Featuring: The State of the Science in SCI Rehabilitation: Informing a New Research Agenda
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New International Standards for Neurological Classification of Spinal Cord Injury

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Publisher of Topics in Spinal Cord Injury Rehabilitation, an official journal of ASIA.
The Board of Directors, Executive Staff, Committee Chairs, and the entire membership of the American Spinal Injury Association salute our valued partner, the International Spinal Cord Society, on the memorable occasion of the 50th Anniversary of its founding.

We are thrilled that this important historical milestone will be celebrated at our 2011 combined scientific meetings, and we anticipate many future years of achievements as partners in the field of spinal cord medicine and rehabilitation.
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**Congratulations to the Program Planning Committee for a job well done!**

**ISCoS Scientific Committee**

- Dr. Susan Charlifue
- Dr. Sergio Aito
- Prof. Fin Biering-Sorensen
- A/Prof. Douglas J. Brown
- Prof. Amiram Catz
- Dr. Harvinder Chhabra
- Mr. Wagih El Masry
- Prof. Hans L. Frankel
- Dr. Shinsuke Katoh
- Mr. Martin McClelland
- Dr. Marcel Post
- Dr. Gordana Savic
- Dr. Giorgio Scivoletto
- Prof. John Steeves
- Mr. Pradeep Thumbikat
- Prof. Jean-Jacques Wyndaele

**ASIA Program Committee**

- Michael Haak, M.D.
- Steve Williams, M.D.
- James Atchison, D.O.
- Deborah Backus, Ph.D., P.T.
- John Horton, M.D.
- Trever Dyson Hudson, M.D.
- Austin Nobunga, M.D., M.P.H.
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- Beth Jacobs, R.N.
- Marty Fochheimer, MPP
- Heather Russell, Ph.D.
- Jane Mitchell, R.N.
- Jennifer Hastings, P.T., Ph.D., NCS
- Pamela Ballard, M.D.
- Lisa Wenzel, M.D.
- Cheryl Vines, M.S.
Admission to all sessions of the meeting will require the registrant or guest to wear a **name badge**. This badge is available with other materials for the meeting at the Registration Desk. No admission will be permitted without this badge.

1. **Grand Hyatt Washington** is a **smoke free hotel**. Please do not smoke anywhere in the hotel.
2. **CME Credits**: Category I AMA credits will be awarded to all US physician participants. All certificates will be given in exchange for completed meeting evaluation forms on Wednesday June 8th, the concluding day of the meeting.
3. **Disclosure**: All authors were queried to determine the existence of a relationship with a corporate entity, federal agency, private grantor, or institution from which they have received something of value, or with which they have a relationship. Records are on file in the ASIA office that reflect the responses. ASIA does not view the existence of these interests as necessarily implying bias or decreasing the value of these presentations.
4. **FDA Statement**: Some drugs or medical devices presented at this meeting have not been cleared by the FDA, or have been cleared by the FDA for specific purposes only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice. ASIA policy provides the “off label” uses of a drug or medical device may be described in ASIA CME activities so long as the “off label” use of the drug or medical device is also specifically disclosed. Any drug or medical device is being used “off label” if the described use is not set forth on the product’s approved label.
5. **Photographs**: Random photographs will be taken throughout the meeting for use on the ASIA website or in published materials. If you choose not to have your picture used, please notify the registration desk.

**MEETING OBJECTIVES**

The meeting will provide participants with scientific papers, posters, invited lectures, symposia, and Instructional Courses that present the results of current research on the evaluation and treatment of individuals with spinal cord injuries. It is the objective of the educational program that all presentations be on important emerging topics in the field, presented clearly and objectively. The Program Committee selected the annual program based on attendee evaluations of previous programs, suggestions solicited from members, and the committee’s knowledge of the latest developments in the field.

The program is designed for physicians, psychologists, researchers, nurses, therapists, counselors, case managers, administrators and others who work in or have interest in rehabilitation medicine with special emphasis on spinal cord injury research and care delivery, in order that they may:

- Learn the results of new research
- Learn the results of clinical advances
- Learn how to expand the care provided in spinal cord medicine practice
- Learn about and participate in the activities of the Association
- Learn about the educational resources of the Association
- Update basic knowledge and skills
- Exchange ideas with experts and peers in spinal cord research and care
- Strengthen professional relationships

**CME ACCREDITATION STATEMENT**

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the American Academy of Orthopaedic Surgeons and the American Spinal Injury Association.

The American Academy of Orthopaedic Surgeons is accredited by the ACCME to sponsor continuing medical education for physicians.

The American Academy of Orthopaedic Surgeons designates this educational activity for a maximum of 23 **AMA PRA Category 1 Credits™**. Physicians should only claim credit commensurate with the extent of their participation in the activity.
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- state-of-the-art online archive from 1998 to present
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<th>TIME</th>
<th>Saturday, June 4, 2011</th>
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| 1:00 to 1:15 P.M. | **Introduction to Course** - Presenter: Jim Harrop/Alex Vaccaro | 2:45 to 3:00 P.M. | **Hypothermia**  
 Presenter: Bobby Kalantar  
 1. Discuss the pathophysiology of hypothermia for treatment of neuronal injuries.  
 2. Discuss beneficial results of hypothermia and current FDA status.  
 3. Discuss potential adverse reactions.  
 4. Describe current status of therapy in terms of basic science and clinical trials. |
| 1:15 to 1:30 P.M. | **Acute interventions/Neuroprotection**  
 Presenter: Prasad  
 1. Discuss members and initiatives for consortium.  
 2. Discuss general outline and methodology of evidence-based approach.  
 3. Review guidelines and options for acute treatment of SCI patients. | 3:00 to 3:15 P.M. | **BREAK** |
| 1:30 to 1:45 P.M. | **Spinal Cord Injury Guidelines**  
 Presenter: Radcliff  
 1. Discuss the anatomy and pathophysiology of acute SCI.  
 4. Discuss beneficial strategies in the ICU in terms of survival and reducing morbidities. | 3:15 to 3:30 P.M. | **Cell Based Therapies**  
 Presenter: Karl Johe  
 1. Discuss the pathophysiology of stem cells for treatment of neuronal injuries.  
 2. Discuss beneficial results of stem cells and current FDA status.  
 3. Discuss potential adverse reactions.  
 4. Describe current status of therapy in terms of basic science and clinical trials. |
| 1:45 to 2:00 P.M. | **Timing of Surgical Intervention**  
 Presenter: Jeff Rihn  
 1. Discuss the basic science work on effect of acute decompression after traumatic SCI.  
 2. Describe the protocol and implementation of the current surgical treatment of acute SCI study.  
 3. Discuss present results from the STASCIS trial. | 3:30 to 3:45 P.M. | **Proneuron**  
 Presenter: Dan Lammertse  
 1. Discuss present FDA status.  
 2. Discuss clinical outcomes of study.  
 3. Discuss potential adverse reactions. |
| 2:00 to 2:15 P.M. | **Discussion and Questions**  
 BREAK | 3:45 to 4:00 P.M. | **Geron**  
 Presenter: Linda Jones  
 1. Discuss the basic science work on effect of stem cell therapy for neurologic recovery after traumatic SCI.  
 2. Discuss beneficial results of stem cell intervention and present FDA status.  
 3. Discuss potential adverse reactions.  
 4. Describe present status of therapy in terms of basic science and clinical trials. |
| 2:15 to 2:30 P.M. | **Pharmacology/Neuroregeneration**  
 BA-210 / Anti-rho  
 Presenter: Dan Scubbia  
 1. Discuss the pathophysiology of Cethrin for treatment of neuronal injuries.  
 2. Discuss beneficial results of drug intervention and current FDA status.  
 3. Discuss potential adverse reactions.  
 4. Describe current status of therapy in terms of basic science and clinical trials. | 4:00 to 4:15 P.M. | **University of Miami Experience with Schwann Cells**  
 Presenter: James Guest  
 1. Discuss the present neurosurgery care at Miami.  
 2. Review limitations of current treatment algorithms.  
 3. Review potential newer tools and strategies to improve neurologic function. |
| 2:30 to 2:45 P.M. | **Riluzole**  
 Presenter: Jefferson Wilson  
 1. Discuss the pathophysiology of Riluzole for treatment of neuronal injuries.  
 2. Discuss beneficial results of drug intervention and present FDA status.  
 3. Discuss potential adverse reactions.  
 4. Describe current status of therapy in terms of basic science and clinical trials. | 4:15 to 4:30 P.M. | **ASIA & Progressive Hemorrhagic Injury in ASIA A & B patients**  
 Presenter: Aarabi  
 1. Discuss the Hemorrhage and SCI.  
 2. Discuss interventions to limit.  
 3. Discuss using MRI to assess injury severity. |
| 2:45 to 3:00 P.M. | **Assessment of SCI with MRI**  
 Presenter: S. Kurpad  
 1. Discuss the present imaging for SCI.  
 2. Discuss newer modalities – Diffusion tractography.  
 3. Discuss using MRI to assess injury severity and prognosis. | 4:30 to 4:45 P.M. | **Case Conference**  
 Discussion and Questions - Concluding remarks. |
State of the Science

Sunday, June 5, 2011

Please see State of the Science Schedule.

