

## Focus On Subspecialties

# Are you ready for the ‘silent epidemic’?

## Wave of legislation on sports concussions portends greater involvement of physicians in injury management

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Traumatic brain injury (TBI) has long been referred to as the “silent epidemic.” Although TBI is quite prevalent, individuals who suffer from its disabling symptoms often do not show any outward signs of trauma.

Concussions are the mildest and most common form of TBI, resulting in 144,000 emergency department visits annually (Meehan WP, Mannix R. *J Pediatr.* 2010; 157:889-893).

Recent media coverage on TBI, especially in young athletes, has elevated the public’s awareness regarding such injuries. Of significant importance to any medical professional caring for children with concussions are the recent efforts of organized sports governing bodies and state and federal legislators to mandate standardized management of the amateur athlete who suffers a sport-related concussion.

The TBI suffered by Zackery Lystedt, a high school football player in Washington state, precipitated the recent spate of regulations. In 2006, the 13-year-old sustained a mild TBI (likely a concussion) at a football game. After he “shook off” his symptoms, he was allowed to return to play in the second half of the game and subsequently collapsed. He developed severe brain edema, required emergent decompressive brain surgery, and suffered numerous strokes and a prolonged coma followed by significant physical and cognitive disability (see [www.cdc.gov/media/subtopic/matte/pdf/031210-Zack-story.pdf](http://www.cdc.gov/media/subtopic/matte/pdf/031210-Zack-story.pdf) for details).

In May 2009, the state of Washington passed the Lystedt law, which mandates that schools take specific steps in the management of the youth athlete who has sustained a concussion during play to prevent any further brain injury due to a premature return to play. Since then, 20 additional states have passed similar sports-related concussion laws, and 21 more have pending legislation ([www.sportsconcussions.org/laws.html](http://www.sportsconcussions.org/laws.html)). In addition, a similar bill was introduced this year in the U.S. Congress (<http://tim-bishop.house.gov/index.cfm?sectionid=79&sectiontree=3,79&itemid=1841>).



As a result of such legislation, the National Federation of State High School Associations and the National Collegiate Athletic Association have teamed up with the Centers for Disease Control and Prevention to help schools implement a protocol for concussion treatment as well as educate athletes, parents, coaches and trainers on the symptoms and management of concussions in sports (see resource box below).

At the core of these laws and protocols is the recognition of the concussed youth athlete, removal from the game

and referral to the emergency department when appropriate. In addition, no concussed athlete can return to practice or play until given clearance from a licensed health care professional such as a physician, nurse practitioner or physician’s assistant. Following clearance, a gradual, supervised return to play is required (see table below).

Unlike adults or college-age students, school-aged children suffer from post-concussive symptoms longer. A recent study found that 11% of school-aged children still reported concussion-related symptoms three months after a concussion (Barlow KM, et al. *Pediatrics.* 2010;126:e374-e381). This means that the management and clearance of some of these

### Concussion rehabilitation/stepwise return to play

Rehabilitation stage	Functional exercise
1. No activity	Complete physical and cognitive rest
2. Light aerobic activity	Walking, swimming, stationary cycling at 70% maximum heart rate; no resistance exercises
3. Sport-specific exercise	Specific sport-related drills but no head impact
4. Noncontact training drills	More complex drills, may start light resistance training
5. Full-contact practice	After medical clearance, participate in normal training
6. Return to play	Normal game play

Each stage in concussion rehabilitation should last no less than 24 hours with a minimum of five days required to consider a full return to competition. If symptoms recur during the rehabilitation program, the athlete should stop immediately. Once asymptomatic after at least another 24 hours, the athlete should resume at the previous asymptomatic level and try to progress again. Athletes should contact their health care provider if symptoms recur. Any athlete with multiple concussions or prolonged symptoms may require a longer concussion-rehabilitation program, which is ideally created by a physician who is experienced in concussion management.

Source: *Pediatrics.* 2010;126:605.

patients will be a prolonged process, since recommendations call for the athlete to return to play only after symptom resolution.

These management protocols have been well-summarized in the 2010 clinical report from the AAP Council on Sports Medicine and Fitness, *Sport-Related Concussions in Children and Adolescents* (*Pediatrics*. 2010;126:597-615), and the 2009 *Consensus Statement on Concussion in Sport* from the 3rd International Conference on Concussion in Sport (McCrory P, et al. *PM R*. 2009;1:406-420).

The volume of sports concussion-related visits being handled by pediatric practices likely will increase as school athletic programs adopt the

## RESOURCES

Resources on concussions in sports from the National Federation of State High School Associations and the National Collegiate Athletic Association are available at [www.nfhslearn.com/electiveDetail.aspx?courseID=15000](http://www.nfhslearn.com/electiveDetail.aspx?courseID=15000) and [www.ncaa.org/wps/portal/ncaahome?WCM\\_GLOBAL\\_CONTEXT=/ncaa/NCAA/Academics+and+Athletes/Personal+Welfare/Health+and+Safety/Concussion](http://www.ncaa.org/wps/portal/ncaahome?WCM_GLOBAL_CONTEXT=/ncaa/NCAA/Academics+and+Athletes/Personal+Welfare/Health+and+Safety/Concussion).

mandates of these sports concussion laws. In addition, pediatricians may see an increase in the volume of non-sports-related concussions, since sports injuries account for only about one-third of all concussions (Meehan WP, Mannix R. *J Pediatr*. 2010; 157: 889-893) and given the heightened public awareness of concussions.

It is important that all physicians who may be involved in the care of these children be familiar with the management of concussions. The rise in prominence of concussions and TBI as a public health problem and the proactive measures to recognize and manage the problem ultimately will benefit society and youth.



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