Concussions and Mental Health

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No Conflict

• The views expressed in these slides and the today’s discussion are mine

• My views may not be the same as the views of my company’s clients or my colleagues

• Participants must use discretion when using the information contained in this presentation
Learning Objectives

• At the conclusion of the presentation participants should be able to:
  – Identify the most common mental health concerns which present in athletes with concussions.
  – Be able to recognize the symptomatology associated with mental health concerns related to concussions.
  – Feel comfortable referring athletes with mental health concerns to a mental health professional.
Multiple brain injuries can result in lasting cognitive impairments, substance abuse, mental health and physical health concerns (Ilie et al, 2014)
“A mental disorder is a syndrome characterized by clinically significant disturbance in an individual’s cognitive, emotion regulation, or behaviors that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning.”

(DSM-5)
So, What is a Concussion?

- Definition: “Complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces”
- Usually defined as **ANY** change in neurologic function
- Often referred to as mild traumatic brain injury
- Only about 10% of concussions involve loss of consciousness
- CT and MRI are often normal
- 15% may have symptoms lasting >1 year

Why the increased focus recently on sports-related concussions?

- Evolving definition of concussion
- Common in sports and increasing
- Potential for catastrophic outcomes
Why the increased focus recently on sports-related concussions?

• Media attention
  – NFL concussion laws, recent attention on long term effects of concussions in professional athletes
    – “Snitch Rules”
  – Lystedt Laws
What’s Missing?

• Despite increased awareness regarding concussions, mental health concerns are NOT being addressed
• Focus on prevention is great, but what about focusing on mental health concerns
• Guidelines for treatment regarding concussion related mental health
• Recognition
Research Relating Concussion to Mental Health Disorders

  - Increased risk of suicide possibly associated with increased physical, psychological, and social consequences of TBI (Teasdale et al, 2001)

- 12-17 year olds
  - Higher prevalence of diagnosed depression if previous diagnosed concussion national sample
  - **1st study to find this correlation in a nationally representative sample** (Chrisman et al, 2014)
Research Relating Concussion to Mental Health Disorders

• 41 Year Swedish Population Study, 2014
  – TBI carries elevated risk of premature mortality from suicide (Fazel et al, 2014)

• Canadian Population-Based Study (Adolescents Grades 7-12)
  – Significant association between TBI and suicide, depression, anxiety, substance abuse (Ilie et al, 2014)

• 20 Year Longitudinal cohort analysis of adults in Ontario diagnosed with concussion
  – Increase in long-term risk of suicide especially after concussions on weekends (Fralick et al, 2016)
Anxiety

• Baseline depression and anxiety scores (CESD-Center for Epidemiological Studies Depression Scale and State-Trait Anxiety Inventory) = strongest predictors of post-concussion depression and anxiety (Yang et al, 2015)
• Physical symptoms are similar to concussion symptoms
Major Depressive Disorder

• Accepted that a relationship exists between depression (5 or more symptoms with at least one being “depressed mood” or “loss of interest or pleasure”) and prolonged symptoms of SRC (Solomon et al, 2016)
Major Depressive Disorder

• **Commonality of symptoms between SRC and depression**
  – Sleep disturbances, mood changes, cognitive symptoms (Solomon et al, 2016)

• **Similarities between brain scans in patients with concussion-related depression and non-injured patients diagnosed with major depressive disorder** (Alhilali, Barrow Neurological Institute)
Major Depressive Disorder

- Post-concussive depression associated with increased morbidity, school failure, substance abuse and suicide (Chrisman et al, 2014)
- **11% increase** in depression in youth 6 months following TBI (abnormal brain imaging) (Chrisman et al, 2014)
- Prevalence of minor depression increased in patients experiencing a head injury in early adulthood.
  - Rates of depression: 11.2% in head injury group and 8.5% in control group (Holsinger et al, 2002)
Suicide

• **Long-term risk increases threefold** in adults having experienced at least 1 concussion (Cepelewicz, 2016 & Fazel 2014)

• 31 deaths per 100,000 patients with TBI annually vs. 12.6 deaths per 100,000 patients not suffering from a TBI
  - Average completed suicide 6 years after injury
  - Independent of demographics or previous psychiatric conditions
  - Increased risk with increased # of concussions

• Canadian Medical Association Journal (Cepelewicz, 02/08/16)
Suicide

• Odds of contemplating or attempting suicide **2.89 times higher** in students with TBI (Ilie et al, 2014)
  – Adolescents (up to age 24) shortest time between thoughts of suicide and suicide attempt