National Rehabilitation Hospital Reception

5:30 P.M. to 9:30 P.M.

Welcome Reception (all attendees) at National Rehabilitation Hospital (NHR).
Transportation to and from Reception provided from 5:30 PM to 10:00 PM. All buses are wheelchair accessible. Buses depart from 11th Street side of Grand Hyatt Hotel.
**Monday, June 6, 2011**

**Independence Foyer**

- **Continental Breakfast**

**Independence A**

### Joint Opening Session
1. Opening Welcome Remarks - given by Prof. Fin Biering-Sørensen, President, ISCoS and Michael Kennelly, M.D., President, ASIA.
2. ISCoS 50TH Anniversary - given by Prof. Fin Biering-Sørensen, President, ISCoS.
3. Guttmann Lecture - Clinical Trials in Spinal Cord Injury: Lessons Learned on the Path to Translation, given by Daniel P. Lammertse, M.D.
4. ASIA Lifetime Achievement Award - Charles H. Tator, C.M., M.D., Ph.D., FRCSC, FACS, 2011 Recipient. Presented by ASIA Past-President John F. Ditunno, Jr., M.D.
5. Sell Lecture - Value-based Health Care and Innovation in SCI Health Management, given by Gerben DeJong, Ph.D., FACRM.

**Independence Foyer**

### Refreshment Break - Independence Foyer

**Independence A**

### Paper Session 1 - Neuurology Part 1

**MODERATOR:** Brigitte Perrouin Verbe, Ph.D.

**Presenter: Monga**

1) Clinical trial to Investigate the Efficacy of Acute Sacral Neurostimulation Using a Novel Transdermal Amplitude-modulated Signal (TAMS) in Subjects with Neurogenic Detrusor Overactivity.

**Presenter: McDonagh**

2) Is Renal Tract Ultrasound Alone Effective for Detecting Calculi?

**Presenter: Singh**


**Presenter: Kumar**

4) Observations on Changes in Bladder Wall Thickness after Treatment with Tolterodine - ER and Botulinum Toxin in Patients with Detrusor Hyperreflexia after SCI.

**Presenter: Singh**


**Presenter: Singh**

6) Alpha Adrenergic Antagonists—Do they Really Relieve Outlet Obstruction?

**Independence B, C, D, E**

### Paper Session 2 - Respiratory

**MODERATOR:** William Donovan, M.D.

**Presenter: Dyson-Hudson**


**Presenter: Wadsworth**


**Presenter: Dimarco**

9) Prediction Models for Lung Function of Individuals with Motor Complete SCI.

**Presenter: Onders**


**Presenter: Silva**


**Presenter: Mueller**

12) Life Expectancy After Ventilation in a Spinal Injuries Centre.

**Independence F, G, H, I**

12:00 P.M. to 1:00 P.M.

**Lunch sponsored by Coloplast. Due to limited capacity please collect your lunch ticket for the symposium from the Coloplast stand before 11:30 Monday morning. Unreserved seats will be available on a first come basis (Independence B, C, D, E) all others lunch on your own.**
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<td><strong>Paper Session 3 - Translational Research Part 1</strong></td>
<td><strong>Paper Session 4 - Neurology Part 2</strong></td>
<td><strong>Course 2</strong></td>
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<tr>
<td>MODERATOR: Andrew Blight, Ph.D.</td>
<td>MODERATOR: Michael Kennelly, M.D.</td>
<td>1:00 P.M. to 2:30 P.M.</td>
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<tr>
<td>Presenter: Wirth</td>
<td>Presenter: Harvey</td>
<td>Multidisciplinary Approach to Dysphagia and Respiratory Care in Individuals with Spinal Cord Injury.</td>
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<td>(13) Update on a Phase I Safety Trial of Human Embryonic Stem Cell-Derived Oligodendrocyte Progenitor Cells (GRNOPC1) in Subjects with Neurologically Complete, Subacute SCI.</td>
<td>Presenter: Furlan</td>
<td>Course Chair: Kazuko Shem, M.D.</td>
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<tr>
<td>Presenter: Tansey</td>
<td>Presenter: Sako</td>
<td>Course Details on Page 21.</td>
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<tr>
<td>Presenter: Guest</td>
<td>Presenter: Seager</td>
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<td>(17) Utility of Monitoring Spinal Cord Conduction During Cell Transplantation in Incomplete SCI.</td>
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<td>Presenter: Dunham</td>
<td>Presenter: Edokpolo</td>
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<td>(18) Effect of Sulfasalazine on Neuropathic Pain Following Spinal Cord Injury.</td>
<td>(24) Intermittent Catheterization and Recurrent Urinary Tract Infection in SCI.</td>
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<td>Presenter: Kramer</td>
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<td>(15) Patterns of Sensory Preservation and Recovery after Cervical Complete SCI.</td>
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<tr>
<td><strong>Paper Session 5 - Translational Research Part 2</strong></td>
<td><strong>Paper Session 6 - Spine</strong></td>
<td><strong>Course 3</strong></td>
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<tr>
<td>MODERATOR: Keith Tansey, M.D., Ph.D.</td>
<td>MODERATOR: Hemdon Murray, M.D.</td>
<td>2:30 P.M. to 4:00 P.M.</td>
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<tr>
<td>Presenter: Smith</td>
<td>Presenter: Furlan</td>
<td>Interaction of pelvic organs after spinal cord lesion: consequences for bladder and bowel management.</td>
</tr>
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<td>(25) Pulsed Radiofrequency Denervation at the Lumbar Dorsal Roots Reduces Below-Level Neuropathic Pain in a Rat Model of Spinal Cord Injury.</td>
<td>Presenter: Furlan</td>
<td>Course Chair: Prof. Jean Jacques Wyndaele</td>
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<tr>
<td>Presenter: Kwon</td>
<td>Presenter: Furlan</td>
<td>Course Details on Page 22.</td>
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<tr>
<td>Presenter: Huang</td>
<td>Presenter: Förstenberg</td>
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<td>Presenter: Joseph</td>
<td>Presenter: Förstenberg</td>
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<tr>
<td>(26) Implications of Human Distal Sciatic Nerve Fascicular Anatomy for Ankle Control with Nerve Cuff Electrodes.</td>
<td>Presenter: Street</td>
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<td>Presenter: Street</td>
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<td>(31) Incidence and Impact of Acute Adverse Events in Patients with Traumatic SCI.</td>
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<tr>
<td>Moderator: J. Tansey, M.D., Ph.D.</td>
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<td>Independence Foyer</td>
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<tr>
<td>7:00 A.M. to 8:30 A.M.</td>
<td>ASIA Membership Meeting</td>
<td>Continental Breakfast</td>
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<tr>
<td>8:30 A.M. to 10:30 A.M.</td>
<td><strong>Joint Plenary Session</strong></td>
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<td>10:30 A.M. to 11:00 A.M.</td>
<td>Refreshment Break - Independence Foyer</td>
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<tr>
<td>11:00 A.M. to 12:30 P.M.</td>
<td><strong>Paper Session 7 - Awards Posters</strong></td>
<td><strong>Independence B, C, D, E</strong></td>
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<tr>
<td>12:30 P.M. to 1:30 P.M.</td>
<td>Lunch sponsored by Hollister, Inc. in Independence F, G, H, I</td>
<td><strong>Independence F, G, H, I</strong></td>
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**Independence A**

**Joint Plenary Session** - “The State of the Science in Spinal Cord Injury Rehabilitation: Informing a New Research Agenda” was held on Sunday, June 5, 2011. Small discussion groups consisting of a subset of the attendees met on Monday afternoon, June 6, 2011. That evening, track chairs and others assembled the notes from the discussion groups, and combined that information with the content from Sunday. This morning, in a plenary session for all attendees of the “International Conference on Spinal Cord Medicine and Rehabilitation,” the summary recommendations from the State of the Science will be presented.

