

Traumatic Brain Injury (TBI): Resource Guide 2013



CSN is pleased to provide this resource guide on the critical issue of traumatic brain injury (TBI). Studies have found that the four most common causes of TBI are falls, motor vehicle/ traffic crashes, struck by/against events, and assaults (Centers for Disease and Control Prevention 2010). In this resource guide, we provide information on fall prevention, motor vehicle safety, bicycle safety, sports safety, and abuse prevention as they relate to the prevention of TBI.

The purpose of this special newsletter issue is to help state Maternal and Child Health and Injury and Violence Prevention programs respond to the needs of infants, adolescents, and adults who are at risk for TBI. This newsletter contains links to data, research studies, information on policy and legislation, prevention strategies, tools for program planning, and a list of national organizations that address TBI.

For a comprehensive look at this important issue, visit the companion CSN Sport-Related Concussion Fact Sheet Series: <http://www.childrensafetynetwork.org/publications/csns-sport-related-concussions-children-and-adolescents-fact-sheets-2013>

Data, Research & Publications

Abusive Head Trauma

Abusive Head Trauma (2004)

This article from *BC Medical Journal* reviews aspects of history-taking, physical examination, investigation, and treatment that may help health care practitioners recognize and manage children with abusive head trauma. To read the article, visit: <http://www.bcmj.org/article/abusive-head-trauma>.

Abusive Head Trauma in Infants and Children (2009)

This article from *Pediatrics* discusses the history and the role of the pediatrician in diagnosing abusive head trauma in infants and children. The article recommends using the term “abusive

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head trauma” (AHT) rather than “shaken baby syndrome” because a broader term, such as AHT, can include all mechanisms of injury. It recommends that pediatricians become more familiar with the symptoms of AHT and educate parents and caregivers about safe ways to calm crying infants. To read the article, visit: <http://pediatrics.aappublications.org/content/123/5/1409.full.pdf>.

Abusive Head Trauma in Young Children: A Population-Based Study (2013)

“The objectives of this study from *Pediatric Emergency Care* were to provide population-based incidence estimates of abusive head trauma (AHT) in children aged 0 to 5 years from inpatient and emergency departments (ED) and identify risk characteristics for recognizing high-risk children to improve public health surveillance.” The study found that incidence estimates of AHT are incomplete without including EDs. Intracranial bleeding is a cardinal feature of AHT to be considered in case ascertainment to improve public health surveillance. To read the full article (subscription or purchase required), visit: http://journals.lww.com/pec-online/Abstract/2013/03000/Abusive_Head_Trauma_in_Young_Children_A.3.aspx.

Abusive Head Trauma: The Relationship of Perpetrators to Their Victims (1995)

This study from *Pediatrics* examines the relationship between abusers and their victims. The data suggests that male caretakers are at greater risk to abuse infants, although due to a variety of factors, babysitters are a very concerning group as well. The statistics gathered from this study could help change the focus of efforts to prevent abusive head trauma. To read the full abstract, visit: <http://pediatrics.aappublications.org/content/95/2/259.short>.

Characteristics of Non-Fatal Abusive Head Trauma Among Children in the USA, 2003-2008: Application of the CDC Operational Case Definition to National Hospital Inpatient Data (2012)

This study, published in *Injury Prevention*, discusses ways to prevent abusive head trauma by creating prevention programs targeted at at-risk populations by using the new CDC definitions for public health surveillance and research purposes. To view the abstract, visit: <http://injuryprevention.bmj.com/content/early/2012/02/09/injuryprev-2011-040234.abstract>.

Preventing Abusive Head Trauma Among Infants and Young Children: A Hospital-Based, Parent Education Program (2005)

The objective of this study was to determine whether a comprehensive, regional, hospital-based, parent education program, administered at the time of the child’s birth, could be successfully implemented and to examine its impact on the incidence of abusive head injuries among infants <36 months of age. Use of this program resulted in a 47% decrease in the incidence of abusive head injuries over a 5 year period. To read the full article, visit: <http://pediatrics.aappublications.org/content/115/4/e470.full>.



Falls

Kids Can’t Fly: Preventing Fall Injuries in Children, 2005

This article from the Wisconsin Medical Journal discusses the most common types of pediatric falls, prevention strategies, and prevention tips. To read the full article, visit: <https://www.wisconsinmedicalsociety.org/WMS/publications/wmj/pdf/104/1/33.pdf>

Stair-Related Injuries to Young Children Treated in US Emergency Departments, 1999-2008 (2012)

The objective of this study from *Pediatrics*

was to investigate the epidemiologic characteristics and secular trends of stair-related injuries among children aged <5 years treated in US emergency departments. An estimated 931,886 children aged <5 years were treated for stair-related injuries from 1999 through 2008. Approximately three-fourths (76.3%) of children had injuries to the head and neck region, and 2.7% of patients were hospitalized. To read the full study, visit: <http://pediatrics.aappublications.org/content/early/2012/03/07/peds.2011-2314.full.pdf>.



