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TAB COLOR LEGEND

- Plenary Sessions
- Pre-Courses
- Courses
- Awards Session
- ASIA Synposium

Officers and Directors





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Important Meeting Notes

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. The Swissôtel Chicago, IL 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 Wed., May 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. Presentations for which such a relationship has been acknowledged are noted with an asterisk (*) in this program and will be noted in the introductions to their presentations. 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. Presentations that involve "off label" use of drugs or medical devices are marked in the program with a triangle (Δ).
- 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 annual meeting of the American Spinal Injury Association 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 of ASIA selected the annual program based on attendee evaluations of previous programs, suggestions solicited from ASIA 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 20 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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*Liaison to ISCoS

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Recovery through Discovery

ASIA Salutes its 2013 Partners

Plan to spend time with each of our valued Partners during the 2013 meeting. At breakfast, during breaks, at the end of day, take a few moments to meet the people whose support is vital to ASIA's success. Our strength is in our members, our meetings, and our partners.

Acorda Therapeutics

Acorda Therapeutics is a biotechnology company developing therapies for multiple sclerosis, spinal cord injury and related nervous system disorders. The company is commercializing and marketing AMPYRA® (dalfampridine) Extended Release Tablets, 10 mg, in the United States. AMPYRA is a potassium channel blocker approved as a treatment to improve walking in patients with multiple sclerosis (MS). Acorda also markets ZANAFLEX CAPSULES® (tizanidine hydrochloride), a short-acting drug for the management of spasticity.

Adapta Medical Inc.

The new PerfIC Cath intermittent catheter system addresses the self-cath needs of individuals with SCI and other conditions, especially those with limited dexterity.

Allergan

Allergan is a multi-specialty health-care company committed to discovering new therapies to treat unmet medical needs in eye care, medical aesthetics, medical dermatology, obesity intervention, urology, and neurosciences.

Argo Medical Technologies, Inc.

Argo Medical Technologies Inc. presents the ReWalk-I—the premier exoskeleton allowing many who are confined to a wheelchair to stand, sit, walk, turn, and climb/descend stairs.

Asubio Pharmaceuticals, Inc.

Asubio Pharmaceuticals, Inc., a Daiichi Sankyo Group Company is an R&D based company that, in early 2012, initiated a clinical study to evaluate the safety and effectiveness of an investigative new drug called SUN 13837 to determine whether the drug improves neurological function in acute SCI.

Avery Biomedical Devices, Inc.

Avery Biomedical Devices manufactures the Mark IV Breathing Pacemaker System, a phrenic nerve or diaphragm pacemaker. It consists of surgically implanted receivers and electrodes mated to an external transmitter by antennas worn over the receivers.

Bioness

Bioness manufactures solution-driven technologies including the NESS H200 Wireless Hand Rehabilitation System, the award-winning NESS L300 Foot Drop System and the NESS L300 Plus System; the first and only system to address gait disorders resulting from foot drop and thigh weakness.

Braingate Research Team

The BrainGate research team is conducting a pilot clinical trial (IDE) of an intracortically-based neural interface system, to determine the feasibility of persons with tetraplegia from cervical SCI, brainstem stroke, muscular dystrophy, or ALS controlling a computer cursor or other devices simply by imagining arm or hand movement.

Cleveland FES Center

We develop technology that improves the quality of life of individuals with disabilities through the use of Functional Electrical Stimulation and enables the transfer of technology into clinical deployment.

Coloplast

Coloplast develops products and services that make life easier for people with personal and private medical conditions. Our business includes ostomy, urology/continence, and wound and skin care

Craig Hospital

Craig Hospital exclusively specializes in rehabilitation and research for patients with SCI and TBI. In 2011, Craig treated persons from 48 states, and was ranked in the Top Ten Rehab Hospitals for the 22nd consecutive year by US News and World Report.

www.craighospital.org

DP Clinical, Inc.

DP Clinical (DPC) is a full service contract research organization located in Rockville, MD. It serves pharmaceutical, biotechnology and medical device clients and provides them with project management, monitoring, data management/analysis, quality assurance and regulatory support for Phase I-IV trials.

Ekso Bionics

Ekso is a wearable robot—or exoskeleton—that powers people with lower limb paralysis or weakness to get them standing and walking.

Hocoma, Inc.

Hocoma is the leader in robotic rehabilitation therapy for neurological movement disorders. Our products are applied worldwide for: intense locomotion therapy (Lokomat®); functional therapy of the upper extremities (Armeo®); early rehabilitation and patient mobilization (Erigo®); and functional movement therapy within low back pain treatment (Valedo®).

Hollister Incorporated

Hollister Incorporated is a global medical device company dedicated to helping healthcare professionals deliver care with better products and services. Our intermittent and external catheters, urinary containment systems and accessories are developed with a focus on making life more rewarding and dignified for those who use them. www.hollistercontinence.com

The Orthopaedic Research and Education Foundation (OREF)

OREF raises funds to support research and educational initiatives that increase knowledge of illness, injuries, and conditions affecting the musculoskeletal system, contribute to more effective treatments, and improve quality of life.

Paralyzed Veterans of America (PVA)

Paralyzed Veterans of America, a congressionally chartered veterans service organization founded in 1946, has developed a unique expertise on a wide variety of issues involving the special needs of its members—veterans of the armed forces who have experienced SCI or dysfunction.

Parker Hannifin

Parker Hannifin is exhibiting IndegoTM, a revolutionary lower-limb powered orthosis, which allows individuals with severe spinal cord injury to walk and enhances rehabilitation for people who have suffered a stroke.

Restorative Therapies, Inc.

Restorative Therapies provides FES powered systems including RT600, the only stepping system fully integrated with FES and RT300, the leading FES cycle. Our systems are suitable for clinical and home application for adult and pediatric users.

Stratus Pharmaceuticals

Stratus Pharmaceuticals manufactures a quality product line of Rx and OTC products including wound care products such as Venelex-Sonafine-Vasolex, Dermatology specialties (Hydroquinone, Urea, Latic Acid...) and products (Vacuant Mini Enema and Vacuant Plus Mini Enema) to improve patients quality of life by managing their bowel care programs.

Thomas Land Publishers, Inc.

Thomas Land Publishers, Inc., located in St. Louis, Missouri, publishes the official journal of ASIA: "Topics in Spinal Cord Injury Rehabilitation," a peer-reviewed quarterly topical journal devoted to multidisciplinary commentary on the management of persons with disability secondary to SCI/D.



Lifetime Achievement Award

Lesley M. Hudson



"It is my honor to have worked with my good friend and colleague, Lesley Hudson, for over 20 years. Lesley has worked tirelessly for over three decades to create opportunities for countless SCI professionals to make contributions to improve services, care, and research for those with SCI. Her contributions include her executive leadership with the American Spinal Injury Association (ASIA), serving as a Project Director for the SCI Model Systems, and being the founding editor of the journal Topics in Spinal Cord Injury Rehabilitation (naming just a few).

Lesley's contributions have facilitated communication and collaboration necessary to link SCI physicians, clinicians, and researchers in multiple forms allowing them to more effectively advance the field of SCI medicine and research. She has had a wonderful career, and those of us with SCI have benefited from her hard work, skill, and commitment." -- Karla S. Reed

"There is a quote from a woman named Charlotte Whitton, a Canadian feminist and mayor of Ottawa (the first female mayor of a major Canadian City). She said "Whatever women do they must do twice as well as men to be thought half as good. Luckily, this is not difficult" and Lesley proves how easy it is to be an equal to anyone! Congratulations on a well-deserved honor, my friend."

-- Susan Charlifue

"I have known Lesley since 1981 when I joined ASIA. During my service on various ASIA committees and the Board from 1991 to the present, I gained an appreciation for her considerable contribution to the Association and the field of SCI research and clinical care. She has not only been ASIA's "keeper of the flame"—serving as our institutional memory to the benefit of successive Boards of Directors—but also our able representative to the broader world of professional associations. There is no other single individual who has contributed as much as Lesley to the success and current stature of ASIA—her award is welldeserved."

-- Daniel P. Lammertse, MD

"Lesley is an heir of the Greatest Generation, who naturally assumes that devoting your life to your job is normal. She raised two

"We first met at the ISCoS meeting in Perth in 1988 and then again in Atlanta in October 1988 when I was on my Royal Adelaide Travelling Fellowship when I visited The Shepherd Centre. To me she is simply 'Mrs ASIA'."

-- Dr. Ruth Marshall

"Lesley Hudson has been the backbone (the spine!) of ASIA for over 30 years. ASIA presidents, offices, and directors come and go, but Lesley is always there to arrange, assist and, yes, to lead. She has kept ASIA together and on track for the longest time of anybody. Personally, we have rejoiced in good times and have comforted each other in times of grief. I salute Lesley for all of her accomplishments and express my hope that we may enjoy her talents for many years to come."

-- Kristjan T. Ragnarsson

wonderful daughters while also being a Mother to ASIA. Lesley doesn't realize how unique she is, but when your job is steering an aircraft carrier through life's narrow straits and frequent political storms, it makes her personality, built upon dedication and lifetime commitment shine through like a beacon. Congratulations, Lesley. Your life DEFINES the ASIA Lifetime Achievement Award."

-- Jack Zigler

Loving • Excellent • Steadfast • Loyal • Energetic

"Lesley Hudson and I joined ASIA at about the same time and my earliest contacts with her were through the program committee and her role in planning programs and site selection. I have learned so much from Lesley! Her contributions as a leader to our organization are beyond measure so I will point out only this: Lesley is living proof of the maxim "It's amazing what you can accomplish if you don't care who gets the credit." Well done, Lesley Hudson!" -- Ken Parsons MD

a master organizer. Lesley has been instrumental and central to the growth of the ASIA Association providing creative thinking and offering project support, managing and leading the infrastructure. On a personal note, Lesley's intelligence is apparent and she is open to assisting individuals regarding any resources of the organization. Lesley has been helpful to our staff members looking for financial support in order to attend the national meetings as well as presenting. Lesley is very loved and respected by all."

-- Myrtice Atrice

"If you could choose one person to have your back it is Lesley - after 38 years I know that to be a truism."
-- David Apple/Shepherd

"Lesley is my dearest friend and has been for well over 50 years. We met in second grade in the small working class town of West Warwick, RI. We were taught by nuns, half a day in English and half a day in French. I was sunk but she was completely fluent. Amazing! We bonded over piano lessons and choir singing. We were never bored and we had a great childhood together. I have vetted all of her boyfriends, including Alan Johnson, the one who stole her heart in 1986. I admire greatly the way she raised her amazing daughters as a single mom. They are unique, wonderful, and responsible. My husband and I are thrilled to be their honorary "aunt and uncle." Lesley, you inspire me in so many ways. I love you and we will always be best friends!"

-- Valerie Rubins

"Lesley Hudson, whom I have known for 33 years, is a credit to the ASIA Association and to Shepherd Center. Lesley has always been forward thinking and "My mother has been one of the most influential people in my life. She taught me the importance of never giving up the things that matter most in life. For her career with ASIA was something she holds so dear to her heart. I'm so blessed to have her as my mother and so proud to celebrate this fantastic accomplishment."

-- Whitney

"Everything I have achieved and will achieve in my life is a direct result of what my mother has done for me. She has always supported and believed in me. I am the person I am today because of how hard she worked to raise me. I cannot thank her enough." -- Caitlin

"I'm sure others have already pointed out the many personal traits contributing to Lesley's success over the years - great intelligence, exceptional organizational skills, and a supportive, collegial interpersonal style among others. What stands out most to me is her consistent ability to deal positively and effectively with a "complex" cast of characters over the years. SCI Medicine is not without its share of egos and personalities. Time and again, in her role as meeting planner, executive director, journal editor, and model systems collaborator, Lesley has evidenced the unique ability to herd cats with a diplomatic, kind, but firm hand. It is fitting that Lesley is the first woman to receive the ASIA Lifetime Achievement Award -- her "woman's touch" has helped calmly guide the organization from the beginning."

-- Mike Iones



Youthful

The ASIA Lifetime Achievement Award

The G. Heiner Sell Memorial Lectureship

The 40th Anniversary Meeting supplement to the ASIA Journal, "Topics in Spinal Cord Injury Rehabilitation," contains information on The ASIA Lifetime Achievement Award and The G. Heiner Sell Memorial Lectureship. This includes history, previous recipients, and biographical information on both the 2013 recipient of the former, Lesley M. Hudson, MA, and presenter of the latter, Kristjan T. Ragnarsson, MD.

Lach registrant has received a copy of this journal, which also contains all of the abstracts for general session oral and poster presentations, in the order in which they appear in this program.



At the 1979 ASIA Meeting in Atlanta, this group enjoyed a relaxing moment in each other's company: (L-R) J. Darrell Shea, MD (seated); Robert R. Menter, MD; Lesley Hudson, MA; John Young, MD; Heiner Sell, MD; and Frederick Maynard, MD.

ASIA 40th Anniversary Annual Scientific Meeting Pre-Courses

Sunday, May 5, 2	013		
VENTS - Registration -	Zurich Foyer & Zurich	A & B	
REGISTRATION			
Montreux 2&3 - am Montreux 1 - pm	Vevey 2	Vevey 3	
Pre-Course 1	Pre-Course 2	Pre-Course 3	
The Science of Prevention: Managing Secondary Health Conditions in People with Spinal Cord Injury	Spinal Cord Injury: From the Bench to the Bedside	Advanced Symposium on Teaching the International Standards for Neurological Classification of Spinal Cord Injury	
8:00 am to 6:00 p.m. See Page 26	Noon to 5:00 p.m. See Page 27	8:00 am to 5:00 p.m. See Page 31	
	REGISTRATION Montreux 2&3 - am Montreux 1 - pm Pre-Course 1 The Science of Prevention: Managing Secondary Health Conditions in People with Spinal Cord Injury 8:00 am to 6:00 p.m.	Montreux 2&3 - am Montreux 1 - pm Pre-Course 1 The Science of Prevention: Managing Secondary Health Conditions in People with Spinal Cord Injury Spinal Cord Injury: From the Bench to the Bedside Noon to 5:00 p.m.	

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ASIA 2013 is not only the best SCI educational value around, it is also the place where you can go home as the owner of a brand new iPad!!! Come to the Poster Reception on Monday,

May 6th (5:00-7:00 PM) and find out how . . . Three will be raffled to lucky attendees at this event, and we thank our Board members Drs. Michael Haak, Andrei Krassioukov, Adam Stein, and Keith Tansey for contributing generously to the iPad fund that made this offer possible!