**Course 4**


**Course Chair:** Fin Biering-Sørensen, M.D.

**Course Details on Page 23.**

**Paper Session 7 - Awards Posters**

- **Presenter:** Waring
- **Presenter:** Eriks-Hoogland
- **Presenter:** Owings
- **Presenter:** Stacey
- **Presenter:** Lecturer

**Presenter:** Abel

**Presenter:** Bryce

**Presenter:** Krisa

**Presenter:** Abel

**Presenter:** Lopez de Heredia
46) MRI of Pressure Sores in Spinal Cord Injured Patients.

**Presenter:** Waring
39) Lab Abnormalities with Late Stage Pressure Ulcers: Are they Really Significant?

**Presenter:** Cowan
36) Perceived Exercise Barriers and Odds of Exercise Participation among Persons with SCI Living in High Income Households.

**Presenter:** Eriks-Hoogland

**Presenter:** Stacey
38) Genetic Polymorphisms may Influence the Development and Healing of Sitting Acquired Pressure Ulcers Following SCI.

**Presenter:** Lecturer

**Presenter:** Oyster
42) Wheelchair Skill Performance of Manual Wheelchair Users with SCI.

**Presenter:** Nagy

**Presenter:** Kelly

**Presenter:** Johnston
50) Effects of Cycling on Bone and Muscle in Pediatric SCI.

**Presenter:** Klaas
51) Change in Socio-Economic Status related to Psychosocial Factors among Youth with SCI.
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<tr>
<td>1:30 P.M. to 3:00 P.M.</td>
<td><strong>Course 5</strong></td>
<td><strong>Prevention Program</strong></td>
<td><strong>Paper Session 9 - Pediatrics Part 2</strong></td>
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<td>Course Chair: Rebecca Martin, OTR/L, OTD</td>
<td>Co-moderated by Professor Douglas Brown and Michael Haak, M.D., FACS</td>
<td>Presenter: Wong</td>
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<td><strong>Course Details on Page 24.</strong></td>
<td>The focus of the ISCoS-ASIA Prevention symposium is spinal cord injury and road traffic crashes. National and international experts will present injury demographics, mechanical and engineering aspects of prevention, legislative and regulatory initiatives in the US, and international programs aimed at preventing these tragic injuries.</td>
<td>52) Prevalence of Malnutrition in Paediatric Patients Admitted to Uk Spinal Injury Centre – A Pilot Result.</td>
</tr>
<tr>
<td>3:00 P.M. to 3:30 P.M.</td>
<td>Refreshment Break - Independence Foyer</td>
<td>53) Prevalence of Vitamin D Deficiency in Youth with Spinal Cord Injury.</td>
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<tr>
<td>3:30 P.M. to 5:00 P.M.</td>
<td><strong>Course 6</strong></td>
<td><strong>Paper Session 10 - Rehabilitation and Assistive Technology Part 1</strong></td>
<td>Presenter: Nemeth</td>
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<td><strong>Course Details on Page 25.</strong></td>
<td>Presenter: Whiteneck 59) Inpatient and Post-Discharge Rehabilitation Services Provided in the First Year after SCI: Findings from the SCI Rehab Study.</td>
<td>Presenter: Heutink 61) The CONECSI Trial: A Randomized Controlled Trial of a Multi-disciplinary Cognitive Behavioral Program for Coping with Chronic Neuropathic SCI Pain.</td>
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<tr>
<td>5:00 P.M. to 7:00 P.M.</td>
<td>Cocktail Reception hosted by Asubio Pharmaceuticals, Inc - Wilson Room (by invitation only).</td>
<td><strong>Course 7</strong></td>
<td><strong>Course Chair:</strong> Michael W. Keith M.D.</td>
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<tr>
<td>7:00 P.M. to 11:00 P.M.</td>
<td>Dinner Dance - Independence A</td>
<td><strong>Course Details on Page 26.</strong></td>
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**Wednesday, June 8, 2011**

**Independence Foyer**

### Continental Breakfast

- **Time:** 7:00 A.M. to 8:00 A.M.

### Independence A

#### Joint Plenary Session

- **Awards Papers Presentation**
  - **Moderator:** Suzanne Groah, M.D.
  - **Presenter: Kennelly**
    - 64) Clinical and Urodynamic Outcomes with Intradetrusor Injections of OnabotulinumtoxinA in Patients with Neurogenic Detrusor Overactivity Related to SCI.
  - **Presenter: Richardson**
  - **Presenter: Benito**
  - **Presenter: Krause**
    - 67) Do Risk Factors for Mortality after SCI Parallel those from the General USA Population?
  - **Presenter: Kwon**

- **ISRT Lecture** - Functional Regeneration into and Beyond the Glial Scar. **Prof. Jerry Silver**

- **Awards Presentation:** Best Papers/Posters, Apple Award, Schmidt/Sell Research Grant presented by Suzanne Groah, M.D., Research and Awards Committee Chair.

- **Introduction to ISCoS 2012 in London.**

### Refreshment Break - Independence Foyer

- **Time:** 10:00 A.M. to 10:30 A.M.

### Independence B, C, D, E

#### Paper Session 11 - Rehabilitation and Assistive Technology Part 2

- **Moderator:** Lisa Harvey, P.T.
  - **Presenter: Saunders**
    - 70) A Longitudinal Study of Depression after SCI.
  - **Presenter: Velstra**
    - 71) The European GRASSP Responsiveness Study: Advanced Insights in the Recovery of Patients with cervical SCI.
  - **Presenter: Stevens**
    - 72) Impact of Underwater Treadmill Training on Functional Mobility in Adults with Incomplete SCI's.
  - **Presenter: Giordano**
    - 73) Driving for Happiness: Modified Vehicles and Health-Related Quality of Life after SCI.
  - **Presenter: Carter**
  - **Presenter: Ljungberg**
    - 75) Disparities in Wheelchair Type, Wheelchair Skill Level, and Community Participation by Payer Source.

### Independence F, G, H, I

#### Paper Session 12 - Survival / Life Expectancy

- **Moderator:** J. Scott Richards, Ph.D., ABPP
  - **Presenter: DeVivo**
  - **Presenter: Chen**
  - **Presenter: DeVivo**
    - 78) Gains in Life Expectancy after SCI by Preventing Individual Causes of Death.
  - **Presenter: Krause**
  - **Presenter: Noonan**
    - 80) Building a Health Progression Model to Evaluate Long-term Outcomes for People with Traumatic SCI.
  - **Presenter: Middleton**