Sports

Colorado Department of Education Concussion Management Guidelines

The Colorado Department of Education Concussion Management Guidelines (January 2012) were authored by Karen McAvoy, PsyD and Kristina Werther, LCSW and provide information on the history and prevention of concussion, as well as detailed information on the symptoms of concussion and on managing concussions through the creation of a multi-disciplinary team. To read the Concussion Management Guidelines, go to: <http://www.cde.state.co.us/HealthAndWellness/download/Brain%20Injury/Complete%20Concussion%20Guidelines%201-2012.pdf>.

Emergency Department-Reported Head Injuries from Skiing and Snowboarding Among Children and Adolescents, 1996-2010 (2013)

The objective of this study from *Injury Prevention* was to evaluate the incidence of snow-sports-related head injuries among children and adolescents reported to emergency departments (EDs) and to examine the trend from 1996 to 2010 in ED visits for snow sports-related TBI among children and adolescents. An estimated 78,538 snow sports-related head injuries among children and adolescents were treated in EDs during the 14-year study period. Among these, 77.2% were TBIs (intracranial injury, concussion, or fracture). The annual average incidence rate of TBI was 2.24 per 10,000 visits for children compared with 3.13 per 10,000 visits for adolescents. The incidence of TBI increased from 1996 to 2010 among adolescents. To access the full study (subscription and purchase required), visit: <http://injuryprevention.bmj.com/content/early/2013/03/18/injuryprev-2012-040727>.

The Evaluation and Management of Acute Concussion Differs In Young Children (2013)

The aim of this study from the *British Journal of Sports Medicine* is to review the current literature on (1) concussion assessment at the sideline and during recovery stages, especially in the age group 5-15 years, and (2) the management of concussion in children and adolescents. A young child is physically, cognitively and emotionally very different from adults, and requires the use of a different set of tools for the diagnosis, recovery-assessment and management of concussion. Age-specific, validated diagnostic tools are required, and management of concussion in children should focus attention on return to learn before considering return to play. To access the full study (subscription and purchase required), visit: <http://bjsm.bmj.com/content/early/2013/04/22/bjsports-2012-092132.short>.

The Impact of an Educational Intervention on College Athletes' Knowledge of Concussions (2013)

The purpose of this study from the *Clinical Journal of Sports Medicine* was to determine college athletes' knowledge regarding concussions and to determine if an educational lecture before their sport season would improve their knowledge and reporting of concussions. After an educational intervention, athletes demonstrated an improvement in their knowledge on concussions. To access the full study (subscription and purchase required), visit: <http://journals.lww.com/cjsportsmed/pages/articleviewer.aspx?year=9000&issue=00000&article=99837&type=abstract>.

[CSN Webinar] Implementation of State Youth Concussion Laws: Perspectives from the Frontlines (Jan 2013)

The second session of the webinar series “Advancing Injury Prevention through Policy” focused on state youth concussion laws. “Implementation of State Youth Concussion Laws: Perspectives from the Frontlines” first provided an update on which states have passed youth concussion laws, as well as preliminary results of an interview survey with state officials and organizational leaders charged with implementation of these laws in their own states. Next, presenters from three different organizational perspectives—public health, education, and athletic/activities association—each shared their experiences in implementing the laws in their states. The featured speakers were: Kerri McGowan Lowrey, J.D., M.P.H., Carlene Pavlos, M.T.S., Paula Hudson Hildebrand, MHD, R.H.Ed., and Gary Matthews. To watch a full archive of the webinar, visit: <http://edc.adobeconnect.com/p5tjem45zpe>

Implementing Return to Play: Learning from the Experiences of Early Implementers (2013)

In order to assess the implementation of Return to Play laws, the CDC’s National Center for Injury Prevention and Control (NCIPC) conducted a case study evaluation on the Return to Play implementation efforts in two states: Washington and Massachusetts. These two states were selected because they were both early adopters of Return to Play and because their laws varied on several important dimensions, including the role of the health department and other stakeholder groups. The evaluation was designed to assess implementation efforts, including related challenges and successes in implementation. To read the report, visit: http://www.cdc.gov/concussion/policies/rtp_implementation.html.

Institute of Medicine: Sport-Related Concussions in Youth Project

An ad hoc committee will prepare a report on sport-related concussions among youth as part of a 15-month project. The report will include findings from a literature review; recommendations for agencies and organizations, school personnel, military personnel, parents, and equipment manufacturers; and areas for additional research. For more information about the project, go to: <http://www8.nationalacademies.org/cp/projectview.aspx?key=IOM-BCYF-11-03>.

