NEW HOT PAPERS - 2009

March 2009

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Lauri A. Hicks talks with *ScienceWatch.com* and answers a few questions about this month's New Hot Paper in the field of Immunology.

Article Title: Incidence of pneumococcal disease due to non-pneumococcal conjugate vaccine (PCV7) serotypes in the united states during the era of widespread PCV7 vaccination, 1998-2004
Authors: Hicks, LA;Harrison, LH;Flannery, B;Hadler, JL;Schaffner, W; Craig, AS;Jackson, D;Thomas, A;Beall, B;Lynfield, R;Reingold, A; Farley, MM;Whitney, CG;Active Bacterial Core Surveillance
Journal: J INFEC DIS, Volume: 196, Issue: 9, Page: 1346-1354
Year: NOV 1 2007
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(addresses have been truncated)

SW: Why do you think your paper is highly cited?

Streptococcus pneumoniae is a leading infectious cause of morbidity and mortality worldwide. In 2000, the 7-valent pneumococcal conjugate vaccine PCV7 (Prevnar™, Wyeth-Ayerst, Canada), a conjugated pneumococcal polysaccharide which targets the seven serotypes (strains) of pneumococcus that cause more than 80% of serious pneumococcal disease in North American children, was introduced into the infant immunization schedule in the US, and during the next few years we observed profound reductions in the frequency of invasive pneumococcal disease (e.g., bacteremia and meningitis).

This occurred not only among vaccinated children, but also among young children and adults who hadn't received the vaccine. PCV7 protects against disease due to the seven serotypes that are covered by the vaccine. However, there are approximately 90 different serotypes, so it is important to describe changes in the frequency of disease due to the serotypes that aren't covered by the vaccine.

"This research can be used to inform vaccine policy decisions in the U.S. and other developed countries, but also in developing countries where the disease

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

This research confirmed that there has been a small increase in pneumococcal disease due to serotypes that are not included in PCV7.

SW: Would you summarize the significance of your paper in layman's terms?

The bacterium, *S. pneumoniae,* is a leading cause of death worldwide; it's a common cause of pneumonia, meningitis, and bloodstream infections. PCV7, a vaccine for children that targets *S. pneumoniae*, has resulted in a dramatic reduction in disease. There has been a modest increase in disease due to types not covered by the vaccine. These small increases should not overshadow the fact that PCV7 has prevented serious illness and deaths in places where it is in use.

burden is much higher."

SW: How did you become involved in this research, and were there any problems along the way?

I became involved with this research when I joined the Epidemic Intelligence Service with the Centers for Disease Control and Prevention (CDC) in 2003. The Respiratory Diseases Branch at CDC tracks disease caused by *S. pneumoniae* with the Active Bacterial Core surveillance (ABCs) system. We analyzed data from ABCs to evaluate changes in the serotypes causing invasive pneumococcal disease (e.g., meningitis and bacteremia).

SW: Where do you see your research leading in the future?

The Respiratory Diseases Branch at CDC will continue to conduct surveillance in order to identify changes in pneumococcal disease rates. We anticipate that there may be further reductions in disease with the introduction of newer vaccines that target more pneumococcal serotypes. We are facing a crisis in clinical practice and public health due to an increase in antibiotic resistant infections. I am currently conducting research to determine how antibiotic use influences *S. pneumoniae* resistance to antibiotics.

SW: Do you foresee any social or political implications for your research?

This research can be used to inform vaccine policy decisions in the US and other developed countries, but also in developing countries where the disease burden is much greater.

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