

Pediatric injuries from toppled TV sets: Risk factors and strategies for prevention

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Factor	Prevention Method
Host	<ol style="list-style-type: none"> 1. Educate children about in-home hazards, including TV toppling. 2. Restricted play in rooms containing a TV.
Vector	<ol style="list-style-type: none"> 3. Place safety warnings on televisions and instructions on how to safely secure the TV. 4. Improve the design of TVs to evenly distribute the weight and make them less easily tippable. 5. Place TV back away from the edge of the stand.
Environment	<ol style="list-style-type: none"> 6. Educate the public including parents, teachers, medical professionals, children, and other caregivers. 7. Set regulations on the support furniture and wall mounts used for particular TV makes and sizes. Dressers should not be used to support televisions. 8. Regulations for anchoring TVs to the ground or wall using brackets or some other apparatus. 9. Manufacture shorter, more stable TV stands that can withstand the dynamic force caused by climbing children. 10. Objects desirable to children, such as toys or remotes, should not be placed on top of TVs. 11. Caregivers should increase supervision of children around the home. 12. Caregivers should refrain from removing objects that deeply penetrate the head and wait for medical professionals to assess the injury. 13. Have parents/caregivers learn cardiopulmonary resuscitation. 14. Increase the number or speed of first responders, thus shortening the time between injury and treatment.

This table shows factors and prevention methods for head injuries from toppled TV sets. Credit: Cusimano M.D., Parker N: *Journal of Neurosurgery: Pediatrics*

Researchers from the University of Toronto and St. Michael's Hospital (Toronto, Ontario, Canada) reviewed medical articles describing head injuries caused by toppled television sets in children 0 to 18 years of age. These injuries, which can be severe and sometimes fatal in small

children, are often unwitnessed by adult caregivers, indicating a lack of awareness of the dangers posed to toddlers by TV sets that are not securely mounted. The researchers assessed the risk factors associated with these events and, based on their assessment, developed strategies to prevent the injuries. Full details of this study can be found in the article "Toppled television sets and head injuries in the pediatric population: a framework for prevention," by Michael D. Cusimano, MD, MHPE, CRCS, PhD, and Nadine Parker, MSc, published today online, ahead of print, in the *Journal of Neurosurgery: Pediatrics*.

Narrowing the search from more than 4000 published reports to 29 with the most applicable data, Dr. Cusimano and Ms. Parker found that most head and neck injuries due to toppled [television sets](#) are sustained by toddlers and that these injuries are likely to be severe and even fatal. The frequency of these injuries has increased in the last decade, as TV sets have become increasing large and more affordable in many countries. Eighty-four percent of the injuries happen in the home, and more than three-fourths are not witnessed by caregivers. Reports state that at the time of the event children are often in the process of climbing furniture on which the TV set rests. In many cases the TV set is situated on top of a dresser or other piece of furniture that was never designed to hold a TV. Toddlers may try to climb the furniture to reach the TV set or objects on or nearby it. Older children sometimes collide with the TV stand or furniture, causing the TV set to topple.

In their review of the literature, the researchers point out that most children injured by toppling TV sets are too young to be aware of risks involving these objects and are uncoordinated. The children's short stature makes head [injury](#) likely when a TV set topples. In addition, small children may lack the necessary language to describe symptoms following injury. Caregivers are sometimes inattentive and may not be aware of how unstable a TV set or furniture may be. They also may not know appropriate emergency medical techniques to assist an injured

child until first responders can arrive.

Using the Haddon Matrix paradigm and the public health approach, the researchers focused on identifying risk factors and developing strategies for injury prevention. Examined were the host (the child who is the injured party, particularly toddlers), the agent or vector (the TV, which is the vehicle that caused the injury), and the environment (the physical and social situations in which the injury occurred—for example, furniture supporting the TV set and the extent of caregiver supervision). These three factors were each evaluated at three different time points: pre-event, event, and post-event. Using details from the 29 selected articles, the researchers were able to fill in the blanks about specific risk factors that lead to child injury from toppled television sets.

Based on their analysis of [risk factors](#) that can lead to serious head injury, Dr. Cusimano and Ms. Parker compiled a list of prevention methods that, if followed, could be used to avoid TV-toppling events and consequent injuries to [small children](#).

The prevention methods are listed in the accompanying table.

The researchers focus on prevention methods currently in use, ways in which these methods can be made more effective, and new prevention methods that have yet to be implemented. In their discussion, the researchers separated their suggested prevention methods into four categories: engineering and design; legislation and enforcement; education; and emergency response systems. The authors provide a thorough review of injury [prevention methods](#), suggest their implementation, and call for future prospective studies designed to increase our knowledge of the injury mechanism involved when TV sets topple onto children.

According to the authors, "Television-toppling injuries can be easily

prevented; however, the rates of injury do not reflect a sufficient level of awareness, nor do they reflect an acceptable effort from an injury prevention perspective."

When asked about the study and its effect on [injury prevention](#), Nadine Parker said:

"It is our hope that this study raises awareness for a mechanism of injury mostly unknown to the general public. There are far too many children sustaining head trauma from an easily preventable TV toppling event. Armed with the knowledge from our study we hope that clinicians take a more active role as advocates for prevention of these injuries, legislators become more open to implementing changes to current regulations, and caregivers employ the suggested prevention strategies at home while also contributing as advocates for prevention."

More information: Cusimano MD, Parker N: Toppled television sets and head injuries in the pediatric population: a framework for prevention. *Journal of Neurosurgery: Pediatrics*, published online, ahead of print, September 29, 2015; [DOI: 10.3171/2015.2.PEDS14472](https://doi.org/10.3171/2015.2.PEDS14472).

Editorial: Le TM, Wellons JC III: Editorial: Television sets and traumatic brain injury. *Journal of Neurosurgery: Pediatrics*, published online, ahead of print, September 29, 2015; [DOI: 10.3171/2015.2.PEDS1582](https://doi.org/10.3171/2015.2.PEDS1582)

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