Concussion Management: A Team Approach

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Disclosures

• No conflicts to disclose with regards to commercial interest, finance, research, or corporate boards.
Goals and Objectives

1. Identify the role and importance of each of the “teams” involved in concussion management in athletes (family, athletic, medical and academic).

2. Identify the medical professionals involved in the interprofessional management of concussions.

3. Discuss the role that education plays in the recognition and management of concussions, especially in an athletic population.
Concussion Management: Why a Team Approach?

Institute of Medicine Core Competencies

Health Professions Education: A Bridge to Quality (2003)

1. Provide patient-centered care
2. Work in interdisciplinary teams
3. Employ evidence based practice
4. Apply quality improvement
5. Utilize informatics

“Effective Concussion Management requires an array of professionals working collaboratively throughout the spectrum of the disease process.”

Working In Interdisciplinary Teams:

- Cooperate
- Collaborate
- Communicate
- Integrate...

...care in teams to ensure that care is continuous and reliable.

(National Academy of Sciences, 2001. p. 45)
Concussion Management
Team Based Care

Values and Ethics

Teamwork

Roles and Responsibilities

Interprofessional Communication

IPEC, 2011
Pabian et al, 2017
Team Based Return to Learn Models for Student-Athletes

NE Department of Education: Bridging the Gap...

AAP and REAP Team Model

- Advocates the formation of a team to collaborate in caring for the student.
  - Family Team
  - Medical Team
  - School Academic Team
  - School Physical Team

Halstead et al, 2013
McAvoy, 2016
Team Based Model for Non-Athletes

- Patient
- Family
- Supervisor
- Medical
- Work
The Members and Roles of Each of the Teams Managing a Concussion

Students and Student-Athletes
Family Team
(NDE, Bridging the Gap, 2014 McAvoy, REAP 2016)

Members

- Parents/Guardians
- Siblings
- Significant Others

Roles

- Identify
  - That an injury has occurred
- Remove
  - Physical Activity
- Reduce
  - External Stimulation
- Rest
- Communicate/Collaborate
  - Physicians/HCP
  - School
  - Coaches
  - Work
  - Student
- Collaborate/facilitate during transition back to:
  - School
  - Athletics
- Identify
  - Ongoing Issues
  - Resolution
School Team-Academic

(NDE, Bridging the Gap, 2014 McAvoy, REAP, 2016)

Members

- Will vary greatly depending on resources
- May include:
  - Educators
  - Counselors
  - Social Workers
  - School Nurse
  - Ancillary HCP
    - PT/OT/SLP/Psych

Roles

- Identify
  - That an injury has occurred
- Remove
  - Physical Activity
- Reduce
  - Cognitive Demands
- Rest
- Communicate/Collaborate
  - Physicians/HCP
  - Parents
  - Teachers
  - Coaches
  - Student
- Accommodate/Adjust
- Identify
  - Ongoing Issues
  - Resolution
School Team - Physical

(McAvoy, REAP, 2016)

Members

- May vary greatly depending on resources
- May include:
  - Athletic Trainer
  - Coach

Roles

- Identify
  - That an injury has occurred
- Remove
  - Physical Activity
- Reduce
  - Cognitive Stimulation
  - External Stimulation
- Rest
- Communicate/Collaborate
  - Physicians/HCP
  - Parents
  - Teachers
  - Student
- Supervise
  - RTP Progression when cleared
- Identify
  - Ongoing Issues
  - Resolution
Medical Team
(NDE, Bridging the Gap, 2014
McAvoy, REAP, 2016)

Members

- May vary greatly depending on resources, severity, prolonged symptoms
- May include:
  - Physician
    - Specialists
  - Athletic Trainer
  - Other HCP
    - PT/OT/SLP/Psych
  - Academic Support

Roles

- Identify
  - That an injury has occurred
  - Rule out more serious injuries
- Remove
  - Physical Activity
- Educate Family and Patient
- Reduce
  - Cognitive Stimulation
  - External Stimulation
- Rest
- Communicate/Collaborate
  - Athletic Trainers
  - Coaches
  - Parents
  - Teachers
  - Student
- Approve
  - Start of RTP Process
- Identify
  - Ongoing Issues
  - Resolution
The Members and Roles of Each of the Teams Managing a Concussion Non-Students/Student-Athletes
Medical Team Expanded: The medical professionals involved in the interdisciplinary management of concussion.
Medical Professionals on the Concussion Management Team

- Physician
- Neuro-psychologist
- Psychologist
- Neuro-optometrist
- Speech and Language Pathologist
- Audiologist
- Occupational Therapist
- Physical Therapist
- Athletic Trainer
Health Care Provides Roles and Functions throughout the Management of Sports Related Concussion

