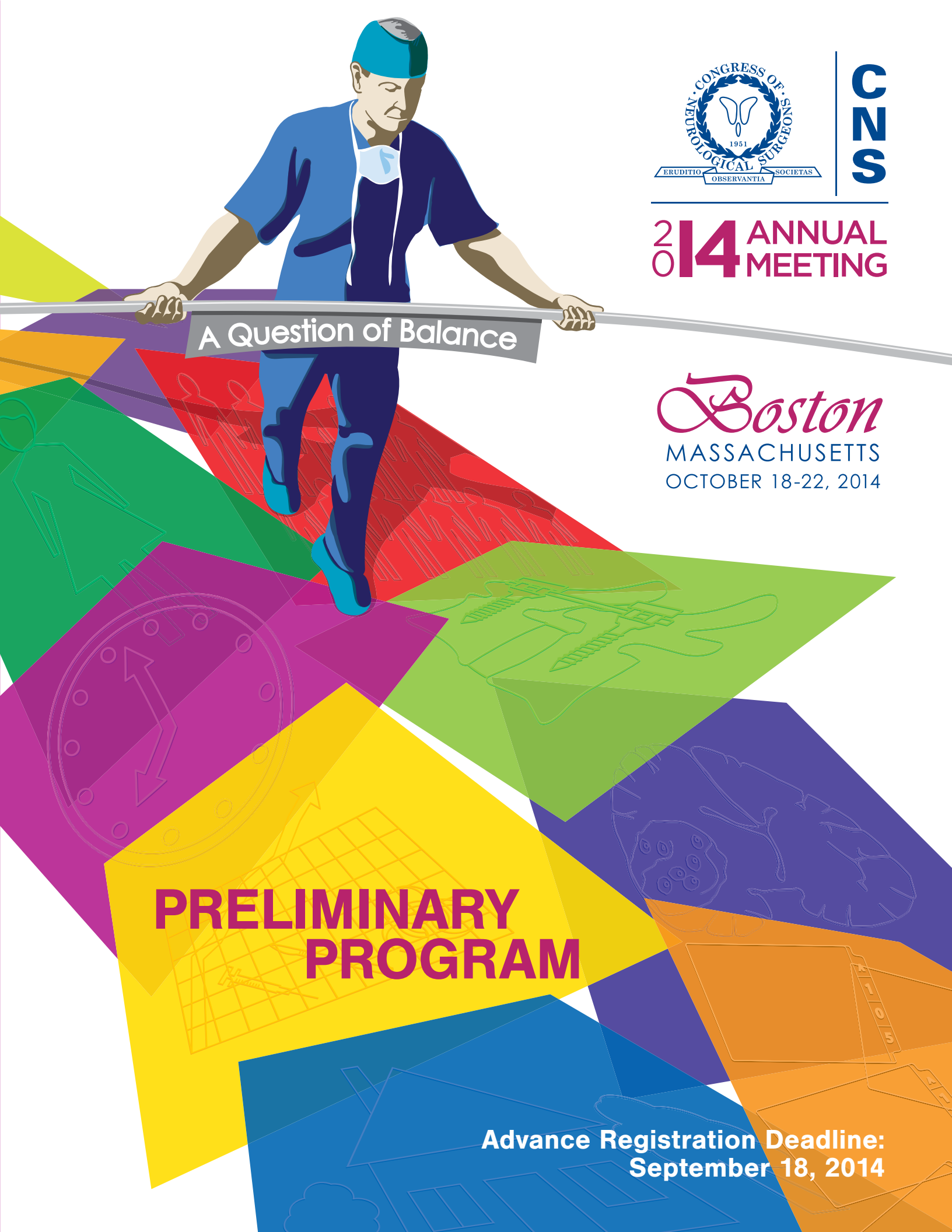


CONGRESS OF NEUROLOGICAL SURGEONS
1951
ERUDITIO OBSERVANTIA SOCIETAS

CNS

2014 ANNUAL MEETING

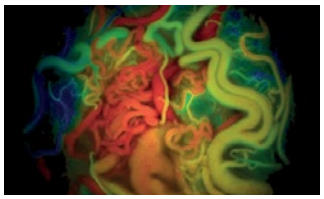
Boston
MASSACHUSETTS
OCTOBER 18-22, 2014

PRELIMINARY PROGRAM

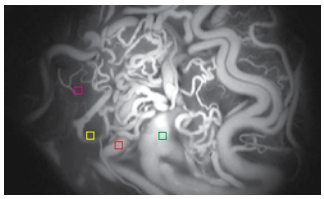
Advance Registration Deadline:
September 18, 2014

The moment you visualize blood flow dynamics to make decisions in real time.

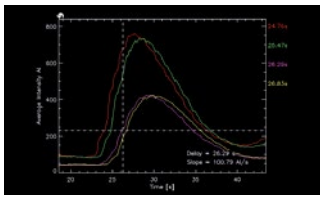
FLOW 800 from ZEISS



Sequence: Delay Map
Instant visual capture of blood flow dynamics.



Direction: Pinpoint Analysis
Blood flow evaluation of specific anatomical regions.



Speed: Blood Flow Over Time
Visualize the variation in blood flow over time.

Sequence, Direction and Speed. FLOW® 800 from ZEISS – Vascular Blood Flow Dynamics, Realized.
ZEISS FLOW 800 is a unique quantitative analysis tool generating blood flow dynamics data by identifying detailed vessel blood flow intraoperatively. Transformation of ZEISS INFRARED 800 video data into summary maps and diagrams support fast identification of AVM feeding arteries, nidal vessels and draining veins – providing objective access to speed and sequence of blood flow.

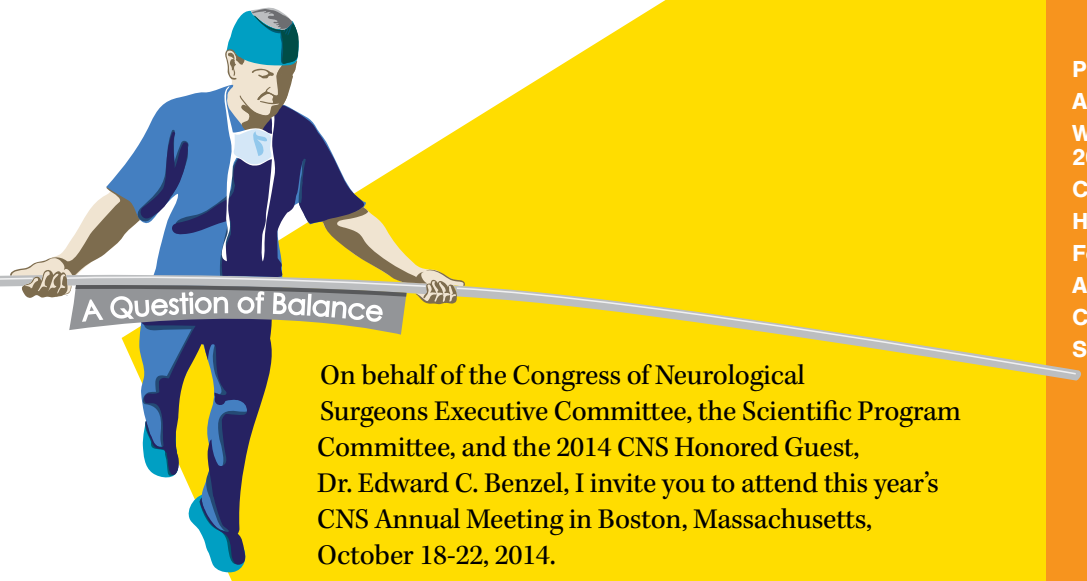
To learn more, call your ZEISS representative or visit us at www.meditec.zeiss.com/contacts.

Images courtesy of Dr. Yasushi Takagi, M.D. Ph.D, Department of Neurosurgery, Kyoto University, Kyoto, Japan
www.meditec.zeiss.com/flow

ZEISS

We make it visible.

PRESIDENT'S MESSAGE



On behalf of the Congress of Neurological Surgeons Executive Committee, the Scientific Program Committee, and the 2014 CNS Honored Guest, Dr. Edward C. Benzel, I invite you to attend this year's CNS Annual Meeting in Boston, Massachusetts, October 18-22, 2014.

Our theme for this year's Annual Meeting is *A Question of Balance,* focusing on the competing challenges faced by neurosurgeons in their everyday practice.

In response to the enthusiastic reception of live surgery broadcast through Telemedicine Technology, we will be featuring **three** live surgeries via Telemedicine Technology in the Exhibit Hall this year. Other highlights include sessions centered around "hot topics" such as pediatric sports related injuries and innovations in neurosurgery, controversies sessions dedicated to opposing paradigms for the same pathology, a retooled 3-D anatomy course and talks by authors of some of the top papers published in *Neurosurgery*® in the past year, including a new late-breaking research category. We will also be recognizing an outstanding lineup of featured speakers.

The CNS Annual Meeting is an amazing opportunity for scientific exchange and networking with thousands of your colleagues and friends from around the world, and to explore opportunities to enhance your skill sets, help your practice and improve patient care. We anticipate this year's Annual Meeting will be one of the largest CNS gatherings in history, as we host our colleagues from the Israel Neurosurgical Society, our 2014 international partner organization.

The 2014 CNS Annual Meeting promises to be a unique experience, focusing on clinical equipoise, novel therapeutics and innovative science. Don't miss your chance to be a part of this meeting. I invite you to join me in Boston and help you answer the *Question of Balance.*

Registration is available online at www.cns.org – ensure your spot at this outstanding neurosurgical event.

Sincerely,
Daniel K. Resnick, MD
CNS President

CONTENTS

Welcome to our colleagues from the Israel Neurosurgical Society – our international partner for the 2014 CNS Annual Meeting!

The purpose of the 2014 Annual Meeting of the Congress of Neurological Surgeons is to provide continuing medical education for practicing neurosurgeons, neurosurgical residents in training and postgraduate neurosurgical fellows, as well as advanced practice providers including nurses, physician assistants and clinical specialists.

Who should attend:
Neurological surgeons, neurosurgery nurses, physician assistants, orthopedic surgeons, primary care physicians, gerontologists, radiologists, hospital administrators, oncologists, neurologists, pediatricians, physiatrists and infectious disease specialists are welcome and encouraged to attend the 2014 CNS Annual Meeting.

2014 AT-A-GLANCE

SATURDAY OCTOBER 18

8:00 AM – 4:00 PM	**Symposia 01: Neurovascular Update 2014**
8:00 AM – 4:00 PM	Full Day Practical Courses (PC01 – PC06)
8:00 – 11:30 AM	Morning Practical Courses (PC07 – PC11)
12:30 – 4:00 PM	Afternoon Practical Courses (PC12 – PC17)
5:00 – 6:30 PM	International Reception
6:00 – 8:30 PM	**Dinner Seminar (DIN01):** Treating the One-level Cervical Disc Herniation with Radiculopathy: ACDF vs. Arthroplasty vs. Posterior Approach **Dinner Seminar (DIN02):** Emerging Technologies and Their Role in the Clip Versus Coil Debate

SUNDAY OCTOBER 19

8:00 AM – 4:00 PM	**Symposia 02: Neuro-vation** (CME not offered for this course)
8:00 AM – 4:00 PM	Full Day Practical Courses (PC18 – PC20)
8:00 – 11:30 AM	Morning Practical Courses (PC21 – PC25)
12:30 – 4:00 PM	Afternoon Practical Courses (PC26 – PC30)
1:00 – 3:00 PM	CNS Resident SANS Challenge Preliminary Rounds
1:30 – 4:00 PM	**Choice Abstracts: Spanning the Spectrum of Neurosurgery**
4:15 – 6:40 PM	**General Scientific Session I**
6:45 – 8:30 PM	**CNS Opening Reception** **Boston Convention and Exhibition Center**

MONDAY OCTOBER 20

7:00 – 8:30 AM	**CNS Original Science Program – Section Session Meetings**
8:30 AM – 4:15 PM	Exhibit Hall Open
8:30 – 9:00 AM	Exhibit Hall Coffee Break
9:00 – 11:30 AM	**General Scientific Session II**
11:30 AM – 12:30 PM	Exhibit Hall Break
11:45 AM –12:30 PM	**Live Surgery in the Exhibit Hall:** Expanded Endonasal Endoscopy
12:30 – 2:00 PM	Luncheon Seminars (M01 – M09)
12:30 – 2:00 PM	Industry Sponsored Lunch Symposia
2:00 – 3:30 PM	**Hot Topics 1:** The Management of Concussion in Children and Young Adults
2:00 – 3:30 PM	**Hot Topics 2:** The Balance Due: Payment for Neurosurgeons Practical Guide to the Current Health Delivery System
2:00 – 3:30 PM	**Controversy Session:** Extent of Resection of Benign Skull Base Tumors and Neo-adjuvant Radiosurgery Followed by Resection of Brain Metastases: Yes Versus No
3:30 – 4:15 PM	Exhibit Hall Beverage Break
4:15 – 5:30 PM	**Consensus Session I:** Management of Gliomas
4:15 – 5:30 PM	**CNS Original Science Program – International Neurosurgical Forum**
4:15 – 5:30 PM	**3-D Neurosurgery:** Techniques to Advance Safety and Efficacy in Micro-neurosurgery
6:00 – 8:30 PM	**Dinner Seminar (DIN03):** Evolving Strategies in Glioblastoma: Case-Based Presentations **Dinner Seminar (DIN04):** Neurosurgery in the Changing Health Care System

TUESDAY OCTOBER 21

7:00 – 8:30 AM	**CNS Original Science Program – Section Oral Presentations**
8:30 AM – 4:15 PM	Exhibit Hall Open
8:30 – 9:00 AM	Exhibit Hall Coffee Break
9:00 – 11:30 AM	**General Scientific Session III**
11:30 AM – 12:30 PM	Exhibit Hall Break
11:45 AM – 12:15 PM	**Live Surgery in the Exhibit Hall:** Sylvian Fissure Dissection
12:30 – 2:00 PM	Luncheon Seminars (T10 – T18)
12:30 – 2:00 PM	SANS Challenge Championship Round
12:30 – 2:00 PM	Industry Sponsored Lunch Symposia
2:00 – 3:30 PM	**Hot Topics 3:** Balancing Quality and Cost in the Era of the Affordable Care Act
2:00 – 3:30 PM	**Hot Topics 4:** The Management of Chiari Type 1 Malformation
2:00 – 3:30 PM	**Controversy Session:** Degenerative Scoliosis and TL Burst
3:30 – 4:15 PM	Exhibit Hall Beverage Break
4:15 – 5:30 PM	**Consensus Session II:** Management of Metastatic Tumors of the Spine
4:15 – 5:30 PM	**CNS Original Science Program – Neurosurgical Forum**
4:15 – 5:30 PM	**2-D Neurosurgery:** Intraoperative Complications Avoidance and Management
5:30 – 6:30 PM	Resident Recruitment Social
6:00 – 8:30 PM	**Dinner Seminar (DIN05):** Social Media: Balancing Your Practice's Needs with Your Privacy **Dinner Seminar (DIN06):** The New Standards: Outcome Measures in Neurosurgery

WEDNESDAY OCTOBER 22

7:00 – 8:00 AM	**Late Breaking Science**
8:00 – 10:30 AM	**General Scientific Session IV**
10:00 AM – 1:00 PM	Exhibit Hall Open
10:30 – 11:30 AM	Exhibit Hall Coffee Break
10:45 – 11:15 AM	**Live Surgery in the Exhibit Hall:** Fluoroscopic Lateral Approach to the Spine
11:30 AM – 1:00 PM	Luncheon Seminars (W19 – W24)
11:30 AM – 1:00 PM	Industry Sponsored Lunch Symposia
1:00 – 2:15 PM	**Hot Topics 5:** Balancing Clinical Research and Individualized Care: The Era of "Personalized Medicine"
1:00 – 2:15 PM	**Hot Topics 6:** Balancing the Future: Neurosurgery in 2025
1:00 – 2:15 PM	**Controversy Session:** Management of Unruptured Intercranial Aneurysms

ARE YOU CONNECTED TO THE CNS? Follow us on Facebook, Twitter and LinkedIn for the most up-to-date information and meeting updates!

What's NEW

Daily Controversy Sessions

Using a Point/Counterpoint format, gain insight and understanding by listening to neurosurgical experts debate critical issues facing our profession.

MON 20 OCT
2:00 – 3:30 PM
Extent of Resection of Benign Skull Base Tumors Neo-adjuvant Radiosurgery Followed by Resection of Brain Metastases: Yes Versus No

TUE 21 OCT
2:00 – 3:30 PM
Degenerative Scoliosis TL Burst

WED 22 OCT
1:00 – 2:15 PM
Management of Unruptured Intracranial Aneurysms

Hot Topics

Learn about and discuss the hot topics in the field of neurosurgery today.

