THE DIAGNOSTIC CREDIBILITY OF SECOND IMPACT SYNDROME: A SYSTEMATIC REVIEW

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Background
Second Impact Syndrome (SIS) is described as a phenomenon that occurs when an individual suffers a second head injury while symptoms from initial head injury are still present. SIS has been associated with a unique set of characteristics. Despite the attention and curiosity regarding SIS as a diagnosis, there are no existing World Health Organization (WHO) criteria associated with the syndrome.

Purpose
The purpose of the review was to examine current literature to determine whether or not existing evidence is adequate to support a WHO recognized, ICD-10 case definition for SIS.

Methods
A sensitive search strategy was developed to include all relevant literature. Data were extracted and placed into a diagnostic framework constructed based upon previously accepted ICD-10 diagnoses. The quality of included studies was assessed using a checklist developed specifically for case reports.

Results
We identified 222 unique citations of which 75 articles were assessed for full-text eligibility. Five case studies and 3 case series were determined appropriate for inclusion. The majority of these cases are suspected, not confirmed episodes of SIS. Young, physically active males, particularly those participating in sports such as American football, boxing and rugby, are at highest risk for SIS.

Conclusions
At present, there is not sufficient evidence to satisfy a standardized WHO, ICD-10 case definition for SIS as a unique diagnosis. Future studies are needed to better understand and define at risk populations, diagnostic signs and symptoms, and the multisystem consequences of SIS.

Clinical Relevance
Based on the inability to standardize an ICD-10 case definition of SIS, health care providers should exercise caution when assigning SIS as a strict diagnosis. On-the-field health care providers should be proactive and diligent in documenting head injuries, regardless of perceived impact severity. This will help prevent retrospective/ anecdotal reporting of head-related injuries by athletes, coaches and training and medical staff. Proactive documentation of head injury, regardless of severity, can also help decrease the risk of premature return to play in athletes, and decrease the incidence of more severe outcomes.

Acknowledgements
Leila Ledbetter MLIS, for helping to conduct the literature search.