ASIA 40th Anniversary Annual Scientific Meeting

Monday, May 6, 2013

ALL DAY EVENTS - Electronic Posters/Registration - Zurich Foyer & Zurich A & B

TIME	Zurich Foyer	
7:00 am	REGISTRATION	
	Zurich Foyer	
7:00 am to 8:00 am	CONTINENTAL BREAKFAST	
	Zurich D	
8:00 am to 10:30 am	OPENING PLENARY SESSION Welcome Remarks from the President of ASIA, Lawrence C. Vogel, MD G. Heiner Sell Memorial Lectureshippresented by Kristjan T. Ragnarsson, MD ASIA Lifetime Achievement Award2013 recipient is Lesley M. Hudson, MA	
	Award Eligible Papers Moderator: Lawrence C. Vogel, MD 1) Presenter: Samford Wong Do Probiotics Prevent Antibiotic-Associated Diarrhea in Patients with Controlled Trial 2) Presenter: Thomas Schnitzer Prevention of Bone Loss after Acute SCI: Effect of Zoledronic Acid 3) Presenter: Allen Heinemann Development and Evaluation of Environmental Factor Items for Person	· · · · · · · · · · · · · · · · · · ·
10:30 am to 11:00 am	REFRESHMENT BREAK - Zurich Foyer	
	Zurich D	Zurich E, F, G
11:00 am to 12:30 pm	Course 1 Chair: Michael Jones, PhD Activity-Based Therapy for Recovery of Walking in Individuals with Chronic SCI: Results from a Randomized Clinical Trial See Page 37	ASIA Symposium ISNCSCI Update Chair: Steven Kirshblum, MD History of ISNCSCI; Update of New Worksheet Including Use of Non-Key Muscles; Use of Algorithms; Dilemmas in Research, and Presentation Of Unusual Cases. See Page 36

Vevey 1 & 2 MENTOR/MENTEE BREAKFAST 4) Presenter: Mark Nash Salsalate Improves Fasting and Postprandial Glycemic and Lipid Levels in Persons with Chronic Tetraplegia 5) Presenter: Christopher West Exercise Reduces the Severity of Autonomic Dysreflexia in Rodents with Complete SCI 6) Presenter: Sunil Sabharwal Presentation of Acute Myocardial Infarction in Veterans with SCI **Zurich C** Course 2 - Part 1 Chair: MJ Mulcahey, PhD, OTR Splinting the Upper Limb in Tetraplegia See Page 38

Monday, May 6, 2013 - Continued

ALL DAY EVENTS - Electronic Posters/Registration - Zurich Foyer & Zurich A & B

		ation-zurich Foyer & zurich A & B
TIME	Zurich D	
1:30 pm to 3:00 pm	General Session 1 - Free Papers Moderator: Stephen Burns, MD 1) Presenter: Charles Bombardier Venlafaxine XR for Major Depressive Disorder after SCI: Rationale, Results and Recommendations 2) Presenter: Allen Heinemann Improving the Measurement Properties of Depressive Symptom Instruments for Use after SCI 3) Presenter: Lisa Lighthall Haubert Factors influencing Car Transfer Performance in Persons with Paraplegia	4) Presenter: Patricia Hatchett Effect of Body Mass Index on Community Mobility for Adults with Paraplegia 5) Presenter: William Scott Relationship among Physical Activity Scale for Individuals with Disability (PASID), Body Mass Index (BMI), and Maximum Oxygen Consumption (V02max) in Persons with Motor Incomplete SCI 6) Presenter: Samford Wong The Prevalence of Vitamin Deficiency In SCI Patients
3:00 pm to 3:30 pm	REFRESHMENT BREAK - Zurich Foyer	
	Zurich D	
3:30 pm to 5:00 pm	AWARDS POSTER SESSION Moderator: David Chen, MD 1) Presenter: Kazuya Kitamura Human Hepatocyte Growth Factor Promotes Functional Recovery in Primates after SCI 2) Presenter: Ann Spungen Beneficial Changes in Body Composition after Exoskeletal-Assisted Walking: Implications for Improved Metabolic Function 3) Presenter: Janeen Mastermick Effect of Height, weight and BMI on sacral interface pressure during backboard immobilization 4) Presenter: Ingrid Moreno-Duarte Investigation of the Mechanisms of Transcranial Direct Current Stimulation of Motor Cortex coupled with Visual Illusion for the Treatment of Chronic Pain in SCI 5) Presenter: Lawrence Vogel Sexual Intimacy in Adults with Pediatric-Onset SCI	6) Presenter: Samford Wong Malnutrition risk changes over time in pediatric SCI patients: a 12 month longitudinal analysis 7) Presenter: Sara Klaas Job-Related Participation in School-Aged Children with Spinal Cord Injury 8) Presenter: Victoria Allen Traumatic SCI Etiology Trends for African Americans 9) Presenter: Erin Kelly Secondary Conditions among Youth with Spinal Cord Injuries 10) Presenter: Raymond Onders Diaphragm Pacing: A Bridge to Functional Recovery 11) Presenter: Gregory Bigford A Population-Relevant Lifestyle-Intensive Intervention for Diabetes Prevention after SCI 12) Presenter: Shashidhar Bangalore Kantharajanna Safety Profile, Feasibility and Early Clinical Outcome of Co-transplantation of Olfactory Mucosa and Bone Marrow Stem Cells in SCI – A Novel implantation with 2 year follow up
	Vevey 1 & 2	
5:00 pm to 7:00 pm	Monday evening, May 6, 2013, ASIA will showcase Viewing will be available on computer screens, by their work. In addition, the 12 posters determined presented in large scale format, on poster boards	CTION WITH AUTHORS, REFRESHMENTS - On the poster presentations of the scientific meeting. Topic category, and authors will be present to discuss to be eligible for this year's three poster awards will be in the reception area. Plan to attend this important . WIN AN iPAD WIN AN iPAD

Zurich E, F, G

Zurich C

Course 3 Chair:

Keith Tansey, MD, PhD

Restorative Neurology of Upper Extremity Function in Tetraplegia: Neurobiology, Assessment, Clinical Research, and **Novel Treatment**

See Page 39

Best of Steel Conference Session 2012

Moderator: Lawrence C. Vogel, MD

1) Presenter: Samford Wong Prevalence of Malnutrition in Pediatric

Patients with SCI

2) Presenter: Samford Wong Validation of the Screening Tool for Assessment of Malnutrition (Stamp) in Patients with SCI

3) Presenter: Randal R. Betz

Contemporary Approaches to the Prevention and Management of Musculoskeletal Conditions Program in Children with SCI

4) Presenter: Adam Graf

Wheelchair Kinematics for Individuals with

5) Presenter: Pamela Wilson

Pediatric Assessment of Manual Wheelchair Skills: Developmental Milestones

6) Presenter: Cindy Hartley

Preventing Primary Spinal Cord Injuries in Adolescents: A 7th Grade Science Education

Zurich E, F, G

General Session 2 - Pain/Free Papers

Moderator: Donald Peck Leslie, MD 1) Presenter: Vincent Huang

Use of Pain Medications in Inpatient SCI Rehabilitation: An Initial Study

2) Presenter: Eva Widerstrom-Noga

Experiences of Living with Pain after a SCI –An Initial Analysis

3) Presenter: Brent Edwards

Reductions in Proximal Tibia Fracture Strength in Acute SCI

4) Presenter: Lance Goetz

Multicenter Trial of Supported Employment for Veterans with SCI

5) Presenter: Allan Kozlowski

Using Individual Growth Curve Models to Predict Recovery in Activities of

Daily Living and Mobility after SCI: A SCIRehab Project Study

6) Presenter: Alexander Libin

HtV Phenomena: YouTube as a Health Literacy Platform for Persons with SCI

Zurich C Course 4

Chair:

Fin Biering-Sørensen, MD, DMSc

International SCI Data Sets

See Page 40

event, spend some time with the presenters, and enjoy wine and cheese at the end of the first day of the 40th Anniversary Celebration meeting. THREE iPADS WILL BE RAFFLED FOR ATTENDEES!!

ASIA EXTENDS SINCERE THANKS TO ITS THREE PARTNERS FOR THIS EVENT: Christopher and Dana Reeve Foundation, Hocoma, Inc., and Spinal Cord Outcomes Partnership Endeavor (SCOPE)

*Partner representatives will attend the reception and are identified by special ribbons on their name tags. Please engage them in conversation as you enjoy this event. WIN AN iPAD ... WIN AN iPAD ... WIN AN iPAD ... WIN AN iPAD ... WIN AN iPAD ...

Tuesday, May 7, 2013

ALL DAY EVENTS - Electronic Posters/Registration - Zurich Foyer & Zurich A & B

ALLUAIL	VEN 13 - Electronic Posters/Registration - Zurich Poyer & Zurich A & B	
TIME	Zurich Foyer	
7:00 am	REGISTRATION	
	Alpine	
7:00 am to 8:30 am	MEMBERSHIP BREAKFAST: Review of ASIA Strategic Plan; Financial and Committee Reports; Report of the 2011 Sam	
	Zurich D	
8:30 am to 10:00 am	PLENARY SESSION: SCOPE COURSE - Procedures, Products and Pragmatism: The evolution of inclusive human study protocols Course Chair: John Steeves, PhD See Page 34	
10:00 am to 10:30 am	REFRESHMENT BREAK - Zurich Foyer	
	Zurich D	
10:30 am to 12:00 pm	General Session 3 - Endocrine / Metabolic / Nutrition Moderator: Amie B. McLain, MD 1) Presenter: Mark Nash Sleep Disordered Breathing in Chronic Tetraplegia: Prevalence and Association with Cardioendocrine Component Risks, Body Composition, and Pulmonary Function 2) Presenter: Zack McCormick Exercise Guidelines for Paraplegic Individuals with SCI Based on the Energy Cost of Manual Wheelchair Propulsion 3) Presenter: Gregory Bigford Pro-inflammatory Signaling in Peripheral Tissue Related to Cardiometabolic Dysfunction and Diabetes in Chronic SCI 4) Presenter: Zack McCormick Energy Cost of Wheelchair Propulsion, Lower Extremity Dressing, and Pop-over Transfers in Paraplegics 5) Presenter: Mark Nash Circuit Resistance Training improves Postprandial Glycemic Responses in Pre-Diabetic Individuals with Paraplegia 6) Presenter: Olivia Gilbert Serum Lipid Concentrations Among Persons with SCI	
	Vevey 1 & 2	
12:00 pm to 1:30 pm	LUNCH - Please attend Asubio's luncheon seminar on our ASCENT-ASCI Trial! In early 2012 Asubio Pharmaceuticals Inc., a group company of Daiichi Sankyo, initiated the ASCENT-ASCI (Asubio Spinal Cord Early Neuro-recovery Treatment for ASCI) Study for patients with newly diagnosed acute spinal cord injury. The study involves trauma and rehab centers in the US and Canada and is designed to determine whether the investigational new drug SUN13837 improves neurological function in this	

Schmidt Paralysis Foundation/Sell Fund Young Investigator Grant; Update on the Activities of SCOPE.

General Session 4 - Free Papers Moderator: Greg Nemunaitis, MD 1) Presenter: Kazuko Shem Dysphagia in acute tetraplegia: Diagnosis, incidence, and associated factors

2) Presenter: Pamela Patt

Zurich E,F, G

Defining Overweight and Obesity in Youth with SCI: The First Step in Prevention of Metabolic Syndrome

3) Presenter: Antoinette Cheung

Incidence, Risk Factors, and Impact of Delirium in Patients with Traumatic SCI

4) Presenter: Andreane Richards-Denis

Predicting the occurrence of pressure ulcers after the acute management of traumatic SCI: the impact of specialized trauma centers

5) Presenter: Jan Yih-Kuen

Using Reactive Hyperemia to Assess the Efficacy of Local Cooling on Reducing Sacral Skin Ischemia under Loading Pressure in People with SCI

6) Presenter: Catherine Truchon

Eradicating Pressure Ulcers in SCI Patients – Simulated Impacts on Patient Flow, Outcomes and Resource Utilization

Zurich C

Course 5

Chair:

Lawrence C. Vogel, MD

Pediatric-Adolescent SCI Over the Last 40 Years

See Page 41

catastrophic injury. It's been a busy year at Asubio, and we are pleased to invite you to a luncheon seminar to update you on our activities and present investigator feedback regarding ASCENT-ASCI so far. Space is limited, so stop by our exhibit as early as possible to obtain a ticket.

NON-CME See Page 51 for Ad

Tuesday, May 7, 2013 - Continued

ALL DAY EVENTS - Electronic Posters/Registration - Zurich Foyer & Zurich A & B

TIME	Zurich D		
1:30 pm to 2:30 pm	Awards Session Moderator: Anthony DiMarco, MD North American Introduction of eLearnSCI.org will be given by Ronald K. Reeves, MD, prior to the presentation of awards. See Page 33		
	Zurich D		
2:30 pm to 4:00 pm	General Session 5 - Clinical Trials Moderator: Adam Stein, MD 1) Presenter: Denise Tate Placebo Response With and Without Placebo: Tales of a Depression Trial for Persons with SCI/D 2) Presenter: Melissa Agrimanakis Predictive Factors of Discharge to a Skilled Nursing Facility In Individuals with New Onset Tetrapleiga 3) Presenter: Jean-Marc Mac-Thiong Non-neurological outcomes of complete traumatic SCI; the role of surgical timing	4) Presenter: Martin Forchheimer Subject Retention in a Clinical Trial of an Antidepressant for Treatment of Mild to Moderate Depressive Symptoms in People with SCI 5) Presenter: Jim Hamer Lessons Learned: Reasons For Delays In Starting Sites For Acute SCI Clinical Trials 6) Presenter: Jeanne Hoffman Scheduled Telephone Follow-up to Improve Outcomes after SCI Rehabilitation	
4:00 pm to 4:30 pm	REFRESHMENT BREAK - Zurich Foyer		
	Zurich D	Zurich E ,F, G	
4:30 pm to 6:00 pm	Course 7 Chair: Jennifer French, MBA How Emerging Neural Interfaces Relate to Functional Restoration for People with SCI See Page 44	General Session 6 - Autonomic Dysfunction Moderator: Isa McClure, PT 1) Presenter: David Ditor Hypertensive Ejaculation in Men with SCI: A Postural Therapeutic Strategy 2) Presenter: Amie B. McLain The Use of Neurologic Examination to Predict Awareness and Control of Lower Urinary Tract Function Post SCI 3) Presenter: Jill Wecht Droxidopa Increases Seated Blood Pressure in Hypotensive Individuals with SCI	
6:30 pm to 8:30 pm	40th ANNIVERSARY "Sweet Home Chicago" - On Tuesday evening, May 7, 2013, ASIA will celebrate the 40th Anniversary of its founding with a very special evening. Called "Sweet Home Chicago," the event will be held at the Chicago Cultural Center (CCC), a landmark Chicago building only a short walk from the Swissôtel, location of the scientific meeting. The CCC, built in 1897 as Chicago's first public library, is one of the city's top ten attractions. The interior includes antique brass, rare imported marble, and mosaics of Favrile glass, colored stone and mother of pearl. It features two spectacular stained glass domes. One of them is the world's largest art glass dome by Tiffany. Approximately 38 feet in diameter, it contains 30,000 pieces of glass in a "fish scale" pattern, with signs of the zodiac embedded in the dome.		

AWARDS WILL BE PRESENTED AS FOLLOWS: 2013 Sam Schmidt Paralysis Foundation/Sell Fund Young Investigator Award; 2013 Apple Award; 2013 Best Oral Presentations (1st, 2nd, 3rd); 2013 Best Poster Presentations (1st, 2nd, 3rd); 2013 Anniversary Awards for Outstanding Service to ASIA and the Field of SCI Medicine (6).