Mechanisms of Team-Sport-Related Brain Injuries in Children 5 to 19 Years Old: Opportunities for Prevention (2013)

The objective of this study from PLoS ONE was to determine the mechanisms of brain injuries among children and youth participating in team sports in Canada. The researchers conducted a retrospective case series of brain injuries suffered by children participating in team sports. There were 12,799 brain injuries related to six team sports. Males represented 81% of injuries and the mean age was 13.2 years. Ice hockey accounted for the greatest number of brain injuries (44.3%), followed by soccer (19.0%) and football (12.9%). Many sports-related brain injury mechanisms are preventable. The



results suggest that further efforts aimed at universal rule changes, safer playing environments, and the education of coaches, players, and parents should be targeted in maximizing prevention of sport-related brain injury using a multifaceted approach. To access the full study (subscription and purchase required), visit: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0058868>.

Pediatric and Adolescent Concussion (2012)

Published by Springer, this book covers the history and background of current knowledge of pediatric concussion, treatment, and recovery; focuses on

working with adults in the child patient's life; and helps readers translate contemporary research into clinical practice. It includes the following articles: Historical Perspectives on Concussion, Definition and Classification of Concussion, Sports-Related Concussion, Immediate "On-the-Field" Assessment of Concussion, Utilization of Imaging Technology in Concussion Assessment, Long-Term Assessment of Concussion, Long-Term Treatment of Concussion, Methods of Formal Neurocognitive Assessment of Concussion, Premorbid Functional Considerations in Pediatric Concussion, Developmental Considerations in Pediatric Concussion Evaluation and Management, The Future of Preventing Concussion in Children and Adolescents, and Post Injury Issues and Ethics of Return to Play in Pediatric Concussion. This book is available for purchase for \$79.95. For more information, visit: <http://www.springer.com/psychology/neuropsychology/book/978-0-387-89544-4>.

Traffic (Pedestrian, Bicycle, Motor Vehicle)

Motor Vehicle Collision Factors Influence Severity and Type of TBI (2002)

This study from *Brain Injury* sought to analyze the relationship between motor vehicle collision factors and TBI. Retrospective design was used to analyze the difference between the types of brain injuries sustained in distinct collision configurations. Medical charts and police accident reports were reviewed for individuals sustaining TBI in 168 motor vehicle collisions between 1985 and 1998. Lateral collisions and collisions involving contact with a fixed object were associated with the most severe brain injuries. Analysis of safety restraints revealed that seatbelts not only reduce the probability of injury, but also mediate the severity of brain injury when it is sustained. Future research should focus the prevention of injury by better defining the minimum physical thresholds at which brain injury might be sustained and the mechanisms by which these thresholds are achieved during natural collisions. To read the full article, visit: <http://schatz.sju.edu/downloads/research/hillarybi.pdf>.

Neuropsychological and Neurophysiological Assessment of Sport Concussion in Children, Adolescents, and Adults (2012)

This article from *Brain Injury* seeks to determine whether age differences exist with respect to neuropsychological and electrophysiological functioning following a sport concussion. To read the abstract, visit: <http://informahealthcare.com/doi/abs/10.3109/02699052.2012.654590>.

NHTSA Traffic Safety Facts – Laws (2008)

This fact sheet from the National Highway Traffic Safety Administration (NHTSA) outlines bicycle helmet laws, including providing background information, key facts, legislative status, and cost savings. To read the fact sheet, visit: <http://www.nhtsa.gov/people/injury/TSFLaws/PDFs/810886.pdf>.

Prevention of Traumatic Brain Injury in Youth and Adolescents (2012)

The goal of this project was to promote bicycle helmet use via an inpatient educational program. This study, published by the *Journal of Child Neurology*, hypothesized that this program would increase bicycle helmet use. The study proved feasible, requiring trained personnel to deliver the intervention. Providing a helmet without the intervention was effective in 80% to 83% of cases with respect to parental report of helmet wearing compliance. To read the abstract, visit: <http://jcn.sagepub.com/content/early/2012/10/30/0883073812464272>.



General/Multiple Mechanisms

Causes and Trends in Traumatic Brain Injury for United States Adolescents (2012)

The authors of this study, published in the *Journal of Neurotrauma*, sought to determine causes and trends for TBI-related hospitalizations in the U.S. adolescent population (10-19 years). The authors identified common causes and trends of adolescent TBI, overall and within two-year age categories, using hospitalization data from 2005 to 2009 in the Nationwide Inpatient Sample. Rates of adolescent TBI-related hospitalizations have decreased overall. Motor vehicle accidents and firearms were identified as leading causes of injury and mortality for adolescent TBI and represent potential targets for intervention. To read the full abstract, visit: <http://online.liebertpub.com/doi/abs/10.1089/neu.2012.2605>.

CDC Concussion and Brain Injury Fact Sheet

This CDC fact sheet outlines concussion signs and symptoms and provides tips on how to recover from a concussion. To read the fact sheet, visit: http://www.cdc.gov/concussion/pdf/Fact_Sheet_ConcussTBI-a.pdf.