MON 20 OCT
2:00 – 3:30 PM

Hot Topic 1
The Management of Concussion in Children and Young Adults

Hot Topic 2
The Balance Due: Payment for Neurosurgeons Practical Guide to the Current Health Delivery System

TUE 21 OCT
2:00 – 3:30 PM

Hot Topic 3
Balancing Quality and Cost in the Era of the Affordable Care Act

Hot Topic 4
The Management of Chiari Type 1 Malformation

WED 22 OCT
1:00 – 2:15 PM

Hot Topic 5
Balancing Clinical Research and Individualized Care: The Era of "Personalized Medicine"

Hot Topic 6
Balancing the Future: Neurosurgery in 2025

Israel: The CNS Annual Meeting Partner

The CNS welcomes the **Israel Neurosurgical Society** as our official Annual Meeting partner society. Please take the opportunity to network with members of our partner society as well as other CNS international members and guests. Take time to share your challenges and solutions with others throughout the world.

CONGRESS OF NEUROLOGICAL SURGEONS 1951 ERUDITIO OBSERVANTIA SOCIETAS

CNS

NEW in the Exhibit Hall

Daily Live Surgical Presentations *via Telemedicine Technology*

MON 20 OCT
11:45 AM – 12:15 PM
EXPANDED ENDONASAL ENDOSCOPY
Operating: ***Paul A. Gardner***

TUE 21 OCT
11:45 AM – 12:15 PM
SYLVIAN FISSURE DISSECTION
Operating: ***Robert F. Spetzler***

WED 22 OCT
10:45 – 11:15 AM
FLUOROSCOPIC LATERAL APPROACH TO THE SPINE
Operating: ***Robert G. Whitmore***

Industry Sponsored Lunch Symposia

Join your colleagues Monday through Wednesday in the Exhibit Hall for industry-hosted lunch symposia on clinical topics. Check the Annual Meeting Guide mobile app in late summer for more details on available sessions.

Innovations Showcase

Stop by this new destination in the Exhibit Hall Monday through Wednesday to learn about the latest technological innovations being displayed in Boston. The showcase lets you browse all these innovations in one convenient location and to talk one on one with representatives from each company about their new technology.

CNS Foundation Silent Auction

Help the CNS Foundation meet its mission while scoring the perfect gift for that special someone who has everything. The CNS Foundation, Inc. Silent Auction will offer up a host of exclusive autographed memorabilia daily in the Exhibit Hall — from jerseys, helmets and hockey pucks to autographed guitars, photos and album covers. Proceeds from the auction will support the CNS Foundation, Inc. in fulfilling its mission. New auctions take place daily in the exhibit hall.

CONTINUING MEDICAL EDUCATION

Congress of Neurological Surgeons 2014 Annual Meeting Objectives

The Congress of Neurological Surgeons exists to enhance health and improve lives worldwide through the advancement of education and scientific exchange in the field of neurosurgery. The CNS Continuing Medical Education (CME) program provides participants with various learning formats to keep current in the field and to improve skills and enhance professional performance to provide the best possible care for their patients.

The CNS CME program is designed, planned and implemented to evaluate a comprehensive collection of activities within the subspecialty of neurosurgery. The CNS plans to yield results that not only contribute to lifelong learning, but also demonstrate change and improvement in competence.

At the conclusion of the 2014 CNS Annual Meeting participants will be able to:

1. Alter their current practice patterns in accordance with the latest data.
2. Compare techniques based on findings discussed during case presentations.
3. Apply and/or perform new techniques based on best practices and current procedures.
4. Practice evidence-based, informed neurosurgical medicine.
5. Interpret newly found outcomes as a result of the scientific abstract presentations.
6. Demonstrate change in competence.

EDUCATIONAL FORMAT DESCRIPTIONS

The CNS offers sessions in a variety of formats to enhance your educational experience. Each session is open to all who have paid the general medical registration fee with the exception of optional Practical Courses, Luncheon Seminars and Dinner Seminars, which are available for an additional fee.

Practical Courses

Didactic and hands-on courses with expert neurosurgical educators demonstrating clinical techniques and applications via technology, models and simulation. Hands-on Practical Courses will provide participants an opportunity to improve surgical skills by applying and demonstrating learned techniques. Practical Courses also provide an opportunity to review case-based complex issues and discuss potential solutions.

- Practical Courses are offered Saturday, October 18 and Sunday, October 19.

General Scientific Sessions, Section Sessions, Luncheon Seminars and Dinner Seminars

Expert lecturers present research, best scientific evidence and associated outcomes demonstrating clinical techniques and applications. The basics of translational development, clinical trials, guideline review and updated changes and evaluation of clinical experience followed by examples of successful application are presented in various sessions. They will present basic skills and information you can apply in your daily practice and professional life.

- General Scientific Sessions and Section Sessions are offered Sunday, October 19 through Wednesday, October 22.
- Luncheon Seminars are offered Monday, October 20 through Wednesday, October 22.
- Dinner Seminars are offered on Saturday, October 18, Monday, October 20 and Tuesday, October 21.

Interactive Discussion with Audience Response Polling during the CNS Consensus Sessions

Consensus Sessions provide an opportunity for expert presentations, discussion and peer debate on various topics, treatments, guidelines and solutions. A review of the best evidence-based literature is conducted and then an opportunity is provided to share your perspective on the optimal management of these disorders as a consensus is reached for the best application of surgical strategies in a variety of clinical scenarios.

- Consensus Sessions are offered on Monday, October 20 and Tuesday, October 21.

Case-Based Education

Challenging neurosurgical cases will be reviewed and discussed in a variety of innovative formats including 3-D Video Presentation, Live Surgery via Telemedicine and Panel Discussions.

- Operative Neurosurgery will take place Monday, October 21 and Tuesday, October 22.
- Live Surgery via Telemedicine in the Exhibit Hall will take place Monday, October 20 through Wednesday, October 22. CME is not offered for these sessions.

Original Science Program

Scientific abstract presentations offer original science, ground-breaking research and the best clinical and basic neurosurgical science in the CNS Original Science Program allowing for audience questions and moderated discussions.

- Choice Abstract Sessions are offered Sunday, October 19.
- Oral Presentations by subspecialty and the CNS Neurosurgical Forum will take place Tuesday, October 21.
- Late Breaking Abstracts will be presented on Wednesday, October 22.

Accreditation

The Congress of Neurological Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CME Credit

The CNS designates this live activity for a maximum of 48.75 *AMA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

* A maximum of 22.75 *AMA PRA Category 1 Credits*™ may be earned for general sessions only.

This activity has been submitted to the American Association of Neuroscience Nurses for approval to award contact hours. The American Association of Neuroscience Nurses is accredited as an approver of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

For all other health professionals, please directly contact your state medical association, specialty society or state board for medical licensure.

Additional CME Credits can be earned by attending the following:

Practical Courses

Attendees will receive a maximum of three-and-a-half (3.5) *AMA PRA Category 1 Credits*™ for each Saturday half-day Practical Course, a maximum of seven (7) *AMA PRA Category 1 Credits*™ for each eligible Saturday full-day Practical Course, a maximum of three-and-a-half (3.5) *AMA PRA Category 1 Credits*™ for each eligible Sunday half-day Practical Course, and a maximum of seven (7) *AMA PRA Category 1 Credits*™ for each eligible Sunday full-day Practical Course. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Luncheon Seminars

Attendees will receive a maximum of one-and-a-half (1.5) *AMA PRA Category 1 Credits*™ for all eligible Luncheon Seminars. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Dinner Seminars

Attendees will receive a maximum of two (2) *AMA PRA Category 1 Credits*™ for all eligible Dinner Seminars. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Posters

Physicians may claim a maximum of five (5) *AMA PRA Category 1 Credits*™ directly from the AMA for preparing a poster presentation, which is also included in the published abstracts. Physicians may claim them on their AMA PRA certificate application or apply directly to the AMA for an *AMA PRA Category 1 Credits*™ certificate.

Physicians may claim *AMA PRA Category 2 Credits*™ for viewing scientific posters. Physicians should self-claim credit on their AMA PRA certificate application form. Please visit the AMA web site for details at www.ama-assn.org.

Claiming CME Credit

CME credits can be claimed through the online CME system at www.cns.org. The CME tracking system allows you to create and print a CME certificate immediately following the CNS Annual Meeting while you are still in Boston, or from the convenience of your home or office. Upon completion of this process, your CME certificate will be sent to you via email at the email address you provided at registration.

Disclosures

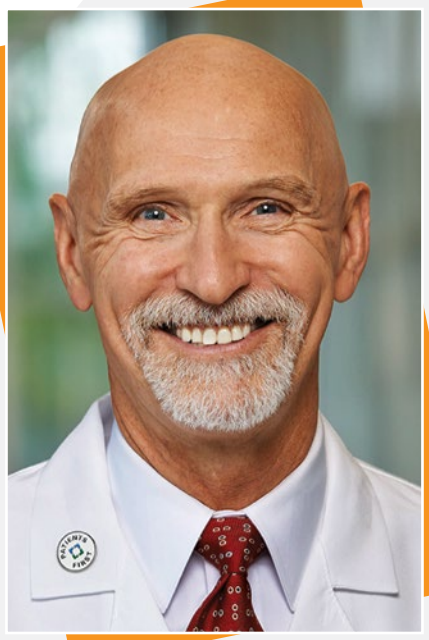
The Accreditation Council for Continuing Medical Education Standards for Commercial Support requires that anyone in a position to control the content of the educational activity has disclosed all financial relationships with any commercial interest. Failure or refusal to disclose or the inability to satisfactorily resolve the identified conflict may result in the withdrawal of the invitation to participate in any of the CNS educational activities. The ACCME defines a "commercial interest" as any entity producing, marketing, re-selling or distributing healthcare goods or services consumed by, or used on, patients. It is also each speaker's responsibility to include the FDA clearance status of any device or drug requiring FDA approval discussed or described in their presentation or to describe the lack of FDA clearance for any "off label" uses discussed. Speakers from the audience are also required, therefore, to indicate any relevant personal/professional relationships as they discuss a given topic.

Disclosures will be published in the Scientific Program Book that will be distributed at the Annual Meeting. Handout materials are prepared and submitted for distribution by the presenters who are solely responsible for their content.

FDA Statement

Some drugs or medical devices demonstrated at the Annual 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 devices he or she wishes to use in clinical practice. The CNS policy provides that "off label" uses of a drug or medical device may be described at the Annual Meeting so long as the "off label" use of the drug or medical device is also specifically disclosed. Any drug or medical device is "off label" if the described use is not set forth on the products approval label. It is also each speaker's responsibility to include the FDA clearance status of any device or drug requiring FDA approval discussed or described in their presentation or to describe the lack of FDA clearance for any "off label" uses discussed. Speakers from the audience are also required, therefore, to indicate any relevant personal/professional relationships as they discuss a given topic.

HONORED GUEST



Edward C. Benzel, MD

Chairman of the Department of Neurosurgery at Cleveland Clinic and Professor of Surgery at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University

Dr. Benzel's major clinical interests embrace many aspects of neurosurgery, but are focused on spinal disorders including cervical spondylosis, syringomyelia, complex spine instrumentation and spine tumors. His clinical research has encompassed such issues as hydrocephalus, neonatal hemorrhage, cerebrovascular disorders, cranial trauma, critical care, brain death, microelectromechanical systems (MEMS) and of course, spinal disorders. From a research perspective, he currently is focusing on Spine biomechanics and clinical research, as well as sports related concussion research. The latter has centered about strategies to reduce risk and increase protection for athletes involved in contact sports.

He has been actively involved in the Congress of Neurological Surgeons, American Association of Neurological Surgery, North American Spine Society (NASS), World Spinal Column Society and Cervical Spine Research Society. Dr. Benzel is one of the founding members of the Lumbar Spine Research Society, formed in 2007. He serves on numerous committees, and in multiple different positions of the various societies.

His continual rigorous review of clinical and research content for several professional neurosurgical and spine publications contributes significantly to the body of literature. He was Co-Chairman of the Editorial Review Board of the *Journal of Neurosurgery* (2003-2004), and is currently Chairman of the Review Board for the *Journal of Neurosurgery: Spine*. He has served as a reviewer for *Neurosurgery, Spine* and *The Spine Journal*, and is an ad hoc reviewer for several other journals.

He has authored 10 textbooks, edited 28 texts and contributed to over 370 book chapters. His seminal texts, *Biomechanics of Spine Stabilization* (1st, 2nd & 3rd Editions) and S*pine Surgery: Techniques, Complications, Avoidance and Management* (1st, 2nd & 3rd Editions) are conceivably the highlights of his publication endeavors.

Dr. Benzel holds ten patents and has participated in many medical advances. He is perhaps best known as an educator. He initiated and directed the Neurosurgery Residency Training Program, and the Spine Fellowship Programs at the University of New Mexico, and has been instrumental in the development and success of these programs at the Cleveland Clinic. His innovations in Neurosurgery Resident Education have won accolades and numerous awards. In February 2011, Dr. Benzel was chosen to receive the Paul C. Bucy Award for his exemplary efforts offering educational opportunities to his fellow neurosurgeons. Most recently, in 2013, Dr. Benzel was deeply honored by the acknowledgement for his "outstanding contribution to medical science worldwide" at the 13th Congress of Spine Surgery, Sao Paolo Brazil.

Look for Dr. Benzel during the following sessions!

SAT 18 OCT

8:00 – 11:30 AM
PC09 – Practical Spine Biomechanics for Clinical Practice, Course Director

SUN 19 OCT

8:00 – 11:30 AM
PC25 – The Advanced Practice Provider's Guide to Integrating Innovation and Conventional Wisdom, Faculty

MON 20 OCT

10:48 – 11:08 AM
Honored Guest Lecture

12:30 – 2:00 PM
M01: Honored Guest Luncheon

TUE 21 OCT

10:24 – 10:49 AM
Honored Guest Lecture

FEATURED SPEAKERS

WALTER E. DANDY ORATOR

Lars Olson, PhD

Professor of Neurobiology, Department of Neuroscience at Karolinska Institute

Lars Olson, PhD, a leading neuroscientist and researcher for decades, obtained his PhD at the Karolinska Institute in 1970. He has held his position as Professor of Neurobiology at Karolinska Institute since 1986, has served 11 years as department chairman, and has been a member of the Karolinska Nobel assembly. Olson is chairman of the board of the Swedish Brain foundation. Throughout his career, Olson has studied development, nerve growth factors, degeneration, regeneration and repair in the nervous system. His main research interests include models for Parkinson's disease and its treatment, models for spinal cord injury and treatment strategies, monoamine neurons, development, growth factors, regeneration, aging, transplantation in the central nervous system, the roles of transcription factors in the nervous system and the Nogo signaling system. His research has been taken from animal studies to novel clinical trials, including therapeutic grafting to the human brain and delivery of NGF to the human brain. For his contributions, Professor Olson has been the recipient of several scientific awards. He has published papers every year since 1964, resulting in some 500 publications in neuroscience and is an original member of the ISI Highly Cited Researchers Database.

SUN 19 OCT

5:45 – 6:05 PM

MICHAEL L.J. APUZZO LECTURER ON CREATIVITY AND INNOVATION

Philip Glass

Composer

Born in Baltimore, Maryland, Philip Glass is a graduate of the University of Chicago and the Juilliard School. He is considered one of the most influential music makers of the late 20th century.

In the early 1960s, Glass spent two years of intensive study in Paris with Nadia Boulanger and while there, earned money by transcribing Ravi Shankar's Indian music into Western notation. By 1974, Glass had a number of innovative projects, creating a large collection of new music for The Philip Glass Ensemble and for the Mabou Mines Theater Company. This period culminated in *Music in Twelve Parts* and the landmark opera, *Einstein on the Beach* for which he collaborated with Robert Wilson.

Since Einstein, Glass has expanded his repertoire to include music for opera, dance, theater, chamber ensemble, orchestra and film. His scores have received Academy Award nominations and a Golden Globe.

Over the past few years, several new works were unveiled, including *The Perfect American* about the death of Walt Disney that premiered at the Teatro Real, Madrid in 2013 with additional performances by the English National Opera. Glass' most recent opera *Spuren de Verirrten*, 'The Lost', premiered at the Landestheater Linz, Austria in 2013.

TUE 21 OCT

11:04 – 11:30 AM

FEATURED SPEAKERS

Cam Neely

President of the Boston Bruins

Cam Neely was named President of the NHL Boston Bruins in 2010 after serving as Vice President for three years. He oversees all of the club's hockey and business operations and it was under his leadership that the Bruins were honored as the Sports Business Journal's 2012 Sports Team of the Year.

A 2007 Hockey Hall of Fame inductee, Neely played 13 years in the NHL, the last ten with the Bruins. He retired in 1996 with 726 games played, 395 goals and 299 assists. He was an NHL All-Star from 1987 to 1996, and in 1994 won the NHL Bill Masterton Trophy as the player who best exemplified the qualities of perseverance, sportsmanship and dedication to hockey.

