

Workshop on Sport-Related Concussions in Youth

Diagnosis and Management of Sports-Related Concussion in Youth: The Roles of Pediatric Neurologists and Family and Rehabilitation Medicine Physicians

Stanley A. Herring, MD

Director of Sports, Spine and Orthopaedic Health

UW Medicine

Co-Medical Director

Seattle Sports Concussion Program

Team Physician Seattle Seahawks

Team Physician Seattle Mariners

Seattle, Washington

Disclosures

National Football League Head, Neck and Spine Committee

Football and Wellness Committee USA Football

Medical Advisory Board Pop Warner Football

Medical Advisory Board X2IMPACT

Who Owns Sports Concussions?

- Not degree or sub-specialty driven
 - Knowledge
 - Training
 - Experience
 - Interest
- Team Physician
 - Concussion (Mild Traumatic Brain Injury) and The Team Physician: A Consensus Statement – 2011 Update. Medicine & Science in Sports & Exercise, 43:2412-2422, 2011.
 - Team Physician Consensus Statement. Medicine & Science in Sports & Exercise, 32:877-878, 2000.

Physical Medicine and Rehabilitation



Physical Medicine and Rehabilitation

- Comprehensive training and experience in the spectrum of traumatic brain injury
 - Severe → Moderate → Mild TBI
- Bio-psychosocial model focusing on functional restoration utilizing multidisciplinary and interdisciplinary care including
 - Physicians
 - Psychologists, neuropsychologists, psychiatrists
 - PT, OT, speech pathologists, school teachers, counselors and coaches

Rehabilitation

- Traumatic brain injury will surpass many diseases as the major cause of death and disability by the year 2020. (estimated 10 million people affected annually)
 - Hyder AA et al. The impact of traumatic brain injuries: a global perspective NeuroRehabilitation. 2007;22(5):341-5
- Direct and indirect medical costs of TBI totaled an estimated \$76.5 billion in the United States in 2000.
 - <http://www.cdc.gov/TraumaticBrainInjury/statistics.html#3>
- Mild brain injury is a leading cause of long-term disability in individuals < 45 y/o.

Clarke L et al. Long-term cognitive complaint and post-concussive symptoms following mild traumatic brain injury: The role of cognitive and affective factors. Brain Inj 2012;26:298-307

Physical Medicine and Rehabilitation

- Comprehensive training and experience in the spectrum of musculoskeletal injury and illness
- Bio-psychosocial model focusing on functional restoration utilizing multidisciplinary and interdisciplinary care including
 - Physicians
 - PT, ATC, OT, CSCS
 - Coaches, teachers
 - Psychologists, psychiatrists

Physical Medicine

- More than 1 in 4 Americans has a musculoskeletal condition requiring medical attention.
- Annual direct and indirect costs for bone and joint health are 849 billion – 7.7% of the gross domestic product.
 - United States Bone and Joint Initiative: *The Burden of Musculoskeletal Diseases in the United States*, Second Edition. Rosemont, IL: American Academy of Orthopaedic Surgeons; 2011.

