

# Caring for Our Future

*Nursing at The Children's Hospital*



Summer 2007

## Practice

# Summer in the Emergency Department

By Julieann Tibbetts MS, RN, CPNP-AC  
Senior Instructor, Pediatric Emergency Medicine  
TCH /UCHSC

Well, we made it through a very long winter with record snow outside and many sick kids inside our emergency department. Now it's time to move on from bronchiolitis, pneumonia, influenza and whatever other "high-fever virus of the week" to summer or what we call the "trauma season." Calling attention to this trend during National Child Abuse Awareness and Prevention Month every April is a unique opportunity to refocus hospital-wide and community efforts on this important issue.

When the weather finally improves, kids migrate outside and face increased risks. Unfortunately they can and do get hurt despite our best anticipatory guidance efforts and injury prevention strategies. According to Safe Kids Worldwide U.S. Summer Safety Ranking Report from May 2007, unintentional injuries are the leading cause of death for children 14 years of age and under in the United States, with more than 2,000 children dying each summer from preventable injuries.

Using the letters in "summer," let's review some common injuries we evaluate in our emergency department, and highlight the U.S. Summer Safety Ranking Report findings related to these injuries and recommendations for injury prevention, which we should readily communicate to patients and families in our practices.

### S = Sports Injuries (Bikes, skateboarding and scooters)

Bicycles are associated with more injuries to children than any other consumer product except motor vehicles. Of all age groups, children aged five-14 have the highest rate of bicycle related hospitalization. In general, almost half of those hospitalized are diagnosed with a traumatic brain injury, which is the leading cause of death in bicycle crashes. Collisions with motor vehicles account for the majority of bicycle-related deaths.

The single most effective safety device available to reduce the severity of head injury and likelihood of death from a

bicycle crash is a properly fitted helmet. Unfortunately, fewer than half of kids wear helmets or wear them inconsistently when participating in wheeled activities, and more than a third of children who use helmets, wear them improperly.

### Injury Prevention Strategies (IPS):

- Encourage all caregivers to be role models by wearing helmets: PRACTICE WHAT WE PREACH!
- Provide access to properly fitting helmets and other protective gear, and ensure that kids wear them every time they bike, skate or use a scooter
- Teach kids the rules of the road and to obey all traffic laws
- Use designated bike paths as much as possible
- Support helmet legislation

### U = Unprotected and Unsupervised (Drowning in pools or open bodies of water)

Drowning is the second-leading cause of unintentional death among children aged one-14 in the U.S. The risk of drowning increases during the summer months because more children are swimming and playing outside near pools and open bodies of water.

Water and children can be a deadly mix. Nearly nine out of 10 fatal events occur during a brief lapse in supervision, and most people don't realize that a child can literally drown within a matter of seconds. Many children drown when they wander outside and fall into their own backyard pools. Open bodies of water present additional dangers, including currents, undertows and other hazards hidden under the surface.

### IPS:

- Provide parental education about risks of drowning and the short amount of time it can take for a child to drown

Cont'd on page 2

*Caring For Our Future* is a publication written by nurses for nurses. The Children's Hospital is an affirmative action, equal opportunity employer. Copyright 2007, The Children's Hospital Association. All rights reserved.

You can find The Children's Hospital online at [www.thechildrenshospital.org](http://www.thechildrenshospital.org)

**Editor:** Ann Froese-Fretz, MS, RN, CPNP, Nurse Practitioner, (303) 861-6065, [froese-fretz.ann@tchden.org](mailto:froese-fretz.ann@tchden.org)

**Co-Editors:** Denise Abdoo, MSN, RN, CPNP, Kempe Child Protection Team  
Carole Kline, MS, RN, CPNP, Nurse Practitioner, Sleep Medicine Program  
Sue Stuller, BSN, RN 3North Department Education Coordinator

**Managing Editor:** Tricia Caputo, Public Relations, (303) 861-8553. [caputo.tricia@tchden.org](mailto:caputo.tricia@tchden.org)

**Graphic Design:** Angelina Fox, Public Relations, (303) 861-6279, [fox.angelina@tchden.org](mailto:fox.angelina@tchden.org)