Z	Zurich E ,F, G	Vevey 1 & 2
Q Ui	course 6 o-Chairs: ohn Kramer PhD and Armin Curt MD Quantifying Sensory Changes after SCI: New Approaches to Inderstand Pain ee Page 42	Course 2 - Part 2 Chair: MJ Mulcahey, PhD, OTR Splinting the Upper Limb in Tetraplegia See Page 43

	Zurich C
	Course 8 Chair: Andrei Krassioukov MD, PhD
4) Presenter: Jackie Cramp The Lived Experience of Sexuality for Women with SCI: The Impact of Urinary Incontinence 5) Presenter: Jacquelyn Cragg Cardiovascular Disease and SCI: Results from a National Population Health Survey 6) Presenter: Nan Liu Blood Pressure Changes During Urodynamics in Individuals with SCI	Paralympics Wheelchair Athletes: Challenges on the Way to the GOLD See Page 45

The evening will feature Chicago themed cuisine, from several of its famous ethnic neighborhoods including Greektown, Pilsen (Mexican), Little Italy, and Chinatown. Entertainment will include blues/jazz by the Matt Steadman Band, with special appearances by ASIA's very own "Blues Brothers." Tickets are reasonably priced at \$30 per person. The reception is sponsored in part by our four Chicago hosts: Rehabilitation Institute of Chicago, Schwab Medical Center, Shriners Hospital, and the Orthopaedic Department of Northwestern Memorial Hospital Feinberg School of Medicine. Reserve your place for this wonderful evening, and do not miss the "Sweet Home Chicago" celebration of ASIA's incorporation in the windy city in 1973. It will be a party to remember!

Wednesday, May 8, 2013

ALL DAY EVENTS - Electronic Posters/Registration - Zurich Foyer & Zurich A & B

_	•
Zurich Foyer	
REGISTRATION	
Zurich Foyer	
CONTINENTAL BREAKFAST	
Zurich D	
PLENARY SESSION: A Presentation from the Primary Prevention of SCI: Collaborating Toward A See Page 35	
REFRESHMENT BREAK - Zurich Foyer	
Zurich D	Zurich E ,F, G
Course 9 Chair: Thomas J. Schnitzer, MD, PhD Bone Changes after SCI: A Problem with a Solution See Page 46	Course 10 Chair: Felipe Fregni, MD, MPH, PhD The Application of Transcranial Direct Current Stimulation (tDCS) on Chronic Neuropathic Pain in SCI See Page 47
Zurich D	
General Session 8 - Free Papers Moderator: Ray Lee, MD 1) Presenter: David Tulsky Validation of the SCI-QOL and SCI-FI Measurement Systems for Persons with SCI 2) Presenter: Isa McClure Development of ASIA White Paper, "Competent Care for Persons with SCI and Dysfunction in Acute Inpatient Rehabilitation" and Consumer Guidelines for Choosing a Rehabilitation Facility 3) Presenter: Shane Sweet The Relationship Between SCI-Related Needs and Quality of Life in Adults with a SCI	4) Presenter: Anthony Burns Neurogenic Bowel from the Perspective of Support Providers to Individuals with SCI 5) Presenter: Martin Forchheimer The International SCI Data Sets for Bowel and Bladder: Development of Interview Forms 6) Presenter: Luc Noreau Community Participation of Persons with SCI in Canada: The Influence of Secondary Complications
	REGISTRATION Zurich Foyer CONTINENTAL BREAKFAST Zurich D PLENARY SESSION: A Presentation from the Primary Prevention of SCI: Collaborating Toward A See Page 35 REFRESHMENT BREAK - Zurich Foyer Zurich D Course 9 Chair: Thomas J. Schnitzer, MD, PhD Bone Changes after SCI: A Problem with a Solution See Page 46 Zurich D General Session 8 - Free Papers Moderator: Ray Lee, MD 1) Presenter: David Tulsky Validation of the SCI-QOL and SCI-FI Measurement Systems for Persons with SCI 2) Presenter: Isa McClure Development of ASIA White Paper, "Competent Care for Persons with SCI and Dysfunction in Acute Inpatient Rehabilitation" and Consumer Guidelines for Choosing a Rehabilitation Facility 3) Presenter: Shane Sweet The Relationship Between SCI-Related Needs and Quality

Co-Chairs: Lawrence C. Vogel, MD & Sara Klaas, MSW **Zurich C General Session 7 - Pediatrics** 3) Presenter: MJ Mulcahey Predictors of Neuromuscular Scoliosis After SCI Moderator: Sara Klaas, MSW 4) Presenter: Sylvia Garma 1) Presenter: Alicia January SCI in Children Ages 1-5: Caregiver Perspective Change in Depression Scores Over Time for Individuals with 5) Presenter: Anne Riordan Pediatric-Onset SCI Examination of Outcomes of Youth with SCI by Neurological 2) Presenter: Miriam Hwang **Impairment** Longitudinal Changes in Medical Complications in Adults with Pediatric-Onset SCI **Zurich C** Zurich E ,F, G Course 11 Course 12 Chair: **Chair:** Andrea L. Behrman, PhD, PT Susan J. Harkema, PhD Neuromuscular Recovery Scale: A New Measure of North American Clinical Trials Network (NACTN) and Recovery Based on Pre-Injury Performance the NeuroRecovery Network (NRN): Advancing SCI Research and Translation of Evidence into Practice See Page 48 See Page 49

POSTERS

- *1. Presenter: Kazuya Kitamura Human Hepatocyte Growth Factor Promotes Functional Recovery in Primates after Spinal Cord Injury
- *2. Presenter: Ann Spungen
 Beneficial Changes in Body
 Composition after ExoskeletalAssisted Walking: Implications for
 Improved Metabolic Function
- *3. Presenter: Janeen Mastermick
 Effect of Height, Weight and BMI
 on Sacral Interface Pressure During
 Backboard Immobilization

*4. Presenter: Ingrid Moreno-Duarte

Investigation of the Mechanisms of Transcranial Direct Current Stimulation of Motor Cortex Coupled with Visual Illusion for the Treatment of Chronic Pain in Spinal Cord Injury

- *5. Presenter: Lawrence Vogel Sexual Intimacy in Adults with Pediatric-Onset SCI
- *6. Presenter: Samford Wong
 Malnutrition Risk Changes Over
 Time in Pediatric Spinal Cord Injury
 Patients: a 12 month Longitudinal
 Analysis
- *7. Presenter: Sara Klaas
 Job-Related Participation in SchoolAged Children with Spinal Cord
 Injury
- *8. Presenter: Victoria Allen
 Traumatic SCI Etiology Trends for
 African Americans
- *9. Presenter: Erin Kelly
 Secondary Conditions among Youth
 with Spinal Cord Injuries
- *10. Presenter: Raymond Onders
 Diaphragm Pacing: A Bridge to
 Functional Recovery
- *11. Presenter: Gregory Bigford
 A Population-Relevant LifestyleIntensive Intervention for Diabetes
 Prevention after SCI
- *12. Presenter: Shashidhar
 Bangalore Kantharajanna
 Safety Profile, Feasibility and
 Early Clinical Outcome of Cotransplantation of Olfactory
 Mucosa and Bone Marrow Stem
 Cells in Spinal Cord Injury A Novel
 implantation with 2 year follow up

13. Presenter: Darryl Wan

Life-threatening Outcomes Associated with Autonomic Dysreflexia: A Clinical Review

- 14. Presenter: Sara Kate Frye
 Atypical Autonomic Dysreflexia
 During Robotic Assisted Body Weight
 Supported Treadmill Training in an
 Individual with Motor Incomplete
 Spinal Cord Injury
- **15. Presenter: Matthais Walter**Beware of Autonomic Dysreflexia in Patients with Spinal Cord Injury During Urodynamic investigation!
- 16. Presenter: Alexander Libin
 Use of Hybrid Simulation to Teach
 the Evaluation and Management
 of Autonomic Dysreflexia among
 Physical Medicine and Rehabilitation
 Residents: A Feasibility Case Study
- 17. Presenter: Jill Wecht

A Simple Battery of Tests to Assess Autonomic Integrity in Persons with Spinal Cord Injury

18. Presenter: Julia Totosy de Zepetnek

Heart Rate Recovery Following Maximal and Sub Maximal Exercise in Individuals with Chronic Spinal Cord Injury

- 19. Presenter: Andrea Townson Evaluation of a Knowledge Translation Activity for The Use of the International Standards To Document Remaining Autonomic Function After SCI
- **20. Presenter: Nancy L.N. Vuong**Rehabilitation of Cervical Spinal Cord
 Injury Resulting from Tissue Plasminogen Activator Treatment for Acute
 Ischemic Stroke
- **21. Presenter: Christina V. Oleson** A Comparison of Remaining Autonomic Function in Traumatic versus Non-Traumatic Spinal Cord Injury
- **22. Presenter: Milos Popovic**Cardiovascular Response of Individuals with SCI to Functional Electrical Stimulation and Passive Stepping
- **23. Presenter: Samford Wong**Nutritional Supplement Use in Patients Admitted to Spinal Cord Injury Centre

- **24. Presenter: Benjamin Seidel**Management of Vitamin D Deficiency in the Presence of Active Heterotopic Ossification
- **25. Presenter: Mark Nash** Intensive Lifestyle Intervention after Paraplegia Significantly Reduces Cardiometabolic Risks: A Two-Subject Case Report
- **26. Presenter: Vincent Huang**Intravenous Therapy for Iron Deficient Anemia in Chronic Spinal Cord Injury Veterans
- **27. Presenter: Todd Astorino**Neurotrophic Response to Acute
 Activity-based Therapy in Persons
 with SCI
- **28. Presenter: Danielle Powell**Analysis of Neurological Level Effect on the Rate of Weight Gain in Individuals with Spinal Cord Injury
- **29. Presenter: Zack McCormick**Brucella Sepsis In A Paraplegic
 Patient Undergoing Acute Rehabilitation: A Case Report
- 30. Presenter: Judith Stein
 Assessment of The International
 Standards for Neurological and Functional Classification of Spinal Cord
 Injury (ISNCSCI) Using a Standardized Patient Approach: A method to
 Improve Inter-Rater Agreement
- **31. Presenter: Samford Wong**Morbid Obesity After Spinal Cord
 Injury: A Bariatric Surgery Case Study
- **32. Presenter: Heather Taylor**Depression and Depression Treatment of Women with SCI: Are We Doing Enough?
- **33. Presenter: K. Rao Poduri** Idiopathic Congenital Syringomyelia Presenting as Paraplegia
- **34. Presenter: Ann Flanagan**Psychosocial Outcomes of Youth with Early Onset Spinal Cord Injury and Those with Spina Bifida
- **35. Presenter: Erin Henry**Challenging Your Patient to Play
 Softball: An Innovative Therapeutic
 Intervention in Acute Spinal Cord
 Injury
- **36. Presenter: Denis Sakai**Does the Level of Spinal Cord Injury Influence the Cervical Sagittal Alignment? Preliminary Study on Paraplegics

POSTERS

37. Presenter: Philippines Cabahug

Functional Ambulation Recovery In Spinal Cord Injury Patients Following Activity Based Restorative Therapies (ABRT): A Case Series

- **38. Presenter: Vanessa Noonan**The Influence of Depression on
 Physical Complications in SCI: Behavioral Mechanisms and Health Care
 Implications
- **39. Presenter: Yuying Chen** Aging with SCI: Current Trends in External Causes
- **40. Presenter: Deborah Crane**Benefits of an Exercise Wellness Program after Spinal Cord Injury
- **41. Presenter: Sally Taylor**Manual Wheelchair Skills and Association with Societal Participation: Findings from the SCIRehab Project
- **42. Presenter: Barry McKay**Neurophysiological Assessment of Motor Control and Clinical Characterization after Spinal Cord Injury: Early Data from a SCI Model Systems Study
- **43. Presenter: Chelsea Pelletier** A Comparison of Exercise Capacity between Adults with Sub-Acute and Chronic Spinal Cord Injury
- **44. Presenter: Vanessa Noonan**Health-care Utilization in Persons with SCI in Canada: Results from the National SCI Community Survey
- **45. Presenter: Hwasoon Kim**Modeling to Predict Loss to Followup in the Spinal Cord Injury Model
 Systems Database
- **46. Presenter: Christopher White** Peripheral Nerve Degeneration following Acute Complete Spinal Cord Injury
- **47. Presenter: Keith Tansey** Methods to Use the ISNCSCI Exam to Score "Central Cord-ness" and "Brown-Sequard-ness" in SCI
- **48. Presenter: Christina Sadowsky** Effect of Activity Based Restorative Therapies on Multiple Neurological, Day to day and Quality of Life Outcomes in a Large Cohort of Individuals with Chronic Paralysis Related to Spinal Cord Disease

49. Presenter: Eisha Wali

Innovative Use of a Power Wheelchair as a Motorized Prone Cart in SCI and Chronic Wound Care: A Case Report

- **50. Presenter: Adele Bosquez** Community Dining: An OT/PT Approach for Inpatient SCI Rehab
- **51. Presenter: Alexander Libin** Experiential Learning Approach to Patient Education: An SCI Navigator Study
- **52. Presenter: Pamela Patt**A Three Year Review of Vitamin D Status and Bone Density during Growth

and Bone Density during Growth and Development in Pediatric Spinal Cord Injury

- **53. Presenter: Sara Klaas**Facing Disability: An Internet-Based Approach to Spinal Cord Injury Edu-
- cation and Peer Support

 54. Presenter: Todd Astorino

 Effect of Multimodal Training on
 Bone Mineral Density in Individuals
 with Spinal Cord Injury
- 55. Presenter: Therese Johnston
 Bone and Muscle Changes following
 Cycling with Functional Electrical
 Stimulation at Different Cadences in
 Two Women with Spinal Cord Injury
 56. Presenter: Jennifer Silvestri
 Shoulder Pain in Spinal Cord Injury:
- Shoulder Pain in Spinal Cord Injury: The Effectiveness of a Home Rehabilitation Program and Activity Modification
- **57. Presenter: Adam Graf**An Assessment of Wrist Joint Dynamics during Wheelchair Propulsion
- **58. Presenter: Phyllis Palma**Spinal Cord Injury Concurrent with
 Brain Injury is Prevalent in a Pediatric
 Population and Impacts the Length
 of Stay of Inpatient Rehabilitation
- **59. Presenter: Kaitlin MacDonald** Activity-Based Rehabilitation Improves Function of Pediatric Patients with Spinal Cord Injury
- **60. Presenter: Phyllis Palma**A Guideline for Mobility for Pediatric Patients after Spinal Cord Injury Based Upon Age-Predicted Length of Stay and Mobility WeeFIM IISM Scores

61. Presenter: Heather Russell

Coping Strategy Use and Relationships with Psychosocial Outcomes in Adolescents with Spinal Cord Injury

- **62. Presenter: Therese Johnston**Health and Fitness in Pediatric Spinal
 Cord Injury
- **63. Presenter: Patricia O'Brien**Use of the Assisting Hand Assessment to Capture Functional Change in the Affected Upper Limb in a Brown-Sequard Type SCI: A Case Report
- **64. Presenter: Marcie Kern**Developing an Exoskeleton Training
 Protocol: Lessons Learned
- **65. Presenter: Marcie Kern**Can a Person with a SCI Learn to Independently Walk with Robotic Exoskeleton in 12 hours?
- **66. Presenter: Jason White** Improving Walking Metrics after Severe SCI using Sensory Electrical Stimulation: An Optimization Approach
- **67. Presenter: Lee Saunders**Cigarette Smoking in Adults with Spinal Cord Injury
- **68. Presenter: James Krause**Race, Ethnicity, and Poverty after
 Spinal Cord Injury
- 69. Presenter: Jean-François Lemay

An Analysis of a Multidirectional Stability Test and Quasi-static Standing Steadiness in Individuals with Spinal Cord Injury

- **70. Presenter: Antonia Ahern**Metagenomic Assessment of the
 GENitoUrinaryMicrobiome in People
 with SCI (The GENUSCIS Project): The
 Healthy Urine Microbiome
- 71. Presenter: Toni Ahern
 Metagenomic Assessment of the
 GENitoUrinaryMicrobiome in People
 with SCI (The GENUSCIS Project):
 Microbiome Diversity
- **72. Presenter: Ramzi Ben-Youssef** Sleep Disturbances in Paraplegics within a Large Urban Community: Prevalence and Associated Co-morbidities

Pre-Courses

PRE-COURSE 1

The State of the Science of Prevention and Management of Secondary Health Conditions in People after Spinal Cord Injury

Sunday, May 5, 2013 • 8:00 a.m. - 6:00 p.m.

