Mayo Clinic Sports Medicine Center

ICE HOCKEY SUMMIT II: ACTION ON CONCUSSION

October 8-9, 2013

Siebens Medical Education Building, Phillips Hall
Mayo Clinic, Rochester, Minnesota

Course Directors:
Michael J. Stuart, MD
Aynsley M. Smith, RN, PhD

This Program Jointly Sponsored with:
General Information

Course Description

The prevalence and consequences of concussion at all levels of ice hockey are concerning. Reduction of concussion risk along with improved diagnosis and management require a collaborative effort from medicine, psychology, sport science, coaching, engineering, officiating, manufacturing, and community partners. This quality scientific program will focus on education and will generate an evidence-based action plan designed to make a difference. All speakers are also being asked to discuss how gender differences influence the topic of their talk.

Course Learning Objectives

Overall Objectives:
1. To provide comprehensive, educational updates on concussions in ice hockey, including prevention, diagnosis, management and sequelae.
2. To identify a comprehensive, objective, and measurable 'action plan' to reduce the risks and consequences of concussion across levels of participation in ice hockey.

Learner Specific Objectives:
1. Identify action items from the 2010 Ice Hockey Summit that resulted in a change and those that were not implemented or effective.
2. Design logical strategies for the successful action items to ensure implementation uniformly across at all levels of hockey participation.
3. Evaluate the basic science literature, consider the macro and micro levels of evidence, and determine the pros and cons of implementation. For example, the application of pharmacogenetics based on the physiology and biomechanics of concussions.

Core Group Outcome Objectives:
1. This patient care competency is accomplished by role modeling the optimal assessment of a concussed athlete. The case will start at the time of injury, and then continue through management, and return to play demonstrating the roles of a multidisciplinary team.
2. Basic science lectures, discussion and questions will ensure attendees are updated and ready to apply their knowledge to their concussed patients.

Intended Audience

Sports Medicine Practitioner health providers (orthopedics, physical medicine and rehabilitation, neurology, neurosurgery, physical therapy, athletic training, family practice, pediatrics, emergency room medicine, neuroradiology, neuropsychology, psychiatry, sport psychology and nursing), bioengineers, sport scientists, and equipment manufacturers will all benefit and contribute.

Credit Directly Sponsored

College of Medicine, Mayo Clinic is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. College of Medicine, Mayo Clinic, designates this live activity for a maximum of 11.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Other Health Care Professionals

A certificate of attendance will be provided to other health care professionals for requesting credits in accordance with state nursing boards, athletic training (NATA) and other professional associations.

Sponsoring and Supporting Organizations

This course is jointly sponsored by the Hockey Equipment Certification Council (HECC), International Ice Hockey Federation (IIHF), Ontario Neurotrauma Foundation (ONF), and USA Hockey, along with additional support provided by The Brian Mark Family Foundation, and the Johannson-Gund endowment.

Date and Location

The Ice Hockey Summit II: Action on Concussion will be held October 8-9, 2013. The course will be located in Phillips Hall on the first floor of the Siebens Medical Education Building, Mayo Clinic, 100 Second Avenue Southwest, Rochester, Minnesota, 55905.

Registration

Due to the participatory nature of this Summit, we strongly encourage attendance both days of the Summit. To register online, visit www.mayo.edu/cme/sports-medicine-2013r042. The registration fee includes tuition, continental breakfast, refreshment breaks, a box lunch, and a reception on Tuesday evening. A letter of confirmation will be sent upon receipt of payment and completion of the registration form. Early registration is suggested. Online registration closes October 4, 2013. On-site registration will be available. All attendees will be seated in Phillips Hall.

General Information

For additional information, contact:
Carol Best, Event Planner
Mayo Clinic Sports Medicine Center
200 First Street SW
Rochester, MN 55905

E-mail: best.carol@mayo.edu
Phone: (507) 266-2466
Fax: (507) 266-1803
Website: http://www.mayo.edu/cme/sports-medicine-2013r042
General Information

Cancellation Policy

If you cancel your participation in the course, your registration fee will be refunded when written notification is received by Carol Best in the Mayo Clinic Sports Medicine Center at least 14 DAYS PRIOR TO THE COURSE (fax#: (507) 266-1803). No refunds will be made on or after a minimum of 14 DAYS PRIOR. Canceled registrations are non-transferable.

