

# the Pediatric Emergency Messenger



NEWSLETTER OF THE  
PEDIATRIC EMERGENCY MEDICINE COMMITTEE,  
TENNESSEE CHAPTER, AMERICAN ACADEMY OF PEDIATRICS

Volume 5, Number 2 Fall/Winter 2005

## Community Associated MRSA

*Staphylococcus aureus* disease has plagued mankind for millennia, and the methicillin-resistant form has been endemic in health care facilities since the 1970s. The last few years, however, have seen a new permutation of this old enemy, known as community-associated methicillin-resistant *St. aureus* (CA-MRSA).

In contrast to the hospital-acquired version, CA-MRSA generally retains sensitivity to trimethoprim-sulfa (T/S). Sensitivity to other antibiotics varies with locale. Now epidemic in many areas, it is spread by direct person-to-person contact or by fomites; many outbreaks have been linked to athletic teams. Multiple cases within a household is the norm.

Like others of this species, CA-MRSA is mainly a pathogen of skin and soft tissues. Infections occur as furuncles (sometimes with associated cellulitis), and usually appear in intertriginous or macerated areas, or areas of minor trauma (including perineum and buttocks in diapered children, or shaved areas like legs or axillae in teens). These exquisitely painful lesions are often reminiscent of "spider bites," and heal with scarring. Much more serious, though, is a subset of children (usually young teens) with invasive infection—septic shock, multiorgan dysfunction, deep venous thrombosis, lung or orthopedic infection, and high mortality. CA-MRSA's increased virulence seems to be related to its production of powerful toxins. Chief among these is

Panton-Valentine leukocidin (PVL), which is cytolytic to leukocytes and provokes an intense inflammatory response. Unfortunately, PVL has been found in both methicillin-resistant and methicillin-sensitive strains of *St. aureus*.

Culturing suspected *St. aureus* infection is crucial in directing therapy. If CA-MRSA is isolated, the sensitivity report must be interpreted with caution. Isolates reported resistant to erythromycin but "sensitive" to clindamycin have a substantial chance of carrying an inducible enzyme that confers resistance; that is, if clindamycin is used for treatment, the pathogen may rapidly become resistant to it. This is designated by "D-test (+)". Unless D-test positivity rates are very low in a community (<10 % of staph isolates), clindamycin should not be used as empiric therapy.

Choice of empiric treatment for suspected CA-MRSA disease must consider location and severity of infection, as well as any underlying health conditions. An afebrile, previously healthy patient with an uncomplicated furuncle may be managed with incision and drainage alone; antibiotics generally are not needed. With fever or ill appearance, an oral antibiotic should be added—T/S is the drug of choice, but clindamycin may be used if the D-test proves to be negative. (Remember that *Strep. pyogenes*, which can also cause cellulitis, is resistant to T/S.) Other agents such as doxycycline or linezolid should be

## A Primer on Bird Flu

Have any of your patients or their families asked you whether they could have bird flu? Bird flu is getting a lot of attention in the press and invariably patients will worry that their symptoms are indicative of the disease and they will seek treatment and reassurance from a physician. Several of my ED patients/families have inquired about the illness and I thought a primer on bird flu would be helpful to readers of this newsletter. I obtained this information from the CDC website at [www.cdc.gov](http://www.cdc.gov). I urge you to look at this website to get more details on this worrisome illness, but I realize it is sometimes a little easier to receive the information directly in your mailbox; therefore I have included a few highlights from the CDC.

Bird flu is an infection caused by avian (bird) influenza (flu) viruses. These flu viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, bird flu is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them.

Bird flu viruses do not usually infect humans, but several cases of human infection with bird flu viruses have occurred since 1997. Symptoms of bird flu in humans have ranged from typical flu-like symptoms (fever, cough, sore throat and muscle aches) to eye infections, pneumonia, severe

continued on page 3 . . .

continued on page 2 . . .

respiratory diseases (such as acute respiratory distress), and other severe and life-threatening complications. The disease caused by H5N1 follows an unusually aggressive clinical course, with rapid deterioration and high fatality. Primary viral pneumonia and multi-organ failure are common. In the present outbreak, more than half of those infected with the virus have died. Most cases have occurred in previously healthy children and young adults. A second risk, of even greater concern, is that the virus—if given enough opportunities—will change into a form that is highly infectious for humans and spreads easily from person to person. Such a change could mark the start of a global outbreak (a pandemic).