CDC Get the Stats on Traumatic Brain Injury in the United States

This CDC fact sheet outlines statistics on TBI in the US, including data on TBI by age, sex, and external cause. To read the fact sheet, visit: http://www.cdc.gov/traumaticbraininjury/pdf/BlueBook_factsheet-a.pdf.

Charges Associated with Pediatric Head Injuries: A Five-Year Retrospective Review of 41 Pediatric Hospitals in the US (2012)

This study from the *Journal of Injury and Violence Research* examines the highest contributing mechanisms to pediatric brain injury and the billed charges associated with them. It concluded that motor vehicle collisions, falls, and assaults/abuse are the three highest contributors to brain injury in terms of total numbers and total billed charges. These three mechanisms of injury accounted for almost \$1 billion in total charges across the five-year period and for almost half of the total charges in this dataset over that same time period. To read the full abstract, visit: <http://jivresearch.org/jivr/index.php/jivr/article/viewFile/205/195>.

Concussion Effects on Child's Brain May Last Months after Injury: Study (2012)

The effects of a concussion on a child's brain can last months after the initial injury, according to a small study in the *Journal of Neuroscience* entitled "Diffusion Abnormalities in Pediatric Mild Traumatic Brain Injury." Researchers from the University of New Mexico and the Mind Research Network found that even if there are no symptoms months after a concussion, there are alterations in the white matter of the brain. And these changes - which are seen two weeks after a concussion - are still observed up to three months later. For the news story from the Huffington Post, visit: http://www.huffingtonpost.com/2012/12/12/concussion-child-brain-white-matter_n_2279643.html

Read the abstract here: <http://www.jneurosci.org/content/32/50/17961.abstract?sid=1d583dae-99c6-44e5-a4de-8ec2459fd9e5>.

Head Injuries in Children Under 3 Years (2012)

This article from *Injury* found that children under 12 months of age are at significant risk of head injury. Many of these injuries could be prevented by increased parental supervision or improved



home safety. To read the full abstract, visit: <http://www.sciencedirect.com/science/article/pii/S0020138312002987>.

Intellectual, Behavioral, and Social Outcomes of Accidental Traumatic Brain Injury in Early Childhood (2012)

In this study by *Pediatrics*, the intellectual, behavioral, and social functioning of children who sustained traumatic brain injury (TBI) before 3 years of age was compared with a group of uninjured children. The role of injury and environmental factors in recovery was examined. To read the study, visit: <http://pediatrics.aappublications.org/content/129/2/e262.full>.

Pediatric Head Injuries (2012)

Head injuries in children are common, comprising more than half of all injuries that children sustain. This article from *Oral and Maxillofacial Surgery Clinics of North America* reviews the evaluation and management of scalp injuries in the pediatric patient. The second portion addresses skull fractures, the specter of child abuse, management of acute fracture, and the phenomenon of growing skull fractures. To read the full abstract, visit: <http://www.sciencedirect.com/science/article/pii/S104236991200088X>.

Pediatric Providers' Self-Reported Knowledge, Practices, and Attitudes About Concussion (2012)

The objective of this study from *Pediatrics* was to determine the self-reported practices and attitudes surrounding concussion diagnosis and management in a single, large pediatric care network. The study found that although pediatric primary care and emergency medicine providers regularly care for concussion patients, they may not have adequate training or infrastructure to systematically diagnose and manage these patients. Specific provider education, decision support tools, and patient information could help enhance and standardize concussion management. For the full abstract, visit: <http://pediatrics.aappublications.org/content/early/2012/11/06/peds.2012-1431.abstract>.

Pediatric Traumatic Brain Injury in 2012 : The Year with New Guidelines and Common Data Elements (2013)

TBI remains the leading cause of death of children in the developing world. In 2012, several international efforts were completed to aid clinicians and researchers in advancing the field of pediatric TBI. The second edition of the Guidelines for the Medical Management of Traumatic Brain Injury in Infants, Children and Adolescents updated those published in 2003. This article highlights the processes involved in developing the Guidelines, contrasts the new guidelines with the previous edition, and delineates new research efforts needed to advance knowledge. The impact of common data elements within these potential new research fields is reviewed in this article from *Critical Care Clinics*. To read the full review (subscription or purchase required), visit: <http://www.sciencedirect.com/science/article/pii/S0749070412001029>.



Pediatric Traumatic Brain Injury: Where Do We Go From Here? (2010)

This article from *ASHA Leader* discusses the broad range of TBI symptoms, immediate effects of pediatric TBI, long-term challenges, resources and supports, successful treatment stories, and a cognitive checklist that can be used to monitor the cognitive-communicative and language skills of a child with TBI. It also outlines a national plan to develop care for children, adolescents, and young adults with TBI. To read the article, visit: <http://develop.asha.org/Publications/leader/2010/101102/Pediatric-Traumatic-Brain-Injury.htm>.

