

AMERICAN ACADEMY OF PEDIATRICS

Committee on Injury and Poison Prevention

Injuries Associated With Infant Walkers

ABSTRACT. In 1999, an estimated 8800 children younger than 15 months were treated in hospital emergency departments in the United States for injuries associated with infant walkers. Thirty-four infant walker-related deaths were reported from 1973 through 1998. The vast majority of injuries occur from falls down stairs, and head injuries are common. Walkers do not help a child learn to walk; indeed, they can delay normal motor and mental development. The use of warning labels, public education, adult supervision during walker use, and stair gates have all been demonstrated to be insufficient strategies to prevent injuries associated with infant walkers. To comply with the revised voluntary standard (ASTM F977-96), walkers manufactured after June 30, 1997, must be wider than a 36-in doorway or must have a braking mechanism designed to stop the walker if 1 or more wheels drop off the riding surface, such as at the top of a stairway. Because data indicate a considerable risk of major and minor injury and even death from the use of infant 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. If a parent insists on using a mobile infant walker, it is vital that they choose a walker that meets the performance standards of ASTM F977-96 to prevent falls down stairs. Stationary activity centers should be promoted as a safer alternative to mobile infant walkers.

ABBREVIATIONS. NEISS, National Electronic Injury Surveillance System; CPSC, Consumer Product Safety Commission; JPMA, Juvenile Products Manufacturers Association.

OVERVIEW

An infant walker, or baby walker, consists of a wheeled base supporting a rigid frame that holds a fabric seat with leg openings and usually a plastic tray. The device is designed to support a preambulatory infant, with feet on the floor, and to 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 more than 3 million.¹ Older studies have found that 55% to 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 infants safe.⁵

DATA

According to the National Electronic Injury Surveillance System (NEISS) of the US Consumer Product Safety Commission (CPSC), an estimated 8800 children younger than 15 months were treated in hospital emergency departments in the United States in 1999 for injuries associated with the use of infant walkers.⁸ This represents a 56% decrease in these injuries since 1995, when 20 100 injuries were reported.⁸ Thirty-four deaths associated with the use of infant walkers were reported to the CPSC during the years 1973 through 1998 (D. Tinsworth, personal communication, November 2000). Population surveys suggest that there may be as many as 10 times more injuries that 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} A study of 65 Virginia children injured in walkers estimated the annual incidence of walker injuries resulting in emergency department visits to be 8.9 per 1000 children younger than 1 year. Severe injuries occurred at a rate of 1.7 per 1000.¹⁰ Approximately one fourth of infant walker-associated injuries reported to the NEISS are described as "more severe," and these are nearly all fractures and closed head injuries. Skull fractures accounted for almost 10% of all walker-related injuries in one large series of patients.¹¹

Reported injuries are overwhelmingly caused by falls, either from the walker or with the infant remaining in the walker. Stairs are implicated in 75% to 96% of cases and in almost all of the severe injuries.¹¹ A small number of pinch injuries to fingers and toes occur.^{1,12} 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.¹³ These burns and poisonings are attributable to the increased access to these hazards afforded by an infant's increased mobility in a walker. Although submersion is not a commonly reported mechanism of nonfatal injury, 4 of the 11 deaths reported between 1989 and 1993 were from drowning (in a pool or toilet), 4 were from suffocation (compression of the neck against the feeding tray), and 3 were from falls.¹²

Little effort has been made to compare the rates and severity of various injuries in children of the

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

PEDIATRICS (ISSN 0031 4005). Copyright © 2001 by the American Academy of Pediatrics.

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 1 infant in the same age group who had fallen down stairs was not in a walker.⁷ Although walkers do not consistently account for the majority of infant injuries associated with falls down stairs, in another study,¹⁴ 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 study authors¹⁴ believe that the walker predisposes infants to more serious injury by increased kinetic energy resulting from the larger mass and higher initial speed (speeds of more than 3 ft/sec have been recorded¹⁵) and because the infant tends to remain in the walker while falling, resulting in unprotected head exposure.¹⁴

Parents who use infant walkers often express their perception that the walker keeps their child safe (a form of baby-sitting), or that it helps the infant learn to walk. Data supporting such benefits do not exist. One study that evaluated children between 6 and 15 months of age demonstrated that walker-experienced infants sat, crawled, and walked later than no-walker controls, and they scored lower on Bayley scales of mental and motor development.¹⁶ 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 typical children or that they have any impact on the child's ultimate motor development or intelligence.^{2,17} 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; however, the duration of these signs and the consequences of these observations have not been addressed systematically.¹⁸⁻²⁰ Beyond parental impressions that infants seem happier in walkers, it does not appear that any real benefits of using a walker can be found to balance the considerable risk of injury.

PREVENTION

Strategies to prevent infant walker-related injuries include 1) warning labels and public education, 2) adult supervision during walker use, 3) barriers such as stair gates, 4) infant walker design changes to prevent falls down stairs, and 5) a proposed ban on mobile infant walkers.

