Communicable Disease & Immunization Update

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Healthy People in Healthy Communities

Tdap Recommendations for Pregnant Women

California is experiencing another widespread pertussis epidemic, with over 10,000 cases reported in 2014. The number of cases in 2014 has surpassed the number of cases during the last epidemic in California, which occurred in 2010. Cases in Washington State hit epidemic proportions in 2012 when we counted 4,916 cases in Washington State (783 in Pierce County). Cases fell in Pierce County to 116 in 2013 and 86 cases in 2014 (preliminary). We are fully expecting an increase in cases in the next year or two, as epidemics of pertussis naturally occur every 3–5 years, diagnostic methods have improved, and disease awareness among medical providers and the public is high. The prevention strategy for our next epidemic will focus on ensuring the best protection for newborns by vaccinating their mothers during pregnancy.

Pertussis in Infants

Pertussis is most serious for very young infants. Complications of pertussis in infants include pneumonia, apnea, seizures and encephalopathy. Infants who die from pertussis usually suffer an overwhelming leukocytosis and refractory pulmonary hypertension. Frequently, very young infants do not display the classic cough illness, but instead have apnea, poor feeding, or unexplained respiratory distress. A careful history usually reveals a cough illness in a household member (often the mother) or close contact. Most hospitalizations occur in infants less than four months of age. Presently, there are 10–20 deaths from pertussis each year in the United States. Among pertussis deaths from 2004–2008, 83% were in infants less than three months old.[1] Prior to the introduction and widespread use of pertussis vaccine in the 1940s, there were an estimated 185,000 cases and 4,000 deaths from pertussis each year.[2]

Public Health Strategy to Protect Infants

Pertussis epidemics are expected every three to five years, and because we do not have a pertussis vaccine that confers long-lasting immunity to the disease (see companion article, this publication), the public health strategy is to focus efforts on protecting newborns. The "cocooning" strategy, which involved vaccinating household members and other contacts of newborns was difficult to implement and probably not cost-effective. In addition to cocooning in Oct. of 2011, the Advisory Committee on Immunization Practices (ACIP) recommended that previously unvaccinated pregnant women receive a dose of Tdap in the second or third trimester. Maternal antibody to pertussis crosses the placenta, is present in the infant at delivery and persists during the first critical weeks of life before the infant gets the first dose of pertussis-containing vaccine at age two months. In 2012, the guidance was expanded to recommend that a Tdap be given with each pregnancy, without regard to previous doses of Tdap.[3] Because maternal antibody wanes so quickly, the prenatal dose should be given between 27 and 36 weeks.[4] A recently published study showed that Tdap given during pregnancy had vaccine effectiveness of 93% in preventing pertussis disease in babies < eight weeks of age.[5]

Of note, during the current pertussis epidemic in California, there have been fewer hospitalizations and deaths reported than in the 2010 epidemic. At last report, there were 347 hospitalizations for the current outbreak, compared with 808 in 2010. During 2010, 10 infants died of pertussis in California, and in 2014, there was one infant who died with onset of illness in 2014, and two infants who died with onset of illness in 2013 (these deaths will be counted for reporting year 2013). Fewer hospitalizations and deaths during the current epidemic may be due to the effect of prenatal immunization recommendations issued in 2011.

Tdap Is Safe During Pregnancy

Women are very concerned about taking medicines and injections during pregnancy. They need strong reassurance from their doctor or midwife that the vaccines are safe. The tetanus and diphtheria components have been used in pregnant women for decades and have an excellent safety profile. Since the recommendation for Tdap to be given during pregnancy has been made, many thousands of pregnant women have received it. Vaccine safety is continually reviewed through population-based monitoring and reporting systems, and there have been no safety signals for women or infants whose mothers have received Tdap. A recent retrospective study of over 26,000 women who received Tdap during the 2010 pertussis epidemic in California showed no increase in preterm delivery, small for gestational age, or hypertensive disorder of pregnancy.[6] A British study of 20,074 pregnant women who received Tdap compared with a matched historical unvaccinated control group showed no increased risk of maternal or neonatal death, pre-eclampsia, hemorrhage, fetal distress, uterine rupture, placenta or vasa previa, caesarean delivery, low birth weight, or child renal failure.[7]

