Prevention of Unintentional Injuries: A Global Role for Pediatricians

INTRODUCTORY COMMENTARY

In spite of many proven ways to prevent childhood injuries, the relative prevalence of unintentional injury continues to plague the health and well-being of children worldwide. No population groups are spared, with children living in all social and economic circumstances at risk. Dr. Höllwarth describes the extent of this injury pandemic. He also cites practical approaches for pediatricians to help advocate for evidence-based injury prevention policies and more consistent inclusion of anticipatory guidance in their daily practice. The simple truth is that children are much more susceptible to unintentional injuries than adults and the societal costs are unacceptably high. This column serves as a call to arms for pediatricians everywhere to work on combating this growing public health challenge.

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Primary care pediatricians serve as physicians for the entire family because they accompany children from infancy through adolescence, and quite often into adulthood. The pediatrician may be primarily consulted in cases of diseases, but his or her advice with regard to vaccination, healthy nutrition, and a safe environment is usually appreciated by families. Thus, pediatricians can play a significant role in injury prevention, too. Why is injury prevention important?

Unintentional injuries constitute a global public health problem and are the leading cause of death in children and adolescents between the ages 5 and 18 years. More than 800,000 children younger than 18 die every year as a result of unintentional injuries.1 In the United States, this is the leading cause of death among children aged 18 and younger, claiming more than 12,000 lives annually.2 For each child who dies as a result of injury, another 553 children are treated at emergency departments, a further 11.2 children need to be hospitalized, and injuries in approximately 16% of hospitalized children result in permanent disability.3 Many more children are injured, but do not require medical care. Everett Koop, Surgeon General of the United States from 1982 to 1989, stated, "If a disease were killing our children at a rate unintentional injuries are, the public would be outraged and demand that this killer be stopped." Of global death in children attributable to unintentional injury, 56% are caused by injuries in road traffic, drowning, burns (fire or scalds), falls, and poisoning (Fig 1). Injuries attributable to smothering, asphyxiation, choking, animal or snakebites, hypothermia, and hyperthermia account for a further 31%. In addition to the mental turmoil for the families, children’s injuries present an enormous economic burden for private and public health. Global estimated costs in 2000 were about $130 billion, of which $25 billion were direct medical costs.4

According to the 64th World Health Assembly, injuries are a major threat to child survival and health. However, injuries are a frequently neglected public health problem, with significant consequences in terms of mortality, morbidity, quality of life, and social and economic costs. Poverty is a leading factor in all countries contributing to a high rate of unintentional injuries and fatalities, but the burden of childhood injuries is heaviest in developing, and low- and middle-income countries. Failing immediate action, this problem will hinder the attainment of the millennium development goals.5

Except during natural disasters, injuries do not occur just by chance, but result from factors or situations that constitute a high risk. Analyzing these factors will permit identification of those risks that might lead to injury, and timely institution of appropriate measures to prevent injury, or minimize its severity. Injury prevention first requires that one collect data to

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identify the leading causes, and an in-depth analysis of risks and circumstances. The next step would be to devise strategies that would eliminate or reduce the risk of injury. Effective injury prevention consists of 4 columns: empowerment provides information to the public (through the media) and addresses children as well as parents; education of professionals (pediatricians, midwives, nurses, social workers, kindergarten care givers, teachers); enactment (eg, legislation concerning child as passenger in motor vehicles, helmets, smoke alarms, child-

**FIGURE 1**
Distribution of global child injury deaths by cause, 0 to 17 years, World, 2004. "Other intentional" includes categories such as smothering; asphyxiation; choking; animal and venomous bites; hypothermia; and hyperthermia, as well as natural disasters. Source: WHO 2008, Global Burden of Disease: 2004 update.

**FIGURE 2**
resistant containers, isolation fencing for swimming pools); and, finally, implementation of activities focused on risk factors within the community (such as projects with children and parents concerning playground safety, appropriate behavior of children and dogs, improving injury prevention at home).

The pediatrician’s advice is of prime importance because most injuries in children younger than 10 to 12 years occur in the home environment. According to one study in the United States, 90% of unintentional fatal injuries that occurred in young children in and around the home could have been prevented.6 Home safety visits were found to significantly reduce injuries in children.7 Parents or caregivers are usually unaware of the typical risks in the different age groups. Appropriate education combined with easy access to economical safety products were shown to promote injury prevention among children.8 However, more randomized controlled trials with larger study samples are needed to prove sufficient evidence that environmental modifications in the home are followed by a significant reduction of injuries in children.9

The examples given illustrate the problem. Falls from the diaper changing table are common; they occur even with infants who are yet unable to turn on their sides. This type of injury can be easily prevented by never leaving the infant unattended or routinely changing diapers on the floor. As soon as infants are able to walk, falls become leading causes of injuries. As is true for other types of injury, children in low-income families are subject to a higher risk of falls. Some of the most serious falls can be prevented by adequate stair gates, nonuse of baby walkers, window restrictors, high chairs with safety belts, and implementing rules for playgrounds. Drowning is a major cause of death or permanent disability in young infants and may even occur in the bathtub or a plastic pool with as little as 5 to 15 cm of water. Drowning is a very serious matter because it occurs silently within a few seconds. The most effective means of prevention is to never leave children unsupervised when they are in water. In larger pools, a 4-sided fence is an excellent means of preventing drowning, but pool alarms or pool covers should not be used instead of a fence. The large majority of injuries in children attributable to poisoning and caustic agents occur at home. The risk is high when harmful substances, such as pharmaceutical agents, aggressive substances, or pesticides are kept within easy reach. Child-resistant closures and safe storage of pharmaceuticals and potentially toxic or aggressive cleaning agents will prevent these injuries. Death and injury from burns and scalding usually occur at home. These can be reduced by installation of smoke alarms and cooker guards, or the regulation of hot water. Bicycling in a safe environment is a very healthy physical activity for children. The bicycle helmet cannot prevent falls and injuries but does reduce the rate of severe head and brain injuries by 80% to 85%.10 Last but not least, road traffic injuries with cars are among the leading causes of death and permanent disability beyond the age of 5 years (Fig 2). The use of seat belts and age-appropriate child seats are effective measures to reduce the severity of injuries in road accidents.

In low- and middle-income countries, safety devices are less often used because of a lack of money. There are some recent programs that resulted in a significant reduction of severe injuries, such as the motorcycle safety program in Malaysia or the drowning prevention program in Bangladesh.11,12 However, further research is needed in low- and middle-income countries to find successful interventions to prevent transport and home injuries in children.

The injuries described herein are just some of the wide spectrum of risks for children in and around their homes. Ample information is provided in the published literature. By informing families and children, practicing pediatricians could certainly contribute to the prevention of unnecessary, severe, and potentially dangerous injuries. The purpose of this brief article is to encourage more pediatricians to be active in the field of injury prevention and cooperate with other professionals to achieve the ultimate goal of a “Safe World for Our Children.”

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