Morning Sessions Rooms: Montreux 2 & 3

Afternoon Sessions Rooms: MUSC - Montreux 2 & 3, MedStar/NRH - Montreux 1

Hosted by: Medical University of South Carolina & MedStar National Rehabilitation Hospital

Educational Objectives:

1. To present the state of the science on secondary conditions after spinal cord injury

Synopsis/Objective:

Medical University of South Carolina (MUSC; Dr. Krause) and MedStar National Rehabilitation Hospital (NRH; Dr. Groah) received grants from the National Institute on Disability and Rehabilitation Research (NIDRR) in 2009 to study secondary conditions in individuals with spinal cord injury. MUSC focuses on psychological, socio-environmental, and behavioral risk and protective factors of secondary health conditions and mortality. MedStar NRH research is focusing on costly complications of obesity, cardiometabolic syndrome and pressure ulcers. This pre-course will pull together the most recent research regarding secondary conditions, not only from the two Centers, but from across the country. The State of the Science conference hosted by MUSC and MedStar NRH includes interim results as well as presentations related to the topics within each RRTC.

Morning Sessions - Montreux 2 & 3

Time	Session	Speakers
8:00-9:00 am	Breakfast	
9:00-9:15 am	Welcome/Introduction	NRH: Mark Nash, PhD; MUSC: James Krause, PhD
9:15-10:15 am	Keynote Speakers	NRH: Ed Eckenhoff, MHA; MUSC Panelists: James Krause, PhD, Glenn White PhD, David Gray, PhD
10:15-10:30 am	Break	
10:30-11:30 am	Plenary Speaker	Jim Rimmer, PhD
11:30-12:00 pm	RRTC Overviews	NRH: Inger Ljungberg, MPH, Manon Schladen, MS; MUSC: Lee Saunders, PhD

Afternoon Sessions

	Montreux 2 & 3		Montreux 1	
Time	MUSC Session	Speakers	MedStar NRH Session	Speakers
12:00-1:00 pm	LUNCH			
1:00-2:00 pm	SESSION 1: Risk and Prevention of Secondary Conditions after Adult & Pediatric SCI	Moderator: Lawrence Vogel, MD Panelists: Deborah Backus, PhD, PT James Krause, PhD	SESSION 1: Cardiometabolic Panel	Moderator: Mark Nash, PhD Panelists: Johan Kressler, MD Alan Taylor, MD Olivia Gilbert, MD
2:00-3:00pm	SESSION 2: Depression, Measurement, Participation, SWB	Moderator: David Gray, PhD Panelists: Allen Heinneman, PhD Charles Bombardier, PhD	SESSION 2: Body Composition	Moderator: Emily Tinsley, MS Panelists: Alexander Libin, PhI Pamela Ballard, MD
3:00-3:20 pm	Break			
3:20-4:20 pm	SESSION 3: Secondary Conditions and Mortality	Moderator: Michael DeVivo, DrPH Panelists: Yue Cao, PhD Eric Garshick, MD	SESSION 3 Upper Body Ultrasound Therapy Session will include several ultrasound stations	Moderator: Victor Ibrahim, MD Panelists: Randy Moore, DC Scott Epsley, PT David Wang, DO Dallas Lea, MD
4:20-5:20pm	SESSION 4: Disparities, Surveillance, Community	Moderator: Glenn White, PhD Panelists: Lee Saunders, PhD Vanessa Noonan, PhD, PT Yaga Szlachcic, MD	Continuation of SESSION 3 SESSION WILL CONCLUDE AT 6 PM	

PRE-COURSE 1- Continued

The MedStar National Rehabilitation Hospital RRTC on Secondary Conditions in the Rehabilitation of Individuals with SCI focuses on two medical complications of spinal cord injury that are alarmingly frequent and costly: cardiometabolic syndrome and pressure ulcers. Cardiometabolic syndrome is an umbrella condition that includes complications of obesity, cardiometabolic syndrome (inclusive of obesity, insulin resistance, hypertension, dyslipidemia and inflammation). In addition, the work of the RRTC places a specific focus on the health and information needs of the underserved.

MedStar National Rehabilitation Hospital (NRH), whose credo is to "Adding Life to Years"," is the hub of all Center activities. MedStar NRH is an ideal site for the RRTC because it is the primary provider of SCI services within the DC area, conducts quality SCI research and training, and facilitates collaborative partnerships with other SCI rehabilitation leaders. In contrast to the grandeur of the nation's capital is a community that is predominantly underserved, poor, illiterate, and/or non-English speaking. The result is an SCI population at extremely high risk for secondary conditions.

By utilizing novel diagnostic and therapeutic practices, this RRTC addresses 3 major secondary conditions that lead to significant health decay in people with SCI. Specifically, we are working to determine the degree to which obesity is related to cardiometabolic health, cardiometabolic risk factors, and atherosclerotic burden (R1). The team is developing a web-based cardiometabolic risk assessment tool (RISK) that will allow doctors and individuals with SCI to determine their true risk for having cardiometabolic syndrome. Additionally, the project will produce a body mass index (BMI) table adjusted specifically for individuals with SCI. Those requiring intervention based on CMR profile and atherosclerotic burden in R1 are selected to participate in Project R2, an RCT examining impact of an omega-3 dietary supplement intervention.

In Project R3, we are assessing the physiologic response of sacral and ischial skin to sitting and pressure relief. The study also includes a behavioral self-management program so that future recommendations can be evidence-based, rather than on clinical dogma, as is currently the case. These research findings feed into our training activities that include culturally sensitive consumer education with a focus on the underserved population, professional training and education of rehabilitation and non-rehabilitation professionals.

To learn more about our work, please visit our project website: www.sci-health.org. We will continually be posting new material and useful information.

On the website you can:

- Subscribe and receive an email alert whenever we update the website (look for the "subscribe" link on our homepage)
- Read about our research studies
- · Find information about SCI and medical complications
- Contribute to monthly polls and surveys
- View "How-to" videos
- Get news updates regarding SCI and findings from previous and present research studies

For more information please contact us at info@sci-health.org





Pre-Courses

PRE-COURSE 2

Spinal Cord Injury: From the Bench to the Bedside

Sunday, May 5, 2013 • Noon - 5:00 p.m. • Room: Vevey 2

Hosted by: The ASIA Spine Committee

Overall Objective:

Provide an update and review on present and future spinal cord injury translation projects.

Course Objectives:

- Discuss acute management strategies and pharmacologic intervention after traumatic SCI
- · Gain insight and experience from previous and current spinal cord injury trials
- Explore resources for maximizing SCI care for chronic conditions of pain and spasticity

This one-day comprehensive course is designed to provide an update and summarize present and future spinal cord injury (SCI) clinical trials with a focus on transitioning laboratory work into the clinical setting. Topics will include acute care, ICU management, clinical trials, pharmacology and surgical interventions for SCI.

Target Audience:

- Physicians and surgeons that care for and manage the acute and chronic SCI patients: Neurosurgeons, Orthopedic surgeons, Traumatologists, Physical Medicine and Rehabilitation specialists, Critical Care physicians, RNs, PAs, and NPs
- · Basic scientists with interest in translation adaptation of SCI medications and also surgical treatment
- Individuals interested in present SCI trials and potential future treatment strategies

5 Contact Hours

Time Frame	Core Topics	Speakers
12:00-12:05PM	Introduction to Course	James Harrop, MD Thomas Jefferson University Philadelphia, Pennsylvania
		Michael Fehlings, MD Toronto Western Hospital Toronto, Ontario, Canada
12:05-1:00 PM	Acute interventions/Neuroprotection	
12:05-12:20 PM	Consortium for Spinal Cord Medicine Guidelines 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	Kristen Radcliff, MD Egg Harbor Township, NJ
12:20-12:35 PM	ICU care and role of blood pressure management 1) Discuss the anatomy and pathophysiology of acute SCI 2) Overview of initial hospital assessment and care of traumatic SCI patient 3) Review evidence and role of blood pressure management in acute SCI patient	Srini Prasad, MD Thomas Jefferson University Philadelphia, PA
12:35-12:50 PM	Timing of Surgical Intervention 1) Discuss the basic science work on effect of acute decompression after traumatic SCI 2) Describe the protocol and implementation of the present surgical treatment of acute SCI study 3) Discuss present results from the STASCIS trial	
	Outcome Assessment in acute setting 1) Discuss the present outcome measurement strategies 2) Review limitations of present outcome strategies and measurement tools 3) Review potential newer tools and strategies to determine outcomes	Robert Grossman, MD Methodist Hospital Houston, TX

Discussion and Questions

12:50-1:00PM

PRE-COURSE 2 - Continued Time Frame Core Topics Speakers 1:15-2:20 PM **Pharmacology** 1:15-2:-00 PM Riluzole (Phase III trial pending) Michael Fehlings, MD 1) Discuss the pathophysiology of Riluzole for treatment of neuronal injuries Toronto Western Hospital 2) Discuss beneficial results of drug intervention and present FDA status Toronto, Ontario, Canada 3) Discuss potential adverse reactions. 4) Describe present status of therapy in terms of basic science and clinical Neuroshield (Magnesium Chloride Therapy) Brian Kwon, MD 1) Discuss the pathophysiology of Magnesium Chloride Therapy for SCI. Vancouver General Hospital 2) Discuss beneficial results of drug intervention Vancouver, BC, Canada 3) Discuss potential adverse reactions. 4) Describe present status of therapy in terms of basic science and clinical trials Minocycline Steve Casha, MD 1) Discuss the pathophysiology of minocycline for treatment of neuronal Calgary, Alberta, Canada injuries 2) Discuss beneficial results of drug intervention and present FDA status 3) Discuss potential adverse reactions. 4) Describe present status of therapy in terms of basic science and clinical 2:00-2:20 PM **Discussion and Questions** 2:20-2:30 PM **Break** 2:30-3:30 PM Neuroregeneration Daniel Sciubba, MD 1) Discuss the pathophysiology of Cethrin for treatment of neuronal injuries Johns Hopkins Hospital 2) Discuss beneficial results of drug intervention and present FDA status Baltimore, MD 3) Discuss potential adverse reactions 4) Describe present status of therapy in terms of basic science and clinical trials Towards Schwann cell therapy for subacute spinal cord injury. Rationale and James D. Guest MD, PhD pre-clinical studies Miami Project to Cure Paralysis 1) Discuss the present neurosurgery care at Miami Miami, FL 2) Review limitations of present treatment algorithms 3) Review potential newer tools and strategies improve neurologic Stem cell therapy (Geron) Linda Jones, PT, MS 1) Discuss the basic science work on effect of stem cell therapy for neurologic **Neilsen Foundation** 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 Susan Harkema, PhD **Electrical Stimulation** 1) Discuss the pathophysiology of electrical stimulation for treatment of University of Louisville Louisville, KY

- neuronal injuries
- 2) Discuss beneficial results of drug intervention and present FDA status
- 3) Discuss potential adverse reactions.
- 4) Describe present status of therapy in terms of basic science and clinical trials

Hypothermia

- 1) Discuss the pathophysiology of hypothermia for treatment of neuronal
- 2) Discuss beneficial results of hypothermia and present FDA status
- 3) Discuss potential adverse reactions.
- 4) Describe present status of therapy in terms of basic science and clinical

S. Babak "Bobby" Kalantar, MD Georgetown University Hospital Washintgon, DC

Pre-Courses

PRE-COURSE 2 - Continued

Time Frame

Core Topics

Proneuron

- 1) Discuss present FDA status
- 2) Discuss clinical outcomes of study
- 3) Discuss potential adverse reactions

Neuralstem

- 1) Discuss the pathophysiology of stem cells for treatment of neuronal injuries
- 2) Discuss beneficial results of stem cells and present FDA status
- 3) Discuss potential adverse reactions
- 4) Describe present status of therapy in terms of basic science and clinical

3:18-3:30PM

Discussion and Questions

Break

3:30-3:40PM

3:40-4:40PM

3:40-3:55PM

3:55-4:10PM

4:10-4:25PM 4:25-4:40PM 4:40-4:55PM

4:55-5:00PM

Chronic Intervention / Assessment

- ASIA & Progressive Hemorrhagic Injury in ASIA A & B patients
- 1) Discuss the Hemorrhage and SCI
- 2) Discuss interventions to limit
- 3) Discuss using MRI to assess injury severity

Assessment of SCI with MRI

- 1) Discuss the present imaging for SCI
- 2) Discuss newer modalities Diffusion tractography
- 3) Discuss using MRI to assess injury severity and prognosis

Speakers

Daniel P. Lammertse, MD Craig Hospital Englewood, CO

Karl Johe, PhD Neuralstem, Inc.

Michael Fehlings, MD Toronto Western Hospital Toronto, Ontario, Canada

Bizhan Aarabi MD University of Maryland Baltimore, MD

Shekar Kurpad, MD Medical College of Wisconsin Milwaukee, WI

Discussion and Questions

Concluding remarks



In 2007, a group of ASIA Presidents posed at the annual meeting in Tampa, Florida. They are (L-R): Paul R. Meyer, Jr., MD; J. Darrell Shea, MD; William Donovan, MD; Robert Waters, MD; Kristjan Ragnarsson, MD; Kenneth Parsons, MD; Daniel Lammertse, MD; Marca Sipski Alexander, MD; and Glenn Rechtine, MD.

PRE-COURSE 3

Advanced Symposium on Teaching the International Standards for Neurological Classification of Spinal Cord Injury

Sunday, May 5, 2013 • 8:00 a.m. - 5:00 p.m. • Room: Vevey 3

Faculty:

Members of the ASIA Education and International Standards Committees

Learning Objectives:

Upon completion of this course, participants will be able to:

- 1) Determine the level, severity and completeness of even the most atypical SCI cases
- Utilize state-of-the-art teaching strategies to meet the needs of a wide range of learning styles and objectives
- 3) Demonstrate examination skills for the most challenging and atypical SCI situations



Course Highlights:

This day long course (8 hours) addresses:

- 1. Challenging cases involving spinal cord injury level, severity and classification
- 2. Educational strategies to teach the SCI examination to new learners
- 3. Hands on training regarding how to approach some of the challenging aspects of the examination

Synopsis:

The ISNCSCI are used world wide. Accurate assessment and classification of spinal cord injuries is becoming increasingly critical to patient management and the measurement of research outcomes. The e-learning course, InSTeP, developed by the American Spinal Injury Association provides the foundation for successful utilization of the ISNCSCI. However, clinicians in SCI practices need advanced hands-on training to effectively apply and teach the Standards. This interactive day long course will provide numerous case examples and teaching strategies to refine the participant's skills in conducting training on the ISNCSCI examination and classification. Hands on practice of examination and teaching techniques will also occur. A pre and post course test will evaluate learning.

