

# Experts List Top Articles in Infectious Disease

*Herpesvirus infections, meningococcal vaccines, GBS disease, and varicella were hot topics.*

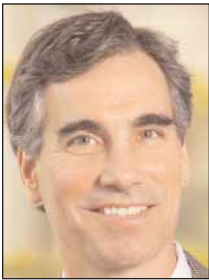
BY SHERRY BOSCHERT  
San Francisco Bureau

SAN FRANCISCO — The most important recently published articles on pediatric infectious diseases include four articles on herpes viruses and two on meningococcal vaccines, two speakers said at the annual meeting of the Infectious Diseases Society of America.

Dr. Joseph W. St. Geme III, professor of pediatrics at Duke University, Durham, N.C., and Dr. Parvin H. Azimi, director of infectious diseases at Children's Hospital, Oakland, Calif., described their picks for the most significant articles.

## Getting Clinical With MRSA

Houston investigators provided clinical descriptions of the increasing number of adolescents admitted to intensive care for severe community-acquired *Staphylococcus aureus* infection (Pediatrics 2005;115:642-8).



"In considering pressing issues in pediatric infectious diseases, I think most of us would agree that at the top of the list, these days, is community-acquired methicillin-resistant *Staph aureus*" (MRSA), Dr. St. Geme said.

A review of records for a 16-month period at Texas Children's Hospital, Houston, found that 14 adolescents were admitted for sepsis and coagulopathy from community-acquired *S. aureus*, 12 with MRSA and 2 with methicillin-susceptible *S. aureus*. Thirteen patients had pulmonary involvement, and 13 had bone and/or joint infection. Of the latter group, 10 patients had infection in two or more bones or joints. Their mean age was 13 years. Three patients died.

Getting a better understanding of the factors responsible for these infections should be a priority, he said.

## HSV Suppression No More

A report of a premature infant with cutaneous herpes simplex virus (HSV) disease

who developed herpes encephalitis despite suppressive therapy called into question assumptions about the efficacy of oral acyclovir regimens for HSV suppression (Pediatrics 2005;115:804-9).

The authors concluded that suppressive therapy with oral acyclovir cannot be recommended at this time.

"Many of us use suppressive therapy," Dr. Azimi said. "We really need a randomized, placebo-controlled study so we can see if it is efficacious."

## Don't Forget Early-Onset GBS

Despite a big drop in the incidence of early-onset group B streptococcal (GBS) disease since adoption of universal screening for GBS colonization, cases of early-onset GBS disease still occur, and most of these

**More rapid, more sensitive techniques to screen for GBS colonization are required.**

DR. ST. GEME

are in infants whose mothers screened negative for GBS colonization, a review of 25 cases at one hospital found (Pediatrics 2005;115:1240-6). Many of the mothers had intrapartum risk factors for neonatal infection but received no prophylactic antibiotics before delivery. Assessment of intrapartum risk factors remains important, the investigators concluded.

"In addition, this study highlights that pending the introduction of a GBS vaccine, more effective prevention of GBS disease will require more rapid, more sensitive techniques to screen for GBS colonization and GBS antibiotic resistance," Dr. St. Geme said.

## Type of Herpesvirus Matters

Congenital infections occur with human herpesvirus 6 (HHV-6) but not with the closely related human herpesvirus 7 (HHV-7), investigators reported (J. Pediatr. 2004;145:472-7). DNA tests found no HHV-7 in 2,129 cord blood samples but showed HHV-6 in 1% of 5,638 cord blood samples, similar to the rate for cytomegalovirus infection. Congenital HHV-6 infections were asymptomatic, without

the acute febrile illnesses seen with post-natal infections. It's not yet known whether congenital HHV-6 infection might cause subsequent hearing loss or developmental delay, as can happen with cytomegalovirus infection.

## Uncovering Details of HHV-6 Infection

Little is known about HHV-6 infection in infants, so investigators prospectively studied 277 children from birth through the first 2 years of life, testing their saliva weekly for HHV-6 DNA and reviewing parents' logs of symptoms or signs of illness. Primary HHV-6 infection occurred in 40% by 1 year of age and in 77% by age 2 (N. Engl. J. Med. 2005;352:768-76).

Infections usually were symptomatic (associated with fever, fussiness, diarrhea, and roseola) and often resulted in a visit to a physician. Having older siblings was a risk factor for HHV-6 infection, but exposure to group child care was not. Girls were more likely than boys to get HHV-6 infection.

