Kingella kingae Adds Twist to Osteomyelitis Dx

BY PATRICE WENDLING
Chicago Bureau

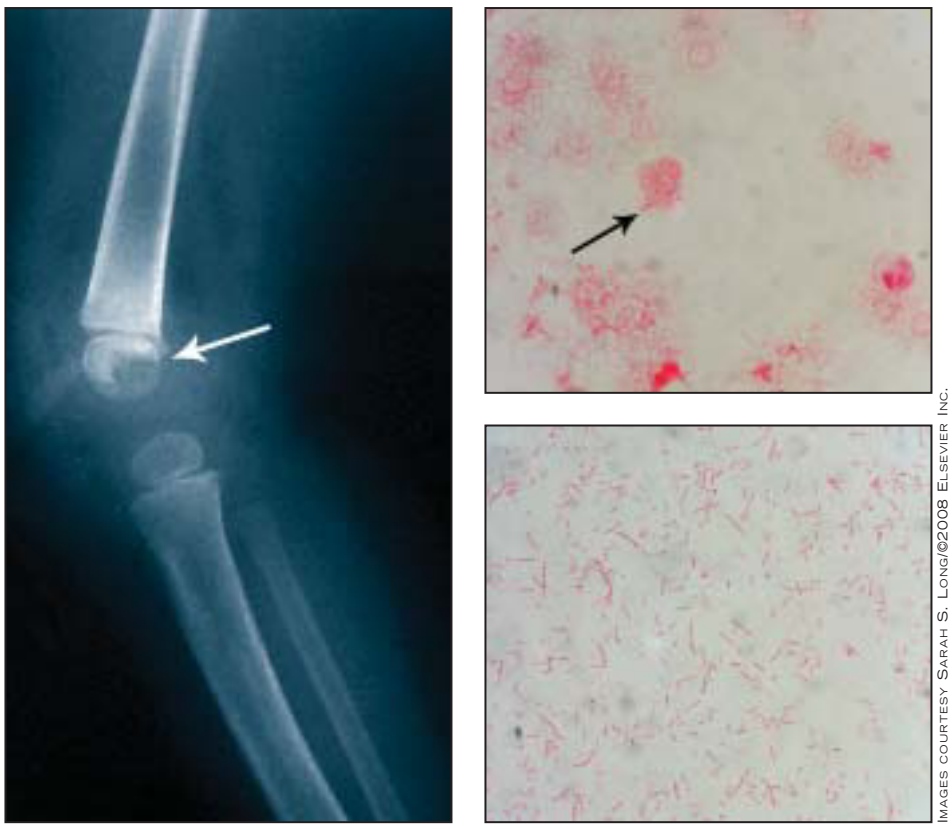
CHICAGO — Consider *Kingella kingae* as a cause of infection when diagnosing and treating children with suspected acute osteomyelitis, an infectious disease specialist advised.

The incidence of acute osteoarticular infections in young children has risen dramatically in recent years, with methicillin-resistant *Staphylococcus aureus* (MRSA) accounting for the lion's share of osteomyelitis cases in the United States, said Dr. Sheldon L. Kaplan, chief of the infectious disease service at Texas Children's Hospital, Houston.

But in some parts of the world, *K. kingae* is the most common cause of acute osteomyelitis and septic arthritis in infants and young children, Dr. Kaplan said at a meeting sponsored by the American Academy of Pediatrics. This global mismatch could be because a lot of children with suspected osteomyelitis are culture negative—up to 50% in some case series—and because *K. kingae* bacteria are hard to identify without sophisticated laboratory tests not routinely used in the United States.

"It could be that if we were using PCR [polymerase chain reaction] rather than cultures, we'd be seeing a lot more," he said.

Recovery of *K. kingae* is difficult because the gram-negative coccobacillus is hard to grow on culture, requires an enhanced isolation methodology, and takes a little longer than normal to grow, which may require laboratories to hold on to culture plates for up to 7 days.



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At left, an x-ray of an 18-month-old patient showed a lytic lesion (arrow) of the distal epiphysis of the femur. At top right, a micrograph of an extracted isolate shows a gram-negative bacillus (arrow). At bottom right, a micrograph shows a growth of *Kingella kingae*, which may take up to 7 days to culture.

Researchers in France have developed a specific real-time PCR method to detect *K. kingae* DNA, and prospectively applied it to the diagnosis of all pediatric admissions for osteoarticular infection between January 2004 and December 2005. With culture alone, a pathogen was identified in 45% of the 131 specimens, including *S. aureus* in 25, *K. kingae* in 17, and other organisms in 18 (Pediatr. Infect. Dis. J. 2007;26:377-81).

The combination of culture, plus 16S ribosomal DNA sequence PCR, improved documentation, identifying 16 additional *K. kingae* cases. The use of the *K. kingae*–specific PCR confirmed those 16 cases and identified a further 6 cases. Based on these results, *K. kingae* was the leading cause of osteoarticular infection (39 cases), followed by *S. aureus* (25 cases).

"PCR for *Kingella* is not set up at our place or many others now," Dr. Kaplan said in an interview. "PCR for *Kingella* is mainly research at the moment, but is something that will be set up in the future."

Treatment of culture-negative osteomyelitis is equally challenging in the current era of rising community-associated MRSA infections and clindamycin resistance, said Dr. Kaplan, also professor of pediatrics at Baylor College of Medicine, Houston. *K. kingae* bacteria are resistant to clindamycin, vancomycin, and trimethoprim/sulfamethoxazole, drugs that are currently active against most community-associated MRSA isolates.