AGENDA

Time	Core Topics	Speakers
8:00 a.m.	Welcome and Introductions: (Background, INSTEP, INSTEP Limitations, Pre-Test)	Ronald Reeves, MD
8:15 a.m.	Review: Basic Components of the ISNCSCI • History of ISNCSCI • Muscle Testing (emphasizing pitfall areas) • Sensory Testing (emphasizing pitfall areas) • Anorectal Testing	William Waring, III, MD
10:15 a.m.	Break	
10:45 a.m.	Classification System: Difficult Cases	Ralph Marino, MD Stephen Burns, MD
11:45 a.m.	Upcoming Revisions	Steven Kirshblum, MD
12:00 noon	Lunch	

Pre-Courses

PRE-COURSE 3 - Continued

Time Core Topics

1:00 p.m. Teaching and Competency Assessment Methodologies for the ISNCSCI

- Review of Historical and Current Trainings
- · Approach to training: goals/audience
- Background of trainees
- Research vs. Clinical
- Terminology
- Standardization
- Review
- Competency
- Reliability
- Accuracy

2:00 p.m. Physical Examination: Practical Application

- Muscle Testing with Patient Models
- · Sensory Testing with Patient Models
- Anorectal Testing

3:30 p.m.

Post-workshop test

4:00 p.m

Post-workshop test review / Discussion

5:00 p.m.

Adjournment



Mary Schmidt Read, PT, DPT, MS Linda N. Jones, PT



Ronald Reeves, MD

ASIA Past-President Dr. David F. Apple, Jr. poses with the national office staff at Shepherd Center: (L-R) Lesley M. Hudson (since 1979); Patty Duncan (since 1993); Janice Tilley (since 2001); and Rebecca Acevedo (since 2008). Also on staff, but not pictured, are Latoya Hart (since 2009); and Deborah McGlawn (since 2012).

Awards Session

Tuesday, May 7, 2013 • 1:30 p.m. - 2:30 p.m. • Room: Zurich D

2013 The Apple Award



For the seventh year, the American Spinal Injury Association (ASIA) will present The Apple Award for excellence in publishing in the spinal cord injury rehabilitation literature. This award is named in honor of David F. Apple, Jr., MD, founding member and past-president of ASIA. The award is a collaboration of three entities that have been critically important to Dr. Apple during his long career in orthopaedic surgery: Shepherd Center in Atlanta, Georgia, where he served as founding medical director for 30 years and is currently emeritus medical director; the journal "Topics in Spinal Cord Injury Rehabilitation," of which he was editor in chief from 1994-2011; and ASIA.

The 2013 recipient of The Apple Award is Ralph J. Marino, MD from Jefferson Medical College of Thomas Jefferson University, Philadelphia, PA. Dr. Marino is a graduate of Eckerd College

(biopsychology), was awarded a graduate degree in clinical epidemiology by the University of Pennsylvania, and received his MD from Jefferson Medical College.

The article for which Dr. Marino will receive the 2013 Apple Award is: "Development of an Objective Test of Upper-Limb Function in Tetraplegia." It was published in 2012 in the American Journal of Physical Medicine and Rehabilitation. In addition to a cash prize of \$1,000, Dr. Marino will be invited to serve as keynote speaker at the 2013 Research Day held at Shepherd Center in November.

Previous recipients of The Apple Award are:

MJ Mulcahey, PhD, Philadelphia, PA (2007) • Christopher Patrick Smith, MD, Houston, TX (2008), James S. Krause, PhD, Charleston, SC (2009) • Anthony DiMarco, MD, Cleveland, OH (2010) Christopher David Pritchard, PhD, Boston, MA (2011) • Mark S. Nash, PhD, Miami, FL (2012)

2013 Sam Schmidt Paralysis Foundation/Sell Fund of ASIA Young Investigator Award



The Sam Schmidt/Sell Fund Award is the result of a productive partnership between the Sam Schmidt Paralysis Foundation, a respected foundation dedicated to the lives of individuals with spinal cord injury, and the American Spinal Injury Association, which has provided professional support to researchers and clinicians in the field of spinal cord injury medicine for 40 years. Established in 2009, the award is designed to encourage the research of early career investigators.

The 2013 recipient is Christopher West, PhD, currently a postdoctoral Research Fellow at the University of British Columbia (ICORD). Dr. West is an experienced translational exercise physiologist who specializes in cardiorespiratory and autonomic assessment in humans and animals. He is primary or co-author of nine peer reviewed manuscripts and two invited manuscripts in this area, and is co-investigator/principal applicant on over \$2.2 million in peer

reviewed grant funding. Under the direction of Andrei Krassioukov, MD, PhD, Dr. West is currently responsible for running a study to investigate the exercise-induced changes in cardiovascular function following experimental spinal cord injury in rodents. His research also investigates the relationship between exercise capacity, autonomic function, sports classification and cardiovascular function in Paralympic athletes with SCI. He attended the London 2012 Paralympic Games to work with the International Paralympic Committee, and has been invited to sit on an expert panel on this subject in Canada. Dr. West, who is British, is a graduate of Brunel University in the UK. His dissertation title is: "Effect of Abdominal Binding on Cardiorespiratory Function in Paralympic Athletes with Cervical Spinal Cord Injury".

The research project for which Dr. West will receive the 2013 Sam Schmidt Paralysis Foundation/Sell Fund of ASIA Young Investigator Award of \$15,000 is: "Effect of hind-limb exercise on cardiac function following experimental spinal cord injury."

Previous recipients of this grant are:

Mousumi Ghosh, PhD, University of Miami, Miami, FL (2009)
Victor Ibrahim, MD, Georgetown University School of Medicine, Washington, DC (2010)
James Crew, MD, Santa Clara Valley Medical Center, San Jose, CA (2011)
Shannon D. Sullivan, MD, PhD, Washington Hospital Center, Washington, DC (2012)

Plenary Sessions

Procedures, Products and Pragmatism: The evolution of inclusive human study protocols

Tuesday, May 7, 2013 • 8:30 a.m. - 10:00 a.m. • Zurich D

Course Chair: John Steeves, PhD, ICORD, University of British Columbia, Vancouver, BC, Canada **Faculty:**

Kim Anderson, PhD, Miami Project to Cure Paralysis, Miami FL, Linda Jones, PT, Craig H. Neilsen Foundation, Boulder, CO, Dan Lammertse, MD, Craig Hospital, Englewood, CO, Andy Blight, PhD, Acorda Therapeutics, Inc, Ardsley, NY, Keith Tansey, MD, PhD, Shepherd Center, Atlanta, GA

Question: Can we speed the completion of SCI clinical trials, using both complete and

incomplete subjects, while preserving the sensitivity and accuracy for reliably detecting a subtle therapeutic effect?

Educational Objectives:

- 1. Discover the scientific and pragmatic issues associated with conducting a clinical trial involving the simultaneous participation of subjects with complete (AIS-A) and incomplete (AIS-B, AIS-C) SCI.
- 2. Even though participants with incomplete SCI have highly variable recovery patterns, learn how they can be partitioned into more homogeneous cohorts in an unbiased manner.
- 3. Consider and debate the strengths and limitations of various outcome measurement approaches. Does the same clinical endpoint need to be used for all trial participants or can we prospectively tailor outcome tools and endpoints to specific SCI cohorts?

Background, Justification and Synopsis:

Conventional SCI trials have used two approaches to recruit and evaluate subjects. The first uses a sequential approach where (for safety reasons) sensorimotor complete (AIS-A) subjects with a thoracic level injury are recruited first. Subsequently, AIS-A subjects with SCI at the cervical level or thoracic AIS-B SCI are recruited. Safety is always the primary concern, but previously published SCI trial data have shown how challenging it can be to determine a subtle therapeutic benefit in these target populations. This trial protocol is also slow and risks the cancellation of further studies when no preliminary efficacy data is available, along with the demonstration of safety, in early trial phases. The second approach has enrolled all subjects, regardless of level or severity of SCI, and then used a common clinical endpoint (outcome threshold), which may have been: 1) too demanding an endpoint (e.g. improvement of 2 AIS grades), 2) insensitive to detecting a subtle benefit, and/or 3) a statisticians' nightmare where the responses from less severe SCI participants offset the outcomes from more severe SCI, resulting in no discernible effect.

The recent development of more accurate diagnostic criteria, along with unbiased statistical algorithms, provides an opportunity for the identification of homogeneous cohorts with incomplete spinal cord injury (iSCI). The early enrollment of appropriate iSCI subjects (after small initial safety study on complete SCI) may benefit clinical translation for several reasons, including:

- 1. Because incomplete SCI subjects have some preserved neural connections they might respond better to any subtle therapeutic effect than subjects with sensorimotor complete (AIS-A) SCI.
- 2. Most therapeutic interventions are discovered using animal models with iSCI; thus the use of people with iSCI should more closely approximate the preclinical situation.
- 3. Inclusion of iSCI subjects would provide a faster and more comprehensive completion of a SCI trial due to the concurrent evaluation of a broader range of SCI severities (AIS-A through AIS-C).
- 4. For the moment, the inclusion of participants with mild SCI (e.g. AIS-D) in early phase trials may not be desirable, as the significant spontaneous recovery associated with the AIS-D population will likely mask the detection of any therapeutic effect.

Using the large and comprehensive EMSCI database, we have been identifying which iSCI subjects can and should be included in acute or sub-acute Phase 2 clinical trials. We have completed analyses that suggest we can accurately predict within the first 2 weeks after SCI what the pattern of neurological and functional recovery will be at 6 months for incomplete AIS-B and AIS-C SCI patients. The findings are promising as a diagnostic, but are equally important for human studies.

Using a predetermined number of different anchor outcomes (clinical endpoints), the recursive partitioning algorithm will enable a clinical investigator to selectively include AIS-B and AIS-C patients for an accurate and reliable assessment of whether a therapeutic provides a benefit and is significantly different from appropriate controls. We are extending and validating the approach across a wide range of variables, including different: 1) rostrocaudal levels of SCI, 2) SCI with unique sensorimotor patterns (e.g. anterior and central cord syndrome), 3) start / end times for trials, 4) biological, neurological & functional outcome measures (clinical endpoints), and 5) pivotal phase 3 trials.

As alluded to above, more refined and reasonable clinical endpoints are needed and they should be tailored to the appropriate study population and therapeutic target. We have previously defined a promising clinical endpoint for tetraplegic sensorimotor complete (AIS-A) participants. We will also review several outcome tools as clinical measures and suggest some "reasoned" clinical endpoints (thresholds) for AIS-B and AIS-C iSCI populations, which the audience may wish to discuss and debate. The present course will complete the course started by SCOPE in 2012.

Agenda:

- 1. Introduction of why iSCI subjects are important Kim Anderson (10min)
- 2. Setting the stage (what are the challenges to stratifying iSCI subjects and developing reasonable iSCI trial endpoints) Linda Jones (10mins)
- 3. Outline of enabling algorithms that can be used to stratify iSCI cohorts and model iSCI trial endpoints John Steeves/Dan Lammertse (30mins)
- 4. Pragmatic issues (opportunities and constraints) Andy Blight
- 5. Audience feedback and discussion Keith Tansey as chair (20 min)

Funding: SCOPE (contact steeves@icord.org)

Plenary Sessions

ASIA Prevention Committee Session

Wednesday, May 8, 2013 • 8:00 a.m. - 9:30 a.m. • Room: Zurich D

Course Chairs: Lawrence C. Vogel, MD, Shriners Hospital for Children – Chicago

Sara J. Klaas, MSW, C-ASWCM, Shriners Hospital for Children –Chicago

Moderator: Sara J. Klaas, MSW, C-ASWCM, Shriners Hospital for Children – Chicago

Faculty:

Dirk H. Alander, MD, Orthopaedic Spine Service, Saint Louis University Lawrence C. Vogel, MD, Shriners Hospital for Children – Chicago

Primary Prevention of Spinal Cord Injury; Collaborating Toward a Blueprint for Ending Distracted Driving

Educational Objectives:

- 1. To enhance knowledge of primary prevention of spinal cord injury
- 2. To present data related to primary prevention efforts around distracted driving
- 3. To share current successes and legislation
- 4. To lay out a plan for building on current successes to arm future prevention leaders

Spinal cord injury (SCI) is a catastrophic injury that not only causes paralysis but has long-term impact on physical and mental health. Estimates show that there are 236,000 to 327,000 individuals living with the consequences of SCI in the United States and each year an additional 12,000 individuals sustain a new spinal cord injury. Care and cure are often the focus for healthcare professionals but prevention is truly the key. With the most frequent cause of these injuries being motor vehicle crashes, primary prevention efforts must move to the forefront. As a leader in spinal cord injury rehabilitation and management, the American Spinal Injury Association (ASIA) is committed to doing its part to prevent injuries and to promote safe driving practices through education and awareness. The ASIA Prevention Committee's mission is to gather and disseminate best practice information and foster collaborations with other organizations for the purpose of prevention of spinal cord injury through education, research and policy. This symposium will review the committee's mission, goals, and progress (Klaas) and transition into an expert panel specifically focused on distracted driving (LaHood, Vogel, Alander). These experts will share experiences, insights and knowledge to understand the issues around and consequences of distracted driving. With studies showing that more than 100,000 drivers are texting at any given daylight moment and more than 600,000 drivers are holding cell phones in their hands, it is clear that we must collaborate and boost our efforts in the arena of prevention!

Invited Keynote Speaker:

Ray LaHood, United States Secretary of Transportation

Raymond H. LaHood is currently the United States Secretary of Transportation, having served in this role since 2009. He previously represented the Illinois 18th congressional district in the U.S. House of Representatives for seven terms (1995–2009). Under Secretary LaHood's leadership, The U.S. Department of Transportation launched a national campaign to end the dangerous practice of distracted driving. Secretary LaHood recently released a "Blueprint for Ending Distracted Driving" that offers a comprehensive strategy to address the growing and dangerous practice of using handheld cell phones behind the wheel. The plan outlines concrete steps stakeholders around the country – from lawmakers and safety organizations to families and younger drivers – can take to reduce the risk posed by distracted driving.

Funding Source: None

ASIA Symposium

ASIA Symposium: INSCSCI Update

History of ISNCSCI; update of new worksheet including use of non-key muscles; use of algorithms; dilemmas in research; and presentation of unusual cases.

