

US may be greatly undercounting pediatric concussions

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New research from The Children's Hospital of Philadelphia (CHOP) and the Centers for Disease Control and Prevention (CDC) highlights a substantial gap in how the United States currently estimates the nation's burden of pediatric concussions. Among 0- to 17-year-olds who have a CHOP primary care physician and were diagnosed with a concussion within CHOP's regional pediatric network, 82 percent had their first concussion visit at a primary care site, 12 percent at the emergency department, 5 percent within specialty care (sports medicine, neurology, trauma), and 1 percent were directly admitted to the hospital. Many current counts of concussion injury among children are based solely on emergency department (E.D.) visits or on organized high school and college athletics data. Thus, the authors say, we may be vastly underestimating child and youth concussions in the US.

"We learned two really important things about pediatric concussion healthcare practices," says Kristy Arbogast, PhD, lead author and Co-Scientific Director of CHOP's Center for Injury Research and Prevention. "First, four in five of this diverse group of children were diagnosed at a primary care practice—not the [emergency department](#). Second, one-third were under age 12, and therefore represent an important part of the concussion population that is missed by existing surveillance systems that focus on high school athletes."

The study appears in *JAMA Pediatrics* on May 31, 2016.

Using the CHOP electronic health record (EHR), researchers retrospectively analyzed more than 8,000 concussion diagnoses over a recent four-year period among children up to 17 years who receive their primary care within the CHOP network. Over the course of that period (July 2010 - June 2014), primary care visits as the point of entry increased 13 percent, with a corresponding

16 percent decrease in point-of-entry E.D. visits.

"This study provides direction for healthcare networks and clinicians about the critical importance of providing targeted training and resources in primary care settings," says Christina Master, MD, a co-author and pediatric sports medicine specialist at CHOP. "With targeted training and support, [pediatric primary care](#) providers are well-positioned to diagnose and treat the vast majority of concussions."

Typically, compared to more specialized settings, a [primary care](#) practice can see injured patients sooner, thus getting them on the proper path for treatment earlier. Key to recovery from a concussion is early diagnosis and treatment—including early cognitive and physical rest—followed by a supervised return to learning and activity. The majority of concussions will resolve with this approach in two to three weeks. Patients with lingering symptoms or other comorbidities can be referred for specialist care.

"We need surveillance that better captures concussions that occur in children and adolescents," says Debra Houry, MD, MPH, Director of CDC's National Center for Injury Prevention and Control. "Better estimates of the number, causes, and outcomes of concussion will allow us to more effectively prevent and treat them, which is a priority area for CDC's Injury Center."

CHOP researchers are working hard to fill in many gaps in knowledge about pediatric and adolescent concussions, according to Dr. Arbogast. "We are utilizing the large and diverse electronic health record at CHOP to answer many questions about the natural history of pediatric concussion to guide advances critically needed in this field," says Dr. Arbogast. "CHOP's EHR data are playing an important role in advancing our knowledge about [concussion](#) diagnosis and management and are being applied to many other clinical effectiveness