He has long been actively involved in many charitable efforts, including establishment of the Cam Neely Foundation for Cancer Care. The Foundation supports the Neely House, which provides housing and support for families of patients undergoing cancer treatments, the Neely Cancer Fund, whose initiatives include the Neely Center for Clinical Cancer Research, the Neely Cell Therapy and Collection Center and the Neely Pediatric Bone Marrow Transplant Unit.

Originally from Vancouver, British Columbia, Neely enjoys spending time with his wife and two children.

SUN 19 OCT

5:07 – 5:27 PM

Michael D. Ensley, PhD

CEO, Executive Assessment Institute

Michael D. Ensley has created the ExecuSmart Suite of assessment tools and has dedicated himself to applying the "best science" to the process of talent management, executive coaching and executive assessment. Michael, along with his wife Rhonda Ensley, founded the Executive Assessment Institute, and he serves as the Chief Executive Officer. Michael is also a Visiting Professor at Ecole Polytechnique Federale Lausanne (EPFL) in Switzerland.

Prior to forming EAI, Michael was a Tenured Professor at Rensselaer Polytechnic Institute, where he served as the Area Coordinator and a Professor in the Management and Organization Group. During his tenure at RPI, Michael developed an approach to understanding an executive team's impact on firm performance and systematically assessing and understanding executive talent. Prior to joining RPI, Michael was a Tenured Professor at the University of North Carolina at Charlotte where he focused on Business Strategy and Entrepreneurship.

Michael has published over 50 articles, made nearly 200 presentations and is published in the top academic journals in management and industrial psychology. His two most recent books soon to be published are *Leadership Temperament and Building Team Impact*. He has consulted at many organizations including Ford Motor Company, Oak Ridge National Laboratory, Pacific Northwest National Lab and National Renewal.

MON 20 OCT

11:10 – 11:30 AM

FEATURED SPEAKERS

JOHN THOMPSON HISTORY OF MEDICINE LECTURER

Janne Sirén, PhD

Director, Albright-Knox Art Gallery

Dr. Janne Sirén assumed his appointment as the eleventh director of the Albright-Knox Art Gallery in April 2013. He comes to Buffalo from Helsinki, Finland, where he was Director of the Helsinki Art Museum – overseeing an active exhibitions, acquisitions, public art and museum development program.

From 2004 to 2007, Dr. Sirén served as Director of the Tampere Art Museum in southern Finland. From 2000 to 2004, he was Visiting Assistant Professor in the Department of Art History at The Hebrew University of Jerusalem, teaching courses in modern and contemporary art, aesthetics, museology and critical theory.

Dr. Sirén spent his collegiate career in the United States, earning a BA from College of the Holy Cross, and an MA and PhD from the Institute of Fine Arts at New York University. His research encompasses a broad range of artists and movements from the eighteenth century to the present.

Dr. Sirén is a passionate advocate for the active roles of the museum and the arts in society, particularly as they relate to the growth of communities. His current projects at the Albright-Knox include a major exhibition of work by Anselm Kiefer and a variety of new educational programs and community outreach initiatives.

WED 22 OCT

9:46 – 10:01 AM

Admiral Eric Olson

Former Commander of the U.S. Special Operations Command
Retired Four-Star Navy SEAL Admiral

Eric Olson served as the commander of the U.S. Special Operations Command (USSOCOM) from 2007–2011. During his tenure as America's top special operations officer, he was responsible for recruiting, training, equipping, and deploying broadly capable forces worldwide. Olson is often described as one of this century's great military leaders and credited with developing the specialized forces that have accomplished some of the most notable military operations of the last decade. His personal operational experiences were diverse, marked by valor and strong leadership. Olson is also known as a visionary and action-oriented leader who stayed connected with his forces at all levels.

Olson's actions as a Navy SEAL have been of national importance and utmost secrecy; many details of his operations are still classified. His career has included major, historic geopolitical events, and he was key to the successes of special operations forces in our recent conflicts.

Olson served in operational and leadership roles in which he developed many new tactics, techniques, and technologies. In addition to leading USSOCOM, Olson was commander of a counter-terrorism unit and later the Naval Special Warfare Command. Olson has also been awarded myriad military awards, and he has been recognized for his service by several civilian organizations and three foreign governments.

SUN 19 OCT

6:08 – 6:40 PM

ANNUAL MEETING LEADERSHIP

PRESIDENT

Daniel K. Resnick, MD, MS

A native of Philadelphia and a persistent Eagles fan, Dr. Resnick is a summa cum laude graduate of Princeton University and graduated as a member of AOA from the University of Pennsylvania School of Medicine. Following an internship at Pennsylvania Hospital, he completed his residency training at the University of Pittsburgh. During residency, he earned a master's degree in neuroscience based on spinal cord injury research and did an "infolded fellowship" at the University of New Mexico with this year's Honored Guest, Dr. Edward C. Benzel. Focusing his career in spinal surgery, Dan joined the faculty at the University of Wisconsin where he is now Professor, Vice Chairman and Program Director. He has accrued numerous awards including the Dean's teaching award for education of medical students.

His academic career began with an interest in spinal cord injury and he was part of the writing panel for the first cervical spine injury guidelines. This led to an interest in evidence based medicine and Dr. Resnick has been an advocate for and author of multiple guideline projects in spinal surgery and neurosurgery in general. Currently, his research interest is in comparative effectiveness research to inform and improve spine care and he has, as a consequence, become an advocate for spine surgeons and spine patients. He is currently Research Council Director for the North American Spine Society. He joined the Congress of Neurological Surgeons Executive Committee in 2001 and has served in a variety of posts, including Vice President, Treasurer and Chair of the Education Committee.

Dr. Resnick is immensely proud of his five children, Leah, Sabrina, Eli, Talia and Zev. He and his wife, Rachel, enjoy music, cycling and traveling (preferably in pursuit of music and cycling).

PRESIDENT-ELECT

Nathan R. Selden, MD, PhD

Dr. Selden is the Campagna Chair of Pediatric Neurosurgery at Oregon Health & Science University, residency Program Director and Vice-Chairman of Neurological Surgery.

Raised in Oregon, Dr. Selden graduated from Stanford University and Harvard Medical School and, as a Marshall Scholar, earned a doctorate from Cambridge University. He trained in neurosurgery at the University of Michigan and in pediatric neurosurgery at Northwestern University. In 2006, he performed the world's first transplantation of neural stem cells in a human patient. He has also authored over 100 peer-reviewed articles.

Dr. Selden is Chair of the group that developed new educational outcomes measures for all US neurosurgery training programs, the ACGME Milestones. He also founded the *Neurosurgery PGY1 Boot Camps,* which are attended by all incoming U.S. neurosurgery residents, and received the ACGME Courage to Teach Award.

He has worked on the CNS Executive Committee since 2005, including as Secretary, and as Chair of the Annual Meeting and SANS Committees, and is also Chair of the Committee on Resident Education of the Society of Neurological Surgeons.

Dr. Selden is married to his medical school classmate, Dr. Karen Selden, a plastic surgeon. They enjoy skiing, rafting, and hiking in the Oregon Cascades as well as travel at home and abroad with their three children, Ryan, Lauren, and Megan.

ANNUAL MEETING CHAIR

Ashwini D. Sharan, MD

Ashwini D. Sharan, MD, is currently Professor in the Department of Neurosurgery and the Department of Neurology at Jefferson Medical College and Thomas Jefferson University. His practice focuses on neurostimulation neurosurgery, surgery for epilepsy and spinal neurosurgery.

In 1995, he completed his BA-MD degree from Boston University and UMDNJ - Newark, New Jersey in an accelerated medical program. He completed the majority of his training at Thomas Jefferson University in Philadelphia, Pennsylvania. Since then he has completed a fellowship in spinal neurosurgery and functional neurosurgery both at the Cleveland Clinic Foundation in Cleveland, Ohio.

In addition to his clinical work, Dr. Sharan is a true academician. He has been awarded the William H. Sweet Young Investigator Award and the William Buchhiet teacher of the year award.

Dr. Sharan is currently the Program Director of the Thomas Jefferson Neurosurgery Residency Program. He is Vice President and serves on the board of director of the North American Neuromodulation Society and Past President of the American Association of South Asian Neurosurgeons. He also serves on the Executive Committee of the Congress of Neurological Surgeons and is the 2014 CNS Annual Meeting Chairman.

SCIENTIFIC PROGRAM CHAIR

Elad I. Levy, MD, MBA

Dr. Elad Levy practices and lives in Buffalo, New York with his wife, Cindy and their three children, Bennett, 15, Hannon, 13 and Lauren, 9. He enjoys participating in triathlons, cycling, watching his children participate in sporting events; and Sundays are filled with family time. Recently, he has earned his MBA to focus on quality improvement in healthcare.

Dr. Levy is Professor and Chair of Neurosurgery at the State University of New York at Buffalo and is board certified. He is the Medical Director of Neuroendovascular Services at the Gates Vascular Institute (GVI), Co-Director of Kaledia Health Stroke Center and Cerebrovascular Surgery, and Director of Endovascular Stroke Treatment and Research.

He has published over 300 peer-reviewed publications and has been recently appointed as the editor for the *Neurosurgery*®, endovascular section. He is the recipient of numerous awards for his research and contributions to the field.

In 2011, Dr. Levy founded and is President of the Program for Understanding Childhood Concussion and Stroke (PUCCS). His objective was to raise awareness of the effects of concussion. Dr. Levy believes, "There is little that is more gratifying than seeing our research and training translate into real advancements in medicine which help our community and patients across the globe."

ANNUAL MEETING COMMITTEE

Annual Meeting Chairman:
Ashwini D. Sharan, MD

Scientific Program Chairman:
Elad I. Levy, MD, MBA

Vice Scientific Program Chairman:
Steven N. Kalkanis, MD

Guest Society and International Partner:
Sekhar N. Kurpad, MD, PhD
Charles Y. Liu, MD, PhD
Daniel M. Prevedello, MD

Consensus Sessions:
Michael P. Steinmetz, MD**
Nicholas C. Bambakidis, MD**
Peter Kan, MD, MPH, FRCSC
John Pollina, MD
Ciaran J. Powers, MD, PhD
Gregory R. Trost, MD
Jonathan H. Sherman, MD
Costas G. Hadjipanayis, MD, PhD
John K. Ratliff, MD

Neurosurgical Forum:
Paul A. Gardner, MD*
Johnathan A. Engh, MD
Jody Leonardo, MD
Edward R. Smith, MD

Practical Courses:
Brian Lim Hoh, MD**
Darlene Angela Lobel, MD, FAANS**
Alexander Arash Khalessi, MD, MS
Zachary N. Litvack, MD, MCR
Nader Pouratian, MD, PhD
Gregory R. Trost, MD

Luncheon Seminars:
Benard R. Bendok, MD, MSCI, FAANS, FACS*
Pascal Jabbour, MD
Shivanand P. Lad, MD, PhD
Daniel M. Sciubba, MD

Dinner Seminars:
Ashok Rajappa Asthagiri, MD*
Renee M. Reynolds, MD
Parham Yashar, MD

Operative Neurosurgery:
Mustafa K. Baskaya, MD**
Paul A. Gardner, MD**
Aaron A. Cohen-Gadol, MD

Controversies/Hot Topics:
James S. Harrop, MD, FACS**
Alexander A. Khalessi, MD, MS**
Ricardo J. Komotar, MD
Julie G. Pilitsis, MD, PhD
Ricardo A. Hanel, MD, PhD
Andrew J. Ringer, MD
John S. Kuo, MD, PhD
Travis M. Dumont, MD
Erol Veznedaroglu, MD

Symposia:
Sekhar N. Kurpad, MD, PhD**
Brian Lim Hoh, MD**
Anan H. Siddiqui, MD, PhD
Domagoj Coric, MD
Peter Kan, MD, MPH, FRCSC
Steven A. Kalkanis, MD
Michael Y. Wang, MD, FACS

SECTION REPRESENTATIVES

Council of State Neurosurgical Societies:
Joshua M. Rosenow, MD, FACS
Michael P. Steinmetz, MD

Section on Cerebrovascular Surgery:
Robert M. Friedlander, MD
Brian Lim Hoh, MD

Section on Disorders of the Spine and Peripheral Nerves:
R. John Hurlbert, MD, PhD, FACS, FRCSC
Frank LaMarca, MD
Lynda J. Yang, MD, PhD

Section on Neurotrauma and Critical Care:
Geoffrey T. Manley, MD, PhD

Section on Pediatric Neurological Surgery:
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Sarah J. Gaskill, MD
Bermans Iskandar, MD
Yasser Jeelani, MD

Section on Pain:
Andre Machado, MD, PhD

Section on Stereotactic and Functional Neurosurgery:
Aviva Abosch, MD, PhD
Konstantin V. Slavin, MD

Section on Tumors:
Frederick George Barker, MD
John S. Kuo, MD, PhD
Andrew T. Parsa, MD, PhD
Jonas Sheehan, MD, FACS

Information Technology Advisory Committee:
Brian T. Ragel, MD

Women in Neurosurgery (WINS)
Julie G. Pilitsis, MD, PhD

Resident SANS Challenge:
Costas G. Hadjipanayis, MD, PhD
Stavropoula I. Tjoumakaris, MD

Sergeant-at-Arms:
Ning Lin, MD
Chen Wu, MD

Simulation Committee:
Benard A. Bendok, MD, MSCI, FAANS, FACS
James S. Harrop, MD, FACS

International Division Chair:
Charles Liu, MD, Phd

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Krystal Tomei, MD, MPH

Advanced Practice Provider CME Liaison:
Andrea L. Strayer, MS, NP

* ***Indicates subcommittee Chair***
** ***Indicates subcommittee Co-Chair***

NETWORK

LEARN

EXPERIENCE

To help our attendees find and learn about the latest technological innovations in the exhibit hall, the CNS is introducing the Innovations Showcase during this year's Annual Meeting in Boston. Stop by the Showcase, located at the entrance of the exhibit hall, to see the latest advances and new product launches.

Get your hands on the latest neurosurgical technology and find the industry-leading solutions that will move your practice forward. Join your colleagues and corporate contacts Monday through Wednesday in the Exhibit Hall.

Learn about breakthrough technological advances

- ***New!*** Innovations Showcase
- ***New!*** Sponsored Lunch Symposia
- Experience live demonstrations
- Live Surgical Presentations daily
- Demonstration Theater presentations during daily Beverage Breaks
- In-Booth Product Demonstrations

Network with your colleagues and make the most of your time in Boston:

- Digital Poster viewing
- ***New!*** CNS Foundation Silent Auction
- CNS Member Services

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2014 ANNUAL MEETING

Boston
MASSACHUSETTS
OCTOBER 18-22, 2014

SYMPOSIA

SATURDAY, OCTOBER 18 8:00 AM – 4:00 PM

SYM01:
Cutting-Edge and Future Technology in Ischemic and Hemorrhagic Stroke

$250 *A buffet lunch, and morning and afternoon coffee service are included in the registration fee.*

Course Director(s): *Peter Kan, Adnan Hussain Siddiqui*
Faculty: *Ali Alaraj, Sepideh Amin-Hanjani, Adam S. Arthur, Mandy J. Binning, Andrew Phillip Carlson, Peng R. Chen, Ricardo A. Hanel, Brian Lim Hoh, Pascal Jabbour, Michael T. Lawton, Elad I. Levy, Demetrius K. Lopes, Cameron G. McDougall, J D. Mocco, Rafael Alexander Ortiz, Andrew J. Ringer, Eric Sauvageau, Erol Veznedaroglu, Ajay K. Wakhloo, A. Samy K. Youssef*
Symposium Description: This course provides a forum for attendees to obtain the latest information about EC-IC bypass, medical and interventional therapies, and optimal treatments of intracranial aneurysms, as well as discussing the best methods for patient selection and advance imaging for acute stroke intervention. Additionally, the critical care management of aneurysmal and subarachnoid hemorrhage and acute ischemic stroke will be covered.
Learning Objectives: *Upon the completion of this symposium, participants will be able to:*

- Discuss recent literature on endovascular therapy for acute ischemic stroke and the latest intra-arterial stroke therapy.
- Discuss recent literature on endovascular and surgical revascularization as well as best medical therapy for carotid artery disease.
- Describe the optimal treatment of intracranial aneurysms and the latest endovascular aneurysm treatment.