Monday, May 6, 2013 • 11:00 a.m. - 12:30 p.m. • Room: Zurich E, F, G

Course Chair: Steven Kirshblum, MD

Educational Objectives:

- 1. To review the new updates in the INSCSCI worksheet and suggested levels for non-key muscles
- 2. To discuss research related issues and advanced uses of the ISNCSCI
- 3. To review difficult cases of classification

Agenda:

- 1. History of the ASIA Standards William Donovan MD
- 2. 2013 new additions worksheet and Non-key muscles Steven Kirshblum MD
- 3. Classification algorithms
- 4. Controversial and Research issues utilizing the ISNCSCI Keith Tansey MD, PhD
- 5. Difficult case reviews

Funding Source: None



COURSE 1

Activity-Based Therapy for Recovery of Walking in Individuals with Chronic Spinal Cord Injury: Results from a Randomized Clinical Trial

Monday, May 6, 2013 • 11:00 a.m. - 12:30 p.m. • Room: Zurich D

Course Chair: Michael Jones, PhD, Crawford Research Institute, Shepherd Center, Atlanta, GA

Faculty:

Nicholas Evans, Shepherd Center Candy Tefertiller, PT, DPT ATP, NCS, Craig Hospital

Educational Objectives:

- 1. Summarize findings from a randomized clinical trial examining the effects of activity-based therapy on recovery of walking in individuals with chronic spinal cord injury
- 2. Describe the algorithm used to prescribe and standardize therapeutic interventions for study participants
- 3. Explain the three categories of therapeutic interventions used in activity-based therapy
- 4. Identify participant factors that differentiate "responders" from "non-responders" to activity-based therapy
- 5. Understand the factors associated with long-term maintenance of effects
- Discuss the relevance of study findings for individuals with chronic, motor incomplete SCI

Synopsis:

"Activity-based" therapy is growing in popularity as an approach to promote neurologic recovery after spinal cord injury (SCI). It involves "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). While intense physical activity has been shown to improve physiological function and health outcomes in individuals with chronic (> one year post-injury) SCI, the impact on neurologic recovery is not well documented.

In 2009, the investigators initiated a prospective, randomized clinical trial to evaluate empirically the effects of participation in an activity-based therapy program for 50 individuals with chronic, motor incomplete SCI (AIS C or D). The trial examined the effectiveness of an intensive (9-hours/week), 24-week ABT program targeting recovery of walking.

This symposium will present results of the trial in three primary areas: 1) effects of activity-based therapy on recovery of walking and community participation, 2) analysis of "responders" and "non-responders" to provide insight into factors that may help predict who is likely to benefit from activity-based therapy; and 3) analysis of 6 and 12-month follow-up data to identify factors associated with the preservation of any gains achieved in recovery of walking.



In 2007, at the annual meeting in Tampa, Florida, MJ Mulcahey, PhD, OTR receives the inaugural Apple Award for excellence in publishing from its namesake, Dr. David F. Apple, Jr.

The symposium will conclude with a discussion of the implications of study findings with respect to: 1) future research, 2) role of activity-based therapy in long term recovery of SCI, and 3) recommendations for individuals with SCI who may be interested in activity-based therapy.

Funding Source: US Department of Education, National Institute on Disability and Rehabilitation Research, Grant No. H133G080031-10

COURSE 2 - Part 1

Splinting the Upper Limb in Tetraplegia

Monday, May 6, 2013 • 11:00 a.m. - 12:30 p.m. • Room: Zurich C

Course Chair: MJ Mulcahey, PhD,OTR, Jefferson School of Health Professions, Thomas Jefferson University, Philadelphia PA

Moderator: Isa McClure, MSPT, Kessler Institute for Rehabilitation, Saddle Brook, NJ

Faculty:

Anne Bryden, OTR, Case Western Reserve University, Cleveland OH Ralph Marino, MD, Thomas Jefferson University Hospital, Philadelphia PA Gabriella Stiefbold, OTR, Kessler Institute for Rehabilitation, Saddle Brook, NJ Isa McClure, MSPT, Kessler Institute for Rehabilitation, Saddle Brook, NJ

Educational Objectives:

1. To understand the biomechanical principles of splinting the upper limb in tetraplegia

2. To understand the anatomical considerations for splinting the hand, forearm and elbow in tetraplegia

- To learn about the differences in splint material and how decisions are made regarding what material to use for what clinical presentation
- 4. To understand what outcomes instruments may be useful to build evidence in support of splinting

5. To understand the evidence in support of treatment associated upper limb splinting

- 6. To apply advanced critical reasoning skills during the evaluation and treatment decision-making process using authentic pediatric and adult cases
- 7. To identify and describe the rationale for the most commonly used splints in spinal cord injury care
- 8. To fabricate a static spasticity-reducing splint and a dynamic tenodesis splint
- 9. To articulate the evidence in support of splinting in tetraplegia

Synopsis/Objective:

This instructional course, which will be delivered in two sessions, is designed for Intermediate and Advanced clinicians and will focus on splinting of the upper limb in tetraplegia. The first course will discuss the principles of upper extremity splinting in persons with tetraplegia; review biomechanics of the upper limb as they relate to splinting; review possible instruments to evaluate the effectiveness of splinting; discuss clinical reasoning associated with choice of splint material and; apply concepts discussed through case presentation with faculty and participant exchange. The material presented will be based on the "best available evidence." The second course will provide participants with "hands-on opportunity" to strengthen their splinting skills specifically for the population with spinal cord injury.

Design:

The two courses are designed for intermediate and advanced level clinicians, therapists and nurses. The course will be a combination of didactic, case studies and hands-on splinting. The first course will focus on the fundamental clinical, anatomical and biomechanical principles and practices associated with splinting the upper limb in tetraplegia; this session will be didactic and will utilize case studies and faculty-participant interchange to solidify concepts discussed in the course. The "best available evidence" will be used to support concepts presented and discussion. The second session will involve actual fabrication of two splints: a static, spasticity-reducing splint and a dynamic tenodesis splint. The second session is limited to the first 24 individuals who register. The second session will be most relevant to therapists who fabricate or assist with fabrications of splints, therapists who utilize and incorporate splints into treatment; physicians who prescribe splints or who want to further develop their knowledge on splint fabrication, (particularly for spasticity and function), and nurses, social workers and psychologists who have the desire to better understand the process of splint fabrication and the education provided to patients regarding application and removal of splints and wearing regimes.

Part 1 - Fundamentals of Upper Limb Splinting

11:00-11:05	Introductions and Learning Objectives - MJ Mulcahey		
11:05-11:20	Anatomy of the Upper Limb and Implications of SCI - Gabriella Stiefbold		
11:20-11:30	Biomechanics and Clinical Principles of Upper Limb Splinting - Anne Bryden		
11:30-11:40	Discussion		
11:40-11:50	Clinical Decisions Regarding Selection of Splinting Material - Gabriella Stiefbold		
11:50-12:00	Potential Outcomes Instruments used to Evaluate Splinting Effectiveness - Ralph Marino		
12:00-12:05	Discussion		
12:05-12:30	Applications of Course Concepts through Case Studies with Audience Participation - Isa McClure, Moderator		
	Funding Common Name		

COURSE 3

Restorative Neurology of Upper Extremity Function in Tetraplegia: Neurobiology, Assessment, Clinical Research, and Novel Treatment

Monday, May 6, 2013 • 1:30 p.m. - 3:00 p.m. • Room: Zurich E, F, G

Course Chair: Keith Tansey, MD, PhD, Crawford Research Institute, Shepherd Center, Emory University School of Medicine SCI

Clinic, Atlanta VA Medical Center, Atlanta, GA

Faculty:

Barry McKay, BS, Shepherd Center, Atlanta, GA John Kramer, PhD, Shepherd Center, Atlanta, GA Justin Brown, MD, University of California San Diego, CA

Educational Objectives:

- 1. Identify neurobiological issues impacting function unique to tetraplegia
- 2. Describe methods to assess and follow motor control using poly-EMG
- 3. Identify important features of clinical study design specific to tetraplegia
- 4. Appreciate a neurosurgical option to recover motor control in tetraplegia

Synopsis:

Tetraplegia, with its associated compromise of upper extremity and hand function, affects about half of all individuals with spinal cord injury. Interventions designed to generate neurological recovery in these patients are limited and poorly understood. This symposium will explore the neurobiological basis of upper extremity compromise in tetraplegia and describe a method that can be used to assess, characterize, and follow that dysfunction through treatment and recovery in neurophysiological terms. The symposium will then address how clinical study in tetraplegia should be designed to reconcile the neurobiological challenges of this injury with the practicalities of conducting meaningful clinical trials in tetraplegia. Finally, the symposium will present a novel neurosurgical approach designed to re-establish upper extremity motor control in tetraplegia by linking supraspinal centers with infra-injury muscle function.



In 1979, the ASIA Board of Directors met prior to the Annual Scientific Meeting in Atlanta, GA. (L-R) First President R. Edward Carter, MD; John Nanninga, MD; Fourth President David F. Apple, Jr., MD; Seventh President John F. Ditunno, Jr., MD; Third President Samuel L. Stover, MD; Fifth President J. Darrell Shea, MD; Richard Hamilton, MD; John Young, MD; and Second President Paul R. Meyer, Jr., MD, MM.



In Houston, TX, in 1997, the first ten Presidents of ASIA were all present at the Annual Scientific Meeting. Having them in the same place at the same time was a photo op too special to pass up. The handsome members of this group, posed in their order of service, are: Front Row (L-R) R. Edward Carter, MD (#1); Paul R. Meyer, Jr., MD, MM (#2); Samuel L. Stover, MD (#3); David F. Apple, Jr., MD, (#4); J. Darrell Shea, MD (#5). Second Row (L-R) William Donovan, MD (#6); John F. Ditunno, Jr., MD (#7); Robert L. Waters, MD (#8); Kristjan T. Ragnarsson, MD (#9); and James S. Keene, MD (#10). Their Presidencies spanned a quarter of a century (1973-1997).

COURSE 4

International Spinal Cord Injury Data Sets

Monday, May 6, 2013 • 3:30 p.m. - 5:00 p.m. • Room: Zurich C

Course Chair: Fin Biering-Sørensen, MD, DMSc, University of Copenhagen, Denmark, The Clinic of Spinal Cord Injuries,

Glostrup Hospital, Denmark

Faculty:

Michael DeVivo, DrPH, University of Alabama at Birmingham, AL Susan Charlifue, PhD, Craig Hospital, Englewood, CO Vanessa Noonan, PhD, Rick Hansen Institute, Vancouver, BC, Canada Naomi Kleitman, PhD, Craig H. Neilsen Foundation

Educational Objectives:

- 1. Describe the International SCI Data Sets project and give examples of the available data sets
- 2. Report the International SCI Core Data Set according to published standards
- 3. Describe important points to consider when translating and assessing reliability and validity of an International SCI Data Set
- 4. Describe ongoing work to develop the 'Complete Clinical Record' and common data elements for SCI clinical research

Synopsis:

Overview of the International SCI Data Sets available (Fin Biering-Sørensen)

Standardization in reporting data related to the International SCI Core Data Set (Michael DeVivo)

Advice for translating and assessing reliability and validity of the International SCI Data Sets (Susan Charlifue)

Ongoing work for the 'Complete Clinical Record' (Vanessa Noonan)

NIH/NINDS partnership in defining common data elements (CDEs) for the International SCI Data Sets and ongoing development of CDEs for clinical SCI trials (Naomi Kleitman)

COURSE 5

Pediatric-Adolescent Spinal Cord Injury Over the Last 40 Years

Tuesday, May 7, 2013 • 10:30 a.m. - 12:00 p.m. • Room: Zurich C

Course Chair: Lawrence Vogel, MD, Shriners Hospital for Children, Chicago, IL

Faculty:

MJ Mulcahey, PhD, Jefferson School of Health Professions, Thomas Jefferson University, Philadelphia PA Michael DeVivo, DrPH, University of Alabama at Birmingham, AL Pam Wilson, MD, Children's Hospital of Denver, Denver, CO Randal Betz, MD, Shriners Hospital for Children, Philadelphia, PA Kathy Zebracki, PhD, Shriners Hospital for Children, Chicago, IL Bill Bogdan, Disability Liaison, Illinois Secretary of State Office Sara Klaas, MSW, C-ASWMC, Shriners Hospital for Children, Chicago, IL Lawrence Vogel, MD, Shriners Hospital for Children, Chicago, IL

Educational Objectives:

- 1. To understand the longitudinal trends in injury characteristics, morbidity and mortality associated with pediatric SCI;
- 2. To trace the evolution of rehabilitation approaches to children with SCI and to appreciate the advances made over time in evidence-based pediatric SCI rehabilitation
- 3. To discuss the evolution in knowledge, medicine and technologies related to musculoskeletal treatment and outcomes associated with pediatric SCI
- 4. To present the outcomes of adults who sustained SCI as children and are now 40 years of age or older
- 5. To reflect upon 40 years of lived experiences associated with SCI

Synopsis:

The course will include didactic lectures, a personal narrative and panel-audience discussion



Best Friends Drs. Ed Carter and John Young, 1988.

COURSE 6

Quantifying Sensory Changes After Spinal Cord Injury: New Approaches to Understand Pain

Tuesday, May 7, 2013 • 2:30 p.m. - 4:00 p.m. • Room: Zurich E, F, G

Course Chairs: John Kramer, PhD, Hulse Spinal Cord Injury Laboratory, Shepherd Center, Atlanta, GA Armin Curt, MD, Balgrist University Hospital, Zurich, Switzerland

Faculty:

Karan Davis, PhD, Toronto Western Research Institute, University of Toronto, Toronto, Ontario, Canada Eva Widerström-Noga, PhD, University of Miami Miller School of Medicine, Miami Project to Cure Paralysis, Miami, FL Diana Cardenas, MD, Department of Rehabilitation Medicine, University of Miami Miller School of Medicine, Miami, FL John Steeves, PhD, ICORD, University of British Columbia, Vancouver, British Columbia, Canada

Educational Objectives:

- 1. Update the current classification(s) of pain after SCI
- 2. Describe current approaches to quantify sensory anatomy and physiology, and brain plasticity after SCI
- 3. Discuss the strengths, limitations, and areas of overlap for the different quantifiable measures of sensory and brain function
- 4. Discuss how these quantifiable sensory and brain imaging measures impact diagnosis and treatment of neuropathic pain



ASIA Meeting, 1982, New York City.

Synopsis:

Neuropathic pain is a complex and often severely debilitating secondary consequence of SCI. While there are currently few effective treatment options, recent development and application of quantitative outcome measures have revealed new insights into changes in sensory neuroanatomy and physiology, and brain structure and function after injury.

The primary aim of the course will be to discuss current knowledge regarding neuropathic pain after SCI according to emerging quantifiable assessment techniques. Specifically, the focus of discussion will be on the application of quantitative sensory testing (QST), electrophysiology, and neuroimaging to assess morphological and physiological changes within the spinal cord and brain. We intend to outline how these new measures have contributed to a better understanding of the mechanisms of pain in the healthy and injured central nervous system, and how, in turn, this may lead to improved treatment options. In the context of assessing clinical applicability, the strengths and limitations of each technique will be discussed by the panel. The audience will be encouraged by the moderator to fully participate with questions and comments during the panel discussion.

