Study shows protection from pertussis vaccine wanes dramatically over time

By ACSH Staff — May 5, 2015

In 2012, Washington state had an outbreak of pertussis (whooping cough). Nearly 5,000 people mostly babies and children caught the disease. Surprisingly, many of the affected adolescents had been vaccinated on schedule, a new study [1] finds. The recent analysis of that epidemic, published in *Pediatrics*, reports that the effectiveness of the acellular pertussis booster shot (Tdap) dropped dramatically within a few years, leaving children and teens vulnerable.

As we ve reported before [2], studies suggest that the newer acellular vaccines those that contain only certain components of pertussis bacteria are partially to blame for recent increases in pertussis outbreaks. While the acellular vaccines result in fewer adverse effects compared to the older whole-cell vaccines, they are less protective. Acellular pertussis vaccines replaced whole-cell vaccines for the 5-dose childhood vaccination series in 1997.

The researchers analyzed the vaccine histories obtained through medical records of 11- to 19-year-old WA residents who received all rounds of their vaccinations on the recommended schedule. Participants were classified by type of pertussis vaccine received on the basis of birth year: a mix of whole-cell and acellular vaccines (1993 1997) or only the acellular vaccine (1998 2000).

Among adolescents who had received only the acellular vaccine, there were about 450 cases of whooping cough during the outbreak. Compared with more than 1,200 participants who did not get sick, overall Tdap effectiveness was found to be 63.9 percent. Effectiveness was 73 percent within one year of vaccination, but at 2 to 4 years post-vaccination, effectiveness plummeted to 34 percent.

The authors conclude, Tdap protection wanes within 2 to 4 years. Lack of long-term protection after vaccination is likely contributing to increases in pertussis among adolescents.
Dr. Anna Acosta, MD, who led the study, stressed "we really need to keep in mind that while vaccines are not perfect, they are still the best way to provide protection among children and adolescents."

ACSH’s Dr. Gil Ross added this: While the acellular vaccine efficacy wanes quicker than we’d like, that does not mean it’s OK to skip it—quite the contrary in fact. Those who fail to get their kids vaccinated on schedule are contributing to the recrudescence of epidemics. We don’t know the solution for this particular problem, aside from more research aimed at providing a better vaccine. Until then, teens and adults should be encouraged to get a booster pertussis shot, especially if they are going to be in the company of infants with little protection.

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