

Invasive *Haemophilus Influenzae* Disease, Europe, 1996–2006

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[Karen Hunter] Hello, I'm Karen Hunter. With me today is Stacey Martin, an epidemiologist at the Centers for Disease Control and Prevention. We're talking about a paper in the March 2010 issue of CDC's journal, *Emerging Infectious Diseases*. The article describes a recent study of trends in *Haemophilus influenzae* disease in Europe. Welcome, Stacey.

[Stacey Martin] Thanks, Karen. I'm happy to be here.

[Karen Hunter] Before we talk specifically about the study, tell me a little about *Haemophilus influenzae*.

[Stacey Martin] Sure. *Haemophilus influenzae* are bacteria commonly found in the nose and throat of children and adults. They are differentiated by their protective capsule into six different serotypes identified as A through F. There are also strains that have no capsule, which we commonly refer to as non-typeable or nonencapsulated. The bacteria can cause a variety of infections in children and adults ranging from localized infections of the ear, eye, or sinuses, to more serious and invasive infections like pneumonia, bacteremia, and meningitis.

In the United States and Europe, before the introduction of effective childhood vaccines, serotype b, called Hib, was the leading cause of bacterial meningitis in children younger than five years of age. Since the introduction of these vaccines, there's been a dramatic decrease in the incidence of Hib disease. The other strains of *Haemophilus influenzae*, particularly the non-typeable strains, most often cause non-invasive disease in children and adults with chronic lung disease; however, newborns, immunocompromised persons, and persons with underlying medical conditions are at risk of invasive disease from the non-type b strains.

[Karen Hunter] Isn't vaccination against Hib routine now?

[Stacey Martin] Yes. All children under the age of five should be vaccinated. Children in the United States should get either three or four doses of Hib, depending on which brand their doctor uses. The vaccine is recommended at 2, 4, 6, and 12 through 15 months of age.

[Karen Hunter] Did the study described in the article cover all European countries?

[Stacey Martin] No. It was part of a collaborative European study that was started in 1996 to study the epidemiology of invasive *Haemophilus influenzae* after the introduction of Hib vaccine into national infant immunization programs. In 1998, the program was expanded and named the European Union Invasive Bacterial Infections Surveillance Network. By 2006, a total of 28 countries routinely reported cases to a central database. In the study, the authors used data from 14 participating countries that regularly serotyped all clinical isolates of *Haemophilus influenzae* for the longest period of time, which was from 1996 to 2006.

[Karen Hunter] Did anything in the paper strike you as being particularly interesting or surprising?

[Stacey Martin] Well, I encourage the listeners to read the paper because it contains a lot of interesting findings that we don't have time to summarize now, but the authors found that even though the incidence of invasive non-type b *Haemophilus influenzae* is now higher than Hib and associated with a higher case-fatality, there was no substantial increase in invasive non-type b *Haemophilus influenzae* infections. This finding is important because it suggests that near elimination of Hib in Europe hasn't led to substantial disease replacement by non-type b strains of *Haemophilus influenzae*.

[Karen Hunter] Now this study was done in Europe, but can its findings be applied elsewhere?

[Stacey Martin] Well, yes. These results, as well as data from the United States, provide strong evidence that Hib vaccination programs are effective at minimizing the burden of invasive Hib, although it is possible that differences in vaccine schedules, types of vaccines used, and the local epidemiology of *Haemophilus influenzae* may impact the findings elsewhere. These unknowns highlight why it's important that countries implement surveillance to better understand the country-specific epidemiology of *Haemophilus influenzae*, especially after the implementation of a Hib vaccination program. This study also highlights that *Haemophilus influenzae* is still an important pathogen and that continued surveillance is needed to assess the long-term effectiveness of Hib vaccination and to quickly detect any changes in the epidemiology of disease. As new vaccines are in development it's important know which strains are causing the disease.

[Karen Hunter] Thanks, Stacey. I've been talking with CDC's Stacey Martin about a paper that appears in the March 2010 issue of CDC's journal, Emerging Infectious Diseases. You can see the entire article online at www.cdc.gov/eid.

If you'd like to comment on this podcast, send an email to EIDeditor@cdc.gov. That's E-I-D-editor – one word -- at cdc.gov. I'm Karen Hunter for Emerging Infectious Diseases.

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