Infected birds shed flu virus in their saliva, nasal secretions, and feces. It is believed that most cases of bird flu infection in humans have resulted from contact with infected poultry or contaminated surfaces. The spread of avian influenza viruses from one ill person to another has been reported very rarely, and transmission has not been observed to continue beyond one person. The risk from bird flu is generally low to most people because the viruses occur mainly among birds and do not usually infect humans. However, during an outbreak of bird flu among poultry (domesticated chicken, ducks, turkeys), there is a possible risk to people who have contact with infected birds or surfaces that have been contaminated with excretions from infected birds.

The H5N1 virus currently infecting birds in Asia that has caused human illness and death is resistant to amantadine and rimantadine, two antiviral medications commonly used for influenza. Two other antiviral

medications, oseltamavir and zanamavir, would probably work to treat flu caused by the H5N1 virus, but additional studies still need to be done to prove their effectiveness.

There currently is no commercially available vaccine to protect humans against the H5N1 virus that is being seen in Asia and Europe. However, vaccine development efforts are taking place. Research studies to test a vaccine to protect humans against H5N1 virus began in April 2005, and a series of clinical trials is underway.

The current risk to Americans from the H5N1 bird flu outbreak in Asia is low. The strain of H5N1 virus found in Asia and Europe has not been found in the United States. There have been no human cases of H5N1 flu in the United States. It is possible that travelers returning from affected countries in Asia could be infected if they were exposed to the virus.

**AND THE BIG QUESTION: Is it safe to eat poultry and poultry products?** Yes, though certain precautions should be followed in countries currently experiencing outbreaks. In areas free of the disease, poultry and poultry products can be prepared and consumed as usual (following good hygienic practices and proper cooking), with no fear of acquiring infection with the H5N1 virus. In areas experiencing outbreaks, poultry and poultry products can also be safely consumed provided these items are properly cooked and properly handled during food preparation. The H5N1 virus is sensitive to heat. Normal temperatures used for cooking (70°C in all parts of the food) will kill the virus. Consumers need to be sure that all parts of the poultry are fully cooked (no “pink” parts) and that eggs, too, are properly cooked (no “runny” yolks). Consumers should also be



aware of the risk of cross-contamination. Juices from raw poultry and poultry products should never be allowed, during food preparation, to touch or mix with items eaten raw. When handling raw poultry or raw poultry products, persons involved in food preparation should wash their hands thoroughly and clean and disinfect surfaces in contact with the poultry products. Soap and hot water are sufficient for this purpose.

In areas experiencing outbreaks in poultry, raw eggs should not be used in foods that will not be further heat-treated as, for example by cooking or baking.

Avian influenza is not transmitted through cooked food. To date, no evidence indicates that anyone has become infected following the consumption of properly cooked poultry or poultry products, even when these foods were contaminated with the H5N1 virus.

Robert Lembersky, MD  
Knoxville

Do you have any pediatric emergency issues you would like to see addressed in this newsletter?

We welcome your comments and suggestions. Please email the editor at: [rlembersky@pol.net](mailto:rlembersky@pol.net).

Views expressed in the Pediatric Emergency Messenger are not necessarily endorsed by the Tennessee Chapter of the American Academy of Pediatrics.

Reprint permission may be requested from the editor.

## Community Associated MRSA, continued from page 1

reserved for the rare case where the above are contraindicated. If the patient's lesion is extensive, hospitalization is advised. For the toxic-appearing or immunocompromised, vancomycin in the hospital is the treatment of choice; for a critically ill patient, nafcillin (which is more rapidly bactericidal for methicillin-sensitive strains) with or without gentamicin should be added to the vancomycin. Health care workers can help by using scrupulous handwashing.

Management of recurrent CA-MRSA infections is problematic, particularly when community prevalence is high. Efforts focus on hygiene: daily bathing with chlorhexidine during outbreaks; avoiding direct contact with draining lesions; keeping nails trimmed short; prompt cleansing of skin breaks, perhaps with application of topical antibacterial ointment; and avoiding shared sports equipment, towels, or personal care items. Intranasal mupirocin may be considered for nasal decolonization, but its use in an endemic setting may not be efficacious, and recolonization is common.

