Reduced Risk of Pertussis Among Persons Ever Vaccinated With Whole-Cell Pertussis Vaccine Compared to Recipients of Acellular Pertussis Vaccines May Have Been Confounded by Age

TO THE EDITOR—The phasing out of whole-cell pertussis (wP)–containing vaccines in an integrated healthcare system with complete electronic records and a centralized laboratory has provided Witt et al with a unique opportunity to compare its effectiveness against pertussis infection to the newly introduced acellular pertussis (aP)–containing vaccines [1]. This retrospective study compared a large cohort of subjects vaccinated with at least 1 dose of wP with subjects vaccinated only with aP, and found considerable protection from clinical pertussis associated with wP. However this association may have been confounded by age, and therefore further analysis of the data is required before conclusions can be drawn.

Subjects were enrolled if they were between 8 and 20 years of age in May 2010, and thus were born between 1990 and 2001. They must have had received at least 5 doses of pertussis-containing vaccines to be included. They were tested for Bordetella pertussis with polymerase chain reaction on nasopharyngeal aspirates between January 2006 and November 2011 if they presented to the healthcare network with symptoms of pertussis infection. Table 3 of Witt et al’s article [1] shows that most of the pertussis cases were in younger children, but it was mostly older children who were wP vaccinated. As the older children were only eligible for testing at an older age (those aged >15 years were tested at age 12–20 years), and the youngest children were only eligible for testing at a young age (children younger than 12 years were tested at age 4–12 years), the comparison of pertussis cases in wP- vs aP-vaccinated subjects is really a comparison of pertussis in adolescents vaccinated with wP vs young children vaccinated with aP. Given that pertussis is much more common in younger children, the apparent association seems to have been confounded by age, but the authors have not accounted for this possibility. It will be important to investigate whether this association holds after adjusting for age at enrollment.

The immunologic consequences of aP vs wP may be considerable, not just for pertussis infections but also for other immune-mediated diseases that may be affected by the altered cytokine and cellular immunity profile associated with wP priming vs aP-only vaccine schedules [2]. A randomized trial may be justified to help inform policy.

Note

Potential conflicts of interest. All authors: No reported conflicts.

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References