### Networking session for SCI physical therapists. Open to all SCI physical therapists - McPherson Room (all others lunch on your own).
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<td><strong>Course 9</strong> Secondary Complications in Spinal Cord Injury Across the Continuum: Predicting the Impact and Optimizing Management Strategies. <strong>Course Chair:</strong> Marcel F. Dvorak, M.D. <strong>Course Details on Page 28.</strong></td>
<td><strong>Paper Session 13 - Rehabilitation and Assistive Technology Part 3</strong> <strong>MODERATOR:</strong> Greg Nemunaitis, M.D. <strong>Presenter: Smith</strong> 82) Electromyographic Characteristics and Muscle Involvement Patterns of Phasic Spasms in Patients with SCI: Background Study to Determine Applicability of Implantable High-Frequency Nerve Blockade for Spasm Control. <strong>Presenter: Lee</strong> 83) Effect of 6 Weeks Aerobic Exercise using the Motor Driven Rowing Machine in Persons with SCI. <strong>Presenter: Gorman</strong> 84) Robotic Treadmill Training Improves Peak Exercise Capacity in Chronic Motor Incomplete SCI: A Pilot Controlled Clinical Trial.</td>
<td><strong>Paper Session 14 - Free Papers Part 1</strong> <strong>MODERATOR:</strong> Gordana Savic, M.D. <strong>Presenter: Chen</strong> 88) A Comparison of Medicare Patients in the SCI Model System Database and National Medicare Databases. <strong>Presenter: Bergström</strong> 89) Outcomes of Lower Limb Fractures After Spinal Cord Injury. <strong>Presenter: Johanson</strong> 90) Upper Limb Motor Control after Tendon Transfer in Tetraplegia.</td>
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Functional Regeneration into and Beyond the Glial Scar

Jerry Silver, Ph.D. to Present 2011 ISRT Lecture

The ISRT Lecture, a staple at every meeting of the International Spinal Cord Society (ISCOs) will be given this year by Jerry Silver, Ph.D. Dr. Silver received his Ph.D. from the Case Western Reserve University in 1974, and was the recipient of the Herbert S. Steuer Memorial Award for Meritorious Original Research in Anatomy. He did post-doctoral work at Harvard University in the Department of Neurosciences at The Children’s Hospital and in the Neuropathology Department at Harvard Medical School. He is currently Professor in the Department of Neurosciences at the Case Western Reserve University School of Medicine and adjunct Professor in the Department of Neurosurgery at the Cleveland Clinic Foundation.

In 2003, Dr. Silver was awarded the Ameritec Prize for significant accomplishments toward a cure for paralysis. Also that year, he was honored with the Christopher Reeve-Joan Irvine Research Medal for critical contributions that may lead to the promotion of repair of the damaged spinal cord. In 2004, Dr. Silver received the Jacob Javits Neuroscience Investigator Award for his longstanding grant entitled “Factors affecting regeneration through the glial scar.” Dr. Silver received the Erica Nader Award from the American Spinal Injury Association (ASIA) in 2008 for breakthrough research in the field of spinal cord injury. This year, he was honored to become a fellow of the American Association for the Advancement of Science.

Dr. Silver has served on a number of editorial boards. He regularly reviews articles for over 35 high impact journals and reviews grants for 18 national and international organizations. He has served on a variety of NIH study sections since 1982, and has been appointed as a regular member of the Scientific Advisory Council of the Christopher Reeve Foundation and of the Scientific Board of the International Spinal Research Trust (ISRT) which sponsors this annual lecture.
Spinal Cord, the official journal of the International Spinal Cord Society (ISCoS), deals with all aspects of spinal anatomy, physiology and lesions (injury and disease). Spinal Cord is a multi-disciplinary forum for basic science, clinical and applied studies, psychology and epidemiology of spinal injury and disease from around the world, and is essential reading for everyone involved in the research and management of these conditions.

For more information visit www.nature.com/sc
AWARDS ELIGIBLE

Presenter: Beauregard
1) Community Needs of People Living with Spinal Cord Injury and Their Families.

Presenter: Cowan
2) Perceived Exercise Barriers and Odds of Exercise Participation Among Persons with SCI Living in High Income Households.

Presenter: Eriks-Hoogland

Presenter: Stacey
4) Genetic Polymorphisms may Influence the Development and Healing of Sitting Acquired Pressure Ulcers Following Spinal Cord Injury.

Presenter: Waring
5) Lab Abnormalities with Late Stage Pressure Ulcers: Are They Really Significant?

Presenter: Wong
6) How Nutritional Risk is Assessed and Managed in Patients with Spinal Cord Injuries (SCI) - Result From a UK Multi Centre Study.

Presenter: Kennedy

Presenter: Oyster

Presenter: Nagy

Presenter: Abel

Presenter: Bryce

Presenter: Lopez de Heredia
12) MRI of Pressure Sores in Spinal Cord Injured Patients.

AUTONOMIC SYSTEM

Presenter: Costa
13) Preliminary Results with New Botulinum Toxin A (BoNTA) in Refractory Detrusor overactivity in SCI Patients.

NEUROUROLOGY

Presenter: Wang
14) What is Wrong with the Assessment of Spasticity, the Method Itself or the Way the Method is Used or the Results are Interpreted?

Presenter: Burki
15) Significance of Upper Tract Abnormalities Identified on Ultrasound During Follow Up of Neurogenic Bladder Patients.

Presenter: Burki

Presenter: Lynch
17) Neurological Complications of Aging with Chronic SCI.

Presenter: Kosaka
18) Anatomical Analysis of Cervical Posterior Fusion (Roy-Camille Lateral Mass Screw) with Enhanced Cervical CT Scan.

Presenter: Yoo

Presenter: Solonchuk
20) Alterations in Electromyography Parameters During the Late Stage of Traumatic Spinal Cord Injury.

Presenter: Lin
21) Bladder Recovery and Sphincter Regeneration in Chronic Spinal Cord Patients Treated with a Peripheral Nerve Graft, Acidic Fibroblast Growth Factor, and Chondroitinase ABC.

PEDiatrics and ADOLESCENTS

Presenter: Pegrum
22) An Objective Case Controlled Study: Does Cervical Muscle Adaptation in Male Rugby Players Aged 13-18 Occur when Compared to Age Matched Controls?

 Presenter: Hartley
23) YIPES: Youth Injury Prevention Education at Shepherd.

REHABILITATION AND ASSISTIVE TECHNOLOGY

Presenter: Garrett
24) The Effect of Age at Injury on Outcomes in Adults with Pediatric-Onset SCI.

Presenter: Jackson

Presenter: Collinger
31) Attitude towards Brain-Computer Interface Technology among Veterans with Spinal Cord Injury.

Presenter: Barthélemy

Presenter: Atluri
33) Effects of Backrest Elevation of Transport Stretcher/Gurney on Sacral Interface Pressure.

Presenter: Gorman
34) Robotic Treadmill Training does not Improve Timed Measures of Ambulatory Function in Chronic Motor Incomplete SCI: A Pilot Controlled Clinical Trial.

Presenter: Tamburella
POSTERS

Presenter: Liu
36) The Effects of Functional Electrical Stimulation Cycling Exercise on Neurogenic Bowel in Patients with Spinal Cord Injury.

Presenter: Dechter
37) Nocturnal Home Turning Schedule for Pressure Relief among Persons with SCI.

Presenter: Somers

Presenter: Graham
39) The Use of Leisure Time Technology by Patients Hospitalized for SCI.

Presenter: Bersch
40) The Importance of the Intensity and the Number of Sessions per Week of Functional Electrical Stimulation (FES) in Patients with Post Traumatic Spinal Cord Injury (SCI).

Presenter: Jaramillo

Presenter: Hitzig

Presenter: McClure

Presenter: Hartley
44) Improving Quality of Life Through Treatment and Community Reintegration for Individuals with High Tetraplegia; Shepherd Center High Tetra Program.

Presenter: Joo
45) Contractile Response to Acetylcholine of Colonic Muscle is Related to the Change of Muscarinic Receptor in Spinal Cord Injured Rat.

Presenter: Nash
46) An Aspirin Pro-Drug Rapidly Improves Fasting and Postprandial Glycemia and Lipemia in Persons with Chronic Tetraplegia: Preliminary Findings.

Presenter: Triolo

Presenter: Arora

Presenter: Zanca

Presenter: Craven

Presenter: Wolfe
51) Unfractionated Heparin vs Low Molecular-Weight Heparin as Prophylaxis Against Venous Thromboembolism post SCI: A Meta-Analysis.

Presenter: Berliner

Presenter: Backus

Presenter: Backus

Presenter: Wallace

Presenter: Gorgey

Presenter: Hong
57) How do VA Clinicians Prescribe and Perceive Power-Assist Wheelchairs?

Presenter: Gorgey
58) Effects of Neuromuscular Electrical Stimulation Resistance Training on Ectopic Adipose Tissue and Insulin Growth Factors-1 Profile in Men with SCI.