Mayo Clinic Sports Medicine Center reserves the right to cancel or postpone any course due to unforeseen circumstances. In the unlikely event the Mayo Clinic Sports Medicine Center must cancel or postpone this course, the registration fees will be refunded. Mayo Clinic Sports Medicine Center is not responsible for any related costs, charges, or expenses to participants, including fees assessed by airline/travel/lodging agencies.

Getting to Mayo Clinic

Mayo Clinic is serviced by Rochester International Airport (RST). Delta Airlines and American Airlines fly to Rochester through Minneapolis, Detroit, and Chicago. Minneapolis-St. Paul International airport (MSP) is located 75 miles north, providing direct service from most cities, via multiple airlines. Shuttle services are available from Minneapolis to Rochester on Go Rochester Direct (1-800-280-9270).

Lodging Accommodations

Guest rooms have been reserved for attendees and their guests with special course rates at the following downtown Rochester hotels. In order to receive a special rate, reservations must be made before the room block is filled or before the expiration date of September 17, 2013, whichever comes first. Reservations will be taken following this date based on space and rate availability. Please identify yourself as a participant of the "Mayo Clinic Ice Hockey Summit II: Action on Concussion" when making your reservation at one of the following hotels.

The Kahler Grand Hotel
20 Second Ave SW
Online reservations: www.thekahlerhotel.com, click on Reservation. Under the date you will see “more options” enter in the group code: 1013icehoc
Telephone reservations: 1-800-533-1655 or 507-280-6000
Rate: $99.00 single/double (plus applicable tax)

Rochester Marriott Hotel
101 First Avenue SW
Online reservations: www.rochestermarriott.com. Under the date you will be able to enter group code: mihiha
Telephone reservations: 1-877-623-7775 or 507-280-6200
Rate: $155.00 single/double (plus applicable tax)

Both the Marriott and Kahler Hotels are connected directly by skyway or pedestrian subway to the Siebens Building and are very close to downtown shops and restaurants. You may wish to visit the Rochester Convention and Visitors Bureau web site (www.rochestercvb.org) or (www.rochester411.com) for additional area information and accommodation options. These include the Hilton Garden Inn, Doubletree, and Holiday Inn.

Lodging arrangements are the sole responsibility of the individual registrant.

Parking

Parking is available in hotel, city, and Mayo patient/visitor ramps. The cost of parking is not included in the registration fee.

Call for Abstracts - Poster Presentations

Overview: The Ice Hockey Summit II: Action on Concussion will include a reception that features poster presentations. Submissions are invited on any concussion related research or educational project; including, but not limited to, rules, guidelines, outcome studies, practice innovations, or descriptive analyses. Posters will be selected from the abstracts received by the July 18, 2013 deadline.

Abstract Eligibility: All abstracts related to concussions are welcome regardless of their previous publication. It is expected that abstracts selected will be displayed, as a poster, at the Summit reception.

Abstract Deadline: Submission deadline for posters is July 18, 2013. Please complete your abstract submission form online at: http://www.mayo.edu/cme/sports-medicine-2013r042, then e-mail, mail or fax completed form to Carol Best (contact information at top of page).

Notification of Results: All primary authors will be notified by August 8, 2013, if their submission has been selected for the poster session. Details regarding poster set-up will follow.

Inquiries: For further information, contact Carol Best via phone at (507) 266-2466 or best.carol@mayo.edu. For questions pertaining to the scientific content of the abstract, please contact David Krause, PT, DSc. at (507) 284-8487 or krause.david@mayo.edu
General Information

Course Directors
Michael J. Stuart, MD
Aynsley M. Smith, RN, PhD

Faculty
Patrick Alford, PhD
Alan Ashare, MD
Mark Aubry, MD
Brian Benson, MD, PhD
Charles Burke, MD
Micky Collins, PhD
Randall Dick
David Dodick, MD
Ken Dryden, JD
Chad Eickhoff, ATR, ATC
Carolyn Emery, PhD
Alan Evans, PhD
Jonathan Finnoff, DO
Laura Flashman, PhD
Daniel Gaz, MSc
Christopher Giza, MD
Richard Greenwald, PhD
Daniel Henkel
Stanley Herring, MD
T. Blaine Hoshizaki, PhD
James Hudziak, MD, PhD
Jeffrey Kutcher, MD
Nicole LaVoi, PhD
John Leddy, MD
Alison Macpherson, PhD
Thomas McAllister, PhD
Ann McKee, MD
Jason Mihalik, PhD
Anne Moessner, RN, CNS
William Montelpare, PhD
Margot Putukain, MD
William Roberts, MD
Kathryn Schneider, PhD
Aynsley M. Smith, RN, PhD
Michael B. Stuart, BSc.
Michael J. Stuart, MD
Ron Szwalkowski
Charles Tator, MD, PhD
James Whitehead, VP, ACSM
Diane Wiese-Bjornstal, PhD