Welcome
Peter Kan, Adnan Hussain Siddiqui

Intra-arterial Therapy for Stroke: The Latest Evidence and Ongoing Trials
J D. Mocco

How Can We Improve Outcomes in Acute Ischemic Stroke: Improvement of Door-to-Needle Time
Adam S. Arthur

How Can We Improve Outcomes in Acute Ischemic Stroke: Improvement of Patient Selection
Eric Sauvageau

The Role of Distal Protection in Acute Stroke Intervention
Pascal Jabbour

The Role of Stenting in the Era of Stentrievers
Elad I. Levy

The Role of Thromboaspiration in the Era of Stentrievers
Peter Kan

How to Build a Successful and Efficient Comprehensive Stroke Center
Andrew J. Ringer

BREAKOUT SESSION
with Vendors

Point/Counterpoint – Unruptured AVMs in the Post-ARUBA Era: "To Treat or Not to Treat"
Sepideh Amin-Hanjani, Michael T. Lawton

Carotid Endarterectomy vs. Carotid Artery Stenting: Where Do We Stand in the Post-CREST Era
Brian Lim Hoh

The Role of Embolic Protection in Carotid Artery Stenting
Mandy J. Binning

Newer Carotid Stents: Is There Still a Role for a New Carotid Trial
Peng R. Chen, Adnan H. Siddiqui

Point/Counterpoint – High-grade Asymptomatic Carotid Stenosis: "Revascularization vs. Medical Management"
Ali Alaraj, Rafael Alexander Ortiz

LUNCH BREAK

BREAKOUT SESSION
with Vendors

Flow Diversion in the Treatment of Intracranial Aneurysms: The Ongoing Pivotal Trials
Ricardo A. Hanel, Cameron G. McDougall

Intra-saccular Devices in the Treatment of Intracranial Aneurysms: A New Frontier
Erol Veznedaroglu

BREAKOUT SESSION
with Vendors

Surgical Management of ICH: The Latest Evidence and Ongoing Trials
Andrew Phillip Carlson

Endoscopic-assisted Aneurysm Surgery
A. Samy K. Youssef

Point/Counterpoint – MCA Aneurysms: Surgery vs. Endovascular Treatment
Demetrius K. Lopes, AJ Wakhloo

SYMPOSIA

SUNDAY, OCTOBER 19 8:00 AM – 4:00 PM

SYM02: Neuro-vation

CME is not offered for this course.

$250 *A buffet lunch, and morning and afternoon coffee service are included in the registration fee.*

Course Director(s): *Brian Lim Hoh*
Faculty: *Gene H. Barnett, Bernard Bendok, Nicholas M. Boulis, Ed Boyden, Stephen Cary, E. Antonio Chiocca, Nikolaos Chronis, Daniel John Dilorenzo, Fred H. Geisler, Robert E. Gross, Roger Hartl, Nobuhiko Hata, Carl B. Heilman, Bob Hopkins, Stephen L. Huhn, Klaus Klingenbeck, Eric C. Leuthardt, Brian Litt, R. Loch Macdonald, Matthew R. McEwan, John Pollina, Ali R. Rezai, Mark L. Rosenblum, Robert H. Rosenwasser, Kathleen M. Schmainda, Christopher I. Shaffrey, Konstantin V. Slavin, Robert J. Spinner, Hoda Tawfik, Henry Woo, Mehmet F. Yanik*

Symposium Description: Engage in open dialogue about the future of cerebrovascular/endovascular, spine and brain tumor neurosurgery. Neuromedicine is among the most rapidly growing areas in surgery and medicine and novel technologies in devices, imaging, biomaterials, molecular diagnostics and regenerative medicine are leading this field forward.

This all-day open forum will include faculty of key thought-leaders in neurosurgery, chief executive officers, lead engineers and directors from the FDA with expertise in the cutting-edge technologies of the future in cerebrovascular/endovascular, spine and brain tumor neurosurgery. The open forum will enable participants, faculty and panelists to engage in free dialogue for the purpose of collectively pushing the field forward. Don't miss this unique opportunity to be part of and have a voice in this important event in the field of innovation and technology in neurosurgery.

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

- Discuss areas of need for new technology in cerebrovascular/endovascular, spine and brain tumor neurosurgery.
- Discuss innovative technologies in the pipeline in cerebrovascular/endovascular, spine and brain tumor neurosurgery.
- Explain FDA governmental policies that help and hinder the development of medical technologies and devices.

DEVICES

Moderators/Panelists: *Gene H. Barnett, Christopher Shaffrey, Henry Woo*

Endovascular Shunt for Hydrocephalus
Carl B. Heilman

Micro Nerve Stimulator/Sensor
Matthew R. MacEwen

Nerve Stimulators
Nicholas M. Boulis

Wireless Optical Technology-Based ICP Monitor
Nikolaos Chronis

Biodegradable EcoG Array Made Out of Spider Silk
Brian Litt

Robot that Can Do Automated Craniotomies in Rodents and Non-Human Primates, by Integrating a Robotic Drill with an Impedance Sensor that Knows When You Hit Conductive Fluid
Ed Boyden

Robot to Perform Endovascular Surgical Clipping
Nobuhiko Hata

Neuromodulation
Daniel J. Dilorenzo

Neurolutions
Eric C. Leuthardt

BIOLOGICS

Moderators/Panelists: *Roger Hartl, Mark Rosenblum, Robert Rossenwasser*

Nerve Tubes
Robert J. Spinner

CSO Stem Cells Inc.
Stephen L. Huhn

High Through-Put Neurotechnology
Mehmet Fatih Yanik

Synthetic Neurobiology, Neural Circuit Computations
Ed Boyden

BUSINESS/VENTURE CAPITAL

Venture Capital
Bob Hopkins

DRUG DELIVERY

Moderators/Panelists: *E. Antonio Chiocca, Ali R. Rezai, Konstatin V. Slavin*

Nanoparticles
R. Loch MacDonald

Implantables for Sustained Postoperative Pain Control
Fred H. Geisler

Omniox
Stephen Cary

Magforce
Hoda Tawfik

Osteovantage
Eric C. Leuthardt

IMAGING

Moderators/Panelists: *Bernard Bendok, Robert E. Gross, John Pollina*

Siemens Innovations
Klaus Klingenbeck

Tumor MR Imaging Specialist
Kathleen M. Schmainda

Keep all the CNS Annual Meeting information accessible with the Annual Meeting Guide

Access all of the details and stay connected throughout the CNS Annual Meeting with the Annual Meeting Guide using your iPhone, iPad, Android or Mobile Windows devices.

This guide includes:

- Course details – title, date, time, description, learning objectives, faculty and location
- Save your favorite sessions or events and create your own calendar
- Receive alerts and special announcements throughout the conference
- Send and receive messages with other meeting attendees
- Review the list of exhibitors and their location in the exhibit hall
- Request an appointment with an exhibitor
- Note taking ability on each of the sessions you attend
- And much more…

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as of 6/25/14

The CNS is pleased to welcome our 2014 International Partner – Israel Neurosurgical Society

Zeev Feldman, MD
President

Leon Levi, MD
Secretary

Zvi Harry Rappaport, MD

Menashe Zaaroor, MD

Moshe Hadani, MD

CNS-SIM

As the global leader in neurosurgical education, the CNS is pleased to announce CNS-SIM, back by popular demand! This course utilizes simulation based training techniques to educate neurosurgical residents in skills necessary to manage patients with traumatic brain injury, spine trauma and deformity, cerebrovascular disorders and skull based tumors. The course incorporates both didactic and hands-on training using state-of-the-art simulators, including virtual reality based and physical models. Participants can expect one-on-one training with faculty experts in the subspecialty modules.

SUN 19 OCT

Join us for this year's CNS-SIM course –
PC19: Simulation Based Neurosurgical Training

**This course requires a $250 registration fee in order to guarantee a seat in the course. Upon completion of the course, the $250 registration fee will be refunded in its entirety. This course is for PGY3, PGY4 and PGY 5 residents.*

PRACTICAL COURSES

All 8:00 AM – 4:00 PM Practical Courses include a buffet lunch, and morning and afternoon coffee service. 8:00 – 11:30 AM and the 12:30 – 4:00 PM Practical Courses include coffee service.

SAT 18 OCT SATURDAY

8:00 AM – 4:00 PM $100

PC01: NINDS/CNS Workshop on Grant Writing and Career Development

General

Course Director(s): *Stephen J. Korn*
Faculty: *Aviva Abosch, E. Antonio Chiocca, Aaron S. Dumont, Emad N. Eskandar, Walter J. Koroshetz, Linda M. Liau, David D. Limbrick, Russell R. Lonser, J. Marc Simard, Kareem A. Zaghloul, Gregory J. Zipfel*
Course Description: Balancing a research career and clinical neurosurgery is challenging. A key to success is to master the art of grant writing. This course is led by faculty who have successfully obtained funding from the National Institutes of Health (NIH) at different stages of their careers and faculty that sit or have sat on NIH study sections that review grants. Participants are encouraged to bring their own grant-in-progress; time will be set aside for the faculty to review these grants and provide individual instruction.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe the methods for writing successful grants, for both the NIH and private foundations.
- Discuss the steps to prepare grant applications based on tips and tricks that have helped others write successful grants.

8:00 AM – 4:00 PM $650

PC02: Brain Tumor Update

Tumor

Course Director(s): *Andrew T. Parsa, Jason P. Sheehan*
Faculty: *Manish Kumar Aghi, Nicholas C. Bambakidis, Frederick G. Barker, John A. Boockvar, Franco DeMonte, Michael Lim, Russell R. Lonser, Mark Edwin Shaffrey, Michael Edward Sughrue, Philip V. Theodosopoulos, Isaac Yang*
Course Description: This course will include current research topics, and emphasizes practical management issues. It will provide an up-to-date overview of current management strategies for major types of glial tumors including astrocytomas, oligodendrogliomas and others. Treatment strategies for major types of benign and malignant brain tumors of non-glial origin will also be discussed.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Formulate treatment plans based on the state-of-the art management of benign and malignant brain tumors including meningiomas, acoustic neuromas, skull base tumors, pediatric tumors and metastases.
- Incorporate current concepts in glioma management including surgical techniques, adjuvant treatments, tumor biology and clinical management decisions into their treatment plans.

8:00 AM – 4:00 PM $1600

PC03: Minimally Invasive Spinal Surgery (Cadaver Course)

Spine

Course Director(s): *Richard G. Fessler, John C. Liu*
Faculty: *Nader S. Dahdaleh, Vassilios Georgios Dimopoulos, Kurt M. Eichholz, Langston T. Holly, Robert E. Isaacs, Bong-Soo Kim, John E. O'Toole, Alfred T. Ogden, Avelino Parajon, Mick J. Perez-Cruet, Faheem A. Sandhu, Zachary Adam Smith, Trent L. Tredway, Jean-Marc Voyadzis*
Course Description: This course will focus on minimally invasive procedures for cervical and lumbar spine surgery. Techniques for decompression, fixation and fusion will be discussed.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Incorporate various minimally invasive techniques into their approach for cervical and lumbar spine surgery.
- Identify the indications, results and potential complications for these procedures.

8:00 AM – 4:00 PM

Part 1 Didactic + Lab	$1600
Part 1 Didactic Only	$300
Parts 1 & 2 Didactic + Lab	$3000
(please note: you will automatically be registered for PC18)	
Parts 1 & 2 Didactic Only	$500
(please note: you will automatically be registered for PC18)	

PC04: Endoscopic and Keyhole Approaches to the Anterior Skull Base – Part 1 Keyhole Craniotomy and Endoscopic Assisted Microsurgery (Cadaver Course)

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15.

Tumor

Course Director(s): *Daniel F. Kelly, Zachary N. Litvack*
Faculty: *Garni Barkhoudarian, Sarat P. Chandra, Aaron A. Cohen-Gadol, James J. Evans, Juan Carlos Fernandez-Miranda, Sebastien Froelich, Paul A. Gardner, Jeremy D. W. Greenlee, Caroline Hayhurst, Nikolai J. Hopf, John Y. K. Lee, Jody Leonardo, James K. Liu, Vikram C. Prabhu, Theodore H. Schwartz, Jonathan H. Sherman, Michael Edward Sughrue, A. Samy K. Youssef*
Course Description: This course is designed for neurosurgeons interested in adding minimally invasive endoscopic techniques to their practice. The full day clinic will provide a combination of didactic lectures, prosections and mentored hands-on practice in minimally invasive approaches to the Anterior, Antero-Lateral and Postero-Lateral Skull Base. Participants will have the opportunity to learn a number of approaches from faculty from around the world including the Supraorbital ("Eyebrow") Craniotomy, Mini-Pterional Craniotomy, Keyhole Parasaggital, Keyhole-Retrosigmoid and Keyhole-Suprasellar with a focus on endoscopic visualization. Panel discussions will review indications and outcomes, along with "tricks of the trade".

There are two registration options. For attendees opting for the "Didactic

+ Lab" course, a large portion of each block will be spent at the bench practicing the approaches with faculty mentors. Space is limited to 24 registrants for the lab. All attendees will participate in the didactics, and have the opportunity to watch step-by-step prosections by the faculty for each segment of the course.

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

- Describe the 3-D relational anatomy of the anterior and posterolateral skull base as it applies to keyhole surgery.
- Discuss indications for keyhole approaches and avoid common missteps and complications.
- Demonstrate acquisition of new manual surgical skills in approach and dissection of the anterior cranial fossa.
- Explain the role of new surgical instrumentation in advancing these surgical approaches.

8:00 AM–4:00 PM $1600

NEW PC05: **Peripheral Nerve Anatomy and Surgery (Cadaver Course)**

Peripheral Nerve

Course Director(s): *Robert J. Spinner, Lynda Jun-San Yang*
Faculty: *Marie-Noelle Hebert-Blouin, Line Jacques, Michel Kliot, John E. McGillicuddy, Rajiv Midha, Wilson Zachary Ray, Gregory R. Trost, Christopher J. Winfree, Eric L. Zager*
Course Description: This hands-on clinic uses cadaver dissection to review clinically relevant anatomy and surgical approaches to the brachial plexus and upper extremity nerves.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Perform common exposures to normal nerves throughout the body.
- Recognize relationships of nerves to potential sites of compression/injury.
- Cite examples of commonly performed new techniques (e.g. nerve transfers).
- Explain normal nerve anatomy in reconstructive efforts.

8:00 AM–4:00 PM $650

PC06: **Controversies in Neuromodulation**

Functional

Course Director(s): *Emad N. Eskandar, Parag G. Patil*
Faculty: *Kelly D. Foote, Darlene Angela Lobel, Joseph Samir Neimat, Nader Pouratian, Ashwini D. Sharan*
Course Description: Neuromodulation is a growing field of neurosurgery and neuromedicine with increasing applications and exciting new technologies. There are controversies, however, in regard to the science, indications and techniques in performing neuromodulation for patients. This course will cover, among other issues, image-guided DBS, neuromodulation for pain, electrophysiology and DBS surgery and building a comprehensive functional restoration practice. This course will be of interest to not only the functional neurosurgery specialist but also the general neurosurgeon who wants to learn the most current up-to-date issues in neuromodulation.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the advantages and disadvantages of image-guided DBS.
- Discuss the advantages and disadvantages of neuromodulation for pain.
- Discuss the advantages and disadvantages of electrophysiology of DBS surgery.

8:00–11:30 AM $450

PC07: **Neurosurgery Board Review**

General

Course Director(s): *Allan D. Levi*
Faculty: *James S. Harrop, Thomas J. Leipzig, Robert J. Spinner*
Course Description: This course will provide an in-depth review of likely oral board questions and topics.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss strategies for studying and mastering a wide range of typical exam-style questions.
- Plan a timeline for case collection, submission, studying and practice sessions.
- Focus on high-yield clinical scenarios very likely to appear on the exam.

8:00–11:30 AM $450

PC08: **3-D Anatomy (Supratentorial)**

General

Course Director(s): *Juan Carlos Fernandez-Miranda, Albert L. Rhoton*
Faculty: *Evandro De Oliveira, Jeffrey M. Sorenson*
Course Description: This course will provide three-dimensional microsurgical instruction on the following topics: routes through the anterior and posterior cerebrum and temporal lobe, anatomy and approaches to the lateral and third ventricles and pineal region, anterior skull base and cavernous sinus and transsphenoidal, transmaxillary and transoral approaches.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Plan the routes through the anterior and posterior cerebrum and temporal lobe.
- Identify the anatomy and approaches to the lateral and third ventricles and pineal region, the anterior skull base and cavernous sinus and transsphenoidal, transmaxillary and transoral approaches.

PRACTICAL COURSES

All 8:00 AM – 4:00 PM Practical Courses include a buffet lunch, and morning and afternoon coffee service. 8:00 – 11:30 AM and the 12:30 – 4:00 PM Practical Courses include coffee service.

8:00 – 11:30 AM $450

PC09: Practical Spine Biomechanics for Clinical Practice

Spine

Course Director(s): *Edward C. Benzel, Tyler R. Koski*
Faculty: *John H. Shin, Robert G. Whitmore*
Course Description: This course will present the physical principles and biomechanical foundations of spinal surgery and stabilization via a didactic and interactive case discussion format.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Integrate biomechanical principles and strategies into their surgical planning.
- Strategize to avoid and manage complications.

