Kids Connection

a monthly newsletter from MUSC Children's Hospital

July 2007

Letter from the Chair

L. Lyndon Key, MD
Professor and Chairman
Department of Pediatrics

Dear faculty, Children's Hospital staff and friends,

As I was thinking about professionalism, I realized that what I am really talking about is courtesy and genuine caring for our patients. Approaching health care in a big academic hospital is a scary business. I suspect our interns feel the pressure about this time of year, but many of us have forgotten the intimidation of going into the unknown at our most vulnerable, with our sick children, not knowing what will occur or what diagnosis will be made. For a long time, I have said in conferences and meetings that for most patients and their families, coming to the MUSC Children's Hospital is the most important thing that day. For many, it may be the biggest thing that they have ever tried to do. Our patients, and their families, need us to treat them with the respect they deserve as they courageously face unknown terrors and unfamiliar circumstances. Imagine how much a kind word or a gentle touch would mean.

Professionalism is having everyone, not only doing a good job, but doing it quickly, calmly and with compassion. Sometimes I see people sitting in nurse's or doctor's stations talking about their weekends or what they are going to do that night rather than speeding patients on their way in clinics or discharging them from the wards. Some people have said that we should not call our patients "customers." However, if we did treat patients as customers, we would adhere to the philosophy that the customer is always right. To paraphrase Jack Welch, former CEO of General Electric, "When we are not thinking about the needs of our customers (substitute patients), we need to think again."

Certainly, we all want to acquire medical knowledge competent skills, but many times it is the kind word, the gentle touch, the courtesy to be on time that means so much. If we want to provide our best in caring for our patients, we need to feel what our patients are feeling. This empathy will elevate our behavior to levels that will not only distinguish us as excellent, but will send a message that we truly understand how to care.

Sincerely,

L. Lyndon Key, MD
Chair, Department of Pediatrics

FEATURE STORIES

Top summer injuries – and how to prevent them

Sally Webb, MD
Emergency Dept.

With a little education and knowledge, most folks can help their kids avoid the top safety hazards this summer, says Dr. Sally Webb, pediatrician in MUSC's Children's Hospital Emergency Department.

Water- and auto-related accidents continue to be leading causes of injury and death in children.

"Boys are more likely to have water safety problems, as are African American adolescents. Also, over half of drownings or near drownings in the adolescent age group are associated with alcohol or drug use," cautions Dr. Webb.

A little prevention goes a long way, she says, to steering clear of the ED.

Below, the top safety issues and what you can do to play it safe with your kids this summer:

Water

Never leave infants or young children unsupervised in a bathtub or even around buckets of water. "Even less than a minute is too much—that can be all it takes," says Dr. Webb.

If you have a pool, fence all four sides at least 55 inches high to keep toddlers from scaling it, and install a gate that closes automatically. Make sure all family members have CPR training. While the American Academy of Pediatrics (AAP) recommends all children learn how to swim, lessons don't always prevent drowning.

"Counsel adolescents about risky behavior when they're unsupervised around bodies of water," emphasizes Dr. Webb. "Remind them that if there's alcohol or drug consumption, it increases their danger. Never drink and swim."

Always use approved personal flotation devices for water-related activities, including fishing.

ATVs

"Emergency department physicians have seen an explosion in the number of off-road ATV injuries in children here and across the country," says Dr. Webb.

The AAP recommends that children who are not old enough to drive a car should not be driving an ATV. "Most injuries we treat are associated with rollovers," notes Dr. Webb, "because these vehicles are driven by inexperienced drivers."

Wear a helmet.

Insist your teenager take a driver educational program before using an ATV.

Do not allow passengers.

Also worrisome: "These ATVs are frequently used in rural areas, where delay to emergency care is significant," says Dr. Webb. "This compounds the seriousness of injuries."

Car Seats

Use approved car safety seats. Once kids outgrow infant seats, use a booster seat. (For info on car seat safety, see sidebar article below, "What's safest for your kid in the car?")

Follow guidelines when attaching the child seat to the car. "I'm still amazed at the number of times children in collisions are in a car seat which is not properly strapped to the car," says Dr. Webb.

Use a booster seat until a child reaches age seven. "It's proven that this results in a significant decrease in injuries," notes Dr. Webb.

Bicycles

Insist your child wear a well-fitting helmet. "Many children coming through our ED or ICU are still not wearing helmets despite educational campaigns," says Dr. Webb with concern. Studies show just 20 percent of kids wear helmets despite their proven effectiveness in preventing injury.

Take advantage of free helmet programs. The Coastal Cyclists Bicycle Club, along with local government groups, will sponsor a bike safety day for children in September.

Obey the rules of the road. Very young children should not ride on the street, just as they should not be allowed to cross streets until they understand how to do it safely. Sidewalk cycling along a busy street is not safe at any age.

