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THE REFRESHER

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Hidden Dangers — Playground Perils

by Wanda Lorsung, EMS Education Specialist

"A mob of kids has just finished a game of tag on the monkey bars. Recess is almost over. As they sit on the top rung of the 10-foot structure, their talk turns to acts of personal bravado.

'Betcha' can't,' says a sixth-grader. 'Bet I can,' replies a third-grader. 'I dare you,' the older child says menacingly. 'I don't want to,' the younger child responds.

'Whatsa matter? Scared?' chides another. 'I'm not scared. I just don't want to.'

'Joey's scared, Joey's scared,' the older boy taunts. 'Am not,' cries Joey defiantly, as he launches himself toward the combination chin-up bar/fireman's pole, his arms outstretched.

He nearly makes the 5-foot horizontal leap, but at the last minute loses his grip and falls, landing on the hard dirt ground with a dull thud. He lies motionless as the other kids scramble down. By the time they reach the unconscious boy, a pool of blood has formed around his head. A second-grader shrieks in terror." (Meade & Orendac, 1995, p. 29)

September marks the start of new beginnings, another exciting school year. The excitement and anticipation, however, is accompanied by a variety of hidden dangers that can lead to serious injuries. Many crises and emergencies occur in children's lives throughout their developmental years. Is it any wonder then that the school environment, where children spend a significant portion of their waking hours — up to 7 hours a day or so — is the setting for 2.2 million to 5.5 million injuries every year? Of those, approximately 148,000 are treated in hospital emergency rooms for playground equipment-related injuries, and 17 die. (Mack, Hudson, & Thompson, 1997)

Playgrounds and playground equipment are the fifth leading cause of childhood injuries. Despite the fact that injuries caused by violence have received extensive media attention, children at school are nine times more likely to sustain unintentional than intentional injuries. It would appear that the slides, swings, seesaws, and jungle gyms aren't just for fun and games!

What is responsible for these appalling statistics? Inadequate supervision or instruction because of personnel cutbacks? Poor design layout? Negligence? Poor equipment maintenance? The answer is that all of the above contribute to the problem of playground injuries, but there is more to it than that. Play is vital for children in their physical development and socialization skills. Playgrounds need to remain exciting and challenging to children, since they are far safer places to play than alternatives such as roads or parking lots. In a world where drugs, violence, and uncertainty predominate, kids need a safe place to congregate, interact, and explore. What better place than the schoolyard playground?

Children, however, believe themselves to be invincible, are naturally curious, have an irrepressible sense of adventure, fewer inhibitions, and a tendency toward risk-taking behavior. Their lack of experience makes them unable to identify hazards and subsequently avoid them. They play on apparatus inappropriate for their age group and in the course of creative play, they use equipment in unintended, unexpected ways. All of these factors set the stage for playground injuries.

Falls from climbing equipment, just like the one described, are the most common cause of injury and lead to significant morbidity and mortality. They account for 75% of playground injuries overall. (Meade & Orendac, 1995) The severity of injury is directly related to the height from which the child falls, the type and depth of surfacing material at the impact

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Pediatric Emergency Care Course Offered

An 8-hour Pediatric Emergency Care Course (PECC) will be conducted by HCMC EMS Education on Friday, Nov. 12, from 8 a.m. to 5 p.m. This course is appropriate for EMT-Basics and First Responders interested in increasing their pediatric knowledge and skill level. The cost of $30 includes continental breakfast and lunch. To register or obtain additional course information, please call (612) 347-5681.

Playground Perils continued from page 1

BLS equipment and supplies

Essential

- Oral airways: infant, child, adult (sizes 00-5)
- Self-inflating resuscitation bag: child and adult sizes*
- Masks for bag-valve-mask: infant, child, and adult sizes^
- Oxygen masks: infant, child, and adult sizes
- Non-rebreathing masks: pediatric and adult sizes
- Stethoscope
- Backboard
- Cervical immobilization device"
- Blood pressure cuffs: infant, child, and adult sizes
- Portable suction unit with a regulator
- Suction catheters: tonsil-tip and 6F-14F
- Extremity splints: pediatric sizes
- Bulb syringe
- Obstetric pack
- Thermal blanket**
- Water soluble lubricant