At this time, there is no recommendation for any group other than pregnant women to receive more than one dose of Tdap. The ACIP addressed safety concerns of repeated Tdap doses in the event of multiple and/or closely spaced pregnancies, by reviewing studies of repeated doses of Tdap and tetanus-toxoid containing vaccines. A theoretical risk exists for severe local reactions (e.g., Arthus reactions, whole limb swelling) for pregnant women who have multiple closely spaced pregnancies. The reality is that approximately 5% of American women have four or more babies, and only 2.5% have an interval ≤12 months between births. ACIP came to the conclusion that the available data suggest no excess risk for severe adverse events for women receiving Tdap with every pregnancy, and that the potential benefit outweighs theoretical risk.

How are We Doing?

It is difficult to ascertain current levels of Tdap receipt during pregnancy as the recommendation is relatively new, but a study of Vaccine Safety Datalink Sites across six states (one of which is Washington State) showed that Tdap levels among pregnant women increased after the recommendation to 17.1% in 2011 and then decreased to 13.7% in 2012.[6] In comparison, influenza

immunization has been recommended for pregnant women in any trimester since 2004, and last flu season, only 52% of women received the flu shot during pregnancy.

Kaiser in Northern California was able to improve their Tdap immunization rates for pregnant women from 32% to 76% in just one year (2013–2014) by implementing a "best practice alert" on their electronic medical record that flagged the patient prenatal chart to receive Tdap beginning at 27 weeks. Obstetrical care providers and patients in California have been on high alert due to their current epidemic, and the vaccine is being heavily promoted.

Give a Strong Recommendation

Patients do listen to their doctor or midwife. If you give them a strong recommendation to be vaccinated, and they are reassured that the vaccine is safe, they are more likely to accept. Patients who are offered vaccine in the provider's office at the time of their prenatal visit are much more likely to get vaccinated. Many who are referred to the pharmacy or to primary care for the vaccine do not follow through. During the 2013–2014 influenza season, women who were offered a flu shot at their prenatal health provider's office were seven times more likely to get one.[8] If a patient refuses immunization, you should document this by having the patient sign a declination form stating that she received recommendation and counseling about the importance of the vaccine. A sample declination form can be found at www.tpchd.org/tdap.

Many obstetricians and midwives still do not have an office-based vaccine program, as vaccines have traditionally been in the realm of the primary care provider. It is time to get a program started. Tdap is now the second vaccine to be recommended as part of routine pregnancy care, and there are more vaccines for pregnant women in development including vaccines for group B strep, meningococcal disease, pneumococcal disease and respiratory syncytial virus (RSV).