<table>
<thead>
<tr>
<th>Provider</th>
<th>Function</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician</td>
<td>E, SM, RH/T</td>
<td>P, DM, RTLP</td>
</tr>
<tr>
<td>Neuropsychologist</td>
<td>E, RH/T</td>
<td>DM</td>
</tr>
<tr>
<td>Psychologist</td>
<td>E, RH/T</td>
<td>DM, RTLP, PCM</td>
</tr>
<tr>
<td>Neuro-Optometrist</td>
<td>E, RH/T</td>
<td>DM, PCM</td>
</tr>
<tr>
<td>Audiologist</td>
<td>E, RH/T</td>
<td>DM, RTLP, PCM</td>
</tr>
<tr>
<td>SLP</td>
<td>E, RH/T</td>
<td>DM, RTLP, PCM</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>E, RH/T</td>
<td>DM, RTLP, PCM</td>
</tr>
<tr>
<td>Physical Therapist</td>
<td>E, RH/T</td>
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</tr>
</tbody>
</table>

Function: Evaluation (E), Exercise Prescription (EP), Sideline Management (SM), Rehabilitation/Treatment(RH/T), Phases- Prevention (P), Diagnosis and Management (DM), Return to Learn and Play (RTLP), Post Concussion Monitoring (PCM).

Adapted from Pabian et al, 2017, p. 126.
The Role of Education in the Recognition and Management of Concussion
How Do We Manage a Concussion?

Recognition relies on Education

Diagnosis relies on Recognition

Management relies on Diagnosis

Education will enhance Management

- 1,532 varsity football players from 20 high schools in Milwaukee, WI

- 47.3% reported their injury

- Reasons for NOT reporting:
  ✓ 66%- didn’t think the concussion was serious enough to report.
  ✓ 41%- didn’t want to leave the game
  ✓ 36%- didn’t realize a concussion was sustained
  ✓ 22%- didn’t want to let down teammates.
The Role of Education

- Bramley et al, 2012
  - High school soccer players who received concussion education (from any source) were more likely to notify coach or athletic trainer of suspected concussion than those without training.
  - Disorder only diagnosed after athlete reports symptoms.
  - Diagnosis relies primarily on the self-reporting of symptoms by the athlete (Kay et al, 2015).
  - Education considered to be the cornerstone of early identification.
The Impact of Concussion Legislation on Education

• Concussion Legislation
  ✓ 5/09/09- Washington passed the Zachary Lystedt Law
    ▪ Became the model legislation for the NFL and most states
  ✓ In January of 2014, Mississippi became the 50th, and final, state (including the District of Columbia) to pass concussion legislation.
Characteristics of Legislation

1. Key Components \textit{(Rivara, 2014)}

- ✓ Concussion Education or training
  - ➢ 43/51 mandatory concussion education for student athletes \textit{(Carroll-Alfano, 2017)}

- ✓ Removal from play in event of a suspected concussion

- ✓ Clearance by designated health care provider prior to return to play.
The Role of Education: Assumptions

1. Mandating education leads to improved outcomes (Carroll-Alfano, 2017):
   - Better self reporting
   - Increased utilization of health care for injury
   - Enhanced knowledge of concussion symptoms.
Realities....

1. Better Reporting

✅ Majority of athletes continued to play while symptomatic

✅ 40% reported that coaches were not aware of symptoms (Rivara, 2014).

✅ Majority of students understand that they are at risk if they return to soon, but only 50% of high school football players would always or occasionally tell their coaches about symptoms (Turner, 2017).

✅ Lack of recognition and reluctance to report have contributed to underreporting of youth concussions (Rivara, 2014).

✅ Increased knowledge of symptoms does not lead to more self reporting (Carroll-Alfano, 2017).

✅ Gap between reporting patterns:

✅ Gender- females more likely than males (Wallace, 2017).

✅ Socio-Economic (Turner, 2017)
Reasons for not Reporting Injury

1. Did not recognize that they had sustained an injury (Carroll-Alfono, 2017)
2. Did not think it was serious (Wallace et al, 2017)
3. Did not want to lose playing time (Wallace et al, 2017)
4. Pressure from coaches and parents to continue participation (Carroll-Alfono, 2017)
5. Culture- reporting or withdrawing from play is a sign of lack of toughness and commitment (Carroll-Alfono, 2017)
6. Not having a medical professional on-site (Kay et al, 2015)
7. Game vs. Practice (Kay et al, 2015)
8. Fear of letting people down (Kay et al, 2015)
9. Embarrassment (Register-Mihalik, 2013)
Realities....

