

## All Terrain Vehicles

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All terrain vehicles (ATVs) are three and four wheeled machines designed with motorcycle style handlebars, a high center of gravity, and large, low pressure tires designed for off-road use. ATVs typically range in engine size from 50 to 683 cubic centimeters (cc) of displacement and the vehicles can weigh as much as 800 pounds, and the average weight in 2001 was 500 pounds.<sup>1</sup> Nearly all ATVs are designed for one rider, as precise and quickly executed weight distribution adjustments must be performed to maintain balance and control of the vehicle in turns or rough terrain situations. Being versatile and powerful machines, ATVs are used for a wide range of occupational and recreational purposes. But while these machines have many useful functions, they also have been associated with significant risks for fatalities and injuries. Children under the age of 16 are of particular concern, being at higher risk than adult ATV riders.

ATV injury in children is a serious and dramatically increasing problem in the United States. In 1997, there were an estimated 54,700 ATV related injuries treated in U.S. emergency rooms including an estimated 22,132 children under age 16 years. By 2001, the number of persons treated in U.S. emergency rooms for ATV related injury had increased 104% to 111,700; including an estimated 33,071 children under age 16 years.<sup>2</sup> In the 1990s, there were an estimated 254 child deaths each year in the U.S. resulting from ATV related injury.<sup>3</sup>

Children are at particular risk of ATV injury. With the increasing popularity of ATVs in the 1980s, a dramatic increase in ATV related injury was seen.<sup>4</sup> The U.S. Consumer

Product Safety Commission (CPSC) became involved and entered into a consent decree with ATV manufacturers. The original consent decree expired in 1998, and was replaced by the ATV Action Plan in 1998, with similar provisions. The consent decree banned the production of 3-wheeled ATVs and prescribed a number of safety related measures, including warning labels and ATV safety programs.

In spite of the consent decree and its' intent to restrict sales of adult-size ATVs for use of children under age 16 years, there are numerous reports of striking increases in the number of injuries to children in the recent past.<sup>1,5-8</sup> The use of ATVs by children and adolescents continues to increase. Between 1997 and 2001, there was an increase of 9.1% in the number of riders under age 16 years and a 34.2% increase in the number of riding hours for children under age 16.<sup>2</sup> Children on ATVs are at higher risk for ATV injury than adults; in 2001, there were an estimated 57.6 injuries/million riding hours in those under age 16 years compared to 37.4 injuries/million riding hours in those 16 and over.<sup>2</sup>

In addition to age, other risk factors for ATV injury and death have been identified. Male gender, use of 3 wheeled rather than 4 wheeled vehicles, and lack of helmet use are associated with increased risk.<sup>1</sup> Helmet use has been shown to reduce both injury severity and mortality risk due to ATV's by about 42%.<sup>9</sup> In addition, operation of an ATV on public roads has been consistently shown to increase the risk of an injury or fatality.<sup>1</sup>

Common ATV injuries include head injuries (11.1%) and extremity trauma (64.8). Fractures and dislocations are present in 30.7% of injuries, and lacerations, abrasions, and contusions are frequent. About 16% of ATV injuries require hospital admission.<sup>10</sup>

To promote safer use among adults and discourage use by youth, various forms of legislation have been considered. A model bill introduced in 1989 by the American Academy of Pediatrics (AAP) is a standard for the goals of ATV safety legislation.<sup>11</sup> Commonly cited components of this bill include: 1) prohibition of children under the age of 16 from operating any ATV; 2) license, insurance, and registration requirements for all ATV operators; 3) a ban on operating an ATV on public roads; 4) motorcycle-style helmet, eye protection, and safety clothing required; 5) no passengers allowed on an ATV; and 6) a ban on operating an ATV while under the influence of alcohol, controlled substances, or certain prescription medications.<sup>11</sup> In 2000, the AAP produced a policy statement with updated recommendations including the use of seatbelts, rollbars, and automatic headlights.<sup>8</sup>

ATV safety legislation has been effective in reducing injuries and deaths. Currently 44 states have at least minimal ATV safety laws. These states have significantly lower ATV related mortality rates as compared to the remaining 6 states (and Washington, D.C.) which do not have ATV safety laws.<sup>12</sup> In addition to legislation, ATV training is an effective method of reducing injuries and deaths. The CPSC reports that the large increases in injuries seen in recent years may be due in part to the increasing number of riders who have not received formal ATV training.<sup>2</sup> Free training classes are available with the purchase of a new ATV through the ATV Safety Institute (ASI).<sup>13</sup> Persons interested in ASI training who have not purchased a new ATV can attend for a relatively small fee.

While legislation and training are effective, responsible parental involvement and supervision is perhaps the most important component for reducing the number of ATV

related injuries and deaths experienced by children. Parents have the greatest amount of influence to ensure that their children ride appropriately sized ATVs and follow proper safety behavior. Improving the utilization of ATV legislation, ATV training, and parental involvement should help to significantly increase the safety of children.

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