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Changes in MCV4 use include booster dose for adolescents

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The Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention has recommended two modifications for use of quadrivalent meningococcal vaccines (MCV4, Menactra and Menveo) that will affect the 2011 immunization schedule.

The AAP Committee on Infectious Diseases has approved these recommendations.

Immunocompromised patients

MCV4 elicits antibodies protective against *Neisseria meningitidis* serogroups A, C, Y and W-135.

For children who are at high risk for meningococcal disease due to immunocompromise (complement deficiency, asplenia, HIV infection), a two-dose primary series (at least two months apart) is now recommended. Children at high risk for meningococcal disease due to immunocompromise who have received only one dose in the primary series should receive a second dose at the earliest opportunity (no sooner than eight weeks after the first dose).

The second dose of vaccine is recommended because antibody levels following a single dose may be insufficient to protect those with HIV infection. In addition, children with a deficiency in their innate immunity (complement deficiency and asplenia) need higher levels of antibody provided by the second dose to achieve protection.

High-risk patients

For individuals at increased risk for meningococcal disease due to prolonged exposure (e.g., microbiology lab workers), the recommendation is to continue with a one-dose primary series.

For all individuals at prolonged high risk for meningococcal disease, booster doses are recommended with intervals determined by age of receipt of the primary series of meningococcal vaccine (three-year interval for 2- to 5-year-olds, and five-year interval for those ages 7 and older). One dose should be administered every five years thereafter for persons with persistent complement deficiency and anatomic or functional asplenia.

Adolescents

The second revised recommendation is the addition of a routine booster dose of MCV4 for adolescents at age 16 years, i.e., vaccinate at 11 through 12 years followed by a booster at 16 years. For adolescents who receive their first dose at 13 through 15 years of age, a one-time booster dose should be administered between ages 16 through 18 years or up to five years after the first dose.

When the original decision was made to vaccinate adolescents with the meningococcal conjugate vaccine at 11 through 12 years, protection was expected to last approximately 10 years. In addition, there was hope that immunization with MCV4 would reduce nasal carriage of *N. meningitidis* as was seen with other bacterial conjugate vaccines such as *Haemophilus influenzae* type b.

Data available since the introduction of the adolescent MCV4 recommendations note that antibody levels to some of the meningococcal vaccine serogroups wane to levels consistent with those seen in vaccine naive adolescents of the same age within five years. Re-exposure to *N. meningitidis* may elicit an anamnestic immune response, but the anamnestic response may occur too slowly to prevent invasive disease. In addition, there is no evidence that carriage rates are affected following a single dose of meningococcal vaccine in adolescents.

Three options were considered. The first option was to make no change in recommendations and await new surveillance data to determine if rates of meningococcal disease are increasing. This option was felt to be unacceptable given data on waning immunity and the fact that breakthrough cases (in adolescents who received MCV4) experienced similar morbidity and mortality as those who were vaccine naive. In addition, this option does not provide protection to adolescents and young adults during the period of greatest risk (16 to 22 years).

The second option was to give a single dose of vaccine at 14 through 16 years of age instead of 11 through 12 years. This would keep costs of the vaccine program essentially the same and would provide protection through much of the highest risk period. However, children ages 11 to 14 years no longer would be protected, and high coverage rates might be difficult to achieve.

The third option of a routine two-dose schedule was approved because this will provide protection through most of the highest risk period and will prevent the most cases of meningococcal disease. While this approach will increase cost to the health care system, it will prevent the greatest number of cases of the three options.

Dr. Brady is chair of the AAP Committee on Infectious Diseases.