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Excerpt From: Epidemic Pertussis in 2012—The Resurgence of a Vaccine Preventable Disease

The New England Journal of Medicine, August 19, 2012
James D. Cherry, M.D.

According to the Centers for Disease Control and Prevention, the United States is currently experiencing what may turn out to be the largest outbreak of reported pertussis (Whooping Cough) in 50 years. Why has this theoretically vaccine-preventable disease been on the upswing?

The past 45 years have seen concern about the safety of the diphtheria-tetanus-pertussis (DTP) vaccine, epidemics stemming from the vaccine's decreased use, and the development of new vaccines using acellular pertussis components (DTaP).

Of particular concern at present is the fact that DTaP vaccines are less potent than DTP vaccines. Recent data from California suggests waning of vaccine-induced immunity after the fifth dose of DTaP vaccine. We should also consider the potential contribution of genetic changes in circulating strains of *B.pertussis.* It is clear that genetic changes have occurred over time in three *B. pertussis* antigens—pertussis toxin, pertactin, and fimbriae.

We should maintain some historical perspective on the renewed occurrences of epidemic pertussis and the fact that our current DTaP vaccines are not as good as the previous DTP vaccines. Better vaccines are something that industry, the Center for Biologics Evaluation and Research of the Food and Drug Administration, and pertussis experts should begin working on immediately.

In the interim, we need to use the vaccines we have in the best ways possible. Of particular concern are the frightening rates of complications and death associated with pertussis in unimmunized young infants. The "cocooning" strategy—vaccinating people who have contact with infants– has been implemented but is often impeded by logistics. Immunizing pregnant women is fundamentally sound because it reduces the risk that the mother will acquire pertussis around the time of delivery, and it gives the infant some protection for perhaps 1 to 2 months.

Another approach would be to start DTaP immunization at a younger age, with shorter intervals between doses. This schedule could be started at birth, and the first three doses could be completed by 3 months of age. Notably , during the period of greatest reduction in pertussis incidence in the United State (1954-1974), the three dose primary series was completed between 3 and 5 months of age.

In 2012, it is time to recognize the successes of the past and to implement new studies and direction for the control of pertussis in the future.

Mark Your Calendars:

Immunize Georgia Conference
Date: Thursday, September 13, 2012
Location: Macon Marriott City Center
Speakers: Dr. Paul Offit, Dr. Walter Orenstein, and Dr. Andrew Kroger

Current Issues in Vaccines Webinar
Date: October 3, 2012
Time: 12pm
Speaker: Paul Offit, MD
Registration: Online
Www.vaccine.chop.edu/webinars

Immunization Summit
Date: October 9, 2012
Location: Copeland's Restaurant
Atlanta, GA
Time: TBA

National AAP Conference
Date: October 20-23
Location: New Orleans, LA

ACIP Meeting
Date: October 24 & 25
Location: Atlanta, GA

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Higher Rates of Pertussis With Acellular Pertussis Vaccine

Children who receive acellular pertussis vaccines have higher rates of pertussis compared with those receiving whole cell pertussis vaccines, according to a research letter published in the Aug. 1 issue of the *Journal of the American Medical Association*.

TUESDAY, July 31 (HealthDay News) -- Children who receive acellular pertussis vaccines have higher rates of pertussis compared with those receiving whole cell pertussis vaccines, according to a research letter published in the Aug. 1 issue of the *Journal of the American Medical Association*.

Sarah L. Sheridan, B.Med., M.App.Epid., from the Queensland Children's Medical Research Institute in Brisbane, Australia, and colleagues examined whether the sustained pertussis epidemic experienced in Australia was related to the 1999 replacement of diphtheria-tetanus-whole cell pertussis (DTwP) with acellular pertussis (diphtheria-tetanus-acellular pertussis [DTaP]) vaccines, which have a lower rate of adverse events.

Pertussis reporting rates were compared with primary course vaccination for 58,233 children in the 1998 birth cohort, of whom 69.5 percent received at least three doses of any pertussis-containing vaccine during the first year.

The researchers found that, in the pre-epidemic and outbreak periods, children who received a three-dose DTaP had higher rates of pertussis compared with those who received a three-dose DTwP primary course. For those who received a mixed dose, rates in the current epidemic were highest for children who received DTaP as their first dose. The incidence rates for children who received a mixed course with DTwP as the initial dose were between rates for the pure course DTwP and DTaP cohorts.

"The challenge for future pertussis vaccine development is to address the benefit-risk trade-off highlighted by our study, and to develop vaccines that induce long-lasting protection from the first dose, without the adverse events associated with DTwP use," the authors write.

