Pneumococcal Vaccine Urged in Flu Pandemic Plan

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MONTREAL — U.S. plans for an influenza virus pandemic should include a strong recommendation for bacterial pneumonia vaccination, as this measure has been shown to reduce influenza mortality by up to 50%, said Dr. Keith Klugman.

"Among the 18 fundamental points in the U.S. pandemic plan, there is little mention of bacterial vaccines. I believe their role is significant and has not been considered up until now," he said at an international conference on community-acquired pneumonia.

Although the influenza virus alone can be fatal, the risk of death is greater with secondary pneumococcal infection, said Dr. Klugman, professor of infectious diseases and the William H. Foege Chair of Global Health at Emory University, Atlanta.

"The combination of bacterial superinfection and influenza is highly fatal. It's a huge problem, and it's not a small part of influenza mortality and morbidity," he said in an interview.

Evidence that pneumococcal infection played a major role in the 1918 influenza pandemic "is substantial, but seems to have been forgotten," Dr. Klugman recently wrote in a letter to the editor (Science 2007;316:49-50).

He cited historical evidence of culturable pneumococci in the blood of at least half of the survivors and victims of influenza in two studies (Br. Med. J. 1919; 1:3-5; JAMA 1918;71:1735).

And a randomized, controlled trial by Dr. Klugman and his colleagues has shown that, in children, vaccination against the pneumococcal bacteria results in a 31% decrease in pneumonias associated with respiratory viruses (Nat. Med. 2004; 10:811-3).

"Because of the vaccine, they are not getting the superinfection that brings them to the hospital," he said at the meeting, which was sponsored by the International Society of Chemotherapy. "I think people have known for years that there can be bacterial superinfections with influenza, but they just didn't realize how common they were and how much of a role they play."

The 23-valent pneumococcal polysaccharide vaccine (PPV 23) is currently recommended in adults older than 65 years, but giving the 7-valent pneumococcal conjugate vaccine (PCV 7) to children is more protective against bacterial pneumonia in the adult population, he said.

Data from the Centers for Disease Control and Prevention show that adult infections with the seven pneumococcal strains covered in the children's vaccine have decreased, while infections from the other 16 strains covered by the adult vaccine have increased.

"The burden of disease in adults has been impacted more by giving the conjugate vaccine to children than by giving the 23-valent vaccine to adults," Dr. Klugman said.

This has led some investigators to ask whether adults might benefit by being immunized using the children's conjugate vaccine. (See box below.)

Also, a new study (Lancet 2007;369:1179-86) offers the first evidence that vaccinating children protects adults against all pneumococcal pneumonia, not just bacteremic pneumococcal pneumonia, he said.

Improving pneumococcal vaccine coverage in children could result in major reductions in infection across all ages, he said.

"Only about 60% of kids currently get the full four doses of the conjugate vaccine, and it's that fourth dose that induces the full immunity and stops transmission, so we need to do a much better job of immunizing kids." ■

Giving Adults the Children's Conjugate Vaccine May Backfire, Researchers Say

Is there a role for giving the children's conjugate vaccine to adults?

A recent study suggested that it may not be as simple as that (Vaccine 2007;25:4029-37). Immunogenicity among elderly patients (aged 70-79 years) who were given the children's dose of conjugate vaccine was "nothing to get overly excited about," Dr. Klugman said. "Perhaps the dose designed for a primary response in kids is not enough for adults," he suggested.

And a study presented at the 2006 International Symposium on Pneumococci and Pneumococcal Diseases by Dr. Andrés de Roux, of the Universitat Autònoma de Barcelona, and colleagues suggested that the administration of the children's conjugate vaccine to elderly patients within 1 year of giving them the polysaccharide vaccine could actually suppress immunity.

"It seems the adult vaccine interferes with the response to the conjugate, which is a concern, because it means we can't simply give the conjugate to people who have previously had the [23-valent vaccine]. There will have to be a strategy, and it seems that certainly the conjugate needs to be given before the 23-valent," Dr. Klugman said.