Desirable

- Infant car seat<
- Nasal airways: sizes 18F-34F, or 4.5-8.5 mm~
- Glasgow Coma Scale reference
- Pediatric Trauma Score reference
- Small stuffed toys

ALS equipment and supplies

All ALS ambulances should carry everything on the BLS list, plus the following items:

Essential

- Transport monitor
- Defibrillator with adult and pediatric paddles***
- Monitoring electrodes: pediatric sizes
- Laryngoscope with straight blades 0-2, curved blades 2-4
- Endotracheal tube stylets: pediatric and adult sizes
- Endotracheal tubes: uncuffed sizes 2.5-6.0, cuffed sizes 6.0-8.0
- Magill forceps: pediatric and adult
- Nasogastric tubes: 8F-16F ^^
- Nebulizer
- IV catheters: 16 to 24 gauge

Footnotes

*A self-inflating resuscitation bag should be self-refilling, should have an oxygen reservoir, and should not have a pop-off valve. A child bag has a reservoir of 450 ml, whereas an adult bag has a reservoir of at least 1,000 ml.

^A neonatal mask may be necessary for rescue units that may deliver a premature infant in the field.

"Many types of cervical immobilization devices are available. These include wedges and collars. The type of device used will depend on local preference and policies and procedures. Whatever device is chosen should be stocked in a variety of sizes to fit infants, children, adolescents, and adults. The use of sandbags to meet this requirement is discouraged because they may cause injury if a patient must be turned.

**A thermal blanket may help minimize heat loss. Hypothermia will complicate many illnesses and injuries, particularly in infants and young children. The type of material used will depend on local preference, protocols, and procedures but may include Mylar, standard blankets, or aluminum foil for small infants.

<Infants should be restrained in ambulances. Car seats may be used for medical emergencies or in trauma when the infant is already restrained in a seat and not critically injured. Traumatically injured infants should be restrained on a gurney if they are not already in a seat. Many types of seats are available to meet this guideline. A recently developed seat is collapsible and easy to store. The type of seat that is procured will be determined by local preference, policy, and procedure.

~A nasopharyngeal airway may be useful when the upper airway compromises respiration and an oral airway cannot be secured. Providers must be trained in its use and know the contraindications for insertion of this device.

***A defibrillator should be able to deliver 5 to 360 joules. The addition of pediatric paddles may give the responding unit enhanced capabilities but is not essential for units that rarely use this equipment. The defibrillator may be equipped with only adult paddles/pads or pediatric paddles and adult paddles/pads. Units carrying only adult paddles/pads should ensure that providers are trained in the proper use of adult paddles in infants and children. When the defibrillator cannot deliver a low dose of joules for infants, shock at the lowest possible energy level.

^^Nasogastric tubes may be useful when the transport time is greater than 30 minutes in patients who have abdominal distention that may impede respiration.

site, and the position in which the child lands. A fall from as low as one foot onto concrete may result in a fatal head or neck injury, whereas a fall of up to nine feet onto an uncompressed surface such as fine sand may result in a far less serious injury. It is important to note these environmental factors during the scene size-up because they impact injury prediction.

Fractures, lacerations, and abrasions are also common, the result of being struck by moving swings or collisions as children run between equipment. Fingers and loose clothing can get caught in moving parts and result in pinch, crush, or shear injuries. Drawstrings that snag between segments of playground slides bring the child to an abrupt stop midslide, causing the drawstring to pull taut resulting in strangulation and asphyxia. Exposed concrete footings and abrupt changes in surface elevations, tree roots, stumps, and rocks can trip children. Playground equipment openings can inadvertently entrap the head or other body parts. Even if all communities and schools were fiscally capable of providing playgrounds designed to meet the standards recommended by the U.S. Consumer Product Safety Commission, it is unrealistic to expect them to be totally risk-free havens of fun.

EMS personnel are often the first to be summoned when playground accidents occur, and such incidents definitely make our hearts beat faster. EMS providers at all levels should be familiar with mechanisms of injury specific to playgrounds so they can be prepared to deliver quality care to the children of their communities. According to the National Pediatric Trauma Registry, the mortality rate of children indicates that one-half to two-thirds of all trauma deaths occur prior to the child's arrival at the hospital, or while being treated in the emergency department. (Grant, 1992) The implications to EMS personnel are overwhelming! This is the time when everything depends on the prehospital providers. Their skills and ability to quickly triage, assess, treat, and transport a child to a trauma center have a profound influence on the outcome related to pediatric trauma.