Two authors disclosed financial ties to GlaxoSmithKline and sanofi-pasteur, both of which manufacture pertussis-containing vaccines.

CDC publishes report on vaccination coverage among kindergartners during 2011–12 school year

CDC published Vaccination Coverage Among Children in Kindergarten—United States, 2011–12 School Year in the August 24 issue of MMWR (pages 647–652). A press summary of the article is reprinted below.

Nationally, most kindergarteners are up-to-date on their vaccines. This report includes assessments from 47 states and the District of Columbia and highlights vaccination coverage among kindergarten children from the 2011–2012 school year. Statewide levels of vaccination coverage are at or very near Healthy People 2020 targets. Median vaccination coverage for three vaccines (diphtheria and tetanus toxoids and acellular pertussis; poliovirus; and hepatitis B) met the Healthy People 2020 target of 95 percent coverage or higher. However, median coverage for measles, mumps, and rubella vaccine and varicella vaccine were below 95 percent, the Healthy People 2020 goal. Exemptions levels were low overall. Although statewide levels of vaccination coverage are at or very near target levels, clusters of unvaccinated children or locally low vaccination coverage for extremely transmissible diseases like measles remains a potential threat. CDC urges parents to give their children the best protection from vaccine-preventable diseases like measles by ensuring that their children are vaccinated according to the recommended immunization schedule before starting school this fall.

Chickenpox Cases Fall 80% Over Decade: CDC
Two-dose schedule will deliver further improvement, experts say

By Margaret Steele
HealthDay Reporter
THURSDAY, Aug. 16 (HealthDay News) -- Chickenpox cases in the United States dropped almost 80 percent between 2000 and 2010 in 31 states following routine use of the varicella vaccine, the U.S. Centers for Disease Control and Prevention reports.
Updated figures published by the CDC Thursday also show that in the four years after a two-dose vaccine was recommended for children in 2006, cases of chickenpox declined about 70 percent. The biggest drop occurred in children between the ages of 5 and 9.
"This is one of our success stories," Dr. Charles Shubin, medical director of the Children's Health Center of Mercy FamilyCare in Baltimore, said when earlier figures were released last year.
The number of states with adequate chickenpox reporting systems jumped from 12 to 31 between 2000 and 2010, allowing the CDC to better monitor the effectiveness of the vaccine, introduced for routine use in the United States in 1996, the agency said.
In those 31 states reporting, incidence of chicken pox dropped from 43 cases per 100,000 population in 2000 to nine cases per 100,000 in 2010, the CDC said.
"State varicella surveillance data reported to CDC are now adequate for monitoring national trends in varicella incidence," the agency said in this week's issue of *Morbidity and Mortality Weekly Report*.
But, only with information from all 50 states can health officials paint a complete picture. "Continued strengthening of the surveillance system and participation from all states is needed to monitor fully the impact of the routine second dose of varicella vaccine," the researchers said.
Symptoms of this common infectious disease include an itchy rash on the face, scalp or trunk, fever and headache. Most cases are mild, lasting five to 10 days, but some people become seriously ill. Adults typically become sicker than children.
In 2010, four chickenpox-related deaths were reported, but none of those were patients known to have had the varicella vaccination, the CDC said.
The CDC recommends that children get two doses of varicella vaccine -- the first dose between 12 and 15 months of age, the second between 4 and 6 years of age or at least three months after the first dose.
Teenagers and adults who have not had chickenpox or the chickenpox vaccine should also get two doses, at least four weeks apart.
Initially, just one dose of vaccine was recommended. As two-dose vaccination increases, the CDC expects to see further declines in chickenpox. While some people may still develop the virus after vaccination, those breakthrough cases tend to be mild, the agency said.

Hepatitis A Vaccine for Children Lasts for 10 Years:

Study Cases of the virus in the U.S. have decreased by 90 percent over the past 20 years, research shows

TUESDAY, Aug. 14 (HealthDay News) -- Children younger than 2 who are given the hepatitis A vaccine are protected from the virus for 10 years, a new study shows.

Hepatitis A is a virus that causes inflammation of the liver, and typically is found in areas with poor sanitation where it is transmitted through contaminated food and water.

Researchers from the U.S. Centers for Disease Control and Prevention found that the transfer of a mother's hepatitis A antibodies -- which help defend against the virus -- to her child does not reduce the effectiveness of the vaccine, which is routinely given to children between 12 months and 18 months old.

In conducting the study, the researchers examined nearly 200 infants and toddlers who were born at full term and healthy at 6 months of age. The children were divided into three groups based on their age: The first group was comprised of babies between 6 months and 12 months old, toddlers between 12 months and 18 months old formed the second group and those from 15 months to 21 months of age made up the third group.