- Encourage active supervision of children in and around water
- Begin teaching children to swim after age four, and teach them not to dive into water less than nine-feet deep
- Use pool physical devices, including four-sided isolation fencing, door alarms, pool alarms, automatic pool covers and anti-entrapment drain devices
- Have life jackets or Personal Flotation Devices available for use when in or around open water
- Take boating safety courses and avoid alcoholic beverages while boating
- Support pool, spa and boating safety legislation

**M = Motor Vehicle Related Injuries**

Motor vehicle crashes are the leading cause of death among children aged three-14 in the U.S. and child passenger deaths increase 20 percent above the monthly average in the summer. The highest number of passenger fatalities among all age groups occurs during July 3<sup>rd</sup> and 4<sup>th</sup>. Also of note, unattended children (and pets) in closed vehicles face extreme temperature increases in a short amount of time on a summer day, and are at risk for death from heat stroke.

When used appropriately, car seats are effective safety tools; however, nearly one-third of children ride in the wrong restraint for their age and size, and an estimated 73 percent of car seats are not installed or used correctly.

**IPS:**

- Role model seat belt behavior and properly restrain all children aged 12 and under in the back seat on every ride (See Table 1)
- Call 911 if child is left unattended in a vehicle; call animal control for pets
- Support motor vehicle-related safety legislation

**M = Many Falls**

Falls are the leading cause of unintentional injury among children year-round with nearly 40 percent of all nonfatal injuries resulting from falls. Toddlers are at risk from window-related falls and walker injuries while older children's falls are typically associated with playground equipment.

In warm weather, children spend more time on playgrounds, sports fields, balconies, fire escapes and near open windows. In the emergency department, we routinely treat a large number of fractures and lacerations as a result of falls from playground equipment.

**IPS:**

- Keep chairs, cribs and other furniture away from windows and don't allow children to play near open windows
- Install window guards on all windows above the first floor: DO NOT USE BABY WALKERS
- Actively supervise children, use age-appropriate playground equipment and look for playground surfaces that are covered with shredded rubber at

least 12-inches deep, hardwood fiber mulch or fine sand extending at least six feet in all directions from equipment

- Make sure kids wear the correct and properly fitting protective gear when practicing and playing sports
- Support window guard and Consumer Product Safety Commission playground equipment legislation

**E = Everyone is Walking, Running and Playing (Pedestrian Injuries)**

Children less than 10 years of age are at higher risk for pedestrian injuries because they are impulsive and have difficulty judging speed, distance and spatial relationships. Child pedestrian deaths increase 10 percent in the summer months. Driveways and parking lots are especially hazardous for playing children. Nearly 10 percent of all injuries to child pedestrians occur in driveways. More than half of all toddler pedestrian injuries occur when a vehicle is backing up.

**IPS:**

- Do not allow children under the age of 10 to cross the street alone
- Walk around parked vehicle before entering vehicle and starting motor
- Do not allow children to play in driveways, streets, parking lots or unfenced yards near busy streets
- Role model and teach children proper pedestrian behavior
- Support legislation that imposes stiffer penalties and fines for those who violate traffic laws including speeding in school zones, neighborhoods and around playgrounds/parks/pools

**R= Rover Rages (Dog Bites)**

Each year approximately 40 children in Colorado, newborn to 14 years of age are hospitalized for injuries due to dog bites. According to the Centers for Disease Control, the rate of dog bite-related injuries is highest for children aged five to nine; higher for boys than for girls, and the rate decreases as children age. Two thirds of dog bite injuries among children aged four or younger are to the head or neck region.

