webinar
July 23, 2015

Q: If we start vaccination early at 6 weeks, should the series be continued at accelerated rate of 6-week intervals or revert to generally accepted schedule after the 1st dose?

A: It is possible to accelerate all three doses of the primary series of DTaP at 6 week intervals or to accelerate just the first dose. Studies have shown that even one dose of DTaP vaccine is protective against severe disease and death caused by pertussis.

Q: If an infant is given the first DTaP at six weeks of age, will the CAIR system note this as a valid dose?

A: The California Immunization Registry or CAIR is programmed to reflect ACIP recommendations, so given the minimum recommended age for administration of DTaP is 6 weeks, it would be counted as a valid dose. In addition, there is an information button (i.e., “Why” button) on each patient’s immunization history page in CAIR that provides the earliest recommended dates for administration of doses.

Q: Is there concern about blunting of the infant primary series by maternal immunization?

A: Blunting has been looked at by a number of investigations and it occurs. However, it has minimal biological significance. We should be sure that all children receive all doses of recommended vaccines in infancy and the booster doses in the second year of life.

Q: Who should get the vaccine in a family with a newborn?

A: It is still recommended by the Advisory Committee on Immunization Practices that all household contacts or close contacts planning to be around the newborn should receive a Tdap prior to the birth of the newborn.

Q: Rheumatoid arthritic patients on biologic drugs, when and if to vaccinate for pertussis?

A: Patients with rheumatoid arthritis on biologic disease-modifying antirheumatic drugs (biologic DMARDs) can be vaccinated with DTaP or Tdap (i.e., there is no contraindication to vaccinating). However, depending on the type of biologic, their immune response may be lessened.

Q: As the effectiveness of the acellular vaccines seems to be declining, is there a new and more effective vaccine being developed or is work being done to improve the current vaccine available? How far away might a better vaccine be?

A: While it is true that DTaP vaccines are not as effective as DTwP vaccines (this has been known for 20 years), there is approximately 20 fold less pertussis today than there was in the pre-vaccine era, and illness in vaccine failures is less severe than it is in unvaccinated children. At the present time many people and companies are studying new vaccines. New vaccines being considered are new DTaP vaccines, live vaccines and DTwP vaccines with the endotoxin (the main cause of reactions) modified. However, any possible new vaccines are at least 10 years away.

Responses to Audience Questions
Los Angeles County Department of Public Health Pertussis Webinar
July 23, 2015

Q: Considering the past effectiveness of whole cell pertussis vaccines and their relative safety, is there any possibility of whole cell DTP returning?

A: Very unlikely. Due to the reactogenicity profile of whole cell vaccines, CDC does not recommend its use and the reintroduction of DTP in the United States is remote. DTwP vaccines are still used in most of the developing world and the WHO encourages their continued use.

Q: How do you respond to patients/parents who do not want to vaccinate their children for pertussis?

A: Health care providers are one of the most trusted sources of information for parents when making decision regarding their child's vaccines. To help parents make an informed decision about vaccines for their children, providers can inform them why they personally recommend vaccines, discuss the benefits and risks of vaccines, ask parents what specific questions or concerns they have regarding the recommended vaccine, and respond to questions in an open non-judgmental fashion. It may be helpful to tailor messages to the parent's concerns and knowledge level and to share a story based on their own experiences about the benefits of vaccines or risk of vaccine-preventable diseases. It is important to inform parents that acquiring pertussis during the first year of life is often severe and results in hospitalizations and deaths. DTaP vaccination has been shown to decrease hospitalizations and prevent deaths in this age group.

The CDC and other organizations have developed many educational materials for clinicians to guide them through this process. These materials provide communication strategies to open and maintain a dialogue between clinicians and parents and make the conversation less stressful.

The following resources are available for clinician and parents:

- Provider Resources for Vaccine Conversations with Parents
<http://www.cdc.gov/vaccines/hcp/patient-ed/conversations/index.html>.
- Tips for Communicating with Parents Regarding Vaccines
http://publichealth.lacounty.gov/ip/providers/Tips_for_Communicating_With_Parents.pdf
- If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities
<http://www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/not-vacc-risks-color-office.pdf>
- Vaccine Safety: Responding to Parents' Top 10 Concerns English
<http://eziz.org/assets/docs/IMM-916.pdf> and Spanish <http://eziz.org/assets/docs/IMM-916S.pdf>

Additional resources are available at <http://www.ph.lacounty.gov/ip/providers/VaccineSafety.htm>

Responses to Audience Questions
Los Angeles County Department of Public Health Pertussis Webinar
July 23, 2015

Q: Pertussis releases many toxins that cause symptoms independent of cytokines, inflammation, etc. Can vaccination against these antigens specifically reduce symptoms?