Dr. Klugman said that in his opinion, a new conjugate vaccine, with coverage of more strains than the current one, will eventually replace the PPV 23 for adults.

Key Benefit Number Is 12 With Flu Immunizations

TORONTO — As few as 12 pediatric influenza immunizations and probably even fewer in each practice could prevent an outpatient visit for influenza later in the season, according to a poster presented at the annual meeting of the Pediatric Academic Societies.

"Most physicians already know the benefits of influenza immunization, but when you have such a simple number it's just easier to stick inside your head," said the study's author Elizabeth Lewis, a medical student at Vanderbilt University, Nashville, Tenn. "Our goal was to provide a clinically relevant number for primary care providers."

The study used published literature to ascertain rates of influenza infection in children aged 6-59 months, and assumed various rates of vaccine efficacy, also published in the literature. "The published range of efficacy is anywhere from 46% to 80% or 90%," she said in an interview. "Assuming only half of 6- to 59-month-old children are vaccinated—at a conservative 50% vaccine efficacy—that eliminates 2,250 hospitalizations and upwards of 650,000 outpatient visits."

Translating that down to the individual physician, Ms. Lewis and her colleagues estimated that—depending on season severity and children's' ages—between 12 and 42 children would need to be vaccinated to prevent one outpatient visit for influenza.

The corresponding range for preventing one influenza-attributable hospitalization was approximately 1,000-3,000 for children aged 6-23 months, and twice that for those aged 24-59 months.

"We also conservatively assumed no herd immunity, but we know there is a basis in the literature for herd immunity. Influenza is highly contagious, and vaccination of schoolchildren decreases influenza in the entire population. So, accounting for herd immunity, the number needed to treat would be less," she said. ■

Access and Autonomy Boost Level of NICU Staff Influenza Immunization

TORONTO — A 24/7 program allowing health care workers to vaccinate each other against influenza can dramatically increase staff immunization rates, bolstering the "cocoon effect" in the neonatal intensive care unit, Dr. Shetal Shah said in a poster presentation at the annual meeting of the Pediatric Academic Societies.

"I think it speaks to physician, nurse, and staff autonomy—the more control you give them over their need to be immunized, the more success you're likely to have," he said in an interview.

"I think the risk-benefit ratio is clearly in favor of letting the nurses and physicians immunize each other. The steps to not adopting this are really just the fear of trying something new, and the fear of ceding some control."

Dr. Shah, a neonatologist at State University of New York, Stony Brook, compared immunization rates among neonatal intensive care unit (NICU) health care workers before and after the implementation of a NICU vaccination program.

The program was originally designed to improve influenza vaccine access for parents of NICU patients.

"Because we have a captive audience of the parents who spend so much time in the NICU, we started immunizing them to provide protection for their high-risk children.

"But during the first year of the program, we noticed that nurses were immunizing not only the parents, but also each other," he commented, crediting the intensive educational efforts that had been directed at nurses to equip them to explain the benefits of vaccination to parents.

Among the reasons cited for refusal of immunization were fear of injections and belief in 'never getting sick' (nurses), and side effects (physicians).

"There was also 100% constant access to immunization for the staff, which removed a major obstacle. Even when people understand that they need to be vaccinated—if they have to take time off and go downstairs for it, or if they have to wait for a flu cart that comes up only once or twice a week—it's better than nothing, but it's still a rather limited opportunity."

With improved access to influenza vaccination under the program, 67% of the NICU health care workers were immunized (45% in the NICU and 22% elsewhere), compared with 32% before the program was implemented.

Among the reasons cited for refusal of immunization were fear of injections and belief in "never getting sick" (nurses), and side effects (physicians).

To increase compliance, educational efforts for nurses should emphasize the likelihood of viral transmission, and physician-directed efforts should include tolerability of side effects, Dr. Shah recommended.

"When you consider the [NICU] where all the workers are in extremely close contact with immunocompromised newborns who are at risk for serious consequences should they contract influenza, this becomes a particularly urgent issue," he noted. ■