

Diagnosis of concussion in children

Children frequently injure their heads during play and sport, which often leads to visits to the Emergency Department (ED) to be checked by a doctor. Concussion is a type of brain injury, which requires an accurate and timely diagnosis, so that children can have an optimal recovery and minimize persistent symptoms. One of the challenges in diagnosing concussion is that doctors currently do not have objective physiologic criteria or brain imaging that can help in making this diagnosis. Therefore, doctors rely on expert opinions of groups of medical professionals, such as the Zurich Fourth International Conference on Concussion consensus statement, which is commonly used and provides guidelines on diagnosis and management of concussion in children. Previous surveys have suggested that doctors frequently use these guidelines to diagnose and manage concussion, but there is an absence of research studies actually assessing this.

The goal of the study by Dr. Kathy Boutis, Dr. Kirstin Weerdenburg and colleagues published in the *Journal of Pediatrics* was to determine how often pediatric emergency doctors diagnose concussion in children and compared it with how often this diagnosis would be made if the diagnostic criteria from the Zurich Fourth International Conference on Concussion guidelines were applied. Experts that contributed to these guidelines defined concussion as a direct and indirect injury to the head, where there is evidence of brain injury. "Brain injury" could be identified as one or more signs or symptoms of brain dysfunction like headache, dizziness, etc. Parents of children aged 5-18 years who came to the study ED with their child who had experienced a head injury were asked if their child had new signs and symptoms since the head injury. The specific signs and symptoms that parents were asked to identify were adapted from the Child Sport Concussion Assessment Tool 3 (ChildSCAT3) and the Sport Concussion Assessment Tool 3 (SCAT3). These are standardized tools used by healthcare professionals to recognize concussion in athletes. Additional information collected on each child included demographics, mechanism of injury, physician diagnosis and discharge advice.

Almost 500 children were enrolled in this study, and it was found that pediatric emergency doctors diagnosed concussion less often in comparison to how often this diagnosis would be made if there was consistent application of the diagnostic criteria from the Zurich consensus statement. The pediatric emergency doctors were more likely to diagnose concussion if the child was older than 10 years, they came to the ED more than 1 day after their head injury occurred, the head injury occurred in a collision sport, and/or they had symptoms of headache or amnesia. While these factors are important and part of consensus criteria to identify concussion, there are many more that should be considered. Therefore, the researchers in this study concluded that pediatric emergency doctors might be missing cases of concussion, and therefore the opportunity to provide critical advice for cognitive and physical rest. Even of those children identified by the emergency doctors as concussion, doctors only provided specific post-concussion advice in half of these children. Improving knowledge of doctors on these consensus statements' recommendations will hopefully provide a wider application for diagnosis and management of concussion in children.

Publication

[The Diagnosis of Concussion in a Pediatric Emergency Department](#)

Boutis K, Weerdenburg K, Koo E, Schneeweiss S, Zemek R.

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