

# Antibiotics for Otitis Media Tied to Resistance Rates

BY MARY ANN MOON  
Contributing Writer

The rates at which oral antibiotics were prescribed to children under age 5 years were directly related to the rates of resistant *Streptococcus pneumoniae* cultured from acute otitis media cases in a study reviewing more than 200,000 prescriptions.

In two distinct populations in southern Israel that were followed for 5 successive years, a “remarkable” seasonal reduction in antibiotic prescriptions during the warm months was significantly associated with a marked

reduction in antibiotic resistance rates in pneumococcal isolates, said Dr. Ron Dagan of Soroka University Medical Center, Beer-Sheva, Israel, and his associates (*J. Infect. Dis.* 2008;197:1094-102).

“In Jewish children, each monthly increase in 10 prescriptions per 1,000 children was associated with a 1.05-fold increase in the odds of penicillin resistance during that month. The corresponding odds ratio for erythromycin resistance was 1.04, and for multidrug resistance it was 1.04,” they wrote.

In an accompanying editorial, Dr. Cindy R. Friedman and Dr.

Cynthia G. Whitney of the Centers for Disease Control and Prevention, Atlanta, wrote that these findings provide solid evidence that reducing antibiotic use can lead to a decrease in resistant pneumococcal infections. “The challenge now is for clinicians to reduce unnecessary use” of antibiotics, they wrote (*J. Infect. Dis.* 2008;197:1082-3).

The researchers reviewed all 236,466 prescriptions for oral antibiotics written during 1999-2003 for children aged younger than 5 years in seven large pediatric primary care clinics. Five of these were in urban Jewish centers and

two in Bedouin townships. There was a 24% drop in the prescription rate during the warm months, compared with the cold months. The mean monthly antibiotic prescription rate was 291 per 1,000 children in the winter and 222 per 1,000 in the summer. Rates of antibiotic resistance showed a corresponding seasonal variation.

Although this pattern was seen in both populations, the urban Jewish population showed a much more pronounced—and statistically significant—seasonal variation in both prescribing rates and resistance rates than did the rural Bedouin population.

In the Jewish population, the rate of penicillin resistance was 43% in the cold months, compared with 29% in the warm months. The rate of erythromycin resistance was 29% in the cold months, compared with 20% in the warm months. And the rate of multidrug resistance was 25% in the cold months, compared with 15%. The differences were smaller and not statistically significant in Bedouin children.

These findings suggest that interventions to reduce antibiotic overuse “may reduce resistance in the community faster than previously thought,” they added. ■

## Travel, Vaccine Exemptors Are Cited in Rise in Measles Cases

BY DAMIAN McNAMARA  
Miami Bureau

MIAMI — Two recent outbreaks of measles in the United States highlight the need for vaccination and vigilance for infections imported from overseas, including Europe.

“We need to be aware of the importations from Europe,” said Dr. Carol J. Baker. “Most people do not think of MMR as a travel vaccine. There is a lot of measles in Europe now.”

The Centers for Disease Control and Prevention reported both outbreaks in February 2008.

In one instance, 11 cases in San Diego County in January and February of this year were linked to a 7-year-old unvaccinated boy who was infected during a family trip to Switzerland (*MMWR* 2008;57:203-6).

None of the eight children he subsequently infected was vaccinated, including two siblings, two playmates from school, and four children exposed in a pediatrician’s office (three were infants younger than the immunization age). Another three students at the school were secondarily infected.

About 10% of the children at his school, including those infected, were vaccine personal belief exemptors.

“If you have more and more vaccine exemptors, you will be, as a community, more susceptible to measles,” Dr. Baker said during a pediatric update sponsored by Miami Children’s Hospital.

No vaccinated child exposed to the San Diego index case became infected.

Suspect measles infection for all patients who have traveled overseas and present with a fever and rash, Dr. Baker advised. In addition, “separate a suspected case from the waiting room...clean the room very well and wait a few hours [before reentering].”



**‘Most people do not think of MMR as a travel vaccine. There is a lot of measles in Europe right now.’**

DR. BAKER

An earlier outbreak of measles in August and September 2007 also was imported and associated with an unvaccinated youth. The index case was a 12-year-old boy from Japan who attended an International Youth event in Pennsylvania (*MMWR* 2008;57:169-73).

A multistate investigation identified seven additional measles infections in Pennsylvania, Michigan, and Texas, including six confirmed from the index case using genetic sequencing.