• Good News: Students with TBI had 2X higher rates of seeking counseling or crisis help as well as being prescribed anxiety/depression medications (Ilie et al, 2014)

• Bad News: About ½ of patients visited a physician in the last week of life (Fralick et al, 2016)
Case Study 1- 15 y/o female

- 1\textsuperscript{st} concussion: 05/2008 (PE class)
- 2\textsuperscript{nd} concussion: 08/2009 (Volleyball)
- 3\textsuperscript{rd} concussion: 11/2009 (Basketball)
- 4\textsuperscript{th} concussion: 01/2010 (Basketball)
- Cleared for RTP after each concussion
Case Study 1

- February 2010 wanted to discuss competing in track
- Decision made that competing was NOT safe, but would rehab with the team
- Progressed to sprinting, but no long jump, triple jump, high jump
  – Due to potential impact to head
Case Study 1

- No official diagnosis of depression
  - However, several discussions with student regarding how she was feeling.
  - Feeling “down,” tired, as if she would never get better
  - Lost a part of her identity when she was unable to play basketball
  - “Depression” symptoms improved once she was able to return to practice/competing and her daily routine
Case Study 2

- 16 y/o H.S. sophomore Basketball & Softball Athlete
- 11/26/14: Elbow to Jaw (no mouth guard)
  - Sx: neck pain, headache, dizziness, blurred vision, nausea, sensitivity to light & noise
  - 11/27-28/14: neck pain, headache, dizziness, blurred vision, nausea, sensitivity to light & noise
  - 11/29/14: neck pain, headache, blurred vision, sensitivity to light & noise
  - 12/01/14: Concussion Specialist Visit
    - SCAT 3: symptom score 67, 18/22 symptoms
  - 12/02-07/14: neck pain, headache, dizziness, blurred vision, nausea, sensitivity to light & noise
  - 12/08/14: Concussion Specialist Visit
    - SCAT 3: Symptom score 34, 12/22 symptoms
- 12/09-12/14: neck pain, headaches, sensitivity to light & noise
- 12/19/14: Concussion Specialist Visit cleared to RTP
Case Study 2

- 01/02/15: Return to full contact practice
- 01/23/15: Head contacted floor during basketball game
  - SCAT 3: “passed”
  - Neck pain, headache, sensitivity to light & noise
- 01/26/15:
  - Cleared by ATC at high school to RTP with symptoms of headache, sensitivity to light & noise
- 01/27/15: woke up with worsened symptoms
  - Concussion Specialist: ends basketball season due to inability to “pass” impact test
- 02/01/15: tinnitus begins, other symptoms continue
Case Study 2

03/09/15: collided with center fielder in softball game
- All symptoms returned, light & noise sensitivity worse
- Continued to play, but “took it easy”
- Did not see doctor after this incident
What would you do?

Treatment Options?
Case Study 2

- Symptoms consistent with:
  - Depression
  - Anger
  - Anxiety/Panic
  - PTSD?
- Suicidal Thoughts
- **No referral** for counseling
- Instead prescribed “sleeping meds,” antihistamine to help manage symptoms (tinnitus)
Solutions According to Research

• Detecting and managing psychiatric conditions becomes an integral component of treatment to reduce premature mortality (Fazel, 2014)

• Primary care physicians need to screen for potential mental health concerns (Ilie et al, 2014)

• Education
  – mental health and behaviour problems among adolescents are a “blind spot” in our culture (Ilie et al, 2014)
Greater attention to long-term care after concussions (Fralick et al, 2016)
  - Including Screening for psychiatric illness and suicide risk often neglected
  - “belief that neurological symptoms have an obvious cause, will resolve quickly, leave nothing visible on medical imaging and do not require follow-up” (Friger 2016)
My Solutions

• Recognition by ATC’s, Chiropractors, Coaches, Teammates
  – mental health symptoms?
  – “snitch rule”
  – @ least ½ of all collegiate concussions go undiagnosed (Armstrong, 2016)

• Requirement for consultation with mental health professional

• Early intervention and referral to mental health professional
Take Home Points

• Care of individuals with concussion needs to be a **collaborative effort** which addressed the physical, emotional and psychological symptoms of the injury.

• Don’t confuse signs/symptoms of a mental health concern with concussion symptomatology…**if NOT sure REFER!!**
• Cepelewicz, J. A Single Concussion May Triple the Long-Term Risk of Suicide. 8 February, 2016.
• Firger, J. Concussion Increases Suicide Risk Threefold, Especially in People Injured on the Weekend. 9 February 2016.