Heat

Do not leave children unattended in a car, especially during summer months. "Every year, infants die as a result of being forgotten or intentionally left by parents who thought they would just be a few minutes," cautions Dr. Webb.

"The inside of a car heats up dramatically faster than the outside temperature. Infants and young children cannot tolerate these high temperatures for more than a few minutes."

Keep cars locked when they're not in use. Inquisitive children often find their way into cars or car trunks and then can't get out.

Drink plenty of liquids and take breaks in the shade or in air-conditioning to cool off.

MUSC Children's Hospital

Obese children could be at risk in standard car seats

With rates of obesity in children increasing in South Carolina and nationwide, a group of MUSC researchers set out to determine whether some children are too heavy for – and therefore unsafe in – age-appropriate child passenger safety seats.

"Parents usually select car seats based on their child's age and weight. Because of the childhood obesity epidemic, we wanted to look at how many kids have an increased injury risk in car accidents. Obese children do not have a weight that appropriately matches their age," explains Dr. Paul Hletko, associate clinical professor in the Department of Pediatrics and a private practitioner in Georgetown, SC, who participated in the study.

Motor vehicle-related injury is the number one cause of unintentional injury and death in children in South Carolina and the US. Research shows that improper use of child automobile restraints contributes to the risk of such deaths.

"It's a very preventable situation. We wanted to know how much trouble we're in," says Dr. Hletko. "It's more than we thought."

Coordinated by the South Carolina Pediatric Practice Research Network (SCPPRN), which conducts collaborative practice-based research, the study included the findings of eight pediatric care groups (including MUSC Children's Care in North Charleston and Moncks Corner, and MUSC Pediatric Primary Care) located in six different areas of the state for a total of 1,390 children subjects.

The study found that 24 percent of children less than 12 months of age, and 21 percent of one- to six-year-olds were too heavy for standard car seats.

"The childhood obesity epidemic," Dr. Hletko says, "means it's no longer safe to assume age is a proxy for weight.

"In the real world, belt positioning is not about age," cautions Dr. Hletko. "Instead, it's about weight, height and, to some degree, the child's behavior."

Using age as the criterion for selecting a car seat often results in many children riding in infant-only or convertible car seats that are too small for them, or in the use of belt positioning booster seats that are too large, says Dr. Hletko. It also could result in a misbehaving child defeating an initially correct belt position. "This diminishes protection in car crashes," concludes Dr. Hletko.

In particular, he cautions parents of children ages three and up.

"Many of the children in this age group are too big for a five-point harness seat and too small for a belt-positioning booster—a sort of 'no-man's land' created by the obesity epidemic," explains Dr. Hletko. "There are seats that fit children in this group, but there's a very limited selection, they're expensive and generally have convenience issues that may lead to further misuse or nonuse." (See the sidebar below for options for child passengers.)

While Dr. Hletko would like to see the seatbelt law reflect the needs of an increasingly obese child population, it's not likely nor is it his main objective.

He said the current child car seat and seat belt laws have flaws but are very helpful. "They were created to protect as many kids as possible, with guidelines that are simple and easy to understand."

His goal is increased public education, with possible future subsidization of more effective – but also more expensive – car seats for heavier children.

"The issue of cost surfaced years ago, when state laws requiring car seats first came out," he recalls. "Back then, hospitals and other organizations donated car seats and considered it a cost of doing business in caring for newborns. There are solutions."

More importantly, the study provides yet another reason to attack childhood obesity in a more logical way.

"Childhood obesity is not just about lying around watching TV or eating unhealthily," Hletko explains. "The problem has underlying complex endocrinology implications."

What's safest for your kid in the car?

To best protect children from injury in car accidents, follow these guidelines:

- **Children under age one and less than 20 pounds:** use a rearward-facing, infant-only or convertible child safety seat.
- **Children 40 pounds or less, ages one to four:** Secure a child in a forward-facing, five-point harness system.
- **Children 40 pounds and over, 40 to 57 inches tall:** Use a belt-positioning booster system.
- **Children 57 inches tall and above:** Use a standard seatbelt/shoulder harness in the back seat.
- **Keep your child in a backward-facing position as long as possible. Use a convertible car seat that rides backward as long as the top of the child's head doesn't rise above the back of the car seat.**
- **Insist kids ride in the back until they are 62 inches tall. A passenger must be 57 inches tall for safe use of a lap belt/shoulder harness and 62 inches for safe use of an airbag.**
- **Not recommended but in an absolute emergency:** If a child must ride without a car seat, put him in the center of the back seat and use a standard seatbelt/shoulder harness. Experts say although it will likely be mispositioned, it's still the best option.

"The best odds for minimizing injury are in the center back seat. It's where you'll most likely survive, adult or child," notes Dr. Hletko. "Experts say that if we were writing laws for maximum safety only, we should all ride in the back seat. But there's the science aspect of transportation safety, the legal aspect of what can be enforced, and the social aspect of what people will put up with."