Until the 1996 revision of the voluntary standard for infant walkers (ASTM F977-96),²¹ injuries attributable to falls were addressed only through warning labels, which was an ineffective strategy in reducing these injuries.¹ Several studies have shown that even the occurrence of a walker-related injury does not deter parents from the continued use of walkers for the injured child or subsequent siblings. In one study, 32% of parents reported that they used the walker again after the injury, and 59% acknowledged that they were aware of the potential dangers of walkers before the injury episode.¹¹ Thus, more labeling and educational efforts are not likely to lead

to an additional decrease in walker-related injuries.^{4,5,7,11}

Adult supervision also cannot be relied on to prevent infant walker-related injuries. Moving at more than 3 ft/sec, an infant can be across the room before an adult has time to react. In one study, 78% of children were being supervised at the time of the injury, including supervision by an adult in 69% of cases.¹¹ Other studies have also shown that many of these events occur with 1 or both parents in the room.^{7,12,22} Stair gates are not uniformly effective even when present; more than one third of falls down stairs in one study occurred with stair gates in place, but the gates were either left open or improperly attached.⁷

Both mandatory and voluntary standards exist for infant walkers. The mandatory standard that has been in effect since 1971 (16 CFR 1500.86 [a]4) 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 standard (ASTM F977) addresses the more difficult problems of falls and tip-overs. The standard's performance requirements to prevent walker tip-overs and structural failures appear to have been effective, because these types of incidents are now uncommon.

In 1996, the voluntary standard was revised to include performance standards for infant walkers to prevent falls down stairs. To comply, walkers manufactured after June 30, 1997, must be wider than a 36-in doorway or must have a braking mechanism designed to stop the walker if 1 or more wheels drop off the riding surface, such as at the top of a stairway. A similar voluntary standard was adopted in Canada in June 1989 requiring the width of walkers to be at least 900 mm (35.4 in).²³ In the United States, CPSC data confirm that basement stairs are involved in approximately half of walker injuries and that about 80% of the doorways to these stairs are 36 in wide or less.¹² Although walkers meeting the new standard began appearing in retail stores at the end of 1997, overall industry compliance remains to be evaluated. Because compliance is voluntary, the incentive for manufacturers to meet the new safety standards is a product certification by the Juvenile Products Manufacturers Association (JPMA). The manufacturers most likely to comply with the revised voluntary standard are members of the JPMA; however, nearly 40% of the new baby walkers sold in the United States are manufactured by firms that do not belong to the JPMA. Because the rule-making proceeding that the CPSC began in 1994 is still open, the CPSC could pursue the development of a mandatory standard to prevent infant walker stairway falls if the industry's compliance with the voluntary standard were judged to be inadequate.

Baby walker-like devices that do not roll across the floor on wheels are also available to consumers. These stationary activity centers allow children to bounce, swivel, and tip, and they provide parents an alternative to the use of mobile infant walkers. Injury data for these devices are not yet available. Their

stationary design eliminates the risk of stair-related falls, however, and therefore they should be safer than mobile walkers. The recent decrease in the number of baby walker-associated injuries is likely to be attributable in part to the availability of walker alternatives, such as stationary activity centers, and a decrease in the use of baby walkers manufactured before July 1997.

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.
2. If a parent insists on using a mobile walker, it is vital that they choose a walker that meets the performance standards of ASTM F977-96 to prevent falls down stairs.
3. Efforts should be made, through 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.
4. 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.
5. Agencies responsible for licensing child care facilities should not permit the use of walkers in approved child care centers and homes. Hospitals should not permit the use of walkers in their facilities.
6. Because the safest baby walker is one without wheels, stationary activity centers should be promoted as a safer alternative to mobile walkers.
7. The CPSC should closely monitor the compliance of infant walker manufacturers with the voluntary standard ASTM F977-96 to ensure that noncomplying walkers do not continue to be manufactured and sold.
8. The CPSC should collect surveillance data on children injured while using walkers that are in compliance with ASTM F977-96.

COMMITTEE ON INJURY AND POISON PREVENTION, 2000-2001

Marilyn J. Bull, MD, Chairperson
Phyllis Agran, MD, MPH
H. Garry Gardner, MD
Danielle Laraque, MD
Susan H. Pollack, MD
Gary A. Smith, MD, DrPH
Howard R. Spivak, MD
Milton Tenenbein, MD

LIAISONS

Ruth A. Brenner, MD, MPH
National Institute of Child Health and Human
Development
Stephanie Bryn, MPH
Health Resources and Services Administration/
Maternal and Child Health Bureau

Cheryl Neverman, MS
National Highway Traffic Safety
Administration
Richard A. Schieber, MD, MPH
Centers for Disease Control and Prevention
Richard Stanwick, MD
Canadian Paediatric Society
Deborah Tinsworth
US Consumer Product Safety Commission

SECTION LIAISONS

Victor Garcia, MD
Section on Surgery
Robert R. Tanz, MD
Section on Injury and Poison Prevention