Sources

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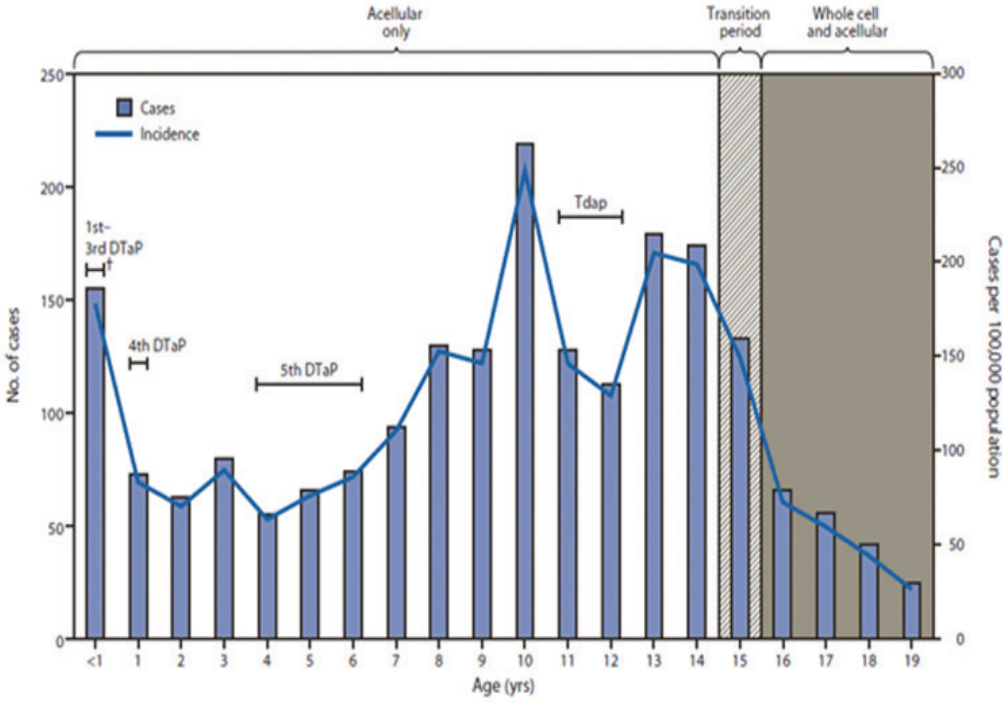
Acellular Pertussis Vaccine–Duration of Immunity

A vaccine made from the entire pertussis bacteria, called "whole cell" pertussis vaccine (DPT) was used until the late 1990s. DTP sometimes caused fevers and an increased risk of febrile seizures. More serious adverse reactions were blamed on DTP, including neurological side effects and brain damage, but there is lack of evidence that there was any causal association.

DTP vaccine was replaced by DTaP (acellular pertussis) and the series is estimated to be about 85% effective after the three doses given at ages two, four and six months. However, immunity from DTaP does not offer a long lasting immunity as did whole cell pertussis vaccine. This was noted during the California epidemic of 2010,[1] and also in the epidemic in Washington State in 2012 (see graphic[2]). Case rates were high in infants and then much lower in children age one through age six, then rose precipitously after age seven. Case rates reached the highest level at age 10, then dropped dramatically for age 11, right after the adolescent Tdap is given. However, case rates climbed again at ages 13 and 14, showing waning immunity just two years after receiving Tdap. Case rates again dropped in the older ages, and the theory is that children in their later teens had received the whole cell DPT for their primary series as infants in the 1990s.

 # and Incidence of Pertussis Cases Persons aged ≤ 19 years, by age and vaccines received, Washington, Jan 1 to Jun 16, 2012



Many other studies indicate Tdap does not offer long lasting protection, and as a result, the ACIP has not yet made a recommendation for repeated doses of Tdap. However, the vaccine does provide good protection to infants and may lessen the severity of pertussis infection. A study of pertussis cases in Oregon during 2010–2012 showed that persons who had received at least one pertussis containing vaccine were less likely to be hospitalized or develop severe illness, and that cases that were up-to-date on pertussis containing vaccines stopped coughing significantly earlier than unvaccinated patients.[3]

Sources

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2015 Measles Outbreak

From Jan. 1, to Mar 6, 2015, 174 cases of measles have been reported in 17 states. Most cases are related to exposures that occurred at Disneyland, but there are three other smaller outbreaks contributing to case counts. There have been seven cases in Washington State since Jan. 1, 2015. Two of the cases are known to be related to Disneyland, but a cluster of four people in Clallam county have a different genotype of measles, and the source of this outbreak is unknown.

The clinical presentation of measles is usually predictable.

- Two to four day prodrome of fever (usually 101° or higher) PLUS cough, coryza and conjunctivitis (the "three Cs")
- After two to four days of fever and 3Cs, eruption of maculo-papular rash, starting at the hairline and spreading downward.

Call us immediately (24/7) if you suspect measles. The following tool may help you evaluate rash illness for measles.