Given the time of year, this article comes as a friendly reminder to take stock of your pediatric equipment and supplies. Are they

organized separately and easily retrievable, either in a specific pediatric pack or section on your rescue vehicles? Is your service fully prepared to deal with traumatic playground injuries? Spinal immobilization of the pediatric patient requires that appropriate size collars and extrication devices be available to adequately immobilize a small child. If adult size equipment must be modified for use, do you have the appropriate padding or other modification devices on hand? Do all personnel know how to make the modifications? Do you have appropriate splints, oxygen, and airway equipment?

Pediatric equipment and supplies are really only half the solution. Primary training and continuing education for all prehospital providers are as important as the outfitting of rescue vehicles for pediatric emergency care. Now is a good time to review pediatric anatomy and physiology — children are not "little adults." An understanding of these differences is essential to provide quality care.

On page 2 is a suggested list of pediatric equipment and supplies for BLS and ALS services. The list was put together by the Committee on Ambulance Equipment and Supplies, National Emergency Medical Services for Children Resource Alliance (1996). Each list has two categories, essential and desirable. "Essential" means that the item is necessary and should be carried. A "desirable" item is worth having and may improve care, but its use will depend on local policy, cost, and scope of practice of the providers.

Kids and playgrounds — dangerous liaisons or fabulous friends? Perhaps a bit of both!

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Summertime *by Judy Flavin, EMS Education Manager*

It's the kind of day that many Minnesotans dream of during the cold and gray of mid-March — the kind of day that makes us realize "*This* is why I live in Minnesota." Now, I know that there are many brave, winter-loving souls who will disagree with me, but these are the days I long for when the snow is swirling. The sky is cloudless and brilliant blue. The temperature is 80 degrees. Trees and flowers are in full bloom. People everywhere are on the move — in their yards, swimming, biking, playing ball, hiking, golfing.

This is the season of activity and freedom from indoors. A biker rides by my window, the neighbor is on his roof, a little-leaguer slides into home, kids make forts and play. We cut the grass and wash windows, grill hamburgers and chicken, and fill the air with the best summer smells. We rollerblade, walk, and run to stay in shape and then go to the beach to soak in the sun and cool off in our beautiful Minnesota lakes. We camp and canoe, waterski and jetski. We drink root beer on balmy nights and go to outdoor concerts. We watch and listen to thunderstorms and soak in as many summer pleasures as we can in these few short months.

Along with all this great stuff of summer, however, comes real risk for injury. There is the squeal of brakes as a biker darts in front of a car, a broken ladder rung, heat-related and water emergencies, bee-stings, and injuries from fireworks, power mowers, and charcoal grills.

We know that there's always the potential for something to put an end to our summer fun, and so we strive to be careful and safe. But when even the best preventive measures fail to help us avert an accident, we (and our families) can be confident that because we live in Minnesota, we will receive the best that EMS has to offer. Across the state, there are thousands of dedicated volunteer and professional EMS providers skilled in administering the emergency care needed. From Baudette to Albert Lea, from Canby to the St. Croix River, we can confidently enjoy the pleasures of summer knowing that competent EMS help will be there when needed. No fear! Have a safe summer!

The Beat Goes On . . .

"The Beat Goes On" Program was instituted to recognize EMS professionals who used the Automated External Defibrillator in the field with successful results. Those recognized receive a specially designed pin and certificate acknowledging their achievements. Congratulations to these recent "Beat Goes On" honorees:

Lake City Ambulance Service
Ross Bendickson
Darla Blossey
Todd Hubbard
Dale Nibble
Bruce Wallerich

Lexington Fire Department
Terri Grote
Rick Sorenson
Mark Vanderbloomer
Gloria Vaux
Jim Wright

Minneapolis Fire Department
C. Brynteson
J. Norlin
G. Wheeler

Minnetonka Police Department
Brett Pertler
Tim Wasmund

South Lake Minnetonka Police Department
Daniel Rusch
Carter Staaf

My Toxic Backyard

by Paul Finney, R.N.,
EMS Education Specialist

In 1994, my wife Sue and I were planning to landscape the yard surrounding our newly built home. We had the luxury of starting from the ground up, so to speak, because our home was located in what had been a farm pasture. There was no green matter at all, just dirt.