RESPIRATORY MANAGEMENT

Presenter: Karlsson
59) Increasing Incidence of Ventilator Dependent Patients Requires Reorganisation of SCI Care.

SPINE

Presenter: Enishi
60) Significant Fracture-Dislocation of the Thoracic or Lumbar Spine Without Neurologic Deficit: A Report of Two Cases.

Presenter: Matsuoka
61) Anterior Cervical Discectomy and Fusion with Titanium Cage for Cervical Spinal Disease.

Presenter: Ishikawa

Presenter: Wallace
63) Use of High Voltage Electrical Stimulation for Healing of Recalcitrant Pressure Ulcers in Patients with Spinal Cord Injury.

Presenter: Nakao
64) Panspinal Epidural Abscess without Fever: An Unusual Case Due To Streptococcus Intermedius.

Presenter: Nakao
65) Distal embolic brain infarction due to recanalization of asymptomatic vertebral artery occlusion resulting from cervical spine injury. Case report.

SURVIVAL/ LIFE EXPECTANCY

Presenter: Furlan

Presenter: Kalke
67) Demographic Changes and trends in the Spinal Cord Injury Centre in Ulm / Germany.

Presenter: Lakra
68) A Comparative Study Assessing the Impact of Social Counseling on Quality of Life Among Males and Females with Spinal Cord Injuries.

Presenter: Onder
69) Incidence of Acute Hepatitis B in Patients with Spinal Cord Injury.

TRANSLATIONAL RESEARCH

Presenter: Guilcher

(Continued next page)
**TRANSLATIONAL RESEARCH**

(Continued)

**Presenter: Thompson**

**Presenter: Pomerantz**

**Presenter: Swaine**

**Presenter: Hitzig**
74) The Spinal Cord Injury Participation and Quality of Life (Par-QoL) Web-Based Tool-Kit.

**Presenter: Soril**
75) Modeling the Provision of Care for Patients with Traumatic SCI in British Columbia.

**Presenter: Fingas**
76) Classifying Neurological Impairment and Spinal Column Injuries: Does Administrative Coding Accurately Represent Clinical Diagnoses?

**Presenter: Rasheed**
77) Improving Spinal Cord Injury Services in Canada through Accreditation.

**Presenter: Rasheed**
78) Providing Incentives to Primary Care Physicians for Increasing Their Knowledge in SCI.

**Presenter: Ljungberg**
79) Barriers for Newly Injured Individuals with SCI Returning to the Community.

**Presenter: Hsieh**
80) Rehabilitation Outcomes in People with Spinal Cord Disease.

**Presenter: Dvorak**

**Presenter: Craven**
82) Fragments 1.0: Initiating Changes in Sublesional Osteoporosis Management through a Case Based Tool Developed from “Best Evidence” and Practice.

**Presenter: Hsieh**
83) Best Practice Implementation: Physical Therapy Outcome Measures in SCI.

**FREE PAPERS**

**Presenter: Babamohamadi**
84) Coping Strategies Used By People With Spinal Cord Injury: A Qualitative Study.

**Presenter: Rathore**
85) Suicide bombing as an Unusual Cause of Spinal Cord Injury: A descriptive Case series from Pakistan.

**Presenter: Murphy**

**Presenter: van Koppenhagen**
87) Physical Capacity After Spinal Cord Injury in a Follow Up Cohort Study 5 Years After Discharge and the Effects of Loss to Follow Up.

**Presenter: Kennedy**

**Presenter: Wong**
89) A Three-Stage Evaluation of the Spinal Nutrition Screening Tool (SNST) in Patients with Spinal Cord Injuries (SCI) - Result From a UK Multi Centre Study.

**Presenter: Dalal**

**Presenter: Banovac**

**Presenter: Banovac**
92) Is Diabetes Mellitus More Common After Spinal Cord Injury?

**Presenter: Perret**
93) Development of Exercise Performance after First Rehabilitation in Subjects with Spinal Cord Injury.

**Presenter: Alexander**
94) Ampyra in Acute AIS B SCI without Preservation of Pinprick.

**Presenter: Scivoletto**

**Presenter: Scivoletto**
96) Recovery Following Ischemic Myelopathies And Traumatic Spinal Cord Lesions.

**Presenter: Farnan-Kennedy**
97) A Subspecialty Nursing Certification in Spinal Cord Injury: An Idea Whose Time has Come?

**Presenter: de Groot**
98) Prospective Analysis of Lipid Profiles in People with Spinal Cord Injury from 1 Year to 5 Years After Discharge of Inpatient Rehabilitation.

**Presenter: Gururaj**

**Presenter: Raghav**
100) Efficacy of Peer Counseling in Facilitating Health Adjustment of People with SCI in South-East Asian Countries.

**Presenter: Rauch**

**Presenter: Franke**
102) Development of Arm Hand Skilled Performance Up to 5 Years After Inpatient Rehabilitation in Persons with a Cervical Spinal Cord Injury.

**Presenter: New**
103) Admission Delays for Patients Referred to a Spinal Rehabilitation Unit.

**Presenter: New**

**Presenter: Angel**

**Presenter: Forchheimer**

**Presenter: Furlan**
107) A Validation Study of the National Intestinal Transit Study is an Essential Supplement for Defining Severity of Bowel Dysfunction in Patients with SCI: Correlation with Clinical Score.

**Presenter: Rutberg**

**Presenter: Bazocchi**
109) Intestinal Transit Study is an Essential Supplement for Defining Severity of Bowel Dysfunction in Patients with SCI: Correlation with Clinical Score.

**Presenter: Tate**
110) Neurological Level of Injury as a Factor in Depression and the Use of Anti-depressants Among SCI-D Inpatients.
**POSTERS**

**Presenter: von Groote**  
111) International Perspectives on Spinal Cord Injury (IPSCI).

**Presenter: Eriks-Hoogland**  

**Presenter: Oleson**  
113) Late Complications of Intrathecal Baclofen Pump Management.

**Presenter: Rauch**  

**Presenter: Post**  

**Presenter: Brinkhof**  
116) SCI Characteristics and Outcomes of First Rehabilitation: First Evidence from the Swiss Spinal Cord Injury Cohort Study (SwiSCI).

**Presenter: Eelmae**  

**Presenter: van Leeuwen**  
118) Structural Relationships Between Personal Factors, Functioning and Subjective Quality of Life.

**Presenter: Brurok**  
119) Arm Cycling combined with Lower Extremity Vascular Occlusion Enhance VO2 Peak in Persons with High Level SCI.

**Presenter: Erhan**  
120) Ultrasonographic Evaluation of Elbow Joint And Triceps Tendon Among Paraplegic Patients: A Preliminary Controlled Study.

**Presenter: Tørhaug**  
121) Arm Cycling Combined with Passive Leg Cycling enhance VO2 Peak in Persons with Spinal Cord Injury Above the 6th Thoracic Vertebra.

**Presenter: Rauch**  

**Presenter: Meagher**  

**Presenter: Lopez de Heredia**  

**Presenter: Savas**  
125) Neuropathic Pain in Patients with Spinal Cord Injury.

**Presenter: Hagen**  
126) Health-Related Quality of Life Among Patients with Traumatic Spinal Cord Injuries.

**Presenter: Aito**  

**Presenter: Lin**  

**Presenter: Lin**  
129) Occupational Therapy Workforce in the United States: Forecasting Nationwide Shortages.

**Presenter: Latt**  
130) Analysis of New Spinal Cord Injury Admissions over a 10 year Period in a UK centre.

**Presenter: Swaine**  

**Presenter: Sarhan**  
132) Complications Following SCI During the Acute Phase.

**Presenter: Tow**  

**Presenter: Hussain**  
134) Extensive Dermatitis Artefacta in a Longstanding T4 Paraplegic Below the Level of Lesion.

**Presenter: Rupp**  

**Presenter: Thumbikat**  
136) Pressure Ulcers in the Immediate Post Injury Period.

**Presenter: Werhagen**  

**Presenter: Radhakrishna**  
138) Direct Cost of Care in Individuals Sustaining Spinal Cord Injuries from Motor Vehicle Collisions in the Province of Quebec.