	Yes	No
A) Does the patient have fever: What is the highest temperature recorded?		
B) Does the rash have any of the following characteristics?		
Was the rash preceded by one of the symptoms listed in (C) by two to four days?		
Did the fever overlap rash?		
Did rash start on head or face?		
C) Does the patient have any of the following:		
Cough		
Runny nose (coryza)		
Red eyes (conjunctivitis)		
D) Unimmunized or unknown immune status?		
E) Exposure to known measles case?		
F) Travel, visit to healthcare facility or other known high-risk exposure in past 21 days?		

Measles is highly suspected if you answered YES to at least one item in B and C, PLUS a YES in D or E or F.

If you suspect measles:

- Mask and isolate the patient (in negative air pressure room when possible), **AND**
- Call the Health Department at (253) 798-6410 (24/7) to arrange testing at the Washington State Public Health Laboratories (WAPHL). All healthcare providers must receive approval from the Health Department prior to submission of specimens to WAPHL.

Collect the following specimens

- Nasopharyngeal (NP) swab for measles PCR and culture (preferred respiratory specimen).
  - Swab the posterior nasal passage with a Dacron™ or rayon swab and place the swab in 2–3 ml of viral transport medium.
  - Store specimen in refrigerator and transport on ice.
- Urine for measles PCR and culture.
  - Collect at least 50 ml of clean voided urine in a sterile container and store in refrigerator.
  - Make sure the urine container is leak-proof and in a separate bag.
  - If urine leaks on the respiratory specimens, they will not be tested.
- Serum for anti-measles IgM and IgG testing—Draw at least 4–5 ml blood (yields about 1.5 ml serum) in a red or tiger top (serum separator) tube. Store specimen in refrigerator and transport on ice.

For current case counts in the United States:
www.cdc.gov/mealses/cases-outbreaks.html.

Reported Cases of Selected Diseases

Preliminary case counts

ENTERIC DISEASES	Jan 2015	Jan 2014	2014 Totals
Campylobacter	15	15	220
Cryptosporidium	1	1	18
Giardia lamblia	5	0	40
Salmonella	4	1	76
Shigella	0	1	8
Enterohemorrhagic *E. coli*	0	0	17
HEPATITIS			
Hepatitis A (Acute)	0	0	4
Hepatitis B (Acute)	0	0	2
Hepatitis C (Acute)	1	0	17
Hepatitis B (Chronic)	16	13	150
Hepatitis C (Chronic)	80	83	1,147
INVASIVE DISEASES/BACTERIAL			
Haemophilus influenzae	0	0	0
Listeriosis	0	0	3
Meningococcal	0	0	4
SEXUALLY TRANSMITTED DISEASES			
Chlamydia	373	329	4,168
Gonorrhea	116	81	1,211
Syphilis-Primary, Secondary & Early Latent	5	4	43
Syphilis, Late & Late Latent	3	2	15
Herpes, Initial Infection	25	33	382
TUBERCULOSIS			
Tuberculosis	0	0	13
VACCINE PREVENTABLE DISEASES			
Measles	0	0	3
Mumps	0	1	1
Rubella	0	0	0
Pertussis	4	5	86
OTHER DISEASES			
Botulism (wound)	0	0	0
Botulism (infant)	0	0	2
Carbapenemase-Resistant Enterobacteracea	0	1	1
Dengue Fever	0	0	2
Legionellosis	0	0	4
Lyme Disease	0	0	0
Malaria	0	0	4
Tularemia	0	0	1
Typhoid Fever	0	0	1
West Nile Virus	0	0	1
Influenza Deaths	10	4	15
Vibroisis	0	0	9

Please remember to report communicable diseases to the Health Department. Accurate reporting helps stop the spread of communicable diseases. Provider and laboratory reporting of specific diseases is required by law.

24-Hour Reporting Line

(253) 798-6534

Confidential Fax Line for Case Reports

(253) 798-7666