The children's mothers also were tested for hepatitis A antibodies.

The children's hepatitis A antibody levels were measured at 1 month and 6 months. The researchers also conducted follow-up assessments at 3, 5, 7 and 10 years old, after the children received their second dose of the hepatitis A vaccine.

The study found that one month after they received the second dose of the vaccine, children in all three groups showed signs of protection from the virus. At the 10-year follow-up, most of the children were still protected form the virus.

The researchers noted that 7 percent of the 6- to 12-month-old babies born to mothers who did not have hepatitis A antibodies did not retain the protection from the virus provided by the vaccine. Moreover, 11 percent of the children from this group whose mothers did have hepatitis A antibodies also lost their protection.

The researchers also found that 4 percent of the children between 15 months and 21 months old who were born to women without hepatitis A antibodies no longer had protection from the virus after 10 years.

"Our study demonstrates that [the effects of] a hepatitis A [vaccine] persists for at least 10 years after primary vaccination ... when administered to children at ages 12 months and older, regardless of their mothers' anti-hepatitis A status," study author Dr. Umid Sharapov, an epidemiologist with the CDC, said in a news release. "These findings support current CDC ... guidelines for routine administration of two doses of inactivated hepatitis A vaccine to all children in the U.S., beginning at the age of 12 months."

The study authors added that a future booster dose may be necessary for children to maintain protection against hepatitis A.

The study was published in the August issue of the journal *Hepatology*.

Wakefield's Libel Suit Against *BMJ* Thrown Out

Deborah Brauser

August 6, 2012 — A judge in Texas has thrown out the libel action suit filed in that state by Andrew Wakefield against the *BMJ*, the journal's editor-in-chief Fiona Godlee, MD, and journalist Brian Deer, according to a news release from the *BMJ*.

As reported at the time by *Medscape Medical News,* Wakefield filed his defamation suit in January 2012 because of a series of articles and accompanying editorials published by the *BMJ* in 2011. The articles, which were written by Deer, were highly critical of the much-maligned study of Wakefield's that was published in (and later retracted from) the *Lancet* linking the measles-mumps-rubella (MMR) vaccine to regressive autism and bowel disease.

Dr. Godlee cowrote the *BMJ's* editorial, which called Wakefield's study "an elaborate fraud." Although 10 of the study's 12 coauthors have now disavowed the findings, the study has been blamed for plummeting rates of MMR vaccinations.

British citizen Wakefield chose to file his suit in Texas, where he is currently residing, because the defendants "purposely availed themselves of the privileges, benefits, advantages, and profits of conducting their affairs in the state of Texas."

However, Travis County district judge Amy Clark Meachum announced in her ruling that Texas courts have no jurisdiction over the 3 British defendants.

"We have always had full confidence in what we published in the *BMJ*. We look forward to putting this litigation behind us," Dr. Godlee said in the news release.

Plans to Appeal

Wakefield's study was published in the *Lancet* in 1998 amid a huge outpouring of media coverage. It was retracted by the journal in 2010 and described by the *Lancet's* editor at time of retraction as "utterly false."

Also in 2010, Wakefield's clinical and academic credentials were stripped by the United Kingdom's medical regulatory authority "for serious professional misconduct, including dishonesty and unethical behavior," reports the release.

The *BMJ's* series of articles and editorials examining all of these issues were published over a 3-week period in January 2011. The journal announced at the time that the articles were fact-checked against the transcript from the UK General Medical Council Fitness to Practice panel hearing.

In the *BMJ's* first article, Deer reported that the investigators altered and falsified medical records and facts, and that Wakefield accepted consultancy fees from lawyers involved with a suit against vaccine manufacturers.

In the journal's second article, Deer wrote that the study investigators "planned to make a vast profit" from the autism/MMR vaccine scare. And in the third article, the *BMJ* charged that "the medical establishment buried concerns" about Wakefield's study.

In January of this year, Wakefield filed his suit, saying that the articles were published "with actual malice...intended to cause damage to Dr. Wakefield's reputation and work as a researcher, academic and physician and to permanently impair his reputation and livelihood." The filing makes no mention of the *Lancet's* retraction or the removal of Wakefield's credentials.

At the time, Wakefield said that the Texas Long-Arm Statute would provide jurisdiction for his filing. However, if the suit had gone forward, the *BMJ* reports that its lawyers would have argued for dismissal "under recent legislation in Texas designed to curb meritless libel lawsuits."

Although the libel action has been thrown out over jurisdiction, the *Austin American-Statesman* is reporting that Wakefield said he plans to appeal the decision.