Injuries Associated With Infant Walkers

Committee on Injury and Poison Prevention

Infant walkers, or baby walkers, generally consist of a wheeled base supporting a rigid frame that holds a fabric seat with leg openings and usually a plastic feeding/play tray. The two basic types of walkers include the X frame, in which the steel support bars form an X, and the circular frame, in which the support bars rise vertically from the circular base to the tray. The device is designed to support a preambulatory infant, with feet on the floor, and allow mobility while the infant is learning to walk. Some walkers are equipped with bouncing mechanisms, activity toys, or locking devices that keep them from moving, and some fold flat for storage.

Estimated annual sales of walkers are over 3 million.1(pp72-86) Studies have found that between 55% and 92% of infants between 5 and 15 months of age use walkers.2-6 Parents give various reasons for using walkers—to keep the infant quiet and happy, to encourage mobility and promote walking, to provide exercise, and to hold the infant during feeding.4,5,7 One third of parents in one study used walkers because they believed that walkers would keep their infant safe.5

According to the National Electronic Injury Surveillance System (NEISS) of the United States Consumer Products Safety Commission (CPSC), 25,000 children, almost all between the ages of 5 and 15 months, were treated in hospital emergency departments in 1993 for injuries associated with the use of infant walkers, at an estimated cost of $90,000,000 annually.1(pp72-86) Eleven deaths occurred during the years 1989 through 1993.8 Population surveys suggest that there may be as many as 10 times more injuries which are sufficiently minor that they are treated in physicians' offices or do not require medical attention.5 Parents report that walker-related injuries occur at some time in 12% to 40% of infants who use walkers.6,9 The rate of injuries (per 1000 walkers) reported to NEISS has increased steadily since 1984.9 Even allowing for changes in the reporting system at CPSC, the absolute number of injuries reported increased 12% between 1993 and 1994.8 A recent study of 65 Virginia children injured in walkers estimated the annual incidence of walker injuries resulting in emergency department visits to be 8.9/1000 children under 1 year of age. Severe injuries occurred at a rate of 1.7/1000.10

About one fourth of infant walker-associated injuries reported to NEISS are described as "more severe," and these are nearly all closed head injuries and fractures. Reported injuries are overwhelmingly caused by falls, either from the walker or while the infant is still in the walker. Stairs are implicated in 75% to 80% of cases and in almost all of the severe injuries. A small number of pinch injuries to fingers and toes occur.1(pp 39-52) Burns account for 2% to 5% of walker-related injuries.7,8,10 Walkers also have been commonly associated with poisonings of infants under 1 year of age.11 Although submersion is not a commonly reported mechanism of nonfatal injury, four of the eleven deaths reported between 1989 and 1993 were from drowning (in a pool or toilet), four were from suffocation (compression of the neck against the feeding tray), and three were from falls.8

Little effort has been made to compare the rates and severity of various injuries in children of the same age who do or do not use walkers. A report from Toronto’s Hospital for Sick Children, however, states that during 1984, 123 infants who had fallen down stairs in walkers were evaluated; only one infant in the same age group who had fallen down stairs was not in a walker.7 In another study,12 walkers accounted for 45% of falls down stairways causing head injury in children younger than 24 months, and these walker-related stairway falls caused more severe injury. The authors believed that the walker predisposed the infant to more serious injury by increased kinetic energy due to the larger mass and higher initial speed (speeds of more than 1 m/sec have been recorded13) and because the infant tends to remain in the walker while falling, resulting in unprotected head exposure and possible injury.12 More injuries are reported with walkers than with other baby furniture, such as cribs, high chairs, and playpens, but because more walkers are sold than any other baby furniture item and information about relative exposure time is lacking, it is difficult to interpret this statistic.1(pp39-52) There are more than twice as many walker injuries reported to NEISS than those from strollers and carriages.8

The positive benefits of walkers are often cited by parents who use them, but data supporting such benefits do not exist. Walkers do not keep infants safe, but their use for babysitting is common. The limited available data on the effects of walker use on development suggest that walkers either do not affect walking time or that they may impede crawling and delay walking by a few weeks.14 At first the
unassisted gait of infants who use walkers may be slightly abnormal.\(^2\) There is no evidence, however, that such effects are lasting in normal children or that they have any impact on the child's ultimate motor development or intelligence.\(^{2,14}\) Anecdotal reports suggest that children with cerebral palsy who use walkers experience exaggerated abnormal motor reactions and delay in development of normal balance and protective responses; again, the duration of these actions and delay in development of normal balance suggest that children with cerebral palsy who use unassisted gait of infants who use walkers may be slightly abnormal.\(^2\) There is no evidence, however, that such effects are lasting in normal children or that they have any impact on the child's ultimate motor development or intelligence.\(^{2,14}\) Anecdotal reports suggest that children with cerebral palsy who use walkers experience exaggerated abnormal motor reactions and delay in development of normal balance and protective responses; again, the duration of these actions and delay in development of normal balance suggest that children with cerebral palsy who use

