Target Teens for the Meningitis Vaccine

The majority of cases—most often caused by serogroups C and Y—could be prevented.

BY DIANA MAHONEY
New England Bureau

CAMBRIDGE, MASS. — Although adolescents are not the pediatric population at greatest risk for invasive meningococcal disease, advocating the use of the conjugate meningococcal vaccine in this patient population "makes perfect sense," said Dr. Richard F. Jacobs, the Horace C. Cabe Professor of Pediatrics at the University of Arkansas, Little Rock.

That population still is at risk, although the majority of meningococcal infections occurs in children younger than 5 years of age, with a peak incidence in those younger than 2 years old.

"Ideally, we would like a conjugated vaccine against bacterial meningitis that we would use as an infant strategy in the first 6 months, with a booster dose at 1 year, that would have the same effect as the *Haemophilus influenzae* type b and pneumococcal conjugate vaccines, but the conjugated vaccine that is available does not target the *Neisseria meningitidis* serogroup responsible for the majority of meningococcal disease in this population," Dr. Jacobs said at a conference on pediatric infectious diseases sponsored by Boston University, PEDIATRIC NEWS, and FAMILY PRACTICE NEWS.

According to the Centers for Disease Control and Prevention, fewer than half of all cases of meningococcal disease in children younger than 5 years are potentially vaccine preventable because they are caused by *N. meningitidis* serogroup B.

"The quadrivalent vaccines in this country [nonconjugated MPSV4 and conjugated MCV4] cover serogroups A, C, Y, and W-135," said Dr. Jacobs.

"Serogroup B was only sequenced within the last 3 years. It has a different outer membrane than the other serogroups, and it has multiple subtypes, making it difficult to develop a vaccine that provides protective immunity," he said.

In contrast, the majority of cases of meningococcal disease that occur in adolescents and young adults—most often caused by serogroups C and Y—are potentially vaccine preventable.

This age group is also especially likely to engage in behaviors that could put them at increased risk for infection. "A number of studies have identified cigarette smoking, alcohol consumption, and bar patronage as risk factors for meningococcal disease," said Dr. Jacobs.

Together with the fact that these populations are more likely to be living in close contact with each other at school or in dormitories, the risk of becoming infected and spreading infection is substantial, he said.

Because meningococcal disease can be a serious, rapidly progressive infection that leaves little time for diagnosis and treatment, and because early meningococcal disease can be difficult to diagnose because it often presents with symptoms similar to those of common viral illnesses, prevention wherever possible should be the order of the day, said Dr. Jacobs.

'The [AAP] has been advocating the adolescent health visit ... and it makes sense to include the conjugate meningococcal vaccine in that visit.'

"The American Academy of Pediatrics has been advocating the adolescent health visit for children who are 11-12 years old, and it makes sense to include the conjugate meningococcal vaccine in that visit," Dr. Jacobs said. "The visit is important, according to the AAP, not only for the meningococcal vaccine, but also for the pertussis booster, for the varicella vaccine in kids who never received it or who never had chicken pox, and for kids who never got their second MMR.

"The timing is also right because it is at this visit that the AAP recommends discussions of such issues as sexuality, teen pregnancy, smoking, drinking, and drugs—all behaviors that could contribute to increased risk of spreading infection," he said.

Recent reports linking the MPV4 (Menactra) vaccine to Guillain-Barré syndrome, a serious nervous system disorder, may cause some hesitation about vaccination among some parents.

"Even though there is not enough evidence to substantiate the link, some parents will express concern and may refuse the vaccination," said Dr. Jacobs. "Advise these parents that the nonconjugated vaccine, which has not been associated with Guillain-Barré, can also provide protection, although the protection is not expected to last as long as that offered by Menactra." ■

Think Legionnaires' When Kids With Pneumonia Don't Respond to Therapy

BY MIRIAM E. TUCKER
Senior Writer

WASHINGTON — Consider the diagnosis of legionnaires' disease in any child with pneumonia who doesn't respond to β-lactam antibiotic therapy, Dr. David Greenberg and his associates advised in a poster presented at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

Legionnaires' disease is considered a rare cause of community-acquired pneumonia in children. Most of the published literature on the subject is in the form of case reports, and nearly all have used serologic tests, for which sensitivity and specificity are uncertain. Awareness of *Legionella* as a potential cause of pediatric pneumonia is important because the disease doesn't respond to standard empiric therapy and may be quite severe and life-threatening, said Dr. Greenberg of Soroka University Medical Center, Beer-Sheva, Israel.