If a patient does not respond to initial therapy directed against *S. aureus*, including community-associated MRSA, renew efforts to obtain specimens for culture and consider expanding therapy to include *K. kingae*, clindamycin-resistant *S. aureus*, as well as other organisms based on the patient's exposure history, he said.

It also might not be a bad idea to hold on to culture plates a little longer, Dr. Kaplan advised. ■

Immunization Coverage Rates in U.S. Reach New Heights

BY DIANA MAHONEY
New England Bureau

More than three-quarters of the nation's young children have been immunized with the full series of childhood vaccines recommended by the Centers for Disease Control and Prevention, according to data from the CDC's 2007 National Immunization Survey.

The survey provides coverage estimates for the 4:3:1:3:3:1 immunization series for children aged 19-35 months that includes vaccines for diphtheria, tetanus, and acellular pertussis (DTaP); poliovirus; measles, mumps, and rubella (MMR); *Haemophilus influenzae* type B; hepatitis B; and varicella.

All but one vaccine in the recommended series—the fourth dose of the DTaP vaccine—reached 90% coverage in 2007, including for the first time the varicella vaccine and the third dose of the seven-valent pneumococcal conjugate vaccine (PCV7), Dr. Julie Gerberding, director of the CDC, reported in a media briefing on the survey results. Additionally, less than 1% of the more than 17,000 children born between January 2004 and July 2006 represented in the survey had not received any vaccines in the recommended series by ages 19-35 months, and there were no statistically significant decreases in individual vaccine coverage from 2006 to 2007 (MMWR 2008;57:961-6).

The coverage rates are indicative of the "ongoing success" of the country's immunization program, said Dr. Gerberding. "This annual report card is very good. The survey indicates that we are at or above our Healthy People 2010 goal of 90% coverage for each of the vaccines [in the 4:3:1:3:3:1 series], and at 77.4%, we are close to the target of 80% for the combined series." These numbers are a reflection of "the trust that parents have in the safety of the vaccines and in the health care providers who administer them," she said.

Relative to the 2006 survey data, coverage levels in 2007 for one dose of the varicella vaccine increased from 89% to 90%, and coverage levels for three or more doses of the PCV7 increased from 87% to 90%, Dr. Gerberding reported.

As in previous years, the estimated vaccine coverage rates for the 4:3:1:3:3:1 series varied substantially among states, ranging from a low of 63% in Nevada to a high of 91% in Maryland. Similarly, there was substantial variation among 14 local areas surveyed, ranging from 70% in San Bernardino County, Calif., to 82% in Philadelphia, she said.

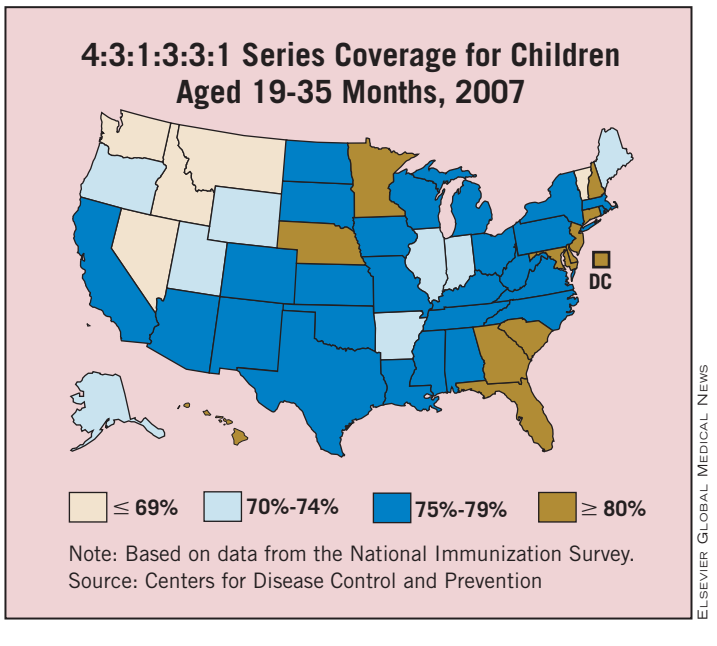
Despite regional coverage gaps, said Dr. Gerberding, "vaccine coverage levels were similar across all racial and ethnic groups for the complete series, and there were some important gains." Specifically, among Native American and Alaska Native children, both varicella and fourth-dose PCV7 coverage increased significantly, from 85% in 2006 to 95% in 2007 for varicella and from 63% in 2006 to 80% for PCV7 in 2007, she noted.

Belying the apparent successes in the immunization program is the recently reported surge in U.S. measles outbreaks (MMWR 2008;57:893-6), which is "a sobering aspect in our failure to protect some children from vaccine-preventable diseases," said Dr. Gerberding. "Many of the children affected in these outbreaks were not adequately protected. Some were too young to be fully immunized, and some parents chose not to immunize their children."

The measles outbreaks serve as an important reminder to maintain heightened vigilance "and not take the benefits of immunizations for granted," said Dr. Anne Schuchat, director of the CDC's National Center for Immunization and Respiratory Diseases. "We're doing well, but we're not finished. Achieving high [coverage] levels is important for preventing major resurgences in diseases like measles."

The measles outbreaks also point to some of the limitations of the National Immunization Survey data, Dr. Schuchat said during the briefing.

The survey estimates state and national coverage levels and provides information on specific local areas, "but we don't have information for every local area," she said. ■



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