Funding Source: Medoc Advanced Medical Systems



In 1988, the ISCoS (then IMSoP) meeting was held in Perth, Western Australia, on the shores of the Indian Ocean. Legendary Australian SCI doctor, knighted by Queen Elizabeth, Sir George Bedbrooke, was the host of the local organizing committee. An ASIA contingent attended, led by three of its Past Presidents. Pictured in the lobby of the host hotel are (L-R): William Donovan, MD; Sir George Bedbrooke; J. Darrell Shea, MD; and David F. Apple, Jr., MD. FUN FACT: This photo was taken by Lesley M. Hudson, MA, at that time Clinical Meeting Coordinator for ASIA. Lesley had traveled to Perth with an ASIA exhibit that was displayed at the meeting!

COURSE 2 - Part 2 Splinting the Upper Limb in Tetraplegia

Tuesday, May 7, 2013 • 2:30 p.m. - 4:00 p.m. • Room: Vevey 1 & 2

Course Chair and Moderator: MJ Mulcahey, PhD, OTR, Jefferson School of Health Professions, Thomas Jefferson University, Philadelphia PA

Faculty:

Anne Bryden, OTR, Case Western Reserve University, Cleveland OH Ralph Marino, MD, Thomas Jefferson University Hospital, Philadelphia PA Gabriella Stiefbold, OTR, Kessler Institute for Rehabilitation, Saddle Brook, NJ Isa McClure, MSPT, Kessler Institute for Rehabilitation, Saddle Brook, NJ

Course details can be found on Page 21

Tuesday May 6th 2013: Advanced Splinting for Spinal Cord Injury

2:30-2:35
 2:35-2:45
 2:45-3:00
 Introduction, Objectives and Course Format - MJ Mulcahey
 Evidence Based Practice: Spasticity Reducing Splint and Tenodesis Splint - Isa McClure, MSPT
 Spasticity Reducing Static Splint in SCI and Dynamic Splint for function in SCI (Five Minute Primary Points) - MJ Mulcahey, Moderator

• Spasticity-Reducing Splint: Alternative options - Ralph Marino

- Dynamic Tenodesis Splint: Alternative Options Ralph Marino
- Clinical Reasoning Related to Selection of Splint Material Gabriella Stiefbold

3:00-4:00 Hands-On Splint Fabrication - Anne Bryden & Gabriella Stiefbold *Funding Source:* None

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COURSE 7

How Emerging Neural Interfaces Relate to Functional Restoration for People with SCI

Tuesday, May 7, 2013 • 4:30 p.m. - 6:00 p.m. • Room: Zurich D

Course Chair: Jennifer French, MBA, Neurotech Network, Tampa, FL

Faculty:

Bolu A. Ajiboye, PhD, Case Western Reserve University, Cleveland FES Center, Louis Stokes Cleveland VA Medical Center Leigh R. Hochberg, MD, PhD, Massachusetts General Hospital, Brigham & Women's Hospital, Spaulding Rehabilitation Hospital; Brown University; Harvard Medical School; Center of Excellence for Neurorestoration and Neurotechnology, Rehabilitation R&D Service, Providence VA Medical Center

Lee E. Miller, PhD, Northwestern University, Feinberg School of Medicine; Rehabilitation Institute of Chicago; The Miller Laboratory of Limb Motor Control

Educational Objectives:

- Review and understand the components and interactions of brain computer interfaces, EMG inputs and networked neural prostheses
- 2. Discuss the use of these interfaces by people living with spinal cord injury for daily functional restoration
- 3. Explore actively recruiting clinical trial research including inclusion and exclusion criteria, the screening method and further resources for clinicians

Synopsis:

Interface innovations have changed the way we interact with technology. The main-stream keyboard has now migrated to touch screens and voice-controlled interfaces. Functional Electrical Stimulation, robotics and automated environmental controls have been topics of human clinical trials for persons with spinal cord injury. During this time, there has been a variety of programs and hundreds of subjects using neural prosthetics in their daily lives. What is next for neural prosthetics? Brain-Computer Interfaces (BCI), Electromyography (EMG) Inputs and Neural Networked Systems are the latest generation. Once subjects of science-fiction movies, these modalities have now translated to active clinical trial research. This course will introduce the components of BCI and EMG systems and how they are used to produce action for daily living. This session will also reveal the latest technology of an inter-human networked neural prosthesis. Learn how these new interfaces potentially translate to daily functional restoration for people with spinal cord injury. Understand what clinical trial programs are actively recruiting participants and how your patients can get involved.

Funding Source:

Department of Veteran Affairs Rehabilitation Research and Development, NIH, NIBIB, NICHD, NIDCD, NINDS, NSF, DARPA, Chicago Community Trust. Affiliates include: Brown Institute for Brain Science, Brown School of Engineering, Brown University, Case Western Reserve University, Cleveland FES Center, Harvard Medical School, Massachusetts General Hospital, Neurology and Stroke Services, Stanford Neural Prosthetics Translational Laboratory, Stanford Neurosurgery, Hospital and Clinics and School of Medicine, Northwestern University, Department of Physiology, Biomedical Engineering, Feinberg School of Medicine

COURSE 8

Paralympic Wheelchair Athletes: Challenges on the Way to the GOLD

Tuesday, May 7, 2013 • 4:30 p.m. - 6:00 p.m. • Room: Zurich C

Course Chair: Andrei Krassioukov MD, PhD, FRCPC, ICORD, University of British Columbia, GF Strong Rehabilitation Centre,

Vancouver, BC, Canada

Faculty:

Fin Biering-Sørensen, MD, DMSc, Professor in Spinal Cord Injuries, University of Copenhagen Cheri Blauwet, MD, Spaulding Rehab Hospital/Harvard Medical School, Boston, MA Christopher West, PhD, ICORD, University of British Columbia, Vancouver, BC, Canada

Educational Objectives:

- 1. To detail the history of Paralympic classification and the present sport specific classification for Paralympic athletes established by the International Paralympic Committee (IPC)
- 2. To introduce challenges that elite wheelchair athletes with spinal cord injury experience during competition due to autonomic and cardiovascular dysfunction
- 3. To introduce the concept of boosting and the possible harmful effects: data from the latest IPC supported study

Synopsis:

It is becoming increasingly well recognized in the clinical setting that spinal cord injury (SCI) is accompanied by a host of changes in autonomic cardiovascular control. Unfortunately, in the sporting setting there is still a limited understanding of how such changes in autonomic cardiovascular control may affect athletic performance; hence, no tests of autonomic cardiovascular function are currently included in the classification of wheelchair athletes. This expert panel symposium will attempt to bridge this gap by providing an overview and history of sports classification, bringing participants from the 1980s through to the

present day. We will discuss how changes in autonomic cardiovascular function may affect elite athletic performance, and address some of the complex issues that elite wheelchair athletes with SCI are experiencing during training and competition. Topics to be covered will include: disordered blood pressure control, autonomic dysreflexia, orthostatic hypotension, boosting phenomenon, and bladder and bowel management. We will also place a particular emphasis on the practice of boosting, and hear about exciting research being conducted by the International Paralympic Committee (IPC) to help reduce this practice.



The ASIA BOD gathered for a formal photo at the Annual Scientific Meeting in Orlando, FL, in 1990. Pictured are: (Seated, L-R) L. Keith Lloyd, MD; Inder Perkash, MD; John F. Ditunno, Jr., MD; Charles Gibson, MD; William Donovan, MD. Standing (L-R) Robert Menter, MD; J. Darrell Shea, MD; Frederick M. Maynard, MD; James S. Keene, MD; Robert L. Waters, MD; Kenneth C. Parson, MD; George Wharton, MD; Kristjan T. Ragnarsson, MD.

Collectively, the panel will present research data collected during their work with Paralympic athletes during the Beijing 2008, Vancouver 2010, and London 2012 games. The expert panel symposium will be conducted by a multidisciplinary team of clinicians, scientists and members of the IPC, who will have long standing expertise in Paralympic sports, clinical management of SCI, and exercise physiology.

COURSE 9

Bone Changes after Spinal Cord Injury: A Problem with a Solution

Wednesday, May 8, 2013 • 10:00 a.m. - 11:30 a.m. • Room: Zurich D

Course Chair: Thomas J. Schnitzer, MD, PhD; Professor; Department of Physical Medicine and Rehabilitation, Northwestern

University Feinberg School of Medicine; Chicago, IL

Faculty:

Karen Troy, PhD; Assistant Professor, University of Illinois at Chicago; Department of Kinesiology and Nutrition; Chicago, IL Leslie Morse, DO; Associate Professor, Harvard Medical School, Department of Physical Medicine and Rehabilitation; Director of SCI Research, Spaulding Rehabilitation Hospital; Boston, MA

Cathy Craven, MD, MSc; Assistant Professor, University of Toronto; Scientist, Toronto Rehab, Lyndhurst Centre, Toronto, ON, Canada

Educational Objectives:

- 1. Identify the significant healthcare consequences of bone loss after SCI
- 2. Recognize the pathophysiologic processes involved in bone modeling and remodeling
- 3. Compare and contrast the changes that occur in bone immediately and at later times after acute SCI
- 4. Design a therapeutic approach to bone changes after SCI based on bone biology

Synopsis:

Bone loss occurs rapidly after acute spinal cord injury (SCI) and is closely associated with an increased incidence of renal stones, heterotopic ossification, and ultimately debilitating extremity fractures. The initial bone loss is a consequence of loss of normal mechanical loading of the skeleton. Bone, a metabolically highly active organ, responds to mechanical and endocrine stimuli; bone metabolic activity can be assessed and monitored by measurement of serum markers of bone metabolism, and bone mass and bone strength determined by DXA and CT imaging. Utilizing these techniques, a significant increase in bone resorptive activity and profound loss of bone have been observed immediately after SCI. Bone loss has involved cortical as well as trabecular constituents, with a marked detrimental effect on bone strength. Prevention of bone loss in acute SCI is based on physical measures to enhance skeletal loading as well as pharmacologic interventions to inhibit bone resorption. Bisphosphonates have been shown, in short-term studies, to be effective after acute SCI in prevention of bone loss; longer-term studies are needed to assess durability of response. Individuals with chronic SCI demonstrate an even greater loss of bone mass and bone strength, particularly in areas of increased fracture risk, e.g., distal femur and proximal tibia. The degree of bone loss is often not well recognized, and an optimal bone program can minimize further bone loss. An increase in bone mass and bone strength is the ultimate goal, and studies of currently available bone anabolic agents have been initiated, with the promise of more potent drugs in the near future. Thus, treatments are available that should allow a renewed discussion regarding the standard of care for bone health after SCI.

COURSE 10

The Application of transcranial Direct Current Stimulation (tDCS) on Chronic Neuropathic Pain in SCI

Wednesday, May 8, 2013 • 10:00 a.m. - 11:30 a.m. • Room: Zurich E, F, G
Course Chair: Felipe Fregni, MD, MPH, PhD, Spaulding Rehabilitation Hospital, Boston, MA

Faculty:

Leon Morales-Quezada, MD, MSc, Laboratory of Neuromodulation, Spaulding Rehabilitation Hospital Ingrid Moreno Duarte, MD, Spaulding Rehabilitation Hospital

Educational Objectives:

- 1. To understand the neuropathophysiology involved in chronic neuropathic pain in SCI, and how non-invasive neuromodulation can be used to target those mechanisms
- 2. To discuss the current clinical research of tDCS and its translation for therapeutic purposes; attendees also will learn the neurophysiological principles of brain stimulation and their effects on pain related conditions
- 3. To explore the tDCS treatment approach in chronic neuropathic pain and to provide evidence of its safety
- 4. To discuss the role of tDCS as an integral part of the physical and cognitive rehabilitative process
- 5. Attendees to participate in a practice session demonstrating the use and technical aspects of a tDCS device
- 6. To discuss the combined effects of tDCS and other behavioral approaches

Synopsis:

Chronic sublesional neuropathic pain in SCI is a major issue that causes significant problems to both the individual and society. Nearly 40% of people with SCI report neuropathic pain that is often refractory to medications. Neuropathic pain has been identified as a primary factor in determining quality of life post-injury, leading to depression as well as loss of employment and productivity. The need to develop novel therapeutic approaches for pain was highlighted as a high priority in the field of SCI research in a position statement by the US Institutes of Medicine and the National Academy of Sciences. Chronic pain in spinal cord injury results from a dysfunction of cortical areas associated with sensory and pain processing. These areas become dysfunctional after SCI due to diminished input from peripheral sensory systems. Evidence suggests that the resulting chronic pain is associated with the phenomenon of central sensitization involving a large neural network. tDCS is a noninvasive method of neuromodulation based on the application of a weak current to the scalp, which flows between an anode and cathode electrode. During tDCS treatment, low amplitude direct currents applied via scalp electrodes penetrate the skull and enter the brain. Anodal tDCS of the motor cortex can induce clinically significant pain relief in chronic pain syndromes, including neuropathic pain in SCI, by changing excitability in critical areas associated with pain processing. Compared to pharmacological approaches, tDCS has significant advantages, as it is a targeted treatment and therefore the effects are localized, avoiding systemic adverse effects.

Funding Source: National Institute on Disability and Rehabilitation Research (NIDRR)

COURSE 11

Neuromuscular Recovery Scale:

A New Measure of Recovery Based on Pre-Injury Performance

Wednesday, May 8, 2013 • 11:30 a.m. - 1:00 p.m. • Room: Zurich E, F, G

Course Chair: Andrea L. Behrman, PhD, PT, FAPTA, Department of Neurological Surgery, University of Louisville, Kentucky

Spinal Cord Injury Research Center, Louisville, KY

Faculty:

Elizabeth Ardolino, PhD, PT, University of St. Augustine, Austin, TX Marcie Kern, PT, MS, TIRR Memorial Hermann, Houston, TX

Educational Objectives:

- 1. Discuss the rationale and process of development of the Neuromuscular Recovery Scale (NRS) including utility
- 2. Compare and contrast the key factors in compensation-based instruments and the new NRS
- 3. Conduct, score, and interpret several items from the NRS for clinical purposes (e.g. clinical decision-making, progression, and treatment planning) and research outcomes
- 4. Describe the inter-rater and test-retest reliability of the NRS when used to assess complete and incomplete SCI
- 5. Describe the validity of the NRS to assess complete and incomplete SCI

Synopsis:

Quantifying recovery after spinal cord injury (SCI) in the clinic is a challenge, yet a timely need with advances in therapies targeting enhanced recovery post-SCI. While some measurement instruments specifically designed for SCI typically allow compensation, other measures such as manual muscle testing prohibit use of compensatory strategies during testing. The Neuromuscular Recovery Scale (NRS) was developed by clinicians and scientists in the Reeve Foundation NeuroRecovery Network (NRN), at 7 outpatient clinical sites in the U.S. (Behrman et al. 2012). The NRS is innovative in that scores are based on normal, pre-injury performance criteria. For instance, the ability to stand up from sitting is assessed without use of load-bearing on the arms and with usual limb and trunk kinematics as the reference. This instructional course will introduce the instrument, and its utility in practice and research. Items that comprise the NRS will be described, as will standardization procedures. Additionally, we will present the psychometric properties of the NRS including inter-rater and test-retest reliability and validity using item-response theory addressing a wide range of injury severity and recovery. Video case examples with hands-on demonstrations across complete and incomplete SCI by skilled clinicians will maximize learning and increase effective translation into clinical use. Interpretation of the scores and discussion of how the NRS can be used to guide rehabilitation and as a clinical and/or research outcome will be drawn from widespread use of the NRS in the NRN.