Steering Committee
Alan Ashare, MD
Mark Aubry, MD
Thomas Bergquist, PhD
Brian Benson, MD, PhD
Charles Burke, MD
David Dodick, MD
Carolyn Emery, PhD
Jonathan Finnoff, DO
Richard Greenwald, PhD
Daniel Henkel
Stanley Herring, MD
T. Blaine Hoshizaki, PhD
David Krause, PT, DSc
Nicole M. LaVoi, PhD
Brian Mark
Jason Mihalik, PhD
Winne Meeuwisse, MD, PhD
William Montelpare, PhD
Margot Putukian, MD
William Roberts, MD
Aynsley M. Smith, RN, PhD
Michael J. Stuart, MD
Charles Tator, MD, PhD
James Whitehead, VP, ACSM
Diane Wiese-Bjornstal, PhD

Faculty Disclosure
As a provider accredited by ACCME, College of Medicine, Mayo Clinic (Mayo School of CPD) must ensure balance, independence, objectivity and scientific rigor in its educational activities. Course directors, steering committee, faculty, and all others who are in a position to control the content of this educational activity are required to disclose all relevant financial relationships with any commercial interest related to the subject matter of the educational activity. Safeguards against commercial bias have been put in place. Faculty also will disclose any off-label and/or investigational use of pharmaceuticals or instruments discussed in their presentation. Disclosure of this information will be published in course materials so those participants in the activity may formulate their own judgments regarding each presentation.

MAYO CLINIC

This Program Jointly Sponsored with:

HECC
Ontario Neurotrauma Foundation
Fondation ontarienne de neurotraumatologie
UFA HOCKEY
IIHF

Additional support provided by:
The Brian Mark Family Foundation
## Tuesday, October 8, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 – 7:45 am</td>
<td>Registration and Continental Breakfast</td>
</tr>
<tr>
<td>7:45 – 7:50 am</td>
<td>Welcome from Dr. John Noseworthy</td>
</tr>
<tr>
<td>7:50 – 7:55 am</td>
<td>Introductions, Announcements and Objectives</td>
</tr>
<tr>
<td></td>
<td>Michael Stuart, MD and Aynsley Smith, RN, PhD</td>
</tr>
<tr>
<td>7:55 – 8:00 am</td>
<td>Pre-Summit Test Questions</td>
</tr>
<tr>
<td>8:00 – 8:12 am</td>
<td>The Epidemiologic Overview of Concussions in Hockey: All Levels of Participation</td>
</tr>
<tr>
<td></td>
<td>Brian Benson MD, PhD</td>
</tr>
<tr>
<td>8:12 – 8:24 am</td>
<td>Head Trauma in a Junior A Ice Hockey Team</td>
</tr>
<tr>
<td></td>
<td>Daniel Gaz, MSc.</td>
</tr>
<tr>
<td>8:24 – 8:36 am</td>
<td>Head Impact Exposure Measures in Hockey and Correlation with Clinical Measures Following Diagnosed Concussions</td>
</tr>
<tr>
<td></td>
<td>Richard Greenwald, PhD</td>
</tr>
<tr>
<td>8:36 – 8:48 am</td>
<td>Determining Forces to Head and Brain – Pros and Cons of Reconstruction Analysis in Hockey Concussions</td>
</tr>
<tr>
<td></td>
<td>T. Blaine Hoshizaki, PhD</td>
</tr>
<tr>
<td>8:48 – 9:00 am</td>
<td>When Sport Related Concussion (SRC) Forces Impact Neurons: Hypotheses Regarding How Neurons Respond</td>
</tr>
<tr>
<td></td>
<td>Patrick Alford, PhD</td>
</tr>
<tr>
<td>9:00 – 9:12 am</td>
<td>Measuring Post Concussion Behavior in an Animal Model</td>
</tr>
<tr>
<td></td>
<td>Christopher Giza, MD</td>
</tr>
<tr>
<td>9:12 – 9:27 am</td>
<td>PANEL DISCUSSION</td>
</tr>
<tr>
<td>9:27 – 9:47 am</td>
<td>BREAK</td>
</tr>
</tbody>
</table>