A Medline search identified 76 reported cases of legionnaires' disease in children. Of those, 33 (43%) came from the United States, possibly because of a higher index of suspicion for the disease among U.S. physicians and the availability of specific diagnostic tests for *Legionella*. Spain was second, with 10 cases, followed by Italy with 7. Another 13 countries reported five or fewer cases each. None were reported from developing countries, probably because diagnostic tests are not available there, the investigators noted at the meeting, sponsored by the American Society for Microbiology.

Patients ranged in age from 5 days to 19 years, with a mean of 24 months.

Symptoms and signs were nonspecific, including fever in nearly all the patients. Cough, tachypnea, and hypoxia also were common.

Results of laboratory tests also were nonspecific and not helpful in making the diagnosis.

Of 63 patients with chest radiographs, pulmonary infiltrates were seen in 97% and pleural effusion in 30%.

Forty-one (54%) of the 76 cases were classified as hospital-acquired. These patients were more likely to be newborns and to have underlying diseases. The 35 patients with community-acquired legionnaires' disease were less likely to be immunosuppressed (37% vs. 90%).

Mortality was 41% in the hospital-acquired cases and 23% in the community-acquired cases. Compared with the 51 who survived, the 25 who died were younger and were more likely to have underlying diseases. Children who received inappropriate antibiotics were three times more likely to die than were those appropriately treated (76% vs. 24%), Dr. Greenberg and his associates said.

Environmental links to *Legionella* were identified in 23 (88%) of the hospital-acquired cases, compared with just 3 (33%) of those acquired in the community. Tap water, hot water tanks, showerheads, respiratory therapy equipment, and humidifiers were the most common sites of colonization. These findings suggest that all hospitals—including children's hospitals—should routinely culture their water supply for *Legionella,* they advised. ■

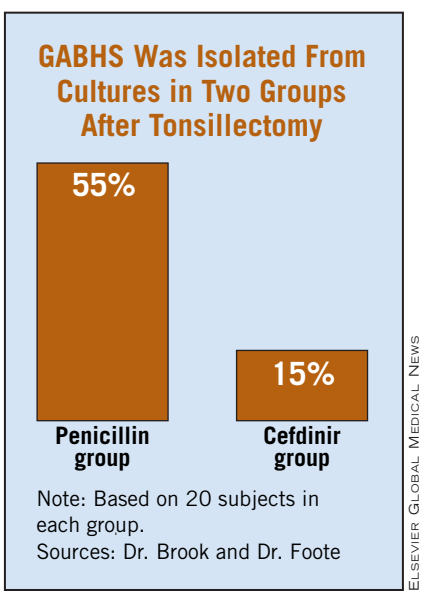
Cephalosporins Superior for GABHS

BY MIRIAM E. TUCKER
Senior Writer

WASHINGTON — Cefdinir is superior to penicillin in eradicating group A streptococci in children with tonsillitis, Dr. Itzhak Brook and Dr. Perry A. Foote reported in a poster at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

The failure of penicillin to eradicate group A β-hemolytic streptococci (GABHS) from inflamed tonsils, currently exceeding 40%, is of great concern. While penicillin remains effective against GABHS in vitro, several theories have been put forth to explain the high failure rate in patients, said Dr. Brook, professor of pediatrics at Georgetown University, Washington, and Dr. Foote, of the department of otorhinolaryngology at the University of Florida, Gainesville.

Data from a non–industry-funded study of 40 children aged 4-12 years who underwent elective tonsillectomy suggest that two simultaneous mechanisms may be at work: the inactivation of penicillin by β-lactamase–producing bacteria, coupled with penicillin's elimination of the "good" α-hemolytic streptococci, which interfere with the growth of GABHS, they said.



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Of the children, 20 received penicillin V (17 mg/kg or 250 mg every 8 hours) while the other 20 were given cefdinir (14 mg/kg or 600 mg/day) for the 10 days prior to surgery.

After removal, GABHS was isolated from core tonsillar cultures in 11 patients in the penicillin group (55%), compared with just 3 given cefdinir (15%).

Thirty-three β-lactamase–producing bacterial organisms—predominantly *Staphylococcus aureus*, *Haemophilus influenzae*, and *Moraxella catarrhalis*—were recovered from 17 (85%) of those treated with penicillin vs. 4 organisms isolated from 3 patients (15%) treated with cefdinir.

However, the penicillin patients had significantly lower numbers of α-hemolytic streptococcus, including those with the capacity to inhibit GABHS, Dr. Brook and Dr. Foote noted at the meeting, also sponsored by the American Society for Microbiology.

Adverse effects were noted in six patients, including diarrhea in two patients on penicillin and three on cefdinir, and vomiting in one of the penicillin patients. ■