Reliable Change in Postconcussive Symptoms and Its Functional Consequences Among Children With Mild Traumatic Brain Injury (2012)

The objective of this study was to examine reliable change in post-concussive symptoms and its functional consequences among children with mild TBI over the first year post-injury as compared with children with orthopedic injuries. To read the abstract, visit: <http://archpedi.ama-assn.org/cgi/content/short/archpediatrics.2011.1082>.



Return to Learning: Going Back to School Following a Concussion (2012)

Authored by Karen McAvoy and published in Volume 40, Issue 6 (March/April 2012) of the *NASP Communique*, Return to Learning: Going Back to School Following a Concussion provides school personnel with information about how to help a student who has sustained a concussion transition successfully back to school. The article explains the symptoms of concussion, familiarizes educators with the ways in which concussions can affect learning and performance in the classroom, and recommends specific interventions that can reduce mental fatigue and support recovery. To read the article, go to: <http://www.nasponline.org/publications/cq/40/6/return-to-learning.aspx>.

Surveillance for Traumatic Brain Injury-Related Deaths – United States, 1997-2007 (2011)

Using vital statistics data for 1997-2007, this report from the CDC provides the most recent estimates of TBI-related deaths in the U. S. Also described are the leading external causes of death; the risk for TBI-related death by age, sex, race, and intention; and the populations at greatest risk for TBI-related death. To read the full report, visit: http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6005a1.htm?s_cid=ss6005a1_w.

Traumatic Brain Injury (TBI) - Effects and Intervention (2002)

The American Occupational Therapy Association provides a Tips for Living sheet entitled Traumatic Brain Injury (TBI) - Effects and Intervention, which describes the ways in which an occupational therapist can work with someone who has sustained a TBI and describes what family members and friends can do to support a person with TBI. To read the fact sheet, go to: <http://www.aota.org/Consumers/consumers/Health-and-Wellness/TBI/35146.aspx>. To visit AOTA's website, go to: <http://www.aota.org/>.

Traumatic Brain Injury: Hope Through Research

This booklet about TBI, prepared by the National Institute of Neurological Disorders and Stroke (NINDS), outlines signs and symptoms, causes and risk factors, different types of TBI, complications and disabilities, rehabilitation, prevention, and more. To read the booklet, visit: http://www.ninds.nih.gov/disorders/tbi/detail_tbi.htm.

Traumatic Brain Injury in the United States: Emergency Department Visits, Hospitalizations, and Deaths, 2002-2006

This CDC report presents data on TBI-related emergency department visits, hospitalizations, and deaths for the years 2002 through 2006 and can be used to determine the number of TBIs occurring each year, groups most affected, and the leading causes of TBI. This important information can be

used to document the need for TBI prevention, to identify research and education priorities, and to support the need for services among individuals living with a TBI. It is intended as a reference for policymakers, health care and service providers, educators, researchers, advocates, and others interested in knowing more about the impact of TBI in the U.S. To read the report, visit: http://www.cdc.gov/traumaticbraininjury/tbi_ed.html.

10 Years Outcome from Childhood Traumatic Brain Injury (2011)

This study, published in International Journal of Developmental Neuroscience, documents functional outcomes at 10 years post-injury and identifies predictors of outcomes, including injury, socio-demographic and pre-injury characteristics. To read the abstract, visit: <http://www.sciencedirect.com/science/article/pii/S0736574811001742>.

Policy and Legislation

The following provides an overview of current policy and legislation addressing TBI prevention.

Governor's Highway Safety Association: Helmet Laws

This webpage from GHSA includes information on motorcycle and bicycle helmet laws by state. To learn more, visit: http://www.ghsa.org/html/stateinfo/laws/helmet_laws.html.

National Conference of State Legislatures: TBI

Many states aim to effectively prevent and diagnose cases of TBI and to respond to and rehabilitate TBI patients. Between 2009 and 2011, at least 34 states passed laws to address TBI. In 2012, at least 14 states have introduced some type of TBI legislation. The majority of these states enacted legislation targeting youth sports-related concussions (see map below). Other introduced legislation addresses TBI in veterans, appropriates funds to TBI prevention or treatment programs, and requires insurers, hospitals and health maintenance organizations to provide insurance coverage for survivors of TBI. The National Conference of State Legislatures' webpage tracks recent legislation and state laws related to TBI: For more information on state legislation, visit: <http://www.ncsl.org/issues-research/health/traumatic-brain-injury-legislation.aspx>.