8:00 – 11:30 AM $450

PC10: Open Aneurysm Surgery: A 3-D Practical Course

Vascular

Course Director(s): *Michael T. Lawton, Byron Gregory Thompson*
Faculty: *Fady T. Charbel, Ali F. Krisht, Jacques J. Morcos, Troy D. Payner, Howard A. Riina*
Course Description: This course will discuss optimal approaches for management of intracranial aneurysms.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Analyze case presentations of patients presenting with intracranial aneurysms to select the optimal (endovascular or microsurgical) approach.
- Interpret advanced preoperative imaging evaluation to maximize effectiveness of preoperative surgical planning.
- Plan for skull base approaches for anterior and posterior circulation aneurysm surgery in order to optimize exposure for complex aneurysms.
- Initiate adjunctive intraoperative imaging techniques to optimize obliteration of cerebral aneurysms with preservation of parent and branch vasculature.

8:00 – 11:30 AM $450

NEW PC11: Update in Epilepsy Surgery

Functional, Pediatrics

Course Director(s): *William E. Bingaman*
Faculty: *Andreas Alexopoulos, Jorge A. Gonzalez-Martinez, Eldad J. Hadar, Gwyneth L. Hughes, Lara Jehi, Bradley Lega, Miguel Angel Lopez Gonzalez, Michael D. Sather, Nitin Tandon, Nicholas Michael Wetjen*
Course Description: Surgery for epilepsy is an ever changing field with new science, new technology and new clinical trials. This course will cover the latest up-to-date science in epilepsy surgery. The course will be of interest to not only the epilepsy specialist, but also the general neurosurgeon who wants to learn the most current updates in epilepsy surgery.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the results of latest clinical trials in epilepsy surgery.
- Discuss the latest technological advances in epilepsy surgery.
- Discuss the latest in imaging advances in epilepsy surgery.

12:30 – 4:00 PM Price: $450

PC12: 3-D Anatomy (Infratentorial)

General

Course Director(s): *Juan Carlos Fernandez-Miranda, Albert L. Rhoton*
Faculty: *Evandro De Oliveira*
Course Description: This course will provide three-dimensional microsurgical instruction on the anatomy and approaches through the temporal bone, cerebellum and fourth ventricle, far lateral and transcondylar approaches, approaches to the cerebellopontine angle and the anatomy and approaches to the jugular foramen.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe the anatomy of the temporal bone, cerebellum and fourth ventricle, far lateral and transcondylar approaches, approaches to the cerebellopontine angle and the anatomy and approaches to the jugular foramen.
- Discuss the three-dimensional neurovascular relationships of each region.

12:30 – 4:00 PM $450

PC13: Cervical Spondylotic Myelopathy and Radiculopathy: Treatment Approaches and Options

Spine

Course Director(s): *Regis W. Haid, Michael G. Kaiser*
Faculty: *Nathaniel P. Brooks, Kurt M. Eichholz, James S. Harrop, Langston T. Holly, John E. O'Toole*
Course Description: This course will present the pathophysiology, clinical presentation and current diagnostic modalities involved in the care of cervical degenerative disease. The indications, techniques and complications associated with the operative management of cervical degenerative disease, including correction of degenerative deformities, will be reviewed through lectures, case-presentations and hands-on practical exercises.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Identify the appropriate indications and recommend state-of-the-art techniques for surgical management of degenerative disease of the cervical spine.
- Establish steps to avoid common complications.

12:30 – 4:00 PM $450

NEW PC14: **Building a Comprehensive Stroke Center: Building a Program, Establishing a Center of Excellence and Achieving Joint Commission CSC Accreditation**

Vascular

Course Director(s): *Elad I. Levy, J D. Mocco*
Faculty: *Bernard R. Bendok, Robert J. Dempsey, Adnan Hussain Siddiqui, Erol Veznedaroglu, Gregory J. Zipfel*
Course Description: There are approximately 800,000 strokes in the United States each year. There is a call for accreditation of comprehensive stroke centers across the country to meet this national health care need. Participants will learn how to build a state-of-the-art stroke program, establish a stroke center of excellence and achieve Joint Commission CSC accreditation.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss standards and certification eligibility criteria for comprehensive stroke centers.
- Review metrics and related data elements designed to monitor the quality of care at comprehensive stroke centers.

12:30 – 4:00 PM $450

PC15: **Cranial and Spinal Radiosurgery Update**

Functional

Course Director(s): *Randy L. Jensen, Andrew E. Sloan*
Faculty: *Steven D. Chang, Michael William McDermott, Alexander Muacevic, Jason P. Sheehan*
Course Description: This course will discuss the appropriate use of various radiosurgery delivery platforms for benign and malignant cranial lesions.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Recommend radiosurgery more safely by recognizing the appropriate use of radiosurgery for benign and malignant cranial lesions.
- Differentiate between the various radiosurgery delivery platforms.
- Implement radiosurgery delivery techniques to avoid injury to intracranial neurovascular structures.
- Identify the indications for the use of radiosurgery for functional disorders and pain.
- Apply techniques learned in this course to formulate a radiosurgery plan for a given cranial pathology.

12:30 – 4:00 PM $450

PC16: **Neurocritical Care and Neurosurgical Emergencies Update**

Trauma

Course Director(s): *Jack Jallo, Christopher J. Madden*
Faculty: *Kamran Athar, Ian E. McCutcheon, John K. Ratliff, Jonathan A. White*
Course Description: This course will promote rapid identification and a better understanding of the management of neurosurgical emergencies.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Design key management strategies for emergencies involving the brain, spine and peripheral nerves.
- Evaluate the current evidence for patient specific therapies.
- Apply the latest modalities in the management and understanding of neurosurgical emergencies.
- Identify controversies in management of these emergencies, considering the role of the surgeon in emergency neurosurgery.
- Discuss the physiology of a variety of neurosurgical emergencies.

12:30 – 4:00 PM *Complimentary*

PC17: **RRC Next Accreditation System, Milestones and the Neurosurgery Matrix**

General

Course Director(s): *Nathan R. Selden, Kim J. Burchiel*
Faculty: *Pamela L. Derstine*
Course Description: This course will be particularly useful for Residency Program Directors, Associate Program Directors, Program Coordinators, Department Chairs and other faculty and educational leaders in academic neurosurgery centers. The course will cover the dynamic changes now occurring in the RRC Common Program Requirements and Neurosurgery Residency Program Requirements, the RRC Milestones Curriculum initiative and the Neurosurgery Matrix Curriculum. The faculty will include members of the Neurosurgery RRC, the ACGME and the Society of Neurological Surgeons Committee on Resident Education (CoRE). Time for questions and interactive discussion with panel members will be provided.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Identify the principal new requirements for ACGME accredited neurological surgery residencies.
- Describe the principal components of the ACGME Milestones teaching and assessment system.

PRACTICAL COURSES

All 8:00 AM – 4:00 PM Practical Courses include a buffet lunch, and morning and afternoon coffee service. 8:00 – 11:30 AM and the 12:30 – 4:00 PM Practical Courses include coffee service.

SUN 19 OCT SUNDAY

8:00 AM – 4:00 PM

Part 2 Didactic + Lab	$1600
Part 2 Didactic Only	$500
Day 1 & 2: Lecture/Pro-section Only:	$500

EXPANDED

PC18: **Endoscopic Endonasal and Keyhole Approaches to the Skull Base – Part 2 Endoscopic Endonasal Skull Base Surgery (Cadaver Course)**

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15.

Tumor

Course Director(s): *James J. Evans, Zachary N. Litvack*
Faculty: *Garni Barkhoudarian, Sarat P. Chandra, Juan Carlos Fernandez-Miranda, Sebastien Froelich, Paul A. Gardner, Jeremy D. W. Greenlee, Caroline Hayhurst, Nikolai J. Hopf, Daniel F. Kelly, John Y. Lee, Jody Leonardo, James K. Liu, Vikram C. Prabhu, Daniel M. Prevedello, Theodore H. Schwartz, Jonathan H. Sherman, Michael Edward Sughrue, A. Samy K. Youssef*
Course Description: This course is designed for neurosurgeons interested in adding minimally invasive endoscopic techniques to their practice. The full day clinic will provide a combination of didactic lectures, prosections and mentored hands-on practice in purely endoscopic endonasal approaches to the skull base. Participants will have the opportunity to learn a number of approaches from faculty from around the world including Transsphenoidal, Transtuberculum, Transplanum, Transpterygoid, Medial Petrosal and Transclival. Participants will also learn the latest techniques in preservation of sinus function, olfaction, and reconstruction of endonasal defects. Panel discussions will review indications and outcomes, along with "tricks of the trade".

There are two registration options. For attendees opting for the "Didactic + Lab" course, a large portion of each block will be spent at the bench practicing the approaches with faculty mentors. Space is limited to 24 registrants for the lab. All attendees will participate in the didactics, and have the opportunity to watch step-by-step prosections by the faculty for each segment of the course.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe the 3-D relational anatomy of the paranasal sinuses and ventral skull base as it applies to endonasal surgery.
- Discuss indications for endonasal approaches and avoid common missteps and complications.
- Demonstrate acquisition of new manual surgical skills.
- Explain the role of new surgical instrumentation in advancing these surgical approaches.

8:00 AM – 4:00 PM $250*

**This course requires a $250 registration fee in order guarantee a seat in the course. Upon completion of the course, the $250 registration fee will be refunded in its entirety.*

PC19: **Simulation Based Neurosurgical Training**

Resident

Course Director(s): *Bernard R. Bendok, James S. Harrop, Darlene Angela Lobel,*
Faculty: *P. Banerjee, Mark W. Bowyer, Peter Campbell, Rohan Chitale, Aaron S. Dumont, James Bradley Elder, Aruna Ganju, George M. Ghobrial, Daniel J. Hoh, Pascal Jabbour, Thomas Kerwin, Elad I. Levy, J D. Mocco, Gregory J. Murad, Daniel M. Prevedello, Wilson Zachary Ray, Andrew J. Ringer, Ben Z. Roitberg, Gail Linskey Rousseau, Clemens M. Schirmer, Nathan R. Selden, Warren R. Selman, Adnan Hussain Siddiqui, Harminder Singh, Erol Veznedaroglu*
Course Description: This course utilizes simulation based training techniques to educate neurosurgical residents in skills necessary to manage patients with traumatic brain injury, spine trauma and deformity, cerebrovascular disorders and skull based tumors. The course incorporates both didactic and hands-on training using state-of-the-art simulators, including virtual reality based and physical models. Participants can expect one-on-one training with faculty experts in the subspecialty modules.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Demonstrate proficiency using realistic simulators for craniotomy for trauma, placement of an external ventricular drain, cervical spine decompression and lumbar pedicle screw placement, repair of CSF leak, performance of cerebral angiogram and performance of retrosigmoid craniotomy.
- Interpret indications for and basic concepts and techniques in management of traumatic brain injury, degenerative spine disease, cerebrovascular disease and skull base tumors.

8:00 AM – 4:00 PM $150

NEW PC20: **So You're Finally a Neurosurgeon...Now What?**

Resident

Course Director(s): *Deborah L. Benzil, Lawrence S. Chin*
Faculty: *Frederick A. Boop, John D. Davis, W. Christopher Fox Neil A. Martin, Julie G. Pilitsis, Richard P. Schlenk, Krystal Lynne Tomei, Luis Tumialan*
Course Description: Residency and fellowship training may prepare you with the neurosurgical knowledge and technical skills, but often this training does not prepare the neurosurgeon for the challenges and modern day issues of starting a practice, navigating the ever-changing medico-economic landscape of coding and reimbursement and the medico-legal environment. This course will be of interest to the young neurosurgeon just entering practice and also the experienced neurosurgeon who wants to learn about the current issues in practice-building, coding and reimbursement and medico-legal issues.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss issues of practice-building

for the neurosurgeon.
- Discuss current issues in coding and reimbursement for the neurosurgeon.
- Discuss medico-legal issues for the neurosurgeon.

8:00 – 11:30 AM $450

PC21: **My Worst Spinal Complication: What I Learned**

Spine

Course Director(s): *Charles Kuntz, Christopher I. Shaffrey*
Faculty: *Robert Bohinski, Regis W. Haid, Laurence D. Rhines, Michael P. Steinmetz, Vincent C. Traynelis, Juan S. Uribe*
Course Description: This course will present and review the avoidance, evaluation, pathophysiology, and treatment of surgical complications. Contemporary avoidance, evaluation, and management of surgical complications remain controversial. Despite significant medical advances, surgical complications can result in poor clinical outcomes and increased medical costs. There is a need for a better understanding of these surgical complications.
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Integrate contemporary evaluation and pathophysiology recognition of spinal complications.
- Develop complication avoidance and management strategies for their current treatment plans.

8:00 – 11:30 AM $450

PC22: **Surgical Management of Tumors in Eloquent Regions**

Tumor

Course Director(s): *Linda M. Liau, Guy M. McKhann*
Faculty: *Mustafa Kemal Baskaya, Andrew J. Fabiano, Isabelle M. Germano, Jorge Alvaro Gonzalez-Martinez, Andrew Morokoff*
Course Description: This course will present surgical management of tumors within eloquent areas of the brain, including brain mapping, planning and avoidance of technical errors.
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Identify the indications for surgical management of tumors within eloquent areas of the brain.
- Integrate current technologies for pre-operative and intra-operative brain mapping for tumors in eloquent cortex and fiber tracts into surgical planning by recognizing how they can enhance the safety of surgery, while considering their limitations.
- Strategize how to avoid common technical errors in brain mapping techniques.

8:00 – 11:30 AM $450

PC23: **Implementing Quality Improvement in Neurosurgery: Raising Quality, Lowering Cost and Maximizing Compensation**

Socioeconomic

Course Director(s): *William A. Friedman, Nader Pouratian*
Faculty: *Anthony L. Asher, Stephen J. Haines, Dong H. Kim, Neil A. Martin, Nancy McLaughlin*
Course Description: The course provides a comprehensive introduction to implementing quality improvement in a neurosurgical program or practice. While delivering quality care has always been an expectation, Medicare mandates and reimbursements, public reporting and evidence-based practice guidelines now require that physicians and neurosurgeons actively engage in the process of delivering and improving quality care. The goals of developing a quality improvement program are to optimize patient care using an evidence-based approach and to minimize the cost of health care, thereby providing the best value to patients and payors. Participants will learn in this interactive practical course that implementing quality improvement in neurosurgery requires recognition of evidence-based best-practice guidelines, models for implementations and continuous measurement to assess success and outcomes. In this course, participants will learn about the history of quality improvement and lessons learned from the aviation industry, which has made great strides in standardizing safety. Participants will also learn about complementary methods of clinical research and process improvement to improve patient outcome. The course will specifically explore the neurosurgical quality improvement landscape and areas for prioritization. Finally, participants will learn about how to increase value in neurosurgery, by cutting costs, decreasing waste and utilization, improving patient outcomes and satisfaction and leveraging these improvements to augment physician compensation.
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Discuss how aviation industry quality improvements have been successfully applied in surgery.
- Explain the concept of "just culture."
- Describe how to implement and sustain comprehensive value based quality improvement.
- Explain how to track clinical quality improvement.
- Apply concepts to cut costs, decrease utilization and thereby increase revenue and compensation.

8:00 – 11:30 AM $450

PC24: **Building a Neurosciences Program**

Socioeconomic

Course Director(s): *Steven A. Toms*
Faculty: *Megan Brosious, James M. Ecklund, Robert M. Friedlander, John B. Pracyk, John K. Ratliff, Adnan Hussain Siddiqui, Gary K. Steinberg*
Course Description: The development of a neurosciences program is a complex enterprise involving the initiation and maintenance of a multitude of institutional and departmental relationships. Although there are significant advantages in an integrated neurosciences program, significant coordination and entry barriers can impede the program growth. This course will describe steps in neuroscience program development, differentiation and maturation in order to aid participants in launching and coordinating their

PRACTICAL COURSES

All 8:00 AM – 4:00 PM Practical Courses include a buffet lunch, and morning and afternoon coffee service. 8:00 – 11:30 AM and the 12:30 – 4:00 PM Practical Courses include coffee service.

EARN Additional CME with the SANS Annual Meeting Supplemental exams!

Continue your education after the Annual Meeting and earn one hour of additional CME credit with SANS supplemental exams! The supplemental exams for each of the following courses are available for only $15 each. Any Annual Meeting attendee can purchase – one or all – regardless of attendance at the live course.

PRACTICAL COURSES

PC04/PC18: **Endoscopic and Keyhole Approaches to the Anterior Skull Base**

DINNER SEMINARS

DIN01: **Treating the One-level Cervical Disc Herniation with Radiculopathy: ACDF vs. Arthroplasty vs. Posterior Approach**

DIN02: **Emerging Technologies and their Role in the Clip Versus Coil Debate**

DIN03: **Evolving Strategies in Glioblastoma: Case-Based Presentations**

LUNCHEON SEMINARS

M06: **Interactive Lunch: Neurooncology**

M08: **Interactive Lunch: Spine**

T10: **Interactive Lunch: Vascular**

T11: **Interactive Lunch: Pediatrics**

SANS ANNUAL MEETING

own neuroscience programs.