Funding Source:

Craig H. Neilsen Foundation, Christopher and Dana Reeve Foundation through a cooperative agreement with the Centers for Disease Control and Prevention (Award No. 1U59DD000838), Department of Defense Spinal Cord Injury Research Program (SCIRP) of the Office of the Congressionally Directed Medical Research Programs (CDMRP)

COURSE 12

North American Clinical Trials Network (NACTN) and the NeuroRecovery Network (NRS): Advancing SCI Research and Translation of Evidence into Practice

Wednesday, May 8, 2013 • 11:30 a.m. - 1:00 p.m. • Room: Zurich C

Course Chair: Susan J. Harkema, PhD, University of Louisville, Louisville, KY

Faculty:

Gail Forrest, PhD, Kessler Foundation Research Center, West Orange, NJ Mary Schmidt-Read, PT, DPT, MS, Magee Rehabilitation Hospital, Philadelphia, PA

Educational Objectives:

- Understand the unique role of the Christopher Reeve Foundation North American Clinical Trials Network and the NeuroRecovery Network to promote effective clinical trials and translation of evidence into practice for advancing recovery after SCI
- 2. Understand recent outcomes from the NACTN and implications for practice including prediction models, outcome measures, and quantitative assessment of neurophysiological status after SCI
- 3. Gain knowledge of the impact of activity-based therapies examining outcomes on balance and ambulation, cardiovascular status after SCI, and outcome selection for clinical decision-making

Synopsis:

Investigators, administrators, physicians, and therapists from the North American Clinical Trials Network (NACTN) and the NeuroRecovery Network (NRN) will introduce attendees to the mission and objectives of these two unique, multi-center clinical research and clinical networks in advancing SCI research and translation of evidence into practice. Each will present recent findings from the networks with implications for clinical practice in acute care and rehabilitation. Specifically, the NACTN team of five clinical research centers and a biostatistics center has examined predictors of acute clinical complications after cervical traumatic SCI, as well as of pulmonary complications after traumatic SCI; developed a measure of upper extremity recovery; developed quantitative tests of neurophysiolocal status; and completed a recent trial of riluzole in acute spinal cord injury. The NRN team of seven clinical out-patient rehabilitation sites in the U.S. has examined the impact of locomotor training as a standardized, activity-based therapy on balance and ambulation outcomes in persons with chronic SCI; described the cardiovascular status in persons with chronic SCI; developed a novel outcome measure for recovery of neuromuscular function for clinical practice and research; examined the association of multiple outcome measures relative to recovery; and examined life-care plans to assess cost-benefit of therapies. Findings will be highlighted with specific focus on application to today's practice and research.

Funding Source:

Christopher and Dana Reeve Foundation through a cooperative agreement with the Centers for Disease Control and Prevention (Award No. 1U59DD000838).

2013 ASIA Annual Meeting Disclosure Information

1a -----Research or institutional support has been received

1b -----Other financial or material support

1c -----Royalties

1d ----Stock or Stock Options

1e ------Speakers Bureau/paid presentations

3a-3b----Paid consultant or employee

3c -----Unpaid consultant

4 -----Stock or Stock Options

5-----Research or institutional support from publishers

6-----Other financial or material support

7-----Royalties

8-----Editorial or Governing Board

9-----Board Members of any relevant committees of health care organizations

N -----No conflicts to disclose

Track	Full Name	Disclosure Information
Paper Session 1:	Charles Bombardier	1d – Pfizer
	William Scott	1a- Department of Defense
Paper Session 2:	Brent Edwards	1a- NIH/NIAMS and Rherck (investigator-initiated)
	Lance Goetz	1a- Department of Veterans Affairs, Rehabilitation Research
		and Development, Novabay Inc.
	Manon Schalden	1a- NIDRR, U.S. Department of Education Craig H. Neilsen Foundation
Paper Session 3:		N
D C	W. L. Ch	1. NIDDD
Paper Session 4:	Kazuko Shem	1a- NIDRR
	Antoinette Cheung	1a- Rick Hansen Institute, 1e- Rick Hansen Institute
Damar Cassian F.	Etionno Bourossa Marcou	1. Mantay Farmatian Dyagyam an mahility and Dastuya from the CILID
Paper Session 5:	Etienne Bourassa-Moreau	1a- Mentor, Formation Program on mobility and Posture from the CIHR
Paper Session 6:	Jill Wecht	1a- VA RR+D Service Grant # B2648C
raper session o.	Jan Wecht	Ta- VA KK+D Service Grafit # D2046C
Paper Session 7:	Alicia January	1a- Shriners Hospital & NIDRR Training Grant
1 4001 3033011 7.	Alicia January	Ta Silinicis Hospital & Nibilit Halling Grafit
Paper Session 8:		N
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Awards Posters:	Samford Wong	1a- Abbott Nutrition (UK); and the Waterloo Foundation (UK)
	Raymond Onders	1a & 1e- Synapse Biomedical
Posters:	Sara Kate Frye	1a- Department of Defense Clinical Trial Award SCO90147
	Todd Astorino	1a- NIH
	Milos Popovic	1a- NSERC, Toronto Rehabilitation Institute, Ontario Ministry of Health
Awards Paper:	Samford Wong	1a- Yakult UK; Hospital Healthcare Infection Society (UK)
	Thomas Schnitzer	1a- Lilly, Novartis, Amgen, Merck & CO.; 1b- Merck & CO.; 1e- Merck & CO.
Best of Steele:	Raymond Onders	1a & 1e- Synapse Biomedical
	Randal Betz	1c- DePuy Synthes Spine, Medtronic, 1d- SpineGuard, MiMedx, Orthocon,
		Orthobond, 1e- DePuy Synthes Spine, Medtronic, Orthocon, SpineGuard
Drogram Committee	Adam Stein	F. Acubia Dharmacouticals, 7. Domos Madical Dublishing
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	Mike Haak	4- Pioneer Surgical, 5-Johnson & Johnson, DuPuy Spine, Synthes,
	WIKE HAAK	18-Topics in SCI Rehabilitation, 9- ASIA
	Kim Anderson	3b- Asubio, BioAxone
	John Lavelle	3b-Allergan
Pre- Course:	Alan Taylor	1e- Abbott
	John Schatzlein	1e- MN SCI Resources Network Inc.
	David Wang	1b- Harvest Technologies
	Olivia Gilbert	1b- Senositc National Ultrasound
Courses:		N
Plenary Session:	John Steeves	1e- Asubio, StemCells Inc, Neural Stem Inc., Novartis, Acorda



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- ASCENT-ASCI involves trauma and rehab centers in the US and Canada and is designed to determine whether the investigational new drug SUN13837 improves neurological function in this catastrophic injury.

Please join us on Tuesday, May 7th From 12:00 -1:30 PM

Check the Program for meeting room information and stop by our booth early for tickets. A limited number of lunches are available.



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On receiving the ASIA Lifetime Achievement Award





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Executive Director, ASIA Co-Project Director, Southeastern Regional SCI Model System Clinical Research Manager, Crawford Research Institute, Shepherd Center



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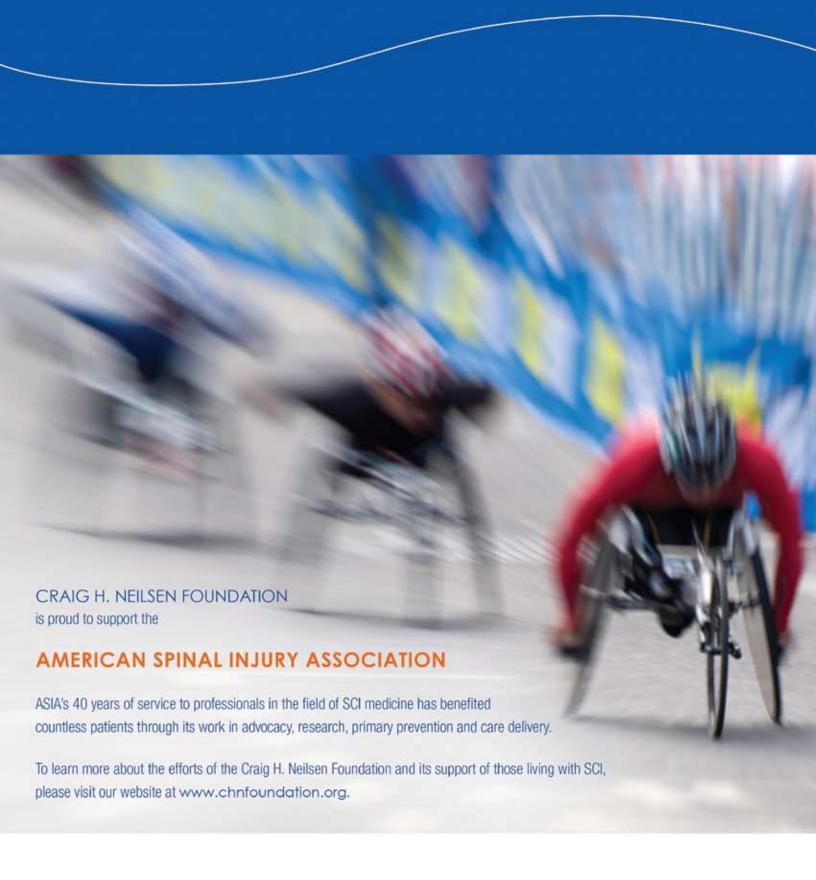
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THE INDUSTRY, ACADEMIC AND COMMUNITY ROUNDTABLE FOR SPINAL CORD INJURY RESEARCH

Mission:

To enhance the development of clinical trial and human study protocols that will accurately validate therapeutic interventions for spinal cord injury (SCI) and facilitate improved best practices.

Ongoing Initiatives:

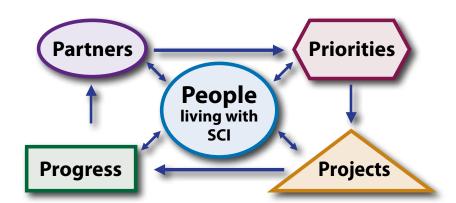
- Analyze alternative schemes for classification and stratification of incomplete SCI.
- Examine the feasibility of enrolling subjects with incomplete SCI in clinical studies.

www.scopesci.org

Accomplishments to Date:

Since 2006, SCOPE has:

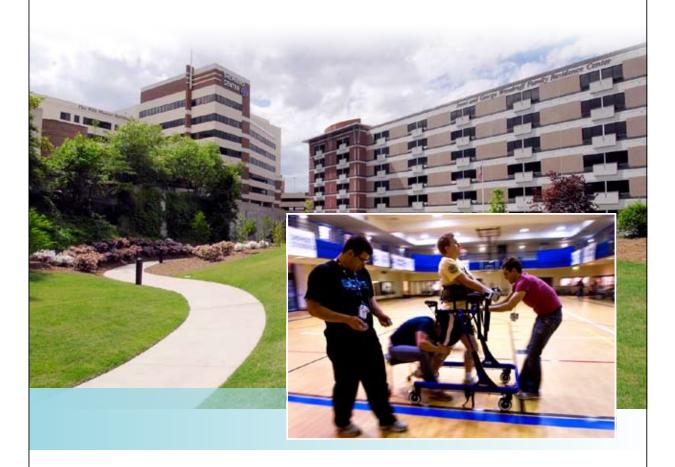
- Hosted annual international workshops addressing SCI outcome choices in human studies.
- Published articles on spontaneous recovery of sensory & motor function after sensorimotor complete (AIS-A) SCI.
 - ✓ Steeves et al. Spinal Cord 2011; 49:257
 - ✓ Zariffa et al. Spinal Cord 2011; 49:463
 - ✓ Steeves et al. TSCIR 2012; in press
 - ✓ Kramer et al.; in press



Current and Past Contributing Partners:

SCOPE participation is from industry, basic science, clinical research, academia, health care, federal government, not-for-profit foundations, and the SCI community. Since its inception, Partners have included: Acorda Therapeutics, Alseres Pharmaceuticals, American Paraplegia Society (APS), American Spinal Injury Association (ASIA), Asubio Pharmaceuticals Inc., Clinical Assistance Programs (Cap Trials), Craig H. Neilsen Foundation, Cyberkinetics Inc., DP Clinical, European Multicenter Study About SCI (EMSCI), Geron Inc., International Campaign for Cures of Spinal Cord Injury Paralysis (ICCP), International Spinal Cord Society (ISCoS), In Vivo Therapeutics, National Institute on Disability and Rehabilitation Research (NIDRR), Neurometrix Inc., and Stemcells, Inc.

Shepherd Center Salutes the American Spinal Injury Association



- Spinal Cord Injury Rehabilitation
- Acquired Brain Injury Rehabilitation
- Complete Continuum of Care
 - 10-bed Intensive Care Unit
 - Medical/Surgical
 - Acute Rehabilitation
 - Post-Acute Care
- Specialized Programs and Therapies
- Adolescent and Adult Programs
- Community/Schools/Work Re-entry Programs
- Clinical Research

S hepherd Center, located in Atlanta, Ga., is a private, not-for-profit hospital specializing in medical treatment, research and rehabilitation for people with spinal cord injury or brain injury.

Founded in 1975, Shepherd Center is ranked by *U.S. News & World Report* among the top 10 rehabilitation hospitals in the nation and is a 151-bed facility. Visit Shepherd Center online at **shepherd.org**.





Shriners Hospitals for Children® would like to recognize and thank

Lawrence C. Vogel, M.D.

for his two years of service as president of the American Spinal Injury Association

The goal of the Spinal Cord Injury Rehabilitation Programs at **Shriners Hospitals for Children**°

is to assist each child with a spinal cord injury to reach his or her optimal level of health and independence in the home, at school and in the community. Comprehensive rehabilitation, medical and surgical care are provided in both the inpatient and outpatient settings regardless of the patients' ability to pay. In addition to comprehensive rehabilitation programs, Shriners Hospitals for Children® participate in state-of-the-art research programs and clinical device and drug trials. Care is provided by a multidisciplinary team in which the patient and family are important members.



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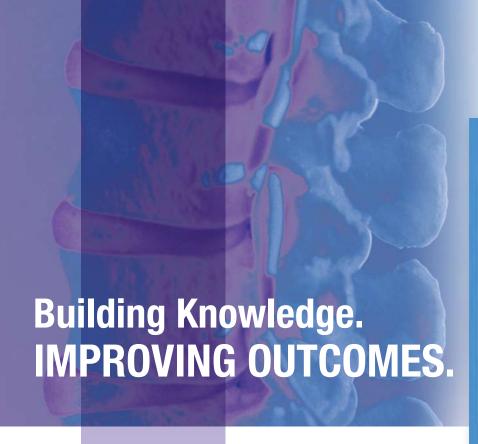
Shriners Hospitals for Children® — Chicago Host of the ASIA 40th anniversary meeting

 To refer a patient call: 773-385-KIDS (5437)

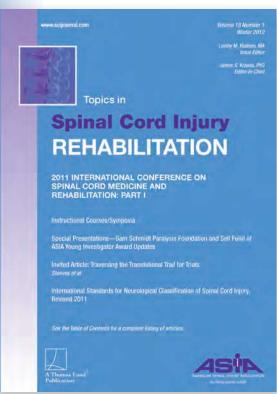


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