Estimated attendance at the event was 265,000 and included teams from Canada, Chinese Taipei, Curaçao, the Netherlands, Venezuela, Mexico, Saudi Arabia, and Japan. The coaches and boys, who were aged 10-13 years, were housed in the same compound during the event, according to the CDC report.

“If you hear one of your patients is going to one of these events, make sure they are vaccinated,” said Dr. Baker, professor of pediatrics and molecular neurology and microbiology at Baylor College of Medicine, Houston.

“This outbreak highlights the need to maintain the highest possible vaccination coverage in the United States, along with disease surveillance and outbreak-containment capabilities,” the CDC investigators wrote.

At press time, the CDC reported that from January through April 25, 2008, 64 reports of confirmed measles cases were received from nine states, in which outbreaks were ongoing in four (Arizona, Michigan, New York, and Wisconsin).

A total of 59 cases occurred in U.S. residents, and 54 were associated with the importation of measles from other countries. In all but one case, patients were unvaccinated or had unknown vaccination status. In all, 43 (67%) of the patients were less than 19 years of age and 32 (50%) were less than 4 years old. ■

## Necrotizing Pneumonia on the Rise in Pediatric Populations

BY DAMIAN McNAMARA  
Miami Bureau

FORT LAUDERDALE, FLA. — More children with pneumonia are developing necrotizing pneumonia from an increasing variety of infectious agents, including methicillin-resistant *Staphylococcus aureus*, according to a retrospective, 15-year study.

“Necrotizing pneumonia is real,” Dr. Andrew Colin said, noting that if a child has a persistent fever that does not respond to treatment for 3 or more weeks, along with pleural effusions suggesting community-acquired pneumonia, consider coexisting necrotizing pneumonia.

Multiple organisms are playing a role, “including a lot of necrotizing pneumonias [in which] we do not know the organism. These could be mycoplasma,” said Dr. Colin, director of the division of pediatric pulmonology, Holtz Children’s Hospital at the University of Miami/Jackson Memorial Medical Center in Florida.

Of 80 patients, 38 (48%) had positive cultures. *Streptococcus pneumoniae* was the predominant organism, although more recently there was a variety of organisms responsible, most notably methicillin-resistant *Staphylococcus aureus* (MRSA), Dr. Colin said at a pediatric pulmonology meeting sponsored by the American College of Chest Physicians.

Dr. Colin and his associates found an increasing incidence of necrotizing pneumonia from January 1990 to February 2005 at Children’s Hospital Boston (*Eur. Respir. J.* 2008 Jan. 23 [Epub ahead of print]). Of 80 cases identified, there was 1 case during 1993-1994; 11 each during 1995-1996 and 1997-1998; 17 cases during 1999-2000; and 12 cases during 2001-2002. “By the end of the study, years 2003-2004, we had 28 cases in one hospital, which is quite significant,” he said.

A meeting attendee asked if children at greater risk for necrotizing pneumonia can be identified. “We don’t have large enough numbers to predict who will develop necrotizing pneumonia,” answered

Dr. Colin, who is also professor of pediatrics at the University of Miami.

Necrotizing pneumonia presents with coexisting effusion in a majority of patients. In the study, 69 children (86%) had pleural effusion with a low pH (mean 7.08). It is clinically challenging to differentiate the signs and symptoms of necrotizing pneumonia from the effusion, Dr. Colin said.

Computed tomography with contrast is the best way to diagnosis necrotizing pneumonia. The imaging detects the characteristic features, the liquefaction and cavitation of lung tissue. Look for demarcation between lung and liquid lung, he suggested.

Another attendee asked how to differentiate a lung abscess from liquid in the lung on the imaging. “The differential diagnosis is absolutely critical,” Dr. Colin said. On the CT scan, abscesses appear with thick walls, whereas necrotizing lungs have thin walls and will collapse in a couple of days, he replied. Also, “if you tap the two, the abscess will be positive in culture, the necrotizing lung will be negative.” Although the lungs are often sterile with necrotizing pneumonia, “there are some bad bugs, so everyone gives antibiotics just in case.”

Dr. Colin advocated a conservative approach to prolonged chest tube drainage in patients who develop necrotizing pneumonia. The longer drainage continues, the greater the risk of puncturing a lung. A bronchopleural fistula is a serious complication that can substantially lengthen a hospital stay and recovery time, he added.

“Despite the serious morbidity, massive parenchymal damage, and prolonged hospitalizations, long-term outcome following necrotizing pneumonia is excellent,” wrote the authors.

In fact, all patients in the study had a complete clinical resolution within 2 months, he added. “The good news is you do not have to resect damaged lungs—these young patients have a remarkable ability to recover.” ■