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

- Describe how a coordinated neuroscience program differs from a neurosurgery department or practice.
- Review the structures under which neuroscience programs can be formed.
- Discuss how neuroscience programs are necessary for hospital platforms and accountable care organizations.
- Assess mechanisms of neuroscience program governance.
- Analyze the methods by which neuroscience programs can differentiate a practice.
- Demonstrate the roles of research and quality metrics in developing a neuroscience program.

8:00 – 11:30 AM $450

Complimentary for Advance Practice Provider Registrants

NEW PC25: **The Advanced Practice Provider's Guide to Integrating Innovation and Conventional Wisdom**

General

Course Director(s): *Andrea L. Strayer, Eve C. Tsai*

Faculty: *Azam S. Ahmed, Edward C. Benzel, Marc Eichler, Durand Jones, Michael F. Nido, Nirav Patel, Joshua M. Rosenow, Kristina Shultz, Michael P. Steinmetz, Shelly D. Timmons*

Course Description: The neurosurgery advanced practice provider (APP) is challenged with learning new innovations and specialty trends while staying abreast of day to day practice demands. The critical decision making skills and intellectual ability of APP's in conjunction with balancing patient care needs and efficiency provides a cornerstone for neurosurgery practices. This practical clinic will explore innovation in neurosurgery, as well as trends and practice pearls. Additionally, how various innovations not only impact patient care, but also how APP's are an integral part of neurosurgery trends and innovations.

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

- Analyze a variety of neurosurgery innovations and trends and the practical integration into APP practice.
- Discuss pearls that will enhance the APP's everyday practice.

12:30 – 4:00 PM $450

PC26: **Cranial Neurosurgery: Complication Avoidance and Management**

Vascular, Tumor

Course Director(s): *William T. Couldwell, Jack P. Rock*

Faculty: *Ossama Al-Mefty, Gordon H. Baltuch, Robert H. Rosenwasser*

Course Description: This course will use case presentations, didactic lectures and interaction with faculty to provide clinical scenarios that may result in complications. Appropriate management will be reviewed. Will discuss strategies designed to anticipate complications so that they may be avoided.

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

- Identify common complications associated with a variety of cranial procedures.
- Plan strategies to avoid and manage them.

12:30 – 4:00 PM $450

NEW PC27: **Trauma Update: Traumatic Brain Injury**

Trauma

Course Director(s): *Shelly D. Timmons*

Faculty: *Rocca Armonda, Prakash Sampath,*

Course Description: The modern management of traumatic brain injury (TBI) is ever-changing and complex. Current clinical trials are demonstrating new science while at the same time raising new controversies in the neurosurgical treatment of TBI. New technologies such as new monitoring devices and techniques are improving the neurosurgeon's ability to take care of TBI patients. New and changing guidelines on TBI are important to every neurosurgeon. This course will

cover current clinical trials in TBI, new technologies and monitoring for TBI and the most up-to-date guidelines on TBI. This course will be interest not only to the neurosurgeon who takes care of TBI on a daily basis, but also to the general neurosurgeon who will want to learn the most up-to-date guidelines and management strategies for TBI.

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

- Discuss current clinical trials in traumatic brain injury.
- Discuss new technologies and monitoring for traumatic brain injury.
- Discuss the most up-to-date guidelines on traumatic brain injury

12:30 – 4:00 PM $450

PC28: **2014 CPT Coding Update**

Socioeconomic

Course Director(s): *Alexander Mason, John K. Ratliff*

Faculty: *Kim Pollock, Karin R. Swartz, Luis M. Tumialan*

Course Description: This course summarizes the anticipated CPT 2014 coding changes and also reviews the 2014 coding changes that affect neurosurgeons.

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

- Apply new and revised CPT coding concepts to key neurosurgical and reporting services with CPT codes and modifiers in order to effectively protect surgical and evaluation/management reimbursement.
- Strategize how to avoid compliance issues with regard to new regulations.

12:30 – 4:00 PM $450

PC29: **Negotiation Tactics from the Experts – Getting the Best Deal (Hospital Negotiations)**

Socioeconomic

Faculty: *James M. Ecklund, Troy D. Payner, James T. Rutka*

Course Description: This course will teach you the critical tools you need to effectively negotiate with your hospital administration. These strategies will also prove invaluable in many other negotiation environments.

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

- Describe principles of negotiation.
- Identify specific methods of maximizing chances of achieving goals during a negotiation.

12:30 – 4:00 PM $450

NEW PC30: **Information Technology, the Internet and Social Media Marketing to Enhance Your Neurosurgery Practice**

Socioeconomic

Course Director(s): *Chaim B. Colen*

Faculty: *Jordan P. Amadio, J. Brad Bellotte, David C. Berg, Brian T. Ragel, Benjamin P. Rosenbaum, Ann R. Stroink, Lindsay Thompson, Krystal Lynne Tomei*

Course Description: The world is rapidly changing as IT advances include not only electronic medical record (EMR), but also smart phones and other applications that can improve the efficiency of your neurosurgery practice. The Internet and social media are the way patients now choose their doctors and hospitals. This course will educate participants on the latest in IT, EMR and using the Internet and social media to improve efficiency and enhance your practice.

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

- Describe the impact of social media in medicine as it relates to neurosurgery.
- Discuss how to balance the use of social media to promote your practice while respecting HIPAA regulations and your own privacy.
- Discuss how to initiate the use of professional networking and social media when marketing your practice.

Association of Neurosurgical Physician Assistants

ANSPA

ANSPA Fall 2014 CME Meeting
Saturday, October 18
7:00 AM–5:30 PM
Boston, MA

ANSPA will be holding its Fall CME meeting in conjunction with the CNS Annual Meeting in Boston, MA!

ANSPA plans to offer neurosurgical lectures from top experts in the field. Breakfast and lunch are included with the registration fee.

NEW! ANSPA non-members will receive a one-year complimentary ANSPA membership with their Fall 2014 registration. Join us for CME and enjoy the benefits of ANSPA membership all year long!

Come to Boston to join your fellow PAs for a day of continuing education, networking and fun! For more information contact:

Rebecca Burns
ANSPA Meeting Planner
cme@anspa.org

Staying for the CNS Meeting?

If you are registered for the CNS meeting October 18-22, join us for a brand *NEW* course – PC25: The Advanced Practice Provider's Guide to Integrating Innovation and Conventional Wisdom. This practical course will explore innovations in neurosurgery, as well as trends and practice pearls. Additionally, how various innovations not only impact patient care, but also how APP's are an integral part of neurosurgery trends and innovations. ***This $450 value is free to Advanced Practice Providers who are registered for the CNS Annual Meeting.***

LUNCHEON SEMINARS

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $95 each ($75 for Residents/Fellows/Medical Students/Advance Practice Providers).

MON 20 OCT MONDAY
12:30–2:00 PM

M01: Honored Guest Luncheon

Complimentary to CNS Resident Members!

Faculty: *Edward C. Benzel*
Introduction: Chair of CNS Resident Committee
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Recognize the importance of leadership principles at various stages in a neurosurgeon's career.
- Explain the principles of developing a rewarding career as a neurosurgeon in academic or community practice.
- Explain how to develop an effective mentor/mentee relationship in the early phase of establishing a practice.

NEW M02: Athletic Head Injuries: Return to Play

Moderator(s): *H. Hunt Batjer*
Faculty: *Julian E. Bailes, James M. Johnston, Russell R. Lonser, Jamie S. Ullman*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Explain the potential consequences of athletic head injuries.
- Recognize concussion signs and symptoms.
- Discuss issues related to return to play after athletic head injury.

M03: Innovations in the Management of Intracerebral and Intraventricular Hemorrhage

Moderator(s): *Issam A. Awad*
Faculty: *E. Sander Connolly, Neil A. Martin, Mario Zuccarello*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss natural history of intracerebral hemorrhage.
- Identify traditional surgical and new minimally invasive options for management of intracerebral hemorrhage.
- Interpret indications, outcomes, and complications from these approaches.

M04: MOC Preparation

Moderator(s): *Ashok Rajappa Asthagiri, Nader Pouratian*
Faculty: *Richard G. Ellenbogen, Mark N. Hadley, Russell R. Lonser, Mark Edwin Shaffrey, Konstantin V. Slavin, Daniel L. Surdell*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Review key high yield topics for the ABNS MOC exam.
- Define the scope of material that is examined on the ABNS MOC exam.
- Identify critical learning resources for review for the ABNS MOC exam.

M05: Advances in the Management of Trigeminal Neuralgia and Facial Pain

Moderator(s): *Kim J. Burchiel*
Faculty: *Douglas Kondziolka, Mark R. McLaughlin, Zvi Harry Rappaport, Joshua M. Rosenow, Johnathan A. White*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Incorporate surgical, percutaneous, radiosurgical and neuromodulation options for trigeminal neuralgia and facial pain syndromes into practice.
- Recognize the complications and outcomes with these approaches.

NEW M06: Interactive Lunch: Neuro-Oncology

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15.

Moderator(s): *Philip H. Gutin*
Faculty: *Mitchel S. Berger, Arlan H. Mintz, Roy A. Patchell, Vikram C. Prabhu, Raymond Sawaya*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Review the latest guidelines on managing brain tumors.
- Discuss innovative techniques for managing challenging brain tumors.
- Review strategies for complication avoidance in tumor surgery.

M07: Guidelines for Diagnosis and Treatment of Degenerative Lumbar Spinal Disease

Moderator(s): *John Pollina,*
Faculty: *Zoher Ghogawala, Praveen V. Mummaneni, Daniel K. Resnick, Daniel M. Sciubba*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Assess the current literature on surgical treatment of degenerative lumbar spine disease.
- Analyze the indications and expected outcomes for various lumbar spine surgical procedures to improve their treatment plans.

NEW M08: Interactive Lunch: Spine

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15.

Moderator(s): *Charles Y. Liu, Christopher I. Shaffrey*
Faculty: *Patrick C. Hsieh, John E. O'Toole, Nicholas Theodore*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Review innovative options for managing difficult spinal pathologies.
- Discuss current controversies in spinal surgery.
- Review recent spine surgery guidelines.

M09: Multidisciplinary Management of Subarachnoid Hemorrhage and Vasospasm

Moderator(s): *Robert H. Rosenwasser*
Faculty: *E. Sander Connolly, Andrew J. Ringer, Daniel L. Surdell*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Compare the current surgical, interventional and medical management of subarachnoid hemorrhage and vasospasm secondary to ruptured intracranial aneurysms and vascular malformations.

TUE 21 OCT TUESDAY
12:30–2:00 PM

T10: Interactive Lunch: Vascular

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15

Moderator(s): *Michael T. Lawton, Erol Veznedaroglou*
Faculty: *Adam S. Arthur, Daniel L. Barrow, Adnan Hussain Siddiqui*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Review the latest guidelines on treating neurovascular diseases.
- Discuss innovative techniques and strategies for managing challenging neurovascular pathologies.
- Discuss indications for treating neurovascular diseases.

T11: Interactive Lunch: Pediatrics

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15

Moderator(s): *Richard G. Ellenbogen, Karin M. Muraszko*
Faculty: *Alan R. Cohen, Arthur James DiPatri*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the natural history and indications for treating pediatric neurosurgical diseases.
- Review risk avoidance strategies in managing pediatric neurosurgical diseases.
- Discuss the latest techniques and guidelines in managing pediatric neurosurgical pathologies.

T12: Cervical Arthroplasty and Lumbar Motion Preservation Technologies

Moderator(s): *Regis W. Haid*
Faculty: *Domagoj Coric, Praveen V. Mummaneni, Vedantam Rajshekhar, Michael Y. Wang*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Analyze the current state-of-the-art cervical disc arthroplasty technology.
- Describe lumbar preservation technologies.
- Determine indications for use of these technologies and potential complications.

T13: Guidelines for the Management of Acute Cervical Spine and Spinal Cord Injuries

Moderator(s): *Mark N. Hadley*
Faculty: *Sanjay S. Dhall, R. John Hurlbert*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Identify advances in the medical treatment of traumatic spinal cord injury.
- Determine state of the art surgical management of cervical spine trauma and spinal cord injury.
- Write protocols for identifying and assessing cervical spine injury in the comatose patient.

T14: Pituitary Adenomas: Operative Nuances and Management Considerations

Moderator(s): *James J. Evans, Edward R. Laws*
Faculty: *Manish Kumar Aghi, James P. Chandler, Fred Gentili*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Explain the roles of medical, radiation and surgical treatment for secretory and non-secretory pituitary adenomas.
- Describe the medical, imaging and laboratory evaluation for various pituitary adenomas.
- Identify the surgical nuances of pituitary adenoma resection.

T15: New Frontiers and Innovations in Radiosurgery

Moderator(s): *Douglas Kondziolka*
Faculty: *William A. Friedman, Ajay Niranjan, Jean M. Regis, Stephen B. Tatter*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- List the various imaging tools used to assess radiosurgery responses.
- Describe the expanded indications and new approaches for brain metastasis radiosurgery.
- Discuss new concepts for trigeminal neuralgia radiosurgery.
- Discuss new concepts for epilepsy radiosurgery.
- Discuss new concepts for behavioral disorder radiosurgery.

T16: Managing Complications in Spinal Surgery

Moderator(s): *Gregory R. Trost*
Faculty: *Michael W. Groff, Patrick W. Hitchon, John Pollina, Christopher I. Shaffrey*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Identify operative events dictating the need for intraoperative salvage techniques in spinal surgery.
- Discuss the specific techniques necessary to rectify intraoperative difficulties.

T17: Guidelines for Neurocritical Care Management for Patients with Severe Traumatic Brain Injury

Moderator(s): *Shelly D. Timmons*
Faculty: *Joshua E. Medow, Patricia B. Raksin*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Review strategies for managing traumatic brain injury.
- Assess current practice standards, and practical issues surrounding management.
- Identify the unique challenges facing patients with traumatic brain injury.

LUNCHEON SEMINARS

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $95 each ($75 for Residents/Fellows/Medical Students/Advance Practice Providers)

T18: Peripheral Nerve Board Review

Moderator(s): *Lynda Jun-San Yang*
Faculty: *Allen H. Maniker, Rajiv Midha, Robert J. Spinner*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the important peripheral nerve injuries frequently presented on board examinations.
- Demonstrate comprehension of the peripheral nerve physical examination.
- Explain how to manage peripheral nerve injury/disease surgically and non-surgically.

WED 22 OCT WEDNESDAY
11:30 AM – 1:00 PM

NEW W19: Incorporating Telemedicine into Your Practice

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15

Moderator(s): *Adnan Hussain Siddiqui*
Faculty: *Pascal Jabbour*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Explain technological and infrastructure requirements of telemedicine systems.
- Discuss the impact of telemedicine on healthcare delivery.
- Learn about the legal and financial issues related to telemedicine.

W20: Lessons Learned: Avoidance and Management of Complications of Aneurysm Surgery

Moderator(s): *Giuseppe Lanzino*
Faculty: *Ali F. Krisht, Michael T. Lawton, Andreas Raabe*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the common complications in aneurysm surgery.
- Describe management of complications occurring during aneurysm surgery.
- List the different techniques available to manage complications with adjunctive technologies.

W21: Multidisciplinary Management Strategies for Unruptured Aneurysms

Moderator(s): *Robert A. Solomon*
Faculty: *Felipe Albuquerque, Robert M. Friedlander, Juha Antero Hernesniemi, Byron Gregory Thompson*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the epidemiology and natural history of unruptured intracranial aneurysms.
- Construct appropriate treatment algorithms for these lesions.

W22: Update on Movement Disorders: Novel Targets, Indications and Approaches

Moderator(s): *Parag G. Patil*
Faculty: *Michael Gordon Kaplitt, Zelma HT Kiss, Konstantin V. Slavin*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the indications for deep brain stimulation for movement disorder.
- Determine outcomes and risks related to deep brain stimulation when assessing their management strategies for the treatment of movement disorders.

W23: Hematology and Coagulation for Neurosurgeons: Dangers and Solutions

Moderator(s): *Issam A. Awad*
Faculty: *Alan S. Hoffer, Pascal Jabbour, R. Loch Macdonald*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss that neurosurgeons commonly face acute peri- and intraoperative decisions regarding the diagnosis and management of coagulopathy that are crucial to patient safety and excellent outcomes.
- Review important coagulation mechanisms, parameters, indications and clinical pearls to their current strategy.
- List important screening guidelines and define the key points of emergency and intraoperative coagulation management.

W24: Peripheral Nerve Entrapment Syndromes: Diagnosis and Management

Moderator(s): *Eric L. Zager*
Faculty: *Jason H. Huang, Robert J. Spinner, Lynda Jun-San Yang*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Explain the diagnosis and workup of peripheral nerve entrapment syndromes.
- Review surgical indications of these syndromes.
- Discuss complication avoidance in the management of these syndromes.