**Presenter: Craven**  

**Presenter: Murray**  
140) Ten Things You Might Not Know about SCIs Worldwide.

**Presenter: Noonan**  
141) Bladder Dysfunction in Patients with Thoraco-lumbar Spinal Cord Injuries: A Long Term Follow-up Study.

**Presenter: Hosier**  

**Presenter: Walden**  

**Presenter: Delparte**  

**Presenter: Craven**  
146) Impairment and Rehabilitation Outcomes of Ontarians with Traumatic and Non-Traumatic SCI.

**Presenter: Wolfe**  

**Presenter: Islam**  
148) Pressure Ulcer: Current Status and Preventing Health Behaviour Utilised by Commonly Reading People with Spinal Cord Lesion (SCL) in Bangladesh.

**Presenter: Hasan**  

**Presenter: Yeo**  
150) Is The Progressive Necrosis Which Occurs in the Contused Spinal Cord Reversible?
Clinical Trial Outcome Measures for Acute/Sub-acute Cervical AIS-A SCI

Date: Monday, June 6, 2011
Time: 10:30 A.M. - 12:00 P.M.
Room: Independence A

Educational Objectives:
1. Update meeting participants about recent advances in clinical trial outcome measures (neurological and functional activities).
2. Discuss the strengths and limitations of these outcome measures.
3. Examine the merits of each outcome category to identify biological activity of a therapeutic and/or a clinically meaningful (i.e. functional) benefit.
4. Identify future goals and/or developments necessary for the assessment of clinical endpoints.

Synopsis:
Effective treatment after cervical SCI is imperative as so many activities of daily living are dependent on the functional recovery of arm and hand capacity. Here we focus on defining and comparing primary and secondary neurological and functional endpoints that might be used during acute or sub-acute Phase 2 clinical trials involving subjects with cervical sensorimotor complete SCI (ASIA Impairment Scale, AIS-A). For the purposes of this course, the trial would be examining the effects of a pharmaceutical drug, small molecule or cell transplant on spinal tissue. Thus, neurological recovery is the intended consequence, which is most directly measured by assessing neurological impairment (e.g. motor aspects of ISNCSCI).

The challenge for clinical science is to measure improvement as precisely as possible (e.g. neurological impairment), but to define a clinically meaningful response in the context of functional improvement (impact on activity limitations).

Course Chair:
John Steeves, Ph.D., UBC, Vancouver, BC, Canada.

Faculty:
Kimberly Anderson, Ph.D., U. Miami, Miami, FL, USA.
Andrew Blight, Ph.D., Acorda Therapeutics Inc., Hawthorne, NY, USA.
Linda Jones, P.T., Geron Corp., Menlo Park, CA, USA.
Daniel Lammertse, M.D., Craig Hospital, Denver, CO, USA.
Sukhvinder Kalsi-Ryan, M.Sc., U. Toronto, Toronto, ON, Canada.
John (Kip) Kramer, Ph.D. (candidate), UBC, Vancouver, BC, Canada.

Funding Source: None.

This course represents the ongoing work of SCOPE (Spinal Cord Outcomes Partnership Endeavor).
Instructional Course - 2

Multidisciplinary Approach to Dysphagia and Respiratory Care in Individuals with Spinal Cord Injury

Date: Monday, June 6, 2011
Time: 1:00 P.M. to 2:30 P.M.
Room: Independence F, G, H, I

Educational Objectives:
1. Best practices for clinical management of dysphagia in individuals with spinal cord injury including incidences, identification of risk factors, and medical complications will be reviewed.
2. Best practices for evaluation and monitoring of dysphagia in individuals with spinal cord injury including bedside swallow evaluation and videofluoroscopy swallow study will be discussed.
3. Respiratory monitoring and secretion management in SCI are vital prerequisites for the management of dysphagia – strategies employed to optimize pulmonary hygiene will be discussed.

Synopsis:
Dysphagia is known to occur in a significant number of individuals with spinal cord injury (SCI) presenting in acute care and inpatient rehabilitation. It is estimated that 17% of individuals with SCI have dysphagia at admission to inpatient rehabilitation.

Our current prospective study has found dysphagia in 40% of individuals with tetraplegia who have been injured less than one month. Tracheostomy, nasogastric tube, and age have been found to be significant risk factors.

The detrimental consequences of swallowing dysfunction in SCI include transient hypoxemia, chemical pneumonitis, mechanical obstruction, atelectasis, bronchospasm, and pneumonia. Thus, early and accurate diagnosis of swallowing dysfunction is felt to be imperative to reduce the risk of developing life-threatening complications.

This presentation will review the incidence of dysphagia, to discuss the use of bedside swallow evaluation (BSE) and videofluoroscopy swallow study (VFSS) to diagnose dysphagia, and to identify associated risk factors for and management of dysphagia in individuals with SCI. A speech pathologist will describe BSE as a screening tool as reliable as the VFSS for individuals with SCI. The role of respiratory therapists in the care of individuals with SCI who have dysphagia also needs to be recognized.

Improved secretion management and respiratory stabilization enable the individuals with dysphagia to be evaluated sooner and safely by a speech pathologist. A respiratory therapy clinician will describe interventions / aggressive respiratory management such as using assist cough machine and high tidal volume ventilation, and a speech pathologist will describe the use of Passy Muir Valve for swallowing and vocalization.

Course Chair:
Kazuko Shem, M.D., Associate Chief, Department of Physical Medicine & Rehabilitation, Santa Clara Valley Medical Center, San Jose, CA, USA.

Faculty:
Kathleen Castillo, M.A., CCC-SLP, BRS-S. Speech Pathologist, Department of Physical Medicine and Rehabilitation, Santa Clara Valley Medical Center, San Jose, CA, USA.
Craig Ivie, RCP-NPS. Director, Respiratory Care, Santa Clara Valley Medical Center, San Jose, CA, USA.

Funding Source:
NIDRR Field Initiated Grant #H133G080165.
Instructional Course - 3

Interaction of Pelvic Organs After Spinal Cord Lesion: Consequences for Bladder and Bowel Management

Date: Monday, June 6, 2011
Time: 2:30 P.M. - 4:00 P.M.
Room: Independence F, G, H, I

Educational Objectives:
1. Learn about the physiology and pathophysiology of interaction between bladder and bowel.
2. Learn how bladder management, as after spinal cord injury, can influence bowel function.
3. Learn how bowel management can influence bladder function.
4. Learn how bladder and bowel function influence sexuality.

Synopsis:
There is increasing evidence that urinary bladder and bowel have close neurophysiologic interactions. When the function becomes disturbed, as after spinal cord lesion, the interaction has consequences on the urinary and bowel management. During this course it will be explained how, in our actual knowledge, such interaction needs to be dealt with. The influence of bladder and bowel function on sexuality will be discussed.

Course Chair:
Prof. Jean Jacques Wyndaele, University Hospital Antwerp, Edegem, Belgium.

Faculty:
Marcalee Sipski Alexander, M.D., Reno, NV, USA.
Inder Perkash, M.D., Palo Alto, CA, USA.
Michel Wyndaele, M.D., University Antwerp, Edegem, Belgium.

Funding Source: None.
Using the Spinal Cord Injury Common Data Elements: A Workshop

Date: Tuesday, June 7, 2011
Time: 11:00 A.M. to 12:30 P.M.
Room: Independence A

Educational Objectives:
1. Understand how consistent variable names and a common database structure are developed for the data elements in the International Spinal Cord Injury (SCI) Data Sets.
2. Learn how database structures can benefit collection and sharing of clinical data sets from trials and other clinical research studies.
3. Gain familiarity with the range of datasets developed and under development for SCI and learn to implement their use in both clinical practice and clinical research.