National Conference of State Legislatures: Shaken Baby Syndrome Prevention

This list provides information on state legislation related to the prevention of Shaken Baby Syndrome, including hospital-based/birthing, child care providers, public awareness campaigns, school awareness, and other. For more information on state legislation, visit: <http://www.ncsl.org/issues-research/human-services/shaken-baby-syndrome-prevention-legislation.aspx>.

The Network for Public Health Law: Sports Concussion Laws



The page features information on sports concussion laws in the United States and includes infographics, laws fact sheets, and webinar archives. For more information, visit: http://www.networkforphl.org/youth_concussions

NFLHealth&Safety.com - The National Football League (NFL) maintains a Health & Safety website that provides a breakdown of concussion legislation by state, as well as frequently asked questions (FAQs) about sport-related concussions. To visit the NFL Health & Safety website, go to: <http://nfl-healthandsafety.com>.

Major Funded Projects

The BRAIN Initiative

The Brain Initiative – short for Brain Research through Advancing Innovative Neurotechnologies – is a new \$100 million research effort to revolutionize our understanding of the human mind and uncover new ways to treat, prevent, and cure brain disorders like Alzheimer’s, schizophrenia, autism, epilepsy, and traumatic brain injury. To learn more, visit: <http://www.whitehouse.gov/blog/2013/04/02/brain-initiative-challenges-researchers-unlock-mysteries-human-mind> and <http://www.whitehouse.gov/infographics/brain-initiative>.

N.F.L. Joins With G.E. in Effort to Detect Concussions

The N.F.L. is forming a partnership with General Electric to jump-start development of imaging technology that would detect concussions and encourage the creation of materials to better protect the brain. The four-year initiative should have at least \$50 million from the league and G.E. To read the full article from the New York Times, visit: <http://www.nytimes.com/2013/02/03/sports/football/nfl-and-ge-team-up-in-effort-to-detect-concussions.html>.

Prevention Programs and Resources

The following is a summary of current programs working to prevent of TBI.

Bicycle Helmet Safety Institute

The Bicycle Helmet Safety Institute (BHSI) is a non-profit organization that provides information on bicycle helmets. BHSI seeks to prevent TBIs and other injuries by spreading awareness of bicycle helmet safety to consumers and advocates for improved safety standards on helmets. BHSI’s website also includes toolkits for helmet promotion programs (which can be found under the “Promotions” tab). For more information, visit: <http://www.bhsi.org>.

BrainLine

BrainLine is a national multimedia project offering information and resources about preventing, treating, and living with TBI. The BrainLine Kids section of BrainLine.org features personal stories of children who have experienced TBI and provides an Ask the Expert section where health care professionals and other experts respond to questions about TBI. There is also a Multimedia section with links to videos on topics such as Child Brain Versus Adult Brain with Traumatic Brain Injury, How Can Physicians Best Help Families with Children with Brain Injury?, and What Impact Can Age Have on a Child’s Injury? This information can be found at: http://www.brainline.org/landing_pages/features/blkids.html. To visit the BrainLine.org home page, go to: <http://www.brainline.org>.

Brain 101: The Concussion Playbook

Developed by Orcas, Inc., a health care technology company, Brain 101 provides online trainings for coaches, school personnel, parents and student athletes on preventing, identifying, and managing concussion. Checklists, charts, and other tools can be found on the Brain 101 website. For information about Brain 101, go to: <http://brain101.orcasinc.com>.

Centers for Disease Control and Prevention (CDC) Heads Up Initiative

The CDC’s Concussion in Sports webpage at <http://www.cdc.gov/concussion/sports/index.html> provides facts about concussions, advice on how to recognize a concussion, and information on what to do if a concussion occurs, as well as links to additional resources such as podcasts, videos, and fact sheets.



- **Heads Up: Concussion in Youth Sports** is a free online course for coaches and parents utilizing interviews with experts and personal stories to explain the signs and symptoms of concussion in young athletes. To take the training, go to: http://www.cdc.gov/concussion/HeadsUp/online_training.html. The course script, quiz, and information sheet are available in both English and Spanish. Heads Up is also available in CD-ROM format for use at training sessions and conferences.

- **Heads Up to Clinicians: Addressing Concussion in Sports Among Kids and Teens** is a free online course

for health professionals that features interviews with experts and case studies. The course covers current research on how the brain is affected by a concussion, the reasons why the risks of concussion are greater for young people, techniques for assessing and managing concussions, and the 5-Step Return to Play model. To take the training, go to: <http://www.cdc.gov/concussion/headsup/clinicians.html>.

