Correspondence

Pertussis Vaccination and Pregnancy

To the Editor—We welcome the contribution of Healy et al [1] on (pre-)pregnancy diphtheria, tetanus, and acellular pertussis (dTpa) immunization, as scientific evidence on this topic is increasingly needed to assist countries in their decision-making processes. Pertussis incidence and disease severity is worryingly high in very young infants in countries with high coverage for infant pertussis vaccination programs. These epidemiologic changes, along with major outbreaks, are impacting vaccination programs. These epidemiologic changes, along with major outbreaks, led the advisory bodies in the United States (2011) [2] and United Kingdom (2012) [3] to recommend pertussis booster administration during pregnancy.

Healy et al describe a short presence and sharp decline of maternal antibodies in a cohort of infants whose mothers were vaccinated shortly before or during pregnancy. Only 3 of 19 women received dTpa vaccine after 20 weeks’ gestation. It would have been interesting to describe separately the antibody kinetics for these 3 mother–child pairs. The data are now diluted in the “during pregnancy administration” group, which could explain why no difference is seen in the immunoglobulin G (IgG) geometric mean concentration (GMC) for women immunized before or during pregnancy. In addition, a control group of infants of unvaccinated women might have been helpful given the possibility of higher pertussis exposure in this study group.

Finally, assessing immunogenicity of the vaccine in the women would give an idea on adequate immune responses, and additional time points in infants would have helped to substantiate the decay model.

We reported in 2011 an interim analysis (N = 24 women–child pairs) of an ongoing study [4], where we compare siblings born before and after dTpa vaccination of the mother in between both pregnancies. None of the mothers had anamnestic evidence of pertussis infection or vaccination during 10 years before inclusion, and all responded adequately to the vaccine. The median time between vaccination and delivery was 12.7 months (vs 13.4 months in [1]). In contrast to the findings of Healy et al, 95% of infants of vaccinated women were born with IgG titers >5 EU per milliliter. This could be explained by different characteristics of the study populations. The IgG GMC in infant blood at days 27–32 after birth was also rapidly decreasing and was only half of the GMC in cord blood, but still significantly higher than in the first-born siblings at the same age. There is no correlate of protection, yet GMC at 1 month was comparable to GMC in infants at month 12, after a full course of 3 pertussis vaccine doses [5].

We would like to emphasize that kinetics of maternal antibodies might differ in different regions of the world according to epidemiology, implemented vaccine strategy, vaccine brand used, and population targeted. Do countries follow the US and UK strategy when the burden of disease is increasing, or do they have the luxury to wait for data on possible blunting by maternal antibodies? As mentioned by Healy et al, we need larger studies with longer follow-up to help understand the immunologic responses in pregnant women and the frequency of booster dTpa administration, as well as the consequences on neonatal immunity.

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Notes

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