Synopsis:
Objective: To offer a workshop that describes the development of consistent variable names and a common database structure for the elements in the International SCI Data Sets.
Setting: NINDS, NIH, the CDE Project and The Executive Committee of the International SCI Standards and Data Sets committees (ECSCI).
Methods: The NINDS CDE Team creates variable names for each data element in the various International SCI Data Sets. ECSCI members review these in an iterative process to make variable names logical and consistent across data sets. Following this process, the working group for the particular data set reviews the variable names, and further revisions and adjustments are considered. In addition, a database structure for each data set was developed allowing data to be stored in a uniform way, thus promoting data sharing across different studies.
Results: The International SCI Data Sets variable names and database specifications will be available through the websites of the International Spinal Cord Society (ISCoS) (www.iscos.org.uk), the American Spinal Injury Association (ASIA) (www.asia-spinalinjury.org), and the NINDS CDE Project website (www.CommonDataElements.ninds.nih.gov).

Course Chair:
Fin Biering-Sørensen, M.D., D.M.Sc.

Faculty:
Fin Biering-Sørensen, M.D., DMSc – Clinic for Spinal Cord Injuries, NeuroScience Centre, Rigshospitalet, University of Copenhagen, Copenhagen, Denmark.
Susan Charlifue, Ph.D. – Craig Hospital, Englewood, CO, USA.
Michael J. DeVivo, DrPH – Department of Physical Medicine and Rehabilitation, University of Alabama at Birmingham, Birmingham, AL, USA.
Stacie T. Grinnon, M.Sc. – KAI Research, Inc. (An Altarum Company), Rockville, MD, USA.
Naomi Kleitman, Ph.D. – National Institutes of Health/National Institute of Neurological Disorders and Stroke (NIH/NINDS), Bethesda, MD, USA.
Yun Lu, Ph.D. – KAI Research, Inc. (An Altarum Company), Rockville, MD, USA.

Funding Source:
The Common Data Element Project is funded by the National Institute of Neurological Disorders and Stroke, National Institutes of Health (Contract #N01-NS-7-2372).
Course Chair:
Rebecca Martin, OTR/L, OTD, Manager of Clinical Education and Training, International Center for Spinal Cord Injury at Kennedy Krieger, Baltimore, MD, USA.

Faculty:
Kimberly Obst, OTR/L, Senior Occupational Therapist, International Center for Spinal Cord Injury at Kennedy Krieger, Baltimore, MD, USA.
Cristina Sadowsky, M.D., Medical Director, International Center for Spinal Cord Injury at Kennedy Krieger, Baltimore, MD, USA.
John W. McDonald, M.D., Ph.D., Director, International Center for Spinal Cord Injury at Kennedy Krieger, Associate Professor, Johns Hopkins University School of Medicine, Baltimore, MD, USA.

Funding Source: None.

Instructional Course - 5

Functional Electrical Stimulation in SCI: From Theory to Practice

Date: Tuesday, June 7, 2011
Time: 1:30 P.M. to 3:00 P.M.
Room: Independence A

Educational Objectives:
1. Identify appropriate candidates for FES usage, based on reviewed indications, precautions, and contraindications.
2. Establish achievable and pertinent functional outcomes utilizing FES.
3. Become familiar with physiologic basis of FES usage and how to alter treatment parameters to gain a desired response.

Synopsis:
This course will outline steps to practical application of functional electrical stimulation (FES) within Activity-Based Restorative Therapy (ABRT). Drawing from current evidence, the panelists will discuss specific applications of FES intended to help restore function lost to spinal cord injury and associated neurologic disease. The medical and therapeutic indications, precautions and contraindications will be reviewed to help participants with appropriate patient selection, treatment planning, and assessment. Panelists will discuss the physiological implications of FES and how to alter parameters, including dosing and timing, for a desired response. Approaches to improve cortical representation and motor learning, as well as transitioning emerging movement into functional tasks will be discussed.
Instructional Course - 6

Activity-based Therapies in Spinal Cord Injury: Clinical Focus and Empirical Evidence in Three Independent Programs

Date: Tuesday, June 7, 2011  
Time: 3:30 P.M. - 5:00 P.M.  
Room: Independence A

Educational Objectives:
1. Describe the theoretical basis and treatment modalities used in activity-based therapy programs.
2. Describe and contrast the approaches used in three different activity-based therapy programs.
3. Present findings of initial empirical studies examining the efficacy of activity-based therapy in promoting neuromotor recovery after SCI.
4. Discuss the cost-effectiveness of activity-based therapy and guidelines for determining which individuals are likely to benefit from therapy.

Synopsis:
Activity-based therapy refers to “interventions that target activation of the neuromuscular system below the level of the lesion, with the goal of retraining the nervous system to recover a specific motor task” (Behrman & Harkema, 2007). Intense physical activity has been shown to improve physiological function and health outcomes in individuals with chronic (> one year post-injury) spinal cord injury. The effects of intense activity on recovery of neurological functioning, however, have not been fully investigated nor verified. This symposium will examine the potential impact of “activity-based therapies” in promoting neurological recovery. The symposium will address the following topics concerning activity-based therapy in SCI: • Clinical approaches used – a comparison and contrast of four activity-based therapy programs; • Empirical evidence, including preliminary results from a RCT, supporting efficacy of activity-based therapy in promoting neurological recovery and improving overall health, fitness, and quality of life; • Discussion of issues related to longterm viability of activity based therapy, including cost-effectiveness of therapy, and success of efforts to maintain gains achieved from therapy. The symposium will consist of several planned talks addressing these topics, followed by a panel discussion to promote audience participation. The interactive panel discussion will focus on identifying next steps needed (future research) to validate the effects and cost-effectiveness of activity-based therapy in recovery after SCI.

Course Chair:  
Michael Jones, Ph.D., Vice President, Research and Technology, Shepherd Center, Atlanta, GA.

Faculty:  
Candy Tefertiller, P.T., Director of Physical Therapy, Craig Hospital, Englewood, CO.  
Eric Harness, CSCS, CSRS III, Director of Research and Development, Project Walk Spinal Cord Injury Recovery Program, Carlsbad, CA.  
Paula Denison, P.T., OMPT Administrative Director, Center for Spinal Cord Injury Recovery, Rehabilitation Institute of Michigan, Detroit, MI.

Funding Source:  
“Evaluating the Effects of Activity-Based Therapy for Individuals with Chronic Spinal Cord Injury”, Field-Initiated Grant Award Number H113G080031, US Department of Education, National Institute on Disability and Rehabilitation Research.
Instructional Course - 7

Surgical Restoration of Arm and Hand Function in People with Tetraplegia

Date:  Tuesday, June 7, 2011
Time:  3:30 P.M. to 5:00 P.M.
Room:  Independence F, G, H, I

Educational Objectives:
1. Identify appropriate surgical procedures for restoring arm and hand function in people with tetraplegia.
2. Recognize the importance of characterizing paralysis by differentiating between upper motor and lower motor neuron damage.
3. Identify appropriate outcome measures to determine the effects of UE reconstructive surgery within the domains of the International Classification of Functioning, Disability and Health.
4. Be able to evaluate and recommend appropriate interventions for improving arm and hand function in people at all levels of tetraplegia.

Synopsis:
Improved hand and arm function is the most sought after outcome for people living with a cervical spinal cord injury. Surgical techniques have been established to increase upper extremity function for tetraplegics, focusing on restoring elbow extension, wrist movement, and hand opening and closing. Additionally, more innovative treatments that have been developed (implanted neuroprostheses and nerve transfers) provide more options for improving function and quality of life. This course will identify appropriate use criteria for upper extremity reconstruction in this complex population. We will review the process for determining the best intervention plan to reanimate arm and hand function at key stages of recovery: acute care, rehabilitation and beyond. Participants will learn the process of determining the best interventions, including discussion of current classification systems for tetraplegia and how they facilitate treatment planning. Education of appropriate surgical procedures and instruction in important prognostication techniques will ensue. This course places a special emphasis on the tetraplegic shoulder including patterns of paralysis for each level of injury based on range of motion and strength data collected from 101 extremities. The complicating secondary effects of spinal cord injury, such as spasticity and contractures, which often prevent restoration of function will be reviewed. Novel methods for remediation will be presented. Throughout the course, participants will be exposed to the interdisciplinary team required for a successful upper extremity program for people with tetraplegia. The evaluation of functional outcomes according to the World Health Organization's International Classification of Functioning, Disability and Health will be explored.