**IPS:**

- Teach children basic safety around dogs and regularly review
- Never leave infants or young children alone with any dog
- Do not approach unfamiliar dogs and do not run from a dog or scream
- Do not disturb a dog who is sleeping, eating or caring for puppies
- Do not pet a dog without allowing it to see and sniff you first
- If bitten, immediately report bite to an adult. Most dog bites (and cat bites) should be medically evaluated due to high risk of infection from Listeria organism

Cont'd on Page 5

# Drug Resistant Bacteria - What's It All About?

By John James PhD, MPH, (ABMM), CIC and Luana Locke, ND, CNS, CIC, MT(ASCP)

You probably have been hearing about antimicrobial resistance as a growing problem in healthcare. Today approximately 60% of Staphylococcal infections seen in this country's intensive care units are resistant to methicillin.<sup>1</sup> These methicillin-resistant *Staph. aureus* (MRSA) infections are no longer solely hospital-associated infections.

A 2006 *New England Journal of Medicine* article reported that community-acquired MRSA caused nearly 74% of skin and soft tissue infections in certain parts of the U.S.<sup>2</sup> There have been several recent reports of outbreaks of community-acquired MRSA in professional football team locker rooms, in school gymnasiums, and in prisons.

The problem with antibiotic resistance is not limited to Staphylococcal infections. We are experiencing infections with gram-negative organisms that are resistant to all classes of antimicrobials as well as resistance in bacteria that are the common cause of community-acquired pneumonia and otitis media. One genus of bacteria ubiquitous in human gastrointestinal tracts (*Enterococcus*) has demonstrated resistance to vancomycin, and has been responsible for outbreaks in hospitals and nursing homes in the past 10 years.

The issue of antimicrobial resistance is not a new one. Within two years of the introduction of penicillin in the 1940s, we began to notice bacterial resistance to it. Healthcare providers began to use nafcillin and the cephalosporins in place of penicillin. As resistance developed, new generations

and new classes of drugs were needed. Today, a hospital formulary that contains a great number of antimicrobials and each facility's antibiogram (the pattern of resistance for the bacteria seen within each facility) are essential so that individual infections may be treated rapidly and then specifically towards a cure.

Since the 1970s, healthcare facilities have been expected to perform infection control activities to help prevent infections with organisms of all types. Today, surveillance for infections, both transmitted from person-to-person while in a facility as well as associated with certain invasive procedures, is conducted in every hospital. While common infection control tools such as standard precautions and isolation are imperative to preventing the spread of these organisms, knowledge of the complex resistance mechanisms is helpful in understanding why there is such a significant problem.

Multiple antibiotic resistance mechanisms in both gram-positive and gram-negative bacteria have been inexorably increasing. This increase has been driven by the selection pressure of unnecessary or inappropriate antibiotic use, both in hospitals and the community. This Darwinian selection process is strongest in hospital intensive care units of both adult and pediatric hospitals.

Bacteria acquire antibiotic resistance genes through genetic mutation or more commonly by receiving genetic material (DNA) from an already resistant bacterium. The most common mechanisms of DNA transfer are conjugation or transduction (DNA-acquired from a bacteriophage infection of the recipient bacteria).

Resistance Type	Active against	Inhibited by	Drug of choice	Found in
<b>mecA (PBP2) positive Methicillin Resistant Staphylococcus aureus (MRSA)</b>	All β-lactams		Variable, but Vancomycin Bactrim Clindamycin and rifampin (not as single drug therapy) used	<i>S. aureus</i> and other staphylococci
<b>Vancomycin Resistant Enterococci (VRE)</b> vanA gene vanB gene	Vancomycin and teicoplanin Vancomycin		High levels of intrinsic resistance to many antibiotics <i>E. faecalis</i> -ampicillin <i>E. faecium</i> -linezolid, quinupristin/dalfopristin (Synercid), daptomycin, tigecycline, and combined therapy	<i>E. faecalis</i> and <i>E. faecium</i>
<b>Extended spectrum β-lactamases(ESBL). Hundreds of different enzymes</b>	3rd-generation cephalosporins, all penicillins and cephalosporins except the cephamycins (cefoxitin and cefotetan)	Clavulanic acid	Carbapenems- Resistance is rare but increasing. Cross-resistance to ciprofloxacin, TMP/SMX, gentamicin and ceftriaxone.	<i>Klebsiella</i> , <i>E. coli</i> , <i>Proteus</i> , <i>Enterobacter</i> , <i>Salmonella</i> , <i>Pseudomonas</i> , and others