DINNER SEMINARS

Saturday, October 18 6:00 – 8:30 PM

SAT 18 OCT 6:00 – 8:30 PM
Price: $205 *(Includes SANS Supplemental Exam)* $190 *(without SANS Supplemental Exam)*

DIN01: **Treating the One-level Cervical Disc Herniation with Radiculopathy: ACDF vs. Arthroplasty vs. Posterior Approach**

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15

Course Director(s): *Praveen V. Mummaneni*
Faculty: *Domagoj Coric, Mark Edwin Shaffrey, Michael Y. Wang*
Course Description: For years, the question of how to surgically approach the one-level disk herniation presenting with refractory radiculopathy has been a matter of clinical equipoise influenced mostly by regional practice patterns, reimbursement and surgeon preference. Are there clear and refined indications for each approach? Enjoy a fantastic dining opportunity while engaging experts in the field present their views and debate their approaches via case-based presentations.

Learning Objectives: *Upon completion of this course, participants will be able to:*
- List the surgical options for treatment of cervical radiculopathy.
- Assess contraindications to cervical arthroplasty.
- Describe the management benefits and indications for cervical: foraminotomy/ posterior diskectomy, arthrodesis and arthroplasty.

AGENDA

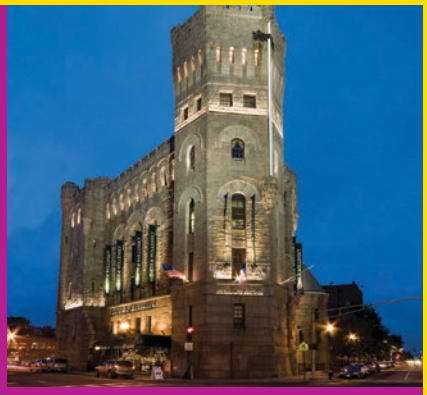
Introduction
Praveen V. Mummaneni

Anterior Cervical Diskectomy and Fusion
Michael Y. Wang

Disk Arthroplasty
Domagoj Coric

Foraminotomy and Diskectomy
Mark Edwin Shaffrey

Case Presentations and Discussion



Smith and Wollensky

Located between the new Rose Kennedy Greenway and historic Boston Harbor, Smith and Wollensky offers a breathtaking waterfront view. The 10,000-square-foot steakhouse includes an outdoor patio, bar and lounge, adding to the restaurant's unique Harbor experience. The European-style exposition kitchen provides culinary entertainment while lush furnishings of wood and leather create a cozy and inviting interior retreat.

Honored by 2013 Wine Spectator for 6th year in a row.

SAT 18 OCT 6:00 – 8:30 PM
Price: $205 *(Includes SANS Supplemental Exam)* $190 *(without SANS Supplemental Exam)*

DIN02: **Emerging Technologies and Their Role in the Clip vs.Coil Debate**

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15

Course Director(s): *Aaron S. Dumont*
Faculty: *Pascal Jabbour, Michael T. Lawton, Adnan Hussain Siddiqui*
Course Description: Neurosurgeons treating patients with intracranial aneurysms are often faced with the challenge of weighing the relative benefits and risks with clipping versus coiling. Though inherent factors such as aneurysm size, location, geometry, patient age, and clinical status play a key role in weighing these decisions, technological advances may play an equally important factor. The CNS has brought together an expert panel to provide insight into this contemporary debate, and to examine whether newer technologies are indeed creating a paradigm shift in management.

Learning Objectives: *Upon completion of this course, participants will be able to:*
- List the surgical and endovascular options for treatment of cerebral aneurysms.
- Discuss the current evidence supporting clipping versus coiling in select cases.
- Describe the relative management benefits and indications for clipping and coiling cerebral aneurysms.

AGENDA

Introduction – A Question of Balance
Aaron S. Dumont

A Clipping First Strategy
Michael T. Lawton

Emerging Technologies in Endovascular Neurosurgery
Pascal Jabbour

Is There a Balance to Achieve in the Clip Versus Coil Debate?

Flow Diversion and Extending the Use of Endovascular Techniques

Case Presentations and Discussion

Mistral

Located in Boston's stylish South End, Mistral showcases uncomplicated French cuisine, highlighted with the season's finest ingredients. Inspired by the wind that sweeps through the south of France, their decor is reminiscent of Provence, with handpicked pottery and arched windows that evoke warmth and sophistication.

Named "Top 25 New Restaurants in America" by Esquire Magazine, and winner of four "Best of Boston" awards from Boston Magazine.

DINNER SEMINARS

Monday, October 20 6:00 – 8:30 PM

MON 20 OCT 6:00 – 8:30 PM
Price: $205 *(Includes SANS Supplemental Exam)* $190 *(without SANS Supplemental Exam)*

DIN03: **Evolving Strategies in Glioblastoma: Case-Based Presentations**

SANS ANNUAL MEETING

SANS supplemental exam is available for this course for an additional $15

Course Director(s): *Robert Fenstermaker*
Faculty: *Michael William McDermott, Lazslo Mechtler, Nader Sanai, Michael A. Vogelbaum*
Course Description: The therapeutic landscape in the management of glioblastoma has been evolving rapidly over the last 10 years with a wide breadth of novel treatment strategies undergoing pre-clinical and clinical testing. In addition to reviewing standard of care in the treatment of glioblastoma, leading experts will present controversial management issues and discuss evolving therapies.

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

- Describe the standard of care for newly diagnosed patients with suspected GBM.
- Discuss the current evidence supporting various novel adjuvant treatments in the treatment of GBM.
- Discuss the evolving use of various surgical methods and technologies in the operative management of GBM. (i.e. awake craniotomy, iMRI, etc.).

AGENDA

Introduction
Robert Fenstermaker

Extent of Resection
Nader Sanai

Clinical Trials Update
Michael A. Vogelbaum

Novel Treatment Paradigms for Glioblastoma
Michael William McDermott

Case Presentations and Discussion

Grill 23

For 30 years, Grill 23's mission has been to deliver world-class service and the best available product to their guests including all-natural meats, dayboat seafood and local produce from sustainable farms. Since 2003, Executive Chef Jay Murray has exclusively served USDA Prime, all-natural, source verified, humane beef from Brandt Beef in California. Everything they serve at Grill 23 delivers the best quality and flavor possible to our guests.

2012–2013, 2006–2008, 1999–2002 Best of Boston and Best Steakhouse by Boston Magazine.

MON 20 OCT 6:00 – 8:30 PM
Price: $190

DIN04: **Neurosurgery in the Changing Health Care System**

Course Director(s): *Katie O. Orrico, John Allen Wilson*
Faculty: *Deborah L. Benzil, Michael P. Steinmetz, Ann R. Stroink*
Course Description: The Patient Protection and Affordable Care Act was signed into law in March 2010 and upheld by the Supreme Court in June 2012. Since the opening of the new healthcare exchange in October 2013, upwards of 10 million Americans have enrolled. The CNS has organized a panel of experts who will provide a vision of its impact on the practice of neurosurgery. Join us in this interactive discussion aimed at understanding the changing landscape of healthcare policy in which we practice neurosurgery.
Learning Objectives: *Upon completion of this session, participants will be able to:*

- Describe the fundamental aspects of the new federal healthcare exchange.
- Describe how to obtain more information regarding healthcare policy changes.
- Discuss how institution of the healthcare exchange will impact the practice and reimbursement of spine, trauma and cerebrovascular neurosurgery.

AGENDA

Introductory Remarks
Katie O. Orrico

Update On What's Going On in Washington
John Allen Wilson

Health Care Reform and Implementation
Ann R. Stroink

Alternative Payment and Practice Models
Deborah L. Benzil

Organized Neurosurgery & Health Care Reform
Michael P. Steinmetz

Discussion

Strega

The Strega phenomenon exploded in 2003 with the opening of restaurateur Nick Varano's now legendary North End Landmark. Strega quickly became famous for its dramatic door, celebrity clientele, unmatched hospitality and unforgettable cuisine. Doors were officially opened in 2010, becoming Boston's foremost dining destination with breathtaking oceanfront views, dazzling interiors with a new twist on Italian Cuisine.

American Express' Executive Travel: Boston's Best Restaurants.

DINNER SEMINARS

Tuesday, October 21 6:00 – 8:30 PM

TUE 21 OCT 6:00 – 8:30 PM
Price: $190

DIN05: Social Media: Balancing Your Practice's Needs with Your Privacy

Course Director(s): *Brian Lim Hoh*
Faculty: *Chaim B. Colen, Nelson M. Oyesiku, Nader Pouratian, Brian T. Ragel, Lindsay Thompson*
Course Description: Tweet. Poke. RSS feeds. LinkedIn. The currency of engaging patients in healthcare decisions and the outward face of your practice is radically changing. With the expanding footprint of social media in our everyday lives, an expert panel will deliver the pros and cons of incorporating social media into your practice, as well as some of the details on how to get started.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe the impact of social media in medicine as it relates to neurosurgery.
- Discuss how to balance the use of social media to promote your practice while respecting HIPAA regulations and your own privacy.
- Discuss how to initiate the use of professional networking and social media in your practice.

AGENDA

Introduction
Brian Lim Hoh

The Science of Social Media
Lindsay Thompson

Pearls and Pitfalls in Social Media
Chaim B. Colen

Tweeting, Facebook and Webinars: Reaching and Teaching Potential Patients
Nader Pouratian

Social Media in Organized Neurosurgery
Brian T. Ragel

Discussion

Empire

Located in the heart of Fan Pier in the Seaport District, Empire, Restaurant & Lounge transports you into the mystics of Asia. Bathed in bright turquoise, oranges and gold and punctuated with intricate patterns, plush fabrics and exotic Asian art, the sleek, modern space is designed to give guests an old world feel with a touch of Hong Kong mystery.

2012 Award Winner for Boston Eater.

TUE 21 OCT 6:00 – 8:30 PM
Price: $190

DIN06: The New Standards: Outcome Measures in Neurosurgery

Course Director(s): *Anthony L. Asher*
Faculty: *Zoher Ghogawala, John J. Knightly, Matthew J. McGirt, Timothy C. Ryken, Nicholas Theodore*
Course Description: With support from Congress, a Patient-Centered Outcomes Research Institute (PCORI) was established in 2010 and has taken comparative clinical effectiveness research to the forefront of public attention. Join leading experts who have participated extensively in outcomes database development and utilization in neurosurgery discuss (1) its overall purpose and (2) how you can incorporate outcome measures into your practice.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe the role of outcomes assessment for the profession of neurosurgery.
- Discuss how to participate in outcomes assessment.
- Discuss the implications of measuring outcomes in the changing healthcare system.

AGENDA

Introduction
Anthony L. Asher

The National Neurosurgery Quality and Outcomes Database
Matthew J. McGirt

An Interactive Spine Registry
Zoher Ghogawala

The Importance of Data Fidelity in Calculating Quality Metrics
John J. Knightly

Translating Guidelines into Outcomes Assessment
Nicholas Theodore

Future Directions in Neurosurgical Outcomes Research
Timothy C. Ryken

Discussion

Towne

Towne Stove and Spirits is a warm, welcoming respite in Boston's bustling Back Bay. It's a place where all are welcome and the savory scents from their wood-fired rotisserie mix with the hearty sounds of laughter and good conversation. A place where people relax and enjoy culinary surprises from around the globe.

Trip Advisors Certificate of Excellence Award 2013.

SATURDAY, OCTOBER 18

8:00 AM – 4:00 PM

SYMPOSIUM

SYM01

(See Page 16 for Full Listing)

8:00 AM – 4:00 PM

PRACTICAL COURSES

PC01 – PC17

(See Pages 20-23 for Full Listing)

6:00 – 8:30 PM

DINNER SEMINARS

DIN01 – DIN02

(See Page 31 for Full Listing)

5:00 – 6:30 PM

INTERNATIONAL RECEPTION

INTERNATIONAL COLLEAGUES!

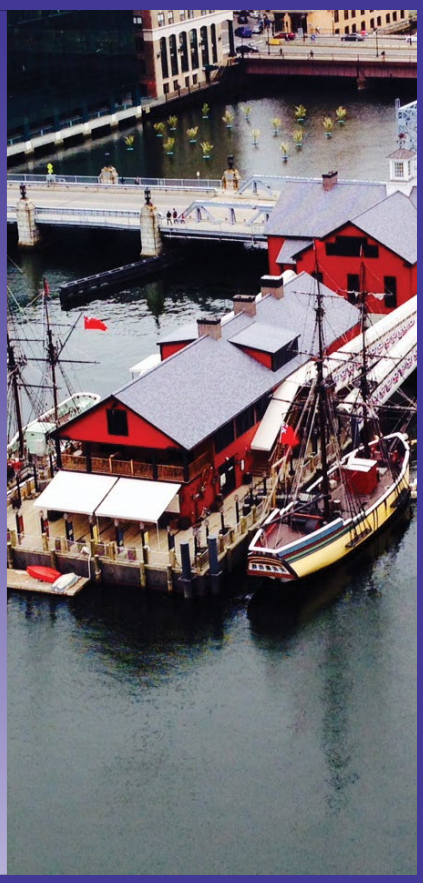
Don't miss the 2014 International Reception!

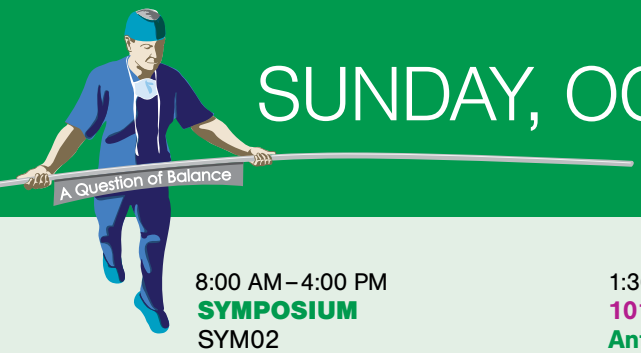
Enjoy cocktails and hors d'oeuvers at this networking opportunity exclusively for our colleagues throughout the world. Taking place at the historic Boston Tea Party Museum.

Saturday, October 18, 2014, 5:00 - 6:30 PM.

All international attendees and their guests are invited to attend. Complimentary transportation from the Headquarter Hotel will be provided.

ALSO join us for the International Forum on Monday, October 20, 2014, 4:15 - 5:30 PM, showcasing cutting edge breakthroughs from around the globe.





SUNDAY, OCTOBER 19

8:00 AM–4:00 PM
SYMPOSIUM
SYM02
(See Pages 17-18 for Full Listing)

8:00 AM–4:00 PM
PRACTICAL COURSES
PC18–PC30
(See Pages 24-27 for Full Listing)

1:00–3:00 PM
CNS RESIDENT SANS CHALLENGE PRELIMINARY ROUND

Back by popular demand, this year's challenge will keep the ***Are You Smarter Than...?*** format. Audience participation is encouraged!

1:30–4:00 PM
CHOICE ABSTRACTS: SPANNING THE SPECTRUM OF NEUROSURGERY
Moderator(s): *Krystal Tomei*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Inspect the findings of novel neurosurgical studies, and critique the design and methodology of these studies.
- List important areas for further knowledge development and research.
- Identify the most important ongoing clinical trials.