Course Chair:
Michael W. Keith M.D., Professor of Orthopaedics, Case Western Reserve University, MetroHealth Medical Center, Cleveland, Ohio, USA.

Faculty:
Harry A. Hoyen  M.D., Orthopaedic Hand Surgeon, MetroHealth Medical Center, Cleveland, Ohio, USA.
Kevin L. Kilgore Ph.D., Clinical Research Director, MetroHealth Medical Center, Case Western Reserve University, Cleveland, Ohio, USA.
Anne Bryden OTR/L, Clinical Rehabilitation Specialist, Case Western Reserve University Cleveland, Ohio, USA.

Funding Source:
FDA Orphan Products grant FD-R-002389.
NIH-NINDS (R01-NS-29549).
The Rehabilitation Research and Development Service of the Department of Veterans Affairs (A3707R).
Instructional Course - 8

Patient Perspectives on Pain

Date: Wednesday, June 8, 2011
Time: 10:30 A.M. to 12:00 P.M.
Room: Independence A

Educational Objectives:
1. To learn about treatment for spinal cord injury neuropathic pain.
2. To explore the impact of pain, complementary treatments, coping strategies, beliefs and expectations from the patient’s perspective.
3. To reflect and discuss the gap between treatment recommendations and patient expectations.

Synopsis:
Nociceptive and neuropathic pain (NP) are common consequences following spinal cord injury (SCI). Approximately 40-50% of those suffering an SCI will develop NP. Studies report that NP often is considered to be the major problem following SCI, and significantly impacts sleep, work, quality of life, and is associated with depression and anxiety.

Current treatment recommendations on SCI-NP primarily focus on pharmacological strategies suggesting the use of anti-convulsant and anti-depressant drugs, followed by tramadol and opioid medication, but these are unfortunately only partly successful in relieving pain.

Qualitative studies report that individuals with SCI and pain seek alternatives to medication due to limited efficacy, unwanted side-effects and perceived risk of dependency. They spend time and money searching for additional treatments. Many have learned, on their own, how to cope with their pain with heat in various forms, relaxation, massage, stretching, distractions and physical activity. Clinicians will benefit from hearing the patient’s voice.

Studies reveal that many individuals with SCI are dissatisfied with their pain management, with the information given to them about their pain, and want to know more about causes and management of pain. They express a desire to improve their communication with their physicians and alternative sources for getting information about their pain.

The discrepancy between treatment algorithms and patient expectations is large. What can we do to bridge the gap?

Course Chair:
Cecilia Norrbrink, RPT, Ph.D., Karolinska Institute, Dept of Clinical Sciences, Stockholm, Sweden.

Faculty:
Judith Hunter, B.Sc. P.T., M.Sc., Ph.D., Assistant Professor, Department of Physical Therapy, University of Alberta and University of Toronto, Canada.
Jacqueline A. Ellis, R.N., Ph.D., School of Nursing, University of Ottawa, Ontario, Canada.
Monika Löfgren, R.P.T., Ph.D., Karolinska Institute, Dept of Clinical Sciences, Stockholm, Sweden.

Funding Source: None.

References:
• Löfgren M and Norrbrink C. Neuropathic pain following spinal cord injury; coping strategies, beliefs and expectations. Manuscript in preparation.
Secondary Complications in SCI Across the Continuum: Predicting the Impact and Optimizing Management Strategies

Date:    Wednesday, June 8, 2011
Time:    1:00 P.M. - 2:30 P.M.
Room:    Independence A

Educational Objectives:
1. To describe how operations research methods can be utilized to examine clinical questions spanning the continuum for persons with traumatic SCI.
2. To demonstrate the impact of secondary complications (e.g. pressure ulcers, neuropathic pain, urinary tract infections, pneumonia, delirium) on system outcomes (e.g. length of stay) and patient outcomes (e.g. health utilities).
3. To demonstrate how management strategies for secondary complications can be targeted and optimally focused using the results of the computer simulation model.

Synopsis:
Secondary complications following SCI have a tremendous impact on a patient’s quality of life and healthcare costs. There are many complications that result from either the injury itself (e.g. neuropathic pain) or from the care provided (e.g. pressure ulcers). A patient’s journey through the health care system is influenced by clinical and system processes, which are integrated across the entire continuum beginning with the time of injury and continuing over a patient’s lifetime. Research has examined secondary conditions from the perspective of one or two phases but few studies have spanned the entire continuum. This symposium will demonstrate how operations research methodology can be used to examine the impact of secondary complications on the health care system and patient outcomes and then directly compare various management strategies.

Overview:
This interactive symposium will focus on the novel concept of applying operations research methods to examine the impact of secondary complications in persons with traumatic SCI starting from the time of injury, during acute care and rehabilitation and throughout life. Approaches to predicting the impact of secondary complications will be presented based on results from a computer simulation model developed to describe processes of care and outcomes in persons with traumatic SCI.

Course Chair:
Marcel F. Dvorak, M.D. FRCSC, Professor and Head of the Division of Spine, Department of Orthopaedics, University of British Columbia.

Faculty:
Michael Fehlings, Ph.D., FRCSC, FACS, Professor, Department of Surgery, Institute of Medical Sciences, University of Toronto.
Anthony Burns, M.D., M.Sc., Associate Professor, Division of Physiatry, Department of Physical Medicine, University of Toronto.
Derek Atkins, Ph.D., Professor, Operations and Logistics Division, Sauder School of Business, University of British Columbia.
Vanessa Noonan, Ph.D., P.T., Director of Research, Rick Hansen Institute.

Funding Source:
The ACT project is funded by the Rick Hansen Institute, Health Canada and the provinces of British Columbia and Ontario.
Psychosocial Outcomes Among Youth with Spinal Cord Injury and Their Primary Caregivers

Date: Wednesday, June 8, 2011
Time: 3:00 P.M. - 4:30 P.M.
Room: Independence B, C, D, E

Educational Objectives:
1. To define psychosocial health for youth with spinal cord injury (SCI).
2. To present data related to the psychosocial health of a group of youth with SCI and their primary caregivers.
3. To discuss how to best measure psychosocial outcomes over time among youth with disabilities.

Synopsis:
The purpose of this course is to describe psychosocial health among youth with spinal cord injury (SCI). Specifically, data will be presented from a prospective study of 420 youth with SCI ages 1-18, and 380 of their primary caregivers (primarily mothers). In addition, activity data will be presented from a study developing a computerized adaptive testing platform with 226 youth with SCI ages 8-21. Youth from both studies were receiving care at one of three pediatric specialty centers within one hospital system in the United States. The course will begin with an overview of pediatrics and psychosocial health (Vogel). Course faculty will then present six constructs critical to psychosocial health among youth with SCI, including activity (Mulcahey), participation (Klaas), quality of life (Garma), coping (Russell), anxiety (Anderson), and depression (Anderson). In addition, as an integral part of the pediatric world, there will be a presentation of caregiver outcomes and how these relate to outcomes of youth (Kelly). All presentations will demonstrate patterns of psychosocial health among youth with SCI by highlighting subgroup differences and examining relationships between outcomes and key demographic and injury-related factors. Further, when available comparisons will be made with published normative data. The course will conclude with a discussion of how to foster psychosocial health among youth with SCI, and how to best measure psychosocial health among youth with disabilities. The measurement discussion will focus on both the mode of measurement (i.e., paper- or computer-based), and the challenge of tracking outcomes over time across various age groups.

Course Chair:
Lawrence C. Vogel, M.D. Chief of Pediatrics, Shriners Hospitals for Children - Chicago, Chicago, IL.

Faculty:
Erin H. Kelly, Ph.D., Research Specialist, Shriners Hospitals for Children-Chicago, Chicago, IL.
Sara J. Klaas, M.S.W., Director, Spinal Cord Injury Service, Shriners Hospitals for Children-Chicago, Chicago, IL.
Caroline J. Anderson, Ph.D. Scientific Staff, Shriners Hospitals for Children-Chicago, Chicago, IL.
Mary Jane Mulcahey, Ph.D., Director of Rehabilitation and Clinical Research, Shriners Hospitals for Children-Philadelphia, Philadelphia, PA.

Funding Source: Shriners Hospitals for Children.
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