

Child injuries and rear bike-mounted child seats

For parents, taking a young child for a ride on the back of a two-wheeler bicycle is quite enjoyable. With the increasing popularity of bike seats for young children the injury rate for children has increased as well. The U.S. Consumer Product Safety Commission reports that almost half of the accidents involving young children were a result of the child falling out of the bike-mounted seat while the bike is in motion. Two other frequent occurrences involve the legs or feet of the children getting caught in the back wheels of the bicycles or the bike-mounted seats falling off the bike with the children inside. Due to the mechanism of injuries with these examples, a majority of the children sustain injuries to the head and face. One study conducted between 2002 – 2004, by the CDC and the Wisconsin Division of Health, showed head and neck trauma made up approximately 63% of the injuries sustained by children under six years of age while riding on bikes. Another study showed that of the children injured, approximately 25% are serious injuries. Approximately 70% of the injury victims are male. The incidence of injury was higher between the months of May and September. While the CDC studied different types of child-bike accidents, the focus of this summary is the prevention of injuries in children with the use of safety precautions for rear bike-mounted child seats.

To reduce the likelihood of an injury to the child, a parent or caregiver must remember to make sure that the bike-mounted child seat hardware are securely fastened to the bike in a proper manner with the integrity of the seat intact. Inspection of the bike-mounted seat should take place before placing the child in the seat and before every ride begins. Child seats should be in compliance with the ASTM 1625-00 safety standard. Also, mount a rear-view mirror on the handle bars, so you can keep the child in view while riding. If you are riding with a child passenger and you suddenly notice any increased resistance while you are peddling, stop and try to determine the cause. The child may or may not be intentionally causing the resistance. For instance, if part of the child's attire is caught in the wheel, it may initially feel like increased resistance. Younger children do not necessarily ask for help right away.

While helmets are not mandatory in every state, in some states helmets are mandatory. There may be fines and tickets if children are not wearing helmets. Helmets are very valuable protective devices for children. Many of the serious head injuries sustained by children while riding on bikes without helmets could have been avoided if the children were wearing helmets. The helmet should have a Consumer Products Safety Commission (CPSC) sticker on it and be manufactured after 1999. This sticker indicates that the helmet meets the standards of the CPSC. Other organizations that provide safety specifications for helmets include the American National Standards Institute (ANSI), American Society for Testing Materials (ASTM) and the Snell Memorial Foundation (Snell). The child's helmet should fit squarely on the head and low on the child's forehead, about one inch above the eyebrows, to protect the head and upper face from impact. The back of the helmet should be rounded, not pointed like some adult helmets. The helmet shape permits a natural resting position if the child puts his head against the back of the seat. The helmet should be securely fastened with no other hat underneath it. The chin strap should fit comfortably and snugly, permitting one finger to fit between the chin and the strap. Helmets should be ventilated and light-weight for comfort. These features will promote compliance with wearing the helmet. The child will be more likely to not mind the helmet if it is comfortable. If the helmet has sustained significant impact at any time, replace it. Helmets lose their ability to absorb impact after one significant impact event. If the child is playing after getting off the bike, remove the helmet. There is a risk for strangulation due to the chin straps if the child plays or climbs with a helmet on.

When placing or taking the child on or off the bike, stabilize the bike by straddling the bike with your legs. The kickstand is not meant to support the bike upright with additional weight on the bike. Injuries to the child can occur if the bike falls over while the adult is relying on the kickstand to support the weight of the child. Shorter or smaller adults have more trouble stabilizing a bike with a child in the bike-mounted child seat. So proceed cautiously to increase stability of the bike, especially when stopping the bike or dismounting the bike. Avoid allowing children to hold toys while riding. The item may get caught up in the wheel or the child may drop the item and reach down risking injury to an arm or hand.

If a child is your passenger, ride on smooth pavement or trails. Do not ride on surfaces that are going to submit the child to significant jarring action. And don't ride your bike with a child passenger at night. Some literature states that bike riders have eight times more of a risk of being involved in accidents on bikes during dark hours.

Parents and child care givers should follow these suggestions to enjoy safe bike riding experiences with their children:

- 1) Children under the age of one year are not mature enough to ride in a bike-mounted seat, so do not take an infant on a bicycle ride in a bike-mounted seat. Infants lack the head strength to support a helmet. Helmets may weigh between 8 to 10 ounces. A pediatrician may check your child for head and neck strength to determine if the child is developmentally ready to ride in a bike-mounted child seat with a helmet.
- 2) Children that weigh over forty pounds are too heavy for bike-mounted seats; the extra weight will increase the likelihood of falling or losing balance. And the length of the older child's legs may put the child at risk for getting their legs caught in the wheels. Children tend to get too tall for a bike-mounted child seat before they exceed weight limits – be cautious.
- 3) The child passenger must have a safety helmet on while riding as a passenger on the bike at all times.
- 4) The child should have safety belts securely fastened before each bike ride.
- 5) Make sure the spoke-protectors are intact. All bike-mounted seats should have spoke-protectors.
- 6) The seat should have a high back to support the head.
- 7) Remember the added weight of the child on the back of the bike will change the way the rider steers, rounds a corner, brakes to stop or dismounts the bike. The addition of a bike-mounted child seat and passenger raises the center of gravity for the bike making the bike more unstable.
- 8) The child should never ride barefoot as a passenger on a bike.
- 9) Bike maintenance is very important. Make sure bike tires are inflated to the proper pressure. Bike chains and bike chain hardware should be oiled and in good repair. The bike handle bars should be the correct height for the rider and securely tightened in place. Make sure the bike brake pads and brake cables are maintained to ensure adequate integrity for good braking action. The bike seat should be the proper height for the rider with seat hardware securely fastened.
- 10) Do not wear earphones while riding your bike with a child passenger on board.

Adherence to these recommendations will enhance your child's bike riding experience and reduce the risk for serious injury. Quite possibly these precautions will save your child's life if you have a bike mishap.

Resources:

http://www.accessmylibrary.com/coms2/summary_0286-406261_ITM

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5550a1.htm>

<http://www.cdc.gov/mmwr/PDF/wk/mm5550.pdf>

www.thechildrenshospital.org/wellness/info/parents/22023.aspx

<http://www.ibertinc.com/safetytips/>

www.ibike.org/education/infant.htm

www.rvwems.org/bicsaf.htm