1:30–1:36 PM
100 Improving Outcomes in Poor Grade Subarachnoid Hemorrhage (SAH) Patients: Implications of Changing Practice Patterns at a High Volume Cerebrovascular Center
Kadir Erkmen, Aditya Sanzgiri, Mark J. Dannenbaum, Arthur L. Day, Peng Roc Chen

1:36–1:42 PM
101 Reoperation Rates after Anterior Cervical Discectomy and Fusion Versus Posterior Cervical Foraminotomy: A Propensity Matched Analysis
Daniel Lubelski, Andrew T. Healy, Michael Silverstein, Michael P. Steinmetz, Edward C. Benzel, Thomas E. Mroz

1:42–1:48 PM
102 Predictors of spinal cord stimulation success
Priscilla De La Cruz, Steven G. Roth, Joannalee C. Campbell, Jessica Haller, Meghan Wilock, Steven Lange, Julie G. Pilitsis

1:48–1:54 PM
103 Stereotactic Laser Amygdalo-Hippocampotomy for Mesial Temporal Lobe Epilepsy: Collective Experience from Seven Single-Center, Prospective, Investigator-Initiated Studies
Robert E. Gross, Jon Timothy Willie, Ashwini Dayal Sharan, Michael Sperling, Jerry J. Shih, Robert E. Wharen, William Tatum, Gautum Popli, Daniel Edward Couture, Adrian Walter Laxton, David M. Labiner, Martin E. Weinand, W. R. Marshk, Gregory Cascino, Gregory A. Worrell, Angus A. Wilfong, Daniel Curry

1:54–2:00 PM
104 Design and Evaluation of a Concentric Tube Robot for Minimally-Invasive Endoscopic Pediatric Neurosurgery
Vivek Pankaj Bodani, Hamidreza Azimian, Thomas Looi, James M. Drake

2:00–2:06 PM
JOURNAL OF NEURO-ONCOLOGY AWARD
105 The Effect of Timing of Radiotherapy (RT) in Patients with Newly-diagnosed Glioblastoma Multiforme (GBM) Receiving Temozolomide (TMZ): An Analysis Based on the UCSF Experience
Seunggu J. Han, William Caleb Rutledge, Annette Molinaro, Susan Chang, Jennifer L. Clarke, Michael Prados, Mitchel S. Berger, Nicholas Butowski

2:06–2:12 PM
106 Verification of Spinal Cord Decompression by Pre and Post-operative Magnetic Resonance Imaging in Traumatic Sub-axial Spinal Cord Injuries
Bizhan Aarabi, Noori Akhtar-Danesh, David Hersh, Elizabeth J. Le, Jennifer M. Massetti, Cara Diaz

2:12–2:18 PM
107 Supporting A Culture of Quality: Integration of a Self-reported Adverse Event Tracking System into an EPIC-based Electronic Health Record at an Academic Institution
Paul L. Penar

2:18–2:24 PM
108 Cerebral Revascularization in the Endovascular Era: Clinical Indications, Surgical Results and Outcomes at the Barrow Neurological Institute
Leonardo Rangel-Castilla, M. Yashar S. Kalani, Jonathan Russin, Wyatt Ramey, Justin C. Clark, Peter Nakaji, Joseph Zabramsky, Robert F. Spetzler

2:24–2:30 PM
109 Defining the Effectiveness of Lumbar Spine Surgery in a Nationwide, Prospective Longitudinal Quality of Life Registry: An Analysis of Variability in Patient-reported Outcomes and Preliminary Predictive Models of Treatment Failure
Saniya S. Godil, Matthew J. McGirt, Steven D. Glassman, John J. Knightly, Praveen V. Mummaneni, Gregory Oetting, Nicholas Theodore, Oren N. Gottfried, Saad Khairi, Meic H. Schmidt, Maxwell Boakye, Steven N. Kalkanis, Doron Rabin, Timothy C. Ryken, Gregory W. Balturshot, James Chadduck, Daniel Robert Fassett, Ralph E. Reeder, Clinton F. Miller, Thomas B. Briggs, Dang Zhang, Nicholas C. Bambakidis, Mark Edwin Shaffrey, Mark N. Hadley, Dean G. Karahalios, Peter D. Angevine, Michael D. Martin, Matthew G. Ewend, Ali Bydon, M. Adam Kremer, Langston T. Holly, Jonathan Slotkin, Wayel Kaakaji, Alexander K. Powers,

Wesley E. Griffitt, Troy M. Tippett, Jeffrey W. Cozzens, Lana D. Christiano, Thomas W. Grahm, Barton L. Guthrie, J. Frederick Harrington, Christopher I. Shaffrey, Eric H. Elowitz, Kevin T. Foley, Clarence B. Watridge, Anthony L. Asher

2:30 – 2:36 PM

110 Implementation of a Standardized Multimodal Post-Operative Pain Protocol Reduces Post-Operative Pain Among Neurosurgical Patients

William Lee Titsworth, Justine Abram, Peggy Guin, Jennifer Bushwitz, Robert Hurley, Christoph Seubert, William A. Friedman

2:36 – 2:42 PM

111 In-vivo Performance of a Microfabricated Catheter for Intraparenchymal Delivery

Martin Brady, Deep Singh, PJ Anand, Adam Fleisher, William C. Broaddus, Jaime Mata, William Olbricht, Raghu Raghavan

2:42 – 2:48 PM

112 Shunt Survival Benefit Associated with Complete Versus Partial Revision

Jonathan Jay Stone, Corey Walker, Minal Jain, Maxwell Jacobson, Valerie Phillips, Howard J. Silberstein

2:48 – 2:54 PM

SYNTHES SKULL BASE SURGERY AWARD

113 Long-term Follow-up of Male Patients with Prolactinomas: Is Bone Densitometry Necessary?

Lukas Andereggen, Janine Frey, Robert H. Andres, Marwan El-Koussy, Emanuel Christ,

2:54 – 3:00 PM

114 Risk Factors for Post-Concussion Syndrome in an Exclusively Sport-Related Concussion Group: Case Control Study

Clinton David Morgan, Scott L. Zuckerman, Young Min Lee, Gary Solomon, Allen K. Sills

3:00 – 3:06 PM

115 Risk Factors for Laminectomy Surgical Site Infection in a Majority Minority Patient Population

Aniebiet-Abasi U. B. Udofia, Tolulope Oyetunji, Damirez Fossett

3:06 – 3:12 PM

116 Resolution of Cranial Neuropathies Following Treatment of Intracranial Aneurysms with the Pipeline Embolization Device

Karam Moon, Felipe Albuquerque, Andrew F. Ducruet, R. Webster Crowley, Cameron G. McDougall

3:12 – 3:18 PM

117 Outcomes of Operative and Nonoperative Treatment for Adult Spinal Deformity (ASD): A Prospective, Multi-Center Matched and Unmatched Cohort Assessment with Minimum 2-Year Follow-Up

Justin S. Smith, Virginie Lafage, Christopher I. Shaffrey, Frank Schwab, Richard A. Hostin, Oheneba Boachie-Adjei, Justin K. Scheer, Behrooz A. Akbarnia, Eric Klineberg, Munish Gupta, Vedat Deviren, Robert Hart, Douglas C. Burton, Shay Bess, Christopher P. Ames

3:18 – 3:24 PM

118 Fully Endoscopic Microvascular Decompression (E-MVD) for TN, a Safe and Effective Procedure

John Thomas Pierce, Leif-Erik Bohman, Sukhmeet Sandhu, Marie Kerr, John Y.K. Lee

3:24 – 3:30 PM

119 Spatial Conflict is Encoded in Human MT+

Charles B. Mikell, Elliot H. Smith, Lauren Terese Brown, Guy M. McKhann, Sameer A. Sheth

3:30 – 3:36 PM

120 Change in Optic Nerve Sheath Parameters Are a Sensitive Radiological Marker of ETV Outcome in Children

Llewellyn Padayachy, Graham A. G. Fieggen, Henri Carrara, Anthony Figaji

3:36 – 3:42 PM

PREUSS AWARD

121 Leptomeningeal Dissemination Cascade in Medulloblastoma

Ricky Raj Singh Kalra, Daniel W. Fults

3:42 – 3:48 PM

122 Risk Factors for Aseptic Bone Necrosis Following Cranioplasty: A Multivariate Analysis After Reinsertion of 500 Bone Flaps

Christian Ewald

3:48 – 3:54 PM

123 Establishing Standard Performance Measures in Adult Traumatic Brain Injury Patients: A Nationwide Inpatient Sample Database Study

Brian M. Corliss, Kristopher G. Hooten, Sarah Shireen Gul, Dan Neal, Gregory J. Murad, Maryam Rahman

3:54 - 4:00 PM

204 Simvastatin in Aneurysmal Subarachnoid Hemorrhage (STASH) Trial: A Clinical Phase 111 Randomized Placebo Controlled Trial – The Results

Carole L Turner, Christopher Smith, Gordon D Murray, Peter J. Hutchinson, Peter J. Kirkpatrick

GENERAL SCIENTIFIC SESSION I

4:15–6:40 PM SUNDAY, OCTOBER 19

Presiding Officer: *Daniel K. Resnick*
Moderator(s): *Ashwini D. Sharan, Elad I. Levy*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss the potential consequences of sports related injuries
- Recognize sports related injury signs and symptoms including concussion
- Discuss issues related to return to play

4:15–4:22 PM
Introduction and Disclosures
Daniel K. Resnick

4:22–4:25 PM
Introduction of Special Lecturer
Gerald A. Grant

4:25–4:37 PM
Tesla Motors – Innovations in Brain Injury Safety
Louise Zhang

4:37–4:49 PM
Return to Play
Richard G. Ellenbogen

4:49–5:04 PM
From Kona to Kilimanjaro – A Metaphor for Neurosurgery
Joseph C. Maroon

5:04–5:07 PM
Introduction of Featured Speaker
Elad I. Levy

5:07–5:27 PM
FEATURED SPEAKER
Boston Bruins President
Cam Neely

5:27–5:42 PM
Chronic Traumatic Encephalopathy – Is this Real?
Julian Bailes

5:42–5:45 PM
Introduction of Walter E. Dandy Orator
Shekar Kurpad

5:45–6:05 PM
WALTER E. DANDY ORATOR
SCI, Neuroplasticity
Lars Olson

6:05–6:08 PM
Introduction of Featured Speaker
Elad I. Levy

6:08–6:40 PM
FEATURED SPEAKER
Admiral Eric Olson

6:45–8:30 PM
Opening Reception
Boston Convention & Exhibit Center

SUNDAY, OCT 19

Opening Reception

SUNDAY, OCTOBER 19
6:45 - 8:30 PM

Join your friends and colleagues for an evening of fun with live music, delectable fare and luscious libations at the **2014 CNS Opening Reception.** No need to travel, your treats await you at the convention center for your convenience and pleasure.

See you there!

PROGRAM HIGHLIGHTS
MONDAY, OCTOBER 20

EXHIBIT HALL OPEN FROM 8:30 AM – 4:15 PM


Live Surgery from 2013

11:45 AM –12:15 PM
LIVE SURGERY IN THE EXHIBIT HALL
Expanded Endonasal Endoscopy

Operating: *Paul A. Gardner*

Moderators: *James K. Liu, Jacques J. Morcos*

2:00 – 3:30 PM
HOT TOPICS
The Management of Concussion in Children and Young Adults

The Balance Due: Payment for Neurosurgeons Practical Guide to the Current Health Delivery System

2:00 – 3:30 PM
CONTROVERSIES
Extent of Resection of Benign Skull Base Tumors

Neo-adjuvant Radiosurgery Followed by Resection of Brain Metastases: Yes vs. No

4:15 – 5:30 PM
CONSENSUS SESSIONS
Management of Gliomas

- **Low Grade Gliomas**
- **High Grade Gliomas**
- **Impact of Genetics**
- **Multimodality Treatment**

7:00–8:30 AM

SECTION SESSIONS

SECTION ON TUMORS

EMERGING TECHNOLOGIES IN TUMOR VISUALIZATION AND THERAPY

Moderator(s): *Steven N. Kalkanis, John S. Kuo*
Faculty: *Aaron A. Cohen-Gadol, Edward R. Laws, David W. Roberts, Nader Sanai, Michael A. Vogelbaum*
Learning Objectives: *Upon completion of this course the participant will be able to:*

- Discuss the current molecular/cellular concepts of tumor extent of resection.
- Apply fluorescence-guided applications to surgeries for gliomas, meningiomas, pituitary tumors.
- Describe new preclinical technologies in tumor visualization and therapy.

7:00–7:12 AM
What Defines Glioma Margins and Extent of Resection
Michael A. Vogelbaum

7:12–7:24 AM
Fluorescence-guided Resection (FGR) for High Grade Gliomas
Aaron A. Cohen-Gadol

7:24–7:36 AM
Fluorescence-guided Resection (FGR) for Low Grade Gliomas
Nader Sanai

7:36–7:48 AM
FGR for Meningiomas
David W. Roberts

7:48–8:00 AM
FGR for Pituitary Tumors
Edward R. Laws

8:00–8:12 AM
Preclinical Concepts: Potential Intraoperative Application of Raman Spectroscopy
Steven N. Kalkanis

8:12–8:24 AM
Preclinical Concepts: Alkylphosphocholine Analogs for Tumor Detection and Therapy
John S. Kuo

8:24–8:30 AM
Discussion

SECTION ON PAIN

MANAGEMENT OF CANCER PAIN

Moderator(s): *Jason M. Schwalb, Ashwin Viswanathan*
Speakers: *Jonathan Miller, Alon Y. Mogilner, Sean J. Nagel, William S. Rosenberg*
Learning Objectives: *Upon completion of the section meeting the attendee will be able to:*

- Review current evidence of risks and benefits of ablative procedures for cancer pain.
- Review current evidence of risks and benefits of neuromodulation for cancer pain.
- Review current evidence of the use of intrathecal pumps for cancer pain.

7:00–7:20 AM
Ablation for Cancer Pain
Alon Y. Mogilner

7:20–7:40 AM
Neuromodulation for Cancer Pain
Jonathan Miller

7:40–8:00 AM
Intrathecal Pumps
Sean J. Nagel

8:00–8:20 AM
Complex Cancer Cases
William S. Rosenberg

8:20–8:30 AM
Panel Discussion

SECTION ON DISORDERS OF THE SPINE AND PERIPHERAL NERVES

SPINAL PATHOLOGY: ALWAYS A QUESTION OF BALANCE

Moderator(s): *Tyler R. Koski, Christopher I. Shaffrey*
Speakers: *Peter D. Angevine, Robert F. Heary, Frank LaMarca, Praveen V. Mummaneni, Daniel M. Sciubba, Juan S. Uribe*
Learning Objectives: *Upon completion of this session the attendee will be able to:*

- Discuss the implications of spinal balance in all types of surgical spinal pathology.
- Explain the importance of pelvic parameters on spinal balance.
- Describe techniques to help address/avoid problems of spinal imbalance.

7:00–7:14 AM
Why Does Spinal Balance Matter in the Case of Basic Degenerative Spinal Pathology?
Robert F. Heary

7:15–7:29 AM
Importance of Pelvic Parameters in Assessing Spinal Balance
Praveen V. Mummaneni

7:30–7:44 AM
Does Coronal Balance Matter When Addressing Adult Spinal Pathology?
Peter D. Angevine

7:45–7:59 AM
When and How Does Global Spinal Balance Affect the Cervical Spine
Frank LaMarca

8:00–8:14 AM
Challenges of Addressing Spinal Balance with Minimally Invasive Surgical Techniques
Juan S. Uribe

8:15–8:29 AM
Proximal Junctional Kyphosis: Can Anything Be Done?
Daniel M. Sciubba

SECTION ON NEUROTRAUMA AND CRITICAL CARE

A QUESTION OF BALANCE: FROM BRAIN MONITORING TO SPINE SURGERY

Moderator(s): *Eve C. Tsai*
Speakers: *Paul M. Arnold, Michael G. Fehlings, Jamshid Ghajar, Guy Rosenthal, Menashe Zaaroor*
Learning Objectives: *Upon completion of this course, participants should be able to:*

- Describe the latest developments with respect to IMPACT: International Mission for Prognosis and Analysis of Clinical Trials in traumatic brain injury.

- Discuss the practice of Neurotrauma in the battlefield.
- Discuss the benefits and limitations of Neuromonitoring in the utility of ICP monitoring.
- Describe the benefits and limitations regarding early decompression for central cord injury.

7:00 – 7:05 AM
Introduction of Marmarou Lecturer

7:05 – 7:35 AM
Marmarou Lecture

7:35 – 7:40 AM
Questions

7:40 – 8:00 AM
Controversy: Neurotrauma in Battle Field; Traumatic Brain Injury and Intracranial Pressure Monitoring – A Question of Balance

7:40 – 7:50 AM
Neurotrauma in Battlefield
Menashe Zaaroor

7:50 – 8:00 AM
Neuromonitoring in the Utilty of ICP Monitoring
Guy Rosenthal

8:00 – 8:05 AM
Questions

8:05 – 8:25 AM
Controversy: Early Decompression for Central Cord Injury–A Question of Balance?

8:05 – 8:15 AM
For: *Michael G. Fehlings*

8:15 – 8:25 AM
Against: *Paul M. Arnold*

8:25 – 8:30 AM
Balance – Questions

SECTION ON PEDIATRIC NEUROLOGICAL SURGERY

THE PEDIATRIC HYDROCEPHALUS GUIDELINES: HIGHLIGHTS AND INSIGHTS

Moderator(s): *Bermans Iskandar, Catherine A. Mazzola*
Speakers: *Ann-Christine Duhaime, Ann Marie Flannery, David D. Limbrick, Mandeep S. Tamber*
Learning Objectives: *Upon completion of this course the participant will be able to:*

- Describe the recent advances in the treatment of pediatric neurosurgical disorders and research initiatives.
- Identify the potential complications of pediatric procedures, and how to differentiate between diagnoses.
- Describe both surgical and non-surgical management strategies for the child with pediatric neurosurgical disorders.

7:00 – 7:05 AM
Overview
Ann Marie Flannery

7:05 – 7:15 AM
Pitfalls of "Guidelines"
Ann-Christine Duhaime

7:15 – 7:30 AM
Antibiotics/AIS

7:30 – 7:40 AM
ETV vs. Shunting
David D. Limbrick

7:40 – 7:50 AM
Adjunctive Equipment for Shunting: Ultrasound/Endoscope/ Computer-Assisted
Ann Marie Flannery

7:50 – 8:05 AM
Management of Premature Babies and Infants
Catherine A. Mazzola

8:05 – 8:15 AM
Infection Treatment
Mandeep S. Tamber

STEREOTACTIC AND FUNCTIONAL NEUROSURGERY

INNOVATIONS IN DEEP BRAIN STIMULATION

Moderator(