CONSULTANT

Murray L. Katcher, MD, PhD

STAFF

Heather Newland

REFERENCES

1. Karels TR, ed. *Briefing Package-Baby Walker Petition HP 92-2*. Washington, DC: US Consumer Product Safety Commission; 1993
2. Kauffman JB, Ridenour M. Influence of an infant walker on onset and quality of walking pattern of locomotion: an electromyographic investigation. *Percept Mot Skills*. 1977;45:1323-1329
3. Kavanagh CA, Banco L. The infant walker: a previously unrecognized health hazard. *Am J Dis Child*. 1982;136:205-206
4. Fazen LE III, Felizberto PI. Baby walker injuries. *Pediatrics*. 1982;70:106-109
5. Stoffman JM, Bass MJ, Fox AM. Head injuries related to the use of baby walkers. *Can Med Assoc J*. 1984;131:573-575
6. Coury DL, Kasten EF, Shepherd L, Mirvis B, Columbus PROBE Group. Infant walker use in private practice populations [abstract]. *Am J Dis Child*. 1992;146:507
7. Rieder MJ, Schwartz C, Newman J. Patterns of walker use and walker injury. *Pediatrics*. 1986;78:488-493
8. US Consumer Product Safety Commission. Report shows decrease in nursery product-related injuries [press release]. Washington, DC: US Consumer Product Safety Commission; September 19, 2000
9. Board of Trustees, American Medical Association. Use of infant walkers. *Am J Dis Child*. 1991;145:933-934
10. Chiavello CT, Christoph RA, Bond GR. Infant walker-related injuries: a prospective study of severity and incidence. *Pediatrics*. 1994;93:974-976
11. Smith GA, Bowman MJ, Luria JW, Shields BJ. Baby walker-related injuries continue despite warning labels and public education. *Pediatrics* [serial online]. 1997;100(2). Available at: <http://www.pediatrics.org/cgi/content/full/100/2/e1>
12. US Consumer Product Safety Commission. Baby walkers: advance notice of proposed rulemaking. *Federal Register*. 1994;59:39306-39311
13. Gaudreault P, McCormick MA, Lacouture PG, Lovejoy FH. Poisoning exposures and use of ipecac in children less than 1 year old. *Ann Emerg Med*. 1986;15:808-810
14. Partington MD, Swanson JA, Meyer FB. Head injury and the use of baby walkers: a continuing problem. *Ann Emerg Med*. 1991;20:652-654
15. Lang-Runtz H. Preventing accidents in the home. *Can Med Assoc J*. 1983;129:482-485
16. Siegel AC, Burton RV. Effects of baby walkers on motor and mental development in human infants. *J Dev Behav Pediatr*. 1999;20:355-361
17. Ridenour MV. Infant walkers: developmental tool or inherent danger. *Percept Mot Skills*. 1982;55:1201-1202
18. Holm VA, Harthun-Smith L, Tada WL. Infant walkers and cerebral palsy. *Am J Dis Child*. 1983;137:1189-1190
19. Blasco PA, Baumgartner MC. Infant walkers. *Am J Dis Child*. 1984;138:992
20. Bachman DS. Infant walkers and cerebral palsy. *Am J Dis Child*. 1985;139:11-12
21. American Society for Testing and Materials. *Standard Consumer Safety Performance Specification for Infant Walkers (ASTM F977-96)*. Philadelphia, PA: American Society for Testing and Materials; 1996
22. Millar R, Colville J, Hughes NC. Burns to infants using walking aids. *Injury*. 1975;7:8-10
23. Morrison CD, Stanwick RS, Tenenbein M. Infant walker injuries persist in Canada after sales have ceased. *Pediatr Emerg Care*. 1996;12:180-182

Injuries Associated With Infant Walkers
Committee on Injury and Poison Prevention
Pediatrics 2001;108;790
DOI: 10.1542/peds.108.3.790

Updated Information & Services

including high resolution figures, can be found at:
<http://pediatrics.aappublications.org/content/108/3/790>

References

This article cites 19 articles, 4 of which you can access for free at:
<http://pediatrics.aappublications.org/content/108/3/790#BIBL>

Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):

Current Policy

http://www.aappublications.org/cgi/collection/current_policy

Council on Injury, Violence, and Poison Prevention

http://www.aappublications.org/cgi/collection/committee_on_injury_violence_and_poison_prevention

Administration/Practice Management

http://www.aappublications.org/cgi/collection/administration:practice_management_sub

For Your Benefit

http://www.aappublications.org/cgi/collection/for_your_benefit

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:

<http://www.aappublications.org/site/misc/Permissions.xhtml>

Reprints

Information about ordering reprints can be found online:

<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



PEDIATRICS[®]

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Injuries Associated With Infant Walkers
Committee on Injury and Poison Prevention
Pediatrics 2001;108;790
DOI: 10.1542/peds.108.3.790

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/108/3/790>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 345 Park Avenue, Itasca, Illinois, 60143. Copyright © 2001 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN[®]

