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Study finds shifting disease burden following universal Hib vaccination

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Vaccination against Haemophilus influenzae type b, or Hib, once the most common cause of bacterial meningitis in children, has dramatically reduced the incidence of Hib disease in young children over the past 20 years, according to a study published in Clinical Infectious Diseases and available online. However, other strains of the bacteria continue to cause substantial disease among the nation's youngest and oldest age groups.

"The Hib vaccine was successful in reducing disease among children 5 years and younger, and now the epidemiology has changed," said lead author Jessica MacNeil, MPH, of the Centers for Disease Control and Prevention, who, with colleagues, analyzed data for the current epidemiology and past trends in the invasive disease over the past two decades following the introduction of the Hib vaccine in the mid-1980s. Most H. influenzae disease in the United States is now caused by other, non-type b strains of the bacteria.

The study authors warn that the highest rates of disease from non-b type strains are in the oldest and youngest age groups, those 65 and older and infants less than a year old. Among children younger than 5 years old, young infants are the most likely to be diagnosed with the disease. Many of these cases occur during the first month of life, and among those, premature and low-birthweight babies are the most vulnerable.

The number of adults 65 and older who become ill due to H. influenzae is also high compared to the rest of the population, according to the study authors. Among those in this group who become sick, nearly 25

percent of the cases are fatal. Risk factors for this age group are harder to interpret, the authors note, as clinical outcomes may be due to underlying medical conditions.

American Indian and Alaska Native children continue to have a disproportionately large burden of both Hib and non-b type disease compared to others, the study found, but the reasons behind this are not fully understood. "Why these groups continue to be at a higher risk than other populations should be the focus of future studies," MacNeil said. Understanding risk factors for H. influenzae disease in this population, such as household crowding, poverty, and poor air quality, could potentially help prevent transmission.

The study authors found that no substantial serotype replacement has been observed among young children in the U.S., which suggests the current Hib vaccine has been effective in preventing H. influenzae illness in this age group. However, the authors note, the burden of disease seen in older adults is an opportunity that could be addressed in the future with an H. influenzae vaccine for adults.

Provided by Infectious Diseases Society of America

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