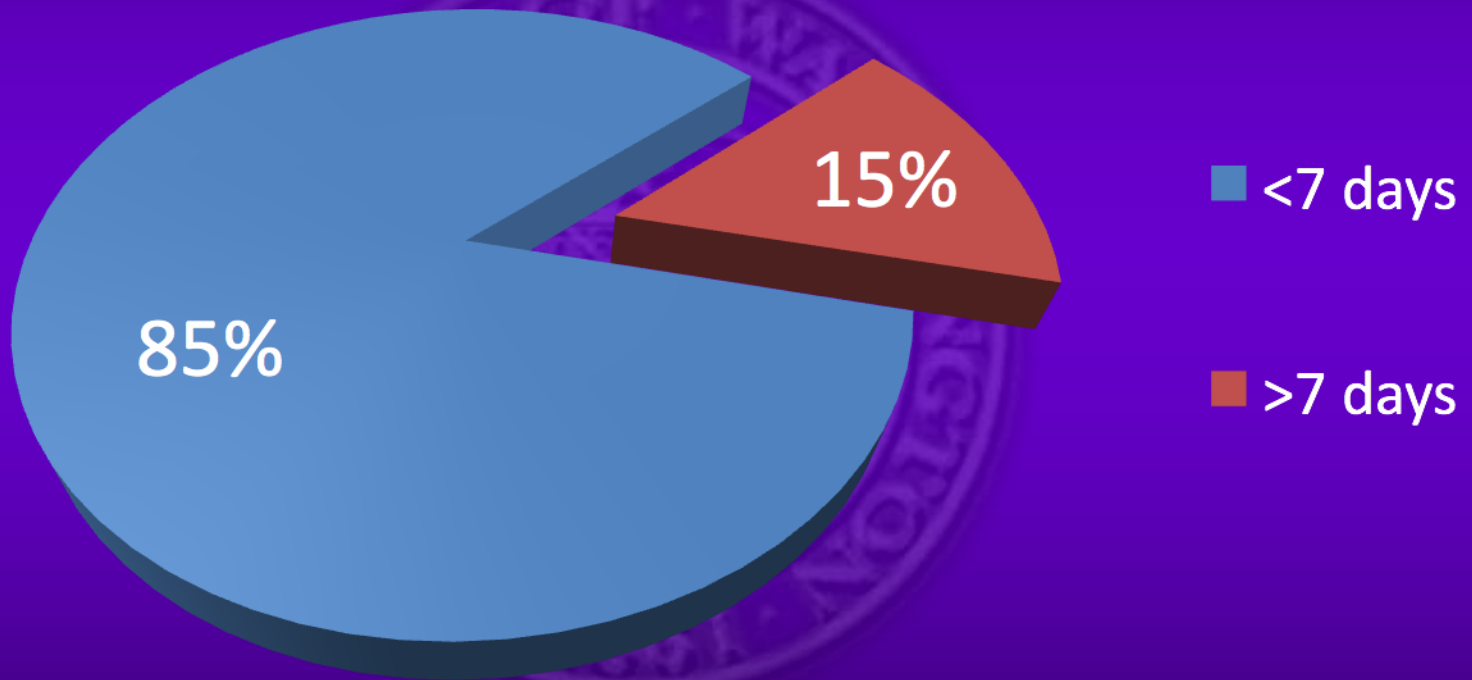
Concussion Care Potential Pitfalls

- Care at the time of injury particularly for youth athletes
- Care for athletes with persistent symptoms



Symptom Duration

Multicenter, prospective, 5 year study
16,624 college and high school athletes
637 concussions



Mcrea M et al. Neurosurgery 2009;65:876-82

Musculoskeletal Confounders

- In concussed athletes, 20-35% report cervical pain
 - Guskiewicz K et al. Epidemiology of concussion in collegiate and high school football players. Am J SportsMed 2000; 28:643-650
- Post-traumatic headache is the most common symptom after a concussion (>90%)
 - Meehan et al. High school concussions in the 2008-2009 academic year: mechanism, symptoms, and management. Am J Sports Med 2010;38:2405-9.

Physiological/Psychological Confounders

- Post concussive syndrome
 - Attribution of all remaining cognitive, somatic, emotional and sleep symptoms to the concussive event itself
 - Interpretation of neuropsychological data

Influences on PCS

- Pre-morbid anxiety
 - Strong predictor of continued PCS
 - Ponsford J et al. Neuropsychology 2012;26:304-13
- Comorbid Major Depressive Disorder
 - Ranges from 26-42% in hospitalized TBI patients
 - 21.4% in mTBI
 - Can persist despite cognitive recovery
 - McCauley SR et al. Journal of Clinical and Experimental Neuropsychology 2001;23:792-808
- Negative illness perceptions
 - Hou R et al. J Neurol Neurosurg Psychiatry 2012.83:217-223
- Motivational factors
 - Miller L et al. Brain Injury 2001;15:297-304

Confounders

- Overlooking or misinterpreting persisting musculoskeletal, cognitive, somatic, emotional and sleep symptoms can result in spurious and expensive treatment, unnecessary restrictions from academic, sporting and social activities, and skewed data regarding sports concussions

Confounders

- Agreed upon by the writing group: athletes with > 10 days of symptoms should be referred to health care providers experienced in concussion management and managed in a multidisciplinary fashion

4th
International
Consensus
Conference on

**Concussion
in Sport**

1 – 2 November 2012
hosted by FIFA at the Home of FIFA in Zurich

FIFA® For the Game. For the World. IOC IFEB FEI™

Conclusions

- Role of all youth sports concussion care providers:
 - Knowledge, experience and training to recognize and provide treatment for acute concussions
 - For athletes with persisting symptoms, provide access to a healthcare team with expertise in TBI

Thank You