We agreed that we wanted the yard design to be nature friendly. We contacted a company that specialized in both designing the landscaping and providing the plants and trees to be used. Our goal was to use plants and trees that both birds and animals would also be able to enjoy. With this in mind, we compiled a list of possible plants and trees for our landscape project. Then we decided on the final list of the winners and a yard design that pleased us.

The next spring we worked diligently to plant all the various plants and trees we had decided on. Later that same year, we found out we were going to have a baby. Wanting to be good safety-minded parents, we decided to research the safety of the plants we had in our yard. Working as a nurse in the emergency room at the time, I had seen my share of plant ingestions, intentional and accidental. I was aware of several potent drugs that are derived from plants. For example, digoxin comes from the foxglove plant.

As I obtained information about the plants we had chosen for our "nature friendly yard," it became apparent how "non-human-friendly" our yard was. Here is some of what our research showed:

* The tall columnar bushes we had planted along the south side of our house were *Buckthorn*, a bush that has dark green leaves with dark black pea-sized fruit. The fruit, I found out, is toxic. It contains several chemicals that can cause respiratory paralysis for up to one month.

* The *Yew*, a small evergreen that we had planted in several locations around our yard, is also quite toxic. Yews produce small, red, juicy berry-like fruit. The seeds in this fruit and all other portions of the plant contain chemicals that are readily absorbable if eaten. They can cause convulsions, coma, and blocking of the electrical pathways in the heart, ultimately leading to cardiac arrest. Symptoms can start within 30 minutes or be delayed up to three hours.

* The fruit of the *Snow Berry* bush that we planted on the north side of our home can cause emesis and diarrhea. *Wisteria*, the vine we planted to grow over our arbor, has poisonous seeds. As few as two seeds can cause problems if ingested. The chemical in the seeds can cause gastrointestinal irritation, lethargy, convulsions, paralysis, shock, and respiratory failure.

* We found that our plum tree was in the *Prunis* family. The pits of the fruit of this plum tree actually contain cyanide. Cyanide is also found in the seeds from our apple and crab apple trees.

* Near our garage, we have a trellis with *Clematis* growing up it. The entire Clematis plant is poisonous. It can cause chemical burns, blistering, and ulcerations in the mouth that can lead to airway problems. Further along the digestive system, Clematis can cause bloody emesis, bloody diarrhea, loss of consciousness, and convulsions.

* Last summer I planted *rhubarb*. The stems of the rhubarb are good to eat, but the leaves contain chemicals that can cause pain and swelling in the mouth, loss of speech that can last for several days, gastrointestinal irritation, and hemorrhage. Getting the chemical in the eyes can cause irritation and corneal damage.

* As for several of the decorative plants we had planted, we found that the bulbs of the *daffodil* cause gastrointestinal irritation, and all parts of the *Lily of the Valley* are toxic. The chemicals in Lily of the Valley can cause oral burning, tightness in the throat, vision changes, slurred speech, respiratory paralysis, convulsions, and varying degrees of electrical blocking in the heart that can lead to cardiac arrest in one to two hours.

* The vegetable garden was not free of toxins either. *Green tomatoes* and the green portions of *potatoe*s exposed to sun light contain chemicals which can cause gastric irritation, and central nervous system depression. I was unable to find information on about half of the plants we had planted.

According to *Toxic Emergencies* (6th ed.) by Goldfrank, 5-10 percent of exposures reported to poison control centers involve plants. Of those involved in toxic plant exposures, 80% are in children under the age of 6 years.

There are several sites on the Internet where poisonous plants are catalogued and biographical references can be obtained. The FDA has a web site, "Plantox," that lists more than 18,000 references. A *Plant Guide* that lists safe, mildly toxic, and poisonous plants is also available from the Hennepin Regional Poison Center. Call (612) 347-5644 or 1-800-POISON-1 (1-800-764-7661) to receive a copy, or check out the center's website at www.mnpoison.org.

Educating ourselves about the potential dangers of our yard plants was the key to keeping our daughter away from the toxic plants. Our research has paid off since, to date, we have not had any problems, and our daughter is a happy, healthy 4-year-old.

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