A: This is an interesting question which Dr. James Cherry has been studying during the past decade. (J.D. Cherry. PLUS Pathogens. 2013; 9; 1-3) *B pertussis* contains >3000 proteins and many of these are toxins which contribute to infection in people. These many toxins work in two ways: they facilitate attachment to ciliated respiratory epithelial cells and they interfere with the innate immune response. In contrast with the toxins that contribute to infection, there are only two toxins that cause illness in people. The first of these is so called pertussis toxin (PT). This causes leukocytosis with lymphocytosis, and this is the cause of deaths in young infants. Antibody to PT prevents death and this has been demonstrated in babies of mothers who received Tdap in pregnancy. Once a person develops an antibody response to PT (either by vaccination or infection) the manifestations of the toxin never again reoccur (for example, adults never have leukocytosis with lymphocytosis). The other toxin ("cough toxin") is responsible for the unique paroxysmal cough in pertussis. In spite of numerous studies during the last 100 years this toxin has not been discovered. In contrast with PT, in which recall of antibody is so rapid that its manifestations do not reoccur, people of all ages frequently have the paroxysmal cough when they are infected with *B. pertussis*.

DIAGNOSIS/TESTING

Q: How common is a co-infection with pertussis?

A: Co-infections of pertussis with other respiratory pathogens do occur and are associated with severe disease among infants and children. A recent study found co-infection rates to be 23.3% - 31.7% among infants and children hospitalized with pertussis in Australia.

Q: Is imaging beneficial in the diagnosis of pertussis?

A: Imaging has no role in the diagnosis of pertussis.

Q: With regards to the "central memory" paroxysmal cough referred to by Dr. Cherry, can this cough be confused with RAD/asthma? Is the treatment/management the same as in acute asthma?

A: The cough in pertussis is different from that in asthma or other respiratory infections. The treatment/management of pertussis is not the same as in acute asthma. There is no wheezing in pertussis and there is no expiratory distress (air trapping). Patients with pertussis are afebrile (unless there is a concomitant or secondary infection). The cough with pertussis is non-productive. Many pertussis patients in ERs are treated with albuterol but there is no evidence to support this treatment. Pertussis patients should also not be given steroids.

Responses to Audience Questions
Los Angeles County Department of Public Health Pertussis Webinar
July 23, 2015

Q: A patient was vaccinated with the Adacel vaccine 2012 but presented with symptomatic pertussis with a positive IgM. What is the most likely explanation?

Addendum: presented with disease in 2015

A: It is likely that the patient had pertussis infection and was no longer immune due to waning of immunity. Recent data from Wisconsin note that by 3 years post-Tdap immunization, there is little remaining efficacy. In addition, there is no test that measures IgM antibody that has any validity.

Q: Could you mention again the name of the specific test/serology for pertussis?

A: Utilize a laboratory that offers a serology test that quantitatively measures IgA and IgG antibody to Pertussis Toxin (PT). In general, disregard the pertussis “FHA” serology results because antibody to this antigen can be due to other *Bordetella* species and other microorganisms as well. The quantitative PT antibody test should only be used in a person with a cough illness and should not be used if the patient had been vaccinated within 12 months of specimen collection.

Q: When is it considered too late to collect a specimen?

A: For a nasopharyngeal swab, collect a specimen within 2 weeks of cough onset for culture testing and within 3-4 weeks of cough onset for PCR testing. Serology testing can be performed if it has been more than 3-4 weeks after cough onset, although it is not considered a laboratory confirmation for public health disease management purposes.

Q: And that dacron swab from our office can be used for both the PCR and culture, right?

A: Yes, the Dacron swab can be used for both PCR and culture testing.

TREATMENT

Q: If allergic to mycins + sulpha, what is the next choice?

A: True allergies to erythromycin or azithromycin are very rare. Most self-reports of allergy are GI discomfort. B pertussis is also sensitive to tetracyclines and perhaps fluoroquinolones, but efficacy has not been demonstrated for either. Therefore, in a clinical situation, Dr. James Cherry recommends giving azithromycin in a person with “allergy to azithromycin” unless there is a concern about a true anaphylactic event.