- **Heads Up: Prevent Shaken Baby Syndrome** from the Centers for Disease Control and Prevention has created resources for journalists, health departments, and community based organizations. It also includes research and radio PSAs focused on parents and caregivers. For more information, visit: http://www.cdc.gov/traumaticbraininjury/tbi_ed.html
- **Heads Up to Schools: Know Your Concussion ABCs** is a CDC webpage featuring concussion-related resources for school nurses, teachers, counselors, and administrators. The webpage provides downloadable posters, fact sheets, and checklists. To view these and other resources, go to: <http://www.cdc.gov/concussion/HeadsUp/schools.html>. As part of the Heads Up to Schools, Know Your Concussion ABCs resources, the CDC also provides a fact sheet entitled Returning to School after a Concussion: A Fact Sheet for School Professionals. To read this fact sheet, go to: http://www.cdc.gov/concussion/pdf/TBI_Returning_to_School-a.pdf.

HRSA Federal Traumatic Brain Injury Program

The Health Resources and Services Administration's Federal Traumatic Brain Injury Program helps states develop resources for individuals with TBI and for their families. The program funds Implementation Partnership Grants (IPGs) to states and territories. IPGs are available for up to four years and provide a maximum of \$250,000 per year to states and \$100,000 to territories. Between 1997 and 2012, 48 states, two territories, and the District of Columbia received at least one IPG. The HRSA Federal Traumatic Brain Injury Program also provides formula-based grants to Protection and Advocacy Systems and the Native American Protection and Advocacy Project to assess their protection and advocacy systems' responsiveness to TBI issues and to provide advocacy support to those with TBI and to their families. To visit the website of HRSA's Federal Traumatic Brain Injury Program, go to: <http://mchb.hrsa.gov/programs/traumaticbraininjury/index.html>. The website also provides a list of links to publications, archived web casts, and external resources on TBI. These resources can be found at: <http://mchb.hrsa.gov/programs/traumaticbraininjury/resources.html>. The Federal TBI Program supports a TBI Technical Assistance Center administered by NORC at the University of Chicago since 2009. The TBI Technical Assistance Center was established to help grantees in the planning and development of effective programs that improve access to health and other services for individuals with TBI and their families. TBI TAC staff analysts provide state grantees with individualized technical assistance. The TBI Technical Assistance Center subcontracts with the National Disability Rights Network (NDRN) to provide individualized technical assistance to the P&A TBI grantees. Additionally, the TBI Technical Assistance Center produces and disseminates a variety of specialized initiatives and information products for the Federal TBI Program.

MomsTeam.com provides youth sports information to parents through its website at: <http://www.momsteam.com/welcome-message>. The website contains an extensive section on Con-cussion Safety, which includes pages on data and statistics, recognizing and evaluating concussions, treatment and recovery from a concussion, returning to play, safety equipment, concussion research, and state laws related to concussions in youth sports.

National Association of State Head Injury Administrators (NASHIA)

NASHIA maintains a list of state programs that address TBI. This list can be found at: <http://www.nashia.org/StatePrograms.asp>. NASHIA also provides technical assistance to states to help them create systems of care for those affected by TBI and, on its website, NASHIA supplies links to federal agencies, organizations, associations, and research projects that work to prevent TBI and to support those who have experienced TBI. To view NASHIA's website, go to: <http://www.nashia.org/default.asp>.

Protect Your Head

A product of BrainTrust Canada, sponsored by the Dave Irwin Foundation for Brain Injury, the Brain Injury Association of Alberta (BIAA), Stop Concussions, Work Safe BC, and more, Protect Your Head is an award-winning social marketing program designed to change decision making behavior and prevent injury before it happens. The campaign uses a multi-media approach, including television, guerrilla marketing, event marketing, and a website. It is targeted to the age group with the highest risk for TBI: males aged 16-30. For more information, visit the website: <http://www.protectyourhead.com>.

Rocky Mountain Hospital for Children REAP Concussion Management Program

The REAP Concussion Management Program provides guidelines for parents, school personnel, and health care providers to implement a team-based approach to helping student athletes recover from concussion. Information about the program can be found at: <http://www.rockymountainhospitalfor-children.com/sports-medicine/concussion-management/reap-guidelines.htm>.

Safe Concussion Outcome Recovery and Education (SCORE)

This program, created by the Children's National Medical Center, evaluates, monitors, and manages the care of children with concussions. The program consults with physicians regionally and nationally, as well as scholastic and youth recreational programs in which children are vulnerable to injury. The website provides resources for parents, coaches, schools, and health care providers. To visit the website, go to: <http://www.childrensnational.org/score>.



Sarah Jane Brain Project

In 2009, the Sarah Jane Brain Project developed the Pediatric Acquired Brain Injury (PABI) Plan, which outlines a comprehensive system of care for children and young adults with TBI. The plan calls for the creation of State Lead Centers of Excellence in pediatric acquired brain injury in every state. To read the plan, visit: <http://www.thebrainproject.org/pabihome.php>. To visit the Sarah Jane Brain Project website, go to: <http://www.the-brainproject.org/index.php>.