## Varicella Vaccination Saves Lives

Universal childhood vaccination against varicella reduced deaths from varicella disease by 66%, a review of national death records found (N. Engl. J. Med. 2005; 352:450-8). Deaths for which varicella was listed as the underlying cause averaged 0.41 per 1 million people in the United States in 1990-1994 but only 0.14 per million in 1999-2001, after introduction of the varicella vaccine. The greatest reduction in mortality (92%) was seen in children aged 1-4 years, but deaths from varicella fell in all age groups.

## AAP Recommends MCV4

The American Academy of Pediatrics published recommendations for administering the quadrivalent meningococcal conjugate vaccine (MCV4, marketed as Menactra), which was licensed in 2005 for use in people aged 11-55 years. The guidelines call for immunizing young adolescents (aged 11-12 years), adolescents when they reach age 15 years or enter high school (whichever comes first), and college fresh-

men who will be living in dormitories (Pediatrics 2005;116:496-505). Approximately 1,400-3,000 cases of invasive meningococcal disease occur each year, and 10%-14% are fatal. Survivors are left with significant sequelae in 11%-19% of cases.

## Is a Meningococcal Booster Needed?

Immunity waned significantly within 2-3 years after toddlers were vaccinated with MCV4, a study of sera from 48 vaccinated and 47 unvaccinated children found (Pediatr. Infect. Dis. J. 2005;24:132-6). The vaccine was given at ages 2-3 years, and sera were tested at ages 4-5 years. Although the vaccinated children had higher antibody concentrations and more frequent passive protective activity, compared with unvaccinated children, serum antibody concentrations were sufficient in only 15% of vaccinated children.

"A booster dose may be needed in this age group for prevention of meningococcal infection," Dr. Azimi said.

## Battling Biofilms

A "tantalizing" study showed that subinhibitory concentrations of aminoglycoside antibiotics induce formation of biofilms and antibiotic resistance in *Pseudomonas aeruginosa*, *Escherichia coli*, and possibly other gram-negative organisms—"potentially contributing to some chronic or recurrent infections," Dr. St. Geme said (Nature 2005;436:1171-5).

Biofilms are aggregates of bacterial cells that form on biotic and abiotic surfaces, including human tissue. They have been implicated in cystic fibrosis, endocarditis, urinary tract infections, osteomyelitis, and otitis media, among other infections. The study identified a *P. aeruginosa* gene that was essential for biofilm induction and aminoglycoside resistance related to biofilms.

"In thinking about how to apply this information, one possibility is that inhibition of this novel gene product may be beneficial in early treatment of *P. aeruginosa* airway infection, in particular when tobramycin aerosol is being used," Dr. St. Geme said. ■



**A booster dose may be needed for 4- to 5-year-olds to prevent meningococcal infection.**

DR. AZIMI

# Hyperglycemia Linked to Complications in Septic Neonates

BY JANE SALODOF MACNEIL  
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PHOENIX — Critically ill infants on total parenteral nutrition may face more complications and worse outcomes as a result of hyperglycemia induced by overfeeding, reported Dr. Diya I. Alaadeen at the annual meeting of the American Pediatric Surgical Association.

A retrospective review of 37 premature infants treated for sepsis during a 1-year period found associations between hyperglycemia, morbidity, and mortality. The

higher their maximum serum glucose concentration, the longer the babies were on mechanical ventilation and the longer they stayed in the hospital, Dr. Alaadeen said.

The average maximum glucose level was 100 mg/dL higher in 6 babies (16%) who died than in 31 babies who lived. It reached 241 mg/dL in nonsurvivors vs. 141 mg/dL in survivors.

"Avoiding caloric overfeeding, perhaps with tight glycemic control, in critically ill infants might be effective for reducing hyperglycemia-associated morbidity and mortality," said Dr. Alaadeen of Rainbow Babies

and Children's Hospital in Cleveland.

Dr. Alaadeen and his colleagues reviewed all ventilator-dependent premature infants who weighed less than 1,500 grams, had culture-proven sepsis, and required total parenteral nutrition while treated in the hospital's neonatal intensive care unit during 2002. Coagulase-negative staphylococci were the most common cause of sepsis, identified in 76% of cases.

Among survivors, 20 infants had maximum glucose levels above 120 mg/dL; their average length of stay exceeded 100 days. The other 11 survivors had levels at

or below 120 mg/dL and stayed a little more than 60 days on average.

The study found that the average caloric intake for all infants was 83 ± 19 kcal/kg per day during the first week after sepsis was proved by culture. This intake exceeds the average measured energy expenditure of 40-60 kcal/kg per day observed in infants during states of acute metabolic stress, according to Dr. Alaadeen. "It is likely that our babies were overfed."

"When [infants] are ill, they are not using these calories to grow," he added in an interview. ■