Q: What is the efficacy of the 3 dose azithromycin?

A: A Cochrane review from 2013 found that 3 days of azithromycin (10 mg/kg as a single dose) was an effective regimen in eliminating *B.pertussis* from patients with clinical disease but did not alter the clinical course.

Responses to Audience Questions
Los Angeles County Department of Public Health Pertussis Webinar
July 23, 2015

Q: Clarify returning to work/school after completing 5 days of antibiotics – should they wait until 24 hours after the last dose or can they return immediately after dose 5?

A: Symptomatic individuals are still considered infectious on the 5th day of their antibiotic regimen, and thus should not be cleared to resume normal activities until the following day. In other words, these individuals can be allowed to return to work/school the day after taking dose 5.

**CONTACTS TO A PATIENT DIAGNOSED WITH
PERTUSSIS/POST-EXPOSURE PROPHYLAXIS**

Q: Given an onset of cough today for the original sick client, when would be the last day to prophylax the household contact(s)?

A: The last day to provide antibiotic prophylaxis to a household contact would be up to 3 weeks after exposure to the original sick client's last infectious day. For example, if the original sick client's last infectious date is 8/1, then the household contact would benefit from receiving prophylaxis up until 8/22. However, if the household contact is at high risk (e.g., infants, individuals with lung disease) of developing severe disease or if they are health care workers that are routinely around patients who are high risk, prophylaxis can be given up to 6 weeks after exposure to the client's last infectious day.

Q: If a HCW is diagnosed with pertussis, what is the recommended follow up for contacts, both patients and co-workers?

A: In general, health care facilities are responsible for notifying and monitoring their own patients and staff who may have been exposed. If the HCW works in Los Angeles County, the Los Angeles County Department of Public Health, Immunization Program should be consulted in this matter so that appropriate guidance and recommendations on a case-by-case basis can be provided to the medical facility on the follow up of their own health care setting contacts.

Q: Should we prophylax school kids with exposure in their classroom? You said to only prophylax school contacts if they are at high risk. However, if they are in the classroom and not at high risk, should we prophylax?

A: If a classroom contact is not high risk (e.g., under-immunized, unimmunized, pre-existing condition that can be worsened by pertussis), then they are not recommended to receive antibiotic prophylaxis. The Los Angeles County Department of Public Health can be consulted in the event exposures such as these occur in Los Angeles County.

Q: Any comments/recommendations about sending notifications of pertussis exposure in school settings on every single pertussis lab confirmed case?

A: In general, an exposure notification letter must be sent to the classrooms of the lab confirmed case. However, consideration of letter distribution can be given on a case-by-case basis by the Los Angeles County Department of Public Health, Immunization Program. For example, if multiple cases are occurring in the school and there is evidence of linkage/transmission between cases either through shared classrooms or extracurricular activities, consideration may be given to send one letter to the entire school after consultation with the Los Angeles County Department of Public Health, Immunization Program.

Responses to Audience Questions
Los Angeles County Department of Public Health Pertussis Webinar
July 23, 2015

MEDICAL LIABILITY

Q: Any idea how many physicians have been sued for infant death due to pertussis and how many loss or settled?

A: Dr. James Cherry, Kathleen Winter, MPH, the California Department of Public Health and the Los Angeles County Department of Public Health do not have this information.

EPIDEMIOLOGY

Q: Why do you think there is such a high rate of pertussis in Hispanic groups more than others? Is it just because of the borders to Mexico surrounding CA?

A: The exact reason or cause for the high rates of pertussis among Hispanic infants is unknown.

LOS ANGELES DEPARTMENT OF PUBLIC HEALTH PERTUSSIS RESOURCES

- Visit the Immunization Program pertussis webpage at www.publichealth.lacounty.gov/ip to access provider and patient resources on pertussis.
- For pertussis disease and reporting-related consultations, call the Immunization Program at 213-351-7800 and ask to speak to the surveillance person on duty.
- Visit www.publichealth.lacounty.gov/ip/PertussisWebinar.htm to view the archived pertussis webinar or download the webinar slide set.

*Thank you for your continued commitment to keeping your patients
and your community free from vaccine preventable diseases!*