For the most current information on safe child transportation, contact the American Academy of Pediatrics at **aap.org**.

Darby Children's Research Institute News

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Transporters could more effectively deliver drugs to needed site.

Researchers in the Charles P. Darby Children's Research Institute (DCRI) Laboratory of Drug Disposition and Pharmacogenetics think they may be able to improve the effectiveness of drugs by altering how they move through the body.

Drs. Lindsay DeVane, John Markowitz, and Jennifer Donovan are looking at the properties of proteins in the body known as "drug transporters." Drug transporters help move a drug through different barriers until it ends up where it's most needed.

"Drug transporters are sort of drug 'gatekeepers,'" says Dr. DeVane. "They are in a new category of proteins intensely researched in the last 10 years."

For example, to treat an illness that originates in the brain, a drug given by mouth must pass several barriers before reaching the site of action. "Drug transporters help move the drug through the body, through these barriers until it reaches its final destination," says Dr. DeVane.

The transporters assist the drug in passing through membranes in the gastro-intestinal tract, where absorption into the blood takes place. These special proteins also help prevent the drug from being chewed up and eliminated by any of a multiple of enzymes in the liver, and then aid it in passing through tight junctions between cells located in what is called the blood-brain-barrier.

"For a drug that has poor brain penetration, a very high dose may enable it to reach the site of action in an amount sufficient to produce therapeutic benefits," explains Dr. DeVane. "However, the proper dose to get it to its ultimate site may be toxic to other organs in the body."

Since injecting a drug directly into the brain is not feasible, Drs. DeVane, Markowitz, and Donovan believe that manipulating the activity of drug transporters may allow useable amounts of a drug to reach critical sites.

"We're working at altering these transporters to improve drug delivery to the brain, which could prevent having to use intolerable amounts of the drug," explains Dr. DeVane.

With funding from the National Institute of Mental Health and the National Institute of Drug Abuse, the three researchers are looking at how antidepressants and psycho-stimulants interact with a drug transporter called P-glycoprotein.

By inhibiting the action of P-glycoprotein and related transporters in the blood brain barrier, more needed drug can pass through to produce beneficial effects. "We hope this could result in using lower doses of drugs if more of the drug is able to reach the site where it's needed."

These classes of drugs will hopefully serve as models for various other categories of drugs used to treat diseases in children and adolescents, explains Dr. DeVane. Currently, the DCRI group is working with Dr. Bernie Maria to investigate better methods to treat brain cancer in children through improved drug delivery.

"Generally, our knowledge about how the body handles and disposes of drugs usually comes from studies conducted in children long after investigations in various adult populations have been completed," says Dr. DeVane.

"This is one of the advantages of the DCRI – it allows us to apply scientific inquiry to children and adolescents early in the process of discovery."

Evidence-Based Tip

Autism & Vaccinations: What does the evidence say?

Laura Cousineau, MLS
MUSC Library
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On June 11, a special U.S. court began hearing arguments from lawyers representing parents of children with autism. These parents are claiming that their children's autism was caused by vaccination and are seeking compensation under the National Vaccine Injury Compensation Program. The news media carried reports of this case, most without referring to the medical evidence showing the safety of MMR and other vaccinations. These stories and the many Internet blogs about autism are fueling parent's fear of vaccination.

One of the contributors to the controversy is a study published in Britain in 1998 by Wakefield et al that did not prove an association between the MMR vaccination and autism. However, the authors suggested that a genetic predisposition to autistic disorders, along with functional vitamin B12 deficiency or chronic enterocolitis that was discovered after vaccination, might be related to the development of developmental regression. Even this weak inference was later retracted by 10 of its 12 authors, and the first author was found to have a conflict of interest.

So, what does the evidence say about the connection between the MMR vaccine and autism? In 2003, a systematic review published in the Archives of Pediatric Adolescent Medicine looked at all studies that examined the connection suggested by Wakefield, and found "no evidence of the emergence of an epidemic of ASD related to the MMR vaccine." The most recent systematic review finds 139 articles and accepts 31 studies as meeting its criteria. It finds "no credible evidence of an involvement of MMR" with autism. No studies done since 2004 provide any evidence linking MMR with autism.

The health implications for unvaccinated children are clear. In Japan, vaccines were withdrawn after two deaths were assumed to be related to a combined DTP and MMR vaccine. The next year, 40 children died from pertussis. As recently as 2002, more than 30,000 cases of measles were reported along with 15 to 90 deaths each year; 650 children became deaf after contracting mumps in 2001; and, local epidemics of rubella occur every year. Recent campaigns to encourage parents to vaccinate their children are helping to reduce disease outbreaks.

Further studies on the etiology of autism may provide better answers for worried parents. For now, studies suggest that the health care provider's ability to listen to parents' concerns and to address their fears with compassion and understanding, along with sharing the evidence, will help these parents make the best decisions for their children's health.

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