2. Increased Utilization of Health Care

✓ Athletes who received education did not report seeking care after injury at rates higher than those who did not (Carroll-Alfano, 2017)

✓ Care generally consulted only after coaches informed parents that child might have sustained a concussion (Turner, 2017)

✓ Access to athletic trainer increased knowledge of concussion, but not the rate of reporting suspected injury to authority figure (include AT) (Register-Mihalik, 2013)

3. Enhanced Knowledge of Concussion Symptoms

✓ Parents have a general knowledge of symptoms, but fail to understand immediate steps to take following injury (Turner, 2017)

✓ Those who received education were not able to name the diverse range of symptoms (Carroll-Alfano, 2017)
Conclusions

1. Better Reporting
   ✓ Little evidence to suggest that enhanced knowledge levels result in behavior changes, including improved reporting practices (Kay et al. 2015, Carroll-Alfano, 2017).

2. Increased Utilization of Health Care
   ✓ Evidence does not support that education increases the utilization of health care.
   ✓ Access to AT may enhance education and knowledge, but utilization is dependent on a variety of factors.

3. Enhanced knowledge of Symptoms
   ✓ Evidence does not support that current education practices enhance the ability to identify symptoms.
Next Steps...

1. Traditional approach to education has been passive (Kay et al, 2015).
   - Take steps to ensure that athletes are not only provided the knowledge but understand the knowledge.
   - Delivery of education across sports and genders (Carroll-Alfano, 2017)

2. Education programs should strive to address the attitudes, beliefs and culture of reporting (Wallace et al, 2017, Carrol-Alfano, 2017).

3. Direct education at parents and coaches (Carrol-Alfano, 2017).
   - Authority Figures
   - The need to seek treatment after experiencing concussion symptoms

4. Identify the needs, learning style and specific strategies for the target audience (McCrory et al, 2017)
How are we doing in Nebraska?
### 2015 Nebraska Sports Concussion Athletic Director Survey

*NE DHHS* * NSAA * BIA-NE * NSATA*

<table>
<thead>
<tr>
<th>Question</th>
<th>2013</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal written policy for removal from play and RTP</td>
<td>63%</td>
<td>74%</td>
</tr>
<tr>
<td>Policy developed because of Concussion Awareness Act</td>
<td>75%</td>
<td>82%</td>
</tr>
<tr>
<td>Written RTL Policy for Student Athletes</td>
<td>6%</td>
<td>71%</td>
</tr>
<tr>
<td>School has made concussion training available for all coaches</td>
<td>93.9%</td>
<td>99.6%</td>
</tr>
<tr>
<td>School provides education to parents and students before start of practice</td>
<td>90.2%</td>
<td>89.5%</td>
</tr>
<tr>
<td>School requires clearance by health care profession before RTP</td>
<td>94.5%</td>
<td>96.5%</td>
</tr>
<tr>
<td>School requires written approval from parents before RTP</td>
<td>69.3%</td>
<td>71.7%</td>
</tr>
<tr>
<td>Concussion Education to teachers including RTL Management</td>
<td>32%</td>
<td>72%</td>
</tr>
<tr>
<td>Designated person for concussion management</td>
<td>34%</td>
<td>60%</td>
</tr>
</tbody>
</table>

**Athletic Directors Survey**

2013 (n= 164)  
2015 (n = 261)
# 2015 Nebraska Sports Concussion Head Coach Survey

**NE DHHS * NSAA * BIA-NE * NSATA**

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<thead>
<tr>
<th>Question</th>
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<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Available before the start of practice on signs/symptoms</td>
<td>92%</td>
<td>94.9%</td>
</tr>
<tr>
<td>Attended Concussion Training</td>
<td>91.2%</td>
<td>95.5%</td>
</tr>
<tr>
<td>School made concussion training mandatory</td>
<td>76.6%</td>
<td>90.4%</td>
</tr>
<tr>
<td>Attended at least one of the four state approved trainings</td>
<td>85.7%</td>
<td>97%</td>
</tr>
<tr>
<td>School provides education or training on the components and requirements for Concussion Awareness Act</td>
<td>72.9%</td>
<td>77.1%</td>
</tr>
<tr>
<td>Perceive the Concussion Awareness Act as effective or highly effective in allowing students to fully recover prior to RTP</td>
<td>89.1%</td>
<td>93.1%</td>
</tr>
<tr>
<td>Athletes removed due to schools policy on removal and RTP</td>
<td>90.7%</td>
<td>94.8%</td>
</tr>
<tr>
<td>Always or often notified when SA receives concussion in another sport</td>
<td>32%</td>
<td>72%</td>
</tr>
<tr>
<td>Always or often notified when a SA suffers a concussion in a non-sanctioned activity or club sport</td>
<td>34%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Head Coach Survey 2013 (n= 1,074) 2015 (n = 1,333)


11. NE Department of Education. *Bridging the Gap from Concussion to Classroom.* 2014.


References