Lori Patterson, MD  
Pediatric Infectious Disease, Knoxville

## MDIs Versus Nebulizers for Wheezing

Metered dose inhalers (MDIs) used with a spacer device and facemask have been shown to be as efficacious in medication delivery as the use of aerosolized medication through a nebulizer for patients with acute asthma and bronchiolitis presenting to the emergency department. Although admission rates were similar for patients regardless of which device was used, administration via MDIs resulted in faster improvement of clinical symptoms (Rubliar, L., et al *Ped Pulmon* 2000; 29:264-269). Fewer side effects were seen when Beta-2-agonists were given through MDIs used with spacer device and facemasks than those given through nebulization. The use of MDIs with a spacer device may improve patient adherence to care regimens post-discharge due to the ease of use, however, further research is needed. Adequate education related to medication administration, regardless of device choice, must be done while the patient is in the institution (inpatient or outpatient) to obtain and maintain long-term symptom relief.



Casey Norris, BSN, MSN  
Pulmonary Clinical Nurse Specialist  
East Tennessee Children's Hospital, Knoxville

## Adacel: a new vaccine to help protect both adolescents and adults against Whooping Cough (Pertussis)



Whooping cough (Pertussis) can be very severe in infants and older adults. It can cause weeks of severe coughing spells, pneumonia, and may be life-threatening in some cases. In June of this year, the US Food and Drug Administration approved **Adacel**, a combination vaccine which includes tetanus, diphtheria, and adds **acellular pertussis**. It is recommended that Adacel replace the old tetanus-diphtheria vaccine (Td) that is used as the adult booster vaccine. Adacel is a **single booster immunization** that offers protection across a wide range of ages, for adolescents and adults 11-64 years of age. Adacel, marketed by Sanofi Pasteur Inc., is the first vaccine approved as a **pertussis booster** for use in adolescents and adults. The tetanus, diphtheria and pertussis vaccine will be referred to as "Tdap."

Adacel should not be confused with other diphtheria, tetanus and pertussis vaccines that are currently available to protect children under the age of seven against pertussis (i.e. Daptacel, Infanrix, and Tripedia), referred to as "DTaP." DTaP is generally administered in five doses between the ages of 6 weeks through 6 years of age (prior to 7th birthday). DTaP does not offer lifelong protection against pertussis, and it is believed that the immunity protection wanes or wears off by adolescence. Adacel contains the same components as the DTaP vaccines, but the diphtheria toxoid and one of the pertussis components are in reduced quantities.

Pertussis can occur at any age and continues to be an important public health issue. Adults may not experience the debilitating effects of the disease that infants do, and often may not be aware that they have the disease and that they can transmit it to younger children and vulnerable infants. Therefore, the use of this new vaccine, while protecting adolescents and adults from pertussis, will also serve the purpose of reducing the transmission of this disease to infants. With the use of Adacel, we may now be able to bring this disease under control.

Keith Jordan, Pharm.D.  
East Tennessee Children's Hospital, Knoxville



## Vanderbilt Children's Emergency Department New Medical Director

Hello. As the new medical director of Vanderbilt Children's Hospital Emergency Department and new resident of Tennessee I would like to introduce myself to you and tell you of my background in Pediatric Emergency Medicine (PEM). I did my medical school training at Meharry Medical College '78-82, Pediatric residency and PEM fellowship at Akron Children's Medical Center from 82-87. Practicing in PEM since 1987 I have seen great changes for the emergency care for children. I have had many duties in this field but the ones in which I have been most active have been as the PEM Fellowship Director and Pediatric Transport Director at Children's Medical Center of Dallas (CMCD) for the past 13 years. During these years I was active in the growth and development of the Emergency Department at CHCD, one of the

busiest Pediatric Emergency Departments in the country (annual census of 110,000 pediatric patients).

On September 1, 2005, I started as the Chief of Pediatric Emergency Medicine and Medical Director of Pediatric Transport at Vanderbilt Children's Hospital. This has been an honor and an exciting opportunity to take a great Pediatric Emergency Department and be an integral player in its future development for delivery of pediatric emergency services to the children of middle Tennessee.

Teaching has been a strong motivator in my academic PEM career. PEM gives one the opportunity to teach in many venues, formats, styles and to many diverse groups- EMS, nursing, medical students, residents and most importantly the patients and parents. The role as an educator keeps one's mind challenged and con-

stantly striving for the "new" in life. The field of PEM is constantly evaluating the new therapies and looking at the old therapies but in a more scientific manner.

Thomas Abramo, MD  
Nashville



# WELCOME!