PREVENTION

Currently mandatory and voluntary standards regarding infant walkers exist. The mandatory standard \([16\text{ CFR}\ 1500.86(a)]\) that has been in effect since 1971 primarily addresses injuries to digits caused by pinching or shearing in the frame of the walker and by collapse of the walker. Judging from CPSC statistics, these types of injuries are infrequent, suggesting that these standards are effective.\(^1\) The voluntary standards (ASTM 977-89), published in 1986 and 1989, address the more difficult problems of falls and tipovers. Although the standards contain some performance requirements to prevent tipovers and structural failures in walkers that appear to have been effective in reducing tipover injuries, falls and burns are addressed only through warning labels, strengthened by the 1989 standard. Because the number of walker-related injuries, especially falls down stairs, has increased steadily since the adoption of labeling standards, this strategy seems to be ineffective.\(^1\) Several studies have shown that the occurrence of a walker-related injury does not deter parents from the continued use of the walkers in the injured child or subsequent siblings. Thus, educational programs are likely to meet with failure as well.\(^4,5,7\) Although the labels on walkers as well as many pediatricians urge parents to supervise their children in walkers, about 17% of falls down stairs occur with the child alone in the room, as do more than half of scalds and other burns.\(^7,18\) Many events also occur with one or both parents in the room.\(^7,8,18\)

Those who oppose a ban on walkers state that stairs actually cause the injury, not the walkers. While the data do support the contention that the combination of walkers and stairs is responsible for the majority of injuries, it would be impossible to prohibit children from living in houses with stairs. Thus, the only practical solution is to ban walkers in their present design. Stair gates are not uniformly effective; more than one third of falls down stairs in one study occurred with stair gates in place, but the gate was either left open or improperly attached.\(^7\) In Canada, where falls associated with walkers were primarily down basement stairs, an attempt was made to deal with this hazard by requiring the walker base to be at least 900 mm (35.4 inches), which is larger than the standard basement door opening. Whether this strategy is effective has not been tested, as the requirement has resulted in a de facto ban of Canadian-made walkers, because manufacturers were not willing to redesign the walker for the relatively small number of sales in that country, and American walkers are easily obtained by Canadians. In the United States, recent CPSC data confirm that basement stairs are involved in about half of walker injuries, and that about 80% of the stairs are 36 inches wide or less. However, a new standard width which would prevent the majority of falls is likely to make the device so unwieldy that it would be unacceptable to parents.\(^8\)

Other engineering modifications, such as a wheel-stop device designed to stop the walker if one or more wheels drop off the riding surface and a so-called "stationary walker" with a treadmill upon which the infant can walk, have been suggested. Such modifications remain to be further evaluated. However, it is difficult to envision the value of stopping the wheels when one or more is already in the air, as gravity would carry the child and walker down the stairs in any case. Newly developed "stationary walkers," actually play tables with rotating seats, have not been available long enough to compile data on injury rates, but do seem to be reasonable substitutes.

RECOMMENDATIONS

1. Because data indicate a considerable risk of major and minor injury and even death from the use of walkers, and because there is no clear benefit from their use, the American Academy of Pediatrics recommends a ban on the manufacture and sale of mobile infant walkers in the United States.
2. Efforts should be made, through strong media campaigns and during anticipatory guidance, to educate parents about the hazards and lack of benefits of walkers. The particular risk of walkers in households with stairs should be emphasized.
3. Even if walkers are banned, the life span of existing devices is considerable, and community programs should be developed to encourage proper disposal of walkers so that they can be destroyed and the materials recycled.
4. Agencies responsible for licensing child care facilities should not permit the use of walkers in approved centers.

COMMITTEE ON INJURY AND POISON PREVENTION, 1994 TO 1995
William E. Boyle, Jr, MD, Chair
Marilyn J. Bull, MD
Murray L. Katcher, MD, PhD
S. Donald Palmer, MD
George C. Rodgers, Jr, MD, PhD
Barbara L. Smith, MD
Susan B. Tully, MD

liaison representatives
Jean Athey, PhD, Maternal and Child Health Bureau
Phyllis Agraw, MD, Ambulatory Pediatric Association
Jordan W. Finkelstein, MD, National Institute of Child Health and Human Development
Dayle Maples, MD, Pediatric Orthopaedic Society of North America
Cheryl Neverman, US Dept of Transportation
Richard A. Schieber, MD, Centers for Disease Control and Prevention
Milton Tenenbein, MD, Canadian Paediatric Society
SECTION LIAISON
James Griffith, MD, Section on Injury and Poison Prevention
DESIGNATED REPRESENTATIVE
Deborah Tinsworth, US Consumer Product Safety Commission

REFERENCES
Injuries Associated With Infant Walkers
Committee On Injury And Poison Prevention
Pediatrics 1995;95;778

Updated Information & Services
including high resolution figures, can be found at:
http://pediatrics.aappublications.org/content/95/5/778

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
https://shop.aap.org/licensing-permissions/

Reprints
Information about ordering reprints can be found online:
http://classic.pediatrics.aappublications.org/content/reprints
Injuries Associated With Infant Walkers
Committee On Injury And Poison Prevention
Pediatrics 1995;95;778

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://pediatrics.aappublications.org/content/95/5/778