### Section 1
From Ice to Axon – The Basic Science of Concussion
Macro Trauma and Micro Trauma

**Learner Objectives**
1. Explain the hypotheses, variables measured, methods and results from a Junior Hockey study.
2. Describe the contributions and limitations of the HITS data collection system in relation to clinical measures.
3. Illustrate the video analysis method of determining forces sustained by Junior A hockey players.
4. Define the potential neurophysiologic responses of the “rat neuron” to sport related concussive forces.
5. Apply post-concussion behavior in an animal model to a concussed athlete.

### Section 2
The Medical Sciences, Diagnosis and Management of Concussions
**Moderator - Aynsley Smith, RN, PhD**

**Learner Objectives**
1. Describe the cellular response to head trauma and the promising target sites for pharmacologic intervention.
2. Explain how repetitive head trauma influences cognitive and emotional function of hockey players.
3. Understand the role of repetitive head impacts on chronic traumatic encephalopathy (CTE) using a prospective approach.
4. Apply the multidisciplinary team approach to the care of hockey players in your practice.

### Section 3
A Multi-Dimensional Approach to Concussion Testing
**Moderator - David Dodick, MD**

**Learner Objectives**
1. Compare contributions of neuroimaging including 3D MRI and Diffusion Tensor Imaging (DTI) in the evaluation of hockey related brain trauma.
2. Explain the contribution of genetics and epigenetics to repetitive neurotrauma in hockey players.
3. Define and expand on the role of neuropsychological testing in concussion assessment.
### Section 4

**Assessing Implementation and Success of Action Plan Priorities from Ice Hockey Summit I: Action on Concussion**  
*Moderator - Margot Putukian, MD*

**Learner Objectives**
1. Explore advances made in hockey-specific data bases and metrics since 2010 Ice Hockey Summit.
2. Describe improvements in concussion recognition, diagnosis and return to play.
3. Provide evidence to support recommended equipment and facility changes.
4. Evaluate usefulness of hockey specific concussion and prevention programs.
5. State consequences of rule changes, new policies and barriers encountered in implementation.
6. Discuss these recommendations and an implementation process to reduce concussions in hockey.

### Action Prioritized, Implemented and Evaluated from Each Sector (12 minutes per sector)

<table>
<thead>
<tr>
<th>Time</th>
<th>Presenter (in Bold)</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 – 1:12 pm</td>
<td>Aubrey/Dick/Macpherson</td>
<td>I. Data Bases and Metrics</td>
</tr>
<tr>
<td>1:12 – 1:24 pm</td>
<td>Finnoff/Herring</td>
<td>II. Recognize, Diagnose, RTP</td>
</tr>
<tr>
<td>1:24 – 1:36 pm</td>
<td>Benson/Szwalkowski/Tator</td>
<td>III. Equipment and Facilities</td>
</tr>
<tr>
<td>1:36 – 1:48 pm</td>
<td>LaVoi/Tator/Wiese-Bjornstal/Montelpare</td>
<td>IV. Education and Prevention</td>
</tr>
<tr>
<td>1:48 – 2:00 pm</td>
<td>Stuart/Emery</td>
<td>V. Rule Changes, and Enforcement</td>
</tr>
</tbody>
</table>

**2:00 – 2:12 pm**
**Policies and Programs Needed to Prevent Concussions (from the perspective of a practitioner, investigator, editor and MSHL Sports Medicine Committee chair)**  
*William Roberts, MD*

**2:12 – 2:32 pm**
**Panel Discussion**  
*Dick, Macpherson, Finnoff, Szwalkowski, Tator, Wiese-Bjornstal, Emery and Roberts* will guide discussion on the Action Items successfully implemented, not implemented and priorities for wider dissemination

**2:32 – 2:52 pm**
**BREAK**
Wednesday, October 9, 2013

Section 6
Updates on Potential Influences on Concussion
Moderator – Nicole LaVoi, PhD

Learner Objectives
1. Describe recommended tools used in assessment of concussed hockey players post Zurich 2013.
2. Explain the value of incorporating an evidence-based return to play conditioning program into your concussion practice.
3. Suggest how “Play it Cool” coaching education would benefit players in your geographical locale.
4. Are females, children and kids with EBD at greater risk of concussion?

