



INJURY CONTROL RESEARCH CENTERS:

## Traumatic Brain Injury

CDC's National Center for Injury Prevention and Control funds 10 Injury Control Research Centers (ICRCs). These centers study ways to prevent injuries and violence and work with community partners to put research findings into action.

Traumatic Brain Injuries (TBIs) contribute to about 30% of all injury deaths. Every day, 153 people in the United States die from injuries that include a TBI. People who survive a TBI can face effects that last a few days, or the rest of their lives. TBIs can cause impaired thinking or memory, movement, sensation (such as vision or hearing), or emotional functioning (such as personality changes or depression). These issues not only affect individuals but can have lasting effects on families and communities.

CDC's research and programs work to prevent TBIs and help people recognize, respond, and recover if a TBI occurs. Eight ICRCs are working to address TBI through research, training, or outreach activities:

- Columbia University
- Icahn School of Medicine at Mount Sinai
- Johns Hopkins School of Public Health
- The Research Institute at Nationwide Children's Hospital
- University of Iowa
- University of Michigan
- University of North Carolina at Chapel Hill
- University of Pennsylvania



### Research: Studying Ways to Prevent Traumatic Brain Injury

Examples of CDC-funded ICRC research projects are listed here:

- Exploring Universal Bicycle Helmet Policies: A Translation Research Study (Johns Hopkins School of Public Health)
- Head Impact Biomechanics as a Behavior Modification Tool to Reduce Mild Traumatic Brain Injury Risk (University of North Carolina at Chapel Hill)
- Impact of Ohio's Youth Concussion Law on Patterns of Healthcare Utilization (The Research Institute at Nationwide Children's Hospital)
- The Juvenile Justice System and Traumatic Brain Injury (Icahn School of Medicine at Mount Sinai)

You can find a complete list of CDC-funded ICRC research projects for 2017-2019 on the ICRC web site at [www.cdc.gov/injury/erpo/icrc/projects.html](http://www.cdc.gov/injury/erpo/icrc/projects.html).



**Centers for Disease  
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National Center for Injury  
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## Outreach: Putting Research Into Action to Prevent Traumatic Brain Injury

The **Mount Sinai Injury Control Research Center (MS-ICRC)** used a research method called ‘verbal autopsy’ to gather health information about TBI patients who survive their injuries but then subsequently die. Verbal autopsy involves talking to the patient’s family about the patient’s health in the year before the patient died. MS-ICRC worked with the TBI Model System Centers to implement the verbal autopsy research method when TBI patients later die. Since implementation, the Centers’ clinicians and researchers better understand the importance of monitoring post-TBI health and helping to learn more about post-TBI health challenges by tracking the health of TBI patients in their first year after injury.

The **Johns Hopkins Center for Injury Research and Policy (CIRP)** developed a [4-minute video](#) about bicycle helmet safety to directly reach urban, minority youth. This *You Make the Call* video was part of a larger pilot program that also provided a free helmet, a helmet fitting, and safety instructions by a health educator. The pilot included 20 pairs of parents and children. Children who participated were about 10 years old and included equal numbers of boys and girls. The majority of these children reported daily or weekly bike-riding (65%). None of the 20 children reported that they “always” wore a helmet while bike-riding. Sixteen of the children (80%) reported that they “never” wore a helmet. Sixteen of the children (80%) did not own a helmet. A month after the intervention, youth who reported bike-riding also reported significantly higher helmet use. The follow up visit included 12 of the children. Five children reported that they “always” use their helmets, compared to 0 before the intervention. There was also an increase from 35% to 66% in youth reporting that parents required helmet use. The project received a Gold Winner and Best in Show awards from the National Health Information Awards program. CIRP is sharing this important work through national and international conference presentations and academic papers.

Since 2012, the **Penn Injury Science Center at the University of Pennsylvania** has collaborated with multiple institutions in the Big Ten and Ivy League sports conferences to collect concussion data on varsity athletes in a surveillance system. The study collects information in real-time from students playing all types of sports. Each athlete is monitored to determine how long it takes for symptoms to resolve and how long it takes to return to academic and physical activities. Since 2012, more than 2,000 concussion cases have been entered into the surveillance system. In 2017, the Penn Injury Science Center partnered with the *Big Ten – Ivy League Traumatic Brain Injury Research Collaboration* to take over operations of the surveillance system and to conduct analyses for the study. The Research Collaboration’s work is already showing the difference interventions can make. The Ivy League conference averaged six concussions per season during kickoff plays from 2012-2015. In 2016, new kickoff return rules were put in place and athletes suffered zero concussions on kickoff plays that year.



## Training: Building the Field to Prevent Traumatic Brain Injury

The **University of Iowa Injury Prevention Research Center (UI IPRC)** developed an inventory of evidence-based bicycle safety programs. Bicycling for children comes with benefits but there are risks to consider. Education is an important piece to increasing child bicycle safety. There are numerous child bicycle education programs throughout the United States but no single program is recognized as the best intervention. Educators can use [this inventory](#) to identify critical components or how to improve programs in their area. Common program elements are grouped by age. This inventory provides a foundation that child bicycle education standards can be built upon.

The **Mount Sinai Injury Control Research Center (MS-ICRC)** developed the Executive Plus and Short-Term Executive Plus (STEP) programs that help TBI patients deal with challenges in solving problems and controlling their emotions after their injuries, and a free manual to help other organizations implement these programs. MS-ICRC’s assessment of the program implementation showed that the programs weren’t working as well as expected. However, MS-ICRC identified three sites that had successfully used the STEP program and investigated why the program had worked in those facilities. MS-ICRC is now sharing what it learned to improve the implementation of the STEP program and the manual more widespread and successful.

The **University of Michigan Injury Prevention Center (UMIPC)** developed a massive open online course (MOOC) focused on a number of injury-related public health areas, including epidemiology, surveillance, risk and protective factors, suicide prevention, and sports injury prevention. The MOOC includes 59 video learning segments grouped into themes and taught by a panel of 25 nationally recognized injury prevention experts. Learners can gain new skills to improve clinical practice, support families and their communities, and learn detailed strategies and techniques to apply best injury prevention practices. One of the MOOC’s modules focuses on concussion prevention. In this module, learners can learn what concussions are, how often people get them, how they are diagnosed and treated, and the long-term effects of concussions. In the first four months after launch, more than 1500 learners enrolled and expanded the University of Michigan’s reach to rural populations.



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