Sport Concussion Library from the Canadian Medical Association

tion offers information on sports concussions geared towards researchers, athletes, parents, coaches and first responders, educational institutions, and physicians. It is a non-profit, free storehouse for non-commercial peer-reviewed literature on sports concussions. Log-in needed, registration is free. Some

articles may link to sites which require a subscription. To access the Sport Concussion Library, visit: <http://www.sportconcussionlibrary.com>.

Sports Legacy Institute (SLI) educates athletes, coaches, and parents about concussions. Resources for coaches include half-day and full-day on-site concussion consulting to review and upgrade concussion training, protocols, assessment, management, prevention, tracking systems, and action plans. SLI provides Advanced Concussion Training and Seven Steps for Brain Safety. To access these resources, visit: <http://www.sportslegacy.org/sports-legacy-institute-concussion-education-programs/for-coaches>. SLI also offers return to play guidelines for first, second, and third concussions at: <http://www.sportslegacy.org/policy-2/cantus-return-to-play-guidelines>.

ThinkFirst

ThinkFirst programs educate young people about their personal vulnerability and the importance of making safe choices. The ThinkFirst National Injury Prevention Foundation's award-winning, evidence-based programs are aimed at helping people learn to reduce their risk for injury. For more information, go to: <http://www.thinkfirst.org>.

UGotBrains

Brain injury is the leading cause of death and disability in teens and young adults. UGotBrains was developed by the Brain Injury Association of New Jersey and funded by the New Jersey Division of Highway Traffic Safety to spread the word about the serious consequences of brain injury. To learn more about *UGotBrains*, go to: <http://www.ugotbrains.com>.

Organizations

The following is a list of organizations that provide information and resources about TBI.

American Speech-Language-Hearing Association (ASHA) maintains a webpage on TBI. The webpage provides information on special topics related to TBI, including concussions in children and teens, as well as articles, research, and consumer information. To learn more, visit: <http://www.asha.org/SLP/clinical/TBI>.

Brain Injury Association of America (BIAA) is the country's oldest and largest nationwide brain injury advocacy organization. To learn more about BIAA, visit: <http://www.biausa.org>.

The Brain Trauma Foundation (BTF) is a national, non-profit organization that focuses on public education aimed at increasing awareness and understanding of the symptoms of concussion. BTF works to educate coaches, nurses, athletes, parents and all citizens about the importance of recognizing concussions and taking the appropriate steps to ensure people receive appropriate care. To learn more about the Brain Trauma Foundation, go to: <https://www.braintrauma.org>.

BrainTrust Canada works to prevent brain injuries by developing effective prevention strategies. The website has information on programs and services, events, media, and links and resources. To learn more, visit: <http://www.braintrustcanada.com>.

The Dana Foundation is a private philanthropic organization that supports brain research through grants and edu-



cates the public about brain research. The Dana Foundation produces free publications; coordinates the International Brain Awareness Week campaign; and supports the Dana Alliances, a network of neuroscientists. To learn more, go to: <http://www.dana.org>.

International Brain Injury Association (IBIA) is a membership organization for brain injury professionals throughout the world. The IBIA publishes the journal *Brain Injury* and organizes a biennial IBIA World Congress, which brings together clinicians, researchers, advocates, and others from across the globe. To visit the IBIA's website, go to: <http://www.internationalbrain.org/about>.

National Brain Injury Information Center can be found on the Brain Injury Association of America's website at: <https://secure.biausa.org/SearchResult.aspx?CategoryID=50>. A wide variety of resources are for sale through the information center, including booklets, books, posters, recorded webinars, DVDs, CDS, and videos. The information center has sections on children and on concussion in sports.

The National Center on Shaken Baby Syndrome has a mission to prevent shaken baby syndrome through the development and implementation of education, programs, public policy and research; to establish networks, support and train families, caregivers and professionals. For more information, go to: <http://www.dontshake.org>.

National Institute of Neurological Disorders and Stroke maintains a Traumatic Brain Injury Information Page at: <http://www.ninds.nih.gov/disorders/tbi/tbi.htm>. The page contains a definition of TBI; brief descriptions of treatment of, prognosis for, and research on TBI; links to clinical trials related to TBI; and contact information for organizations that help those with TBI. To visit the National Institute's website, go to: <http://www.ninds.nih.gov/index.htm>.

The North American Brain Injury Society (NABIS) is a professional membership organization for those who are involved in issues relating to brain injury. NABIS focuses on translating brain injury science into practice. It holds an annual conference and publishes the journal *Brain Injury Professional*. To visit NABIS's website, go to: <http://www.nabis.org>. To learn more about *Brain Injury Professional*,



CSN is a resource center for MCH and injury prevention professionals in State and Territorial health departments who are committed to reducing injuries and violence among children and adolescents. CSN is supported by the Maternal and Child Health Bureau, Health Resources and Services Administration, Department of Health and Human Services.

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Children's Safety Network
Education Development Center, Inc.
43 Foundry Avenue
Waltham, MA 02453-8313

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