7:30 – 7:42 am
Concussion Testing Appropriate to Ice Hockey (SCAT3, Neuropsychology and Balance Post-Concussion)
Mark Aubry, MD

7:42 – 7:54 am
Return to Play Conditioning - Testing for Symptoms and Implementing a Conditioning Program
John Leddy, MD

7:54 – 8:06 am
Coaching for Excellence and Brain Health Using “Play it Cool”:
Coaching Resistance?
William Montelpare, PhD

8:06 – 8:18 am
Are Concussion Risks Greater for Female, Pediatric or EBD Athletes?
Diane Wiese-Bjornstal, PhD

8:18 – 8:33 am
PANEL DISCUSSION
(Aubry, Leddy, Montelpare, Wiese-Bjornstal)

Section 7
Providing Acute and Post-Concussion Care
Moderator – Brian Benson, MD, PhD

Learner Objectives
1. Discuss the priorities a neurologist has to provide rink side acute concussion assessment and care to a player with an initial versus multiple concussions.
2. Identify the healthcare providers and focus areas needed on acute and post-concussion care teams.
3. Describe why some concussions are associated with a whiplash component (manifested by vestibular, oculomotor, TMJ and cervical issues).
4. Explain how a hockey coach/sport scientist incorporates diverse knowledge into on-ice player protection.

8:33 - 8:45 am
CASE STUDY: Multiple Concussions in a Professional Hockey Player
Michael J. Stuart, MD

8:45 – 8:57 am
Acute Concussion Care at the Rink: A Neurologist’s View
Jeffrey S. Kutcher, MD

8:57 – 9:09 am
Roles and Responsibilities of Acute and Post-Concussion Syndrome Care Teams
Chad Eickhoff, A.T.R., A.T.C and Anne Moessner, R.N., C.N.S.

9:09 – 9:21 am
Severe Concussion with Manifestations of Vestibular, Oculomotor and TMJ Concerns: What Can We Do?
Kathryn Schneider, PhD

9:21 – 9:33 am
A Scientist and Hockey Coach Perspective of Concussion Prevention
Jason Mihalik, PhD

9:33 – 9:48 am
PANEL DISCUSSION
(Stuart, Eickhoff, Moessner, Kutcher, Schneider, Mihalik)

9:45 – 10:00 am
BREAK

Section 8
Developing our Concussion Action Plan
Moderator – James Whitehead

Learner Objectives
1. Appreciate how priorities identified by Summit attendees can be integrated into an action plan.
2. Describe how measurable outcomes can be operationalized through democratic vote using the Audience Response System.
3. Explain how the views of high profile panel members may challenge content and implementation of our action plan.
4. Categorize and organize action items into a goal setting model (short term, intermediate and longer term goals) for each section of the action plan.
5. Complete your evaluation and answer post-summit test questions on the Audience Response System.

10:00 – 10:45 am
REPORTS FROM THE BREAKOUT SESSIONS (7 Mins Each Team):

I Basic Science of Concussions in Ice Hockey: Taking Science Forward
(Co-Presenters: McAllister, Hoshizaki)

II Acute and Chronic Concussion Care – Lets Make a Difference
(Co-Presenters: Finnoff, Collins)

III Preventing Concussions (Behaviors, Rules, Education and Epidemiology) to Measure Effectiveness
(Co-Presenters: Emery, Ashare, Macpherson)

IV The Relationship of Equipment to ASTM, ISO, BNQ Standards and HECC
(Co-Presenters: Szwalkowski, Greenwald)

V Organizational, State, National and Federal Policies and Plans
(Co-Presenters: Whitehead, LaVoi, Henkel)

10:45 – 11:05 am
High Profile Panel
For Hockey to Survive and Thrive, We MUST.....
Charles Burke, MD, Ken Dryden, JD, Carolyn Emery, PhD, Michael B. Stuart, BSc.

11:05 – 11:30 am
PANEL DISCUSSION
(Burke, Dryden, Emery, Stuart)

11:30 – 11:45 am
Placing the Ice Hockey Summit II: Action on Concussion Plan in Context and in Position for Success - Zero Tolerance for Concussion
Michael Stuart, MD and Aynsley M. Smith, RN, PhD

11:45 – 12:00 pm
Post-Summit Test Questions and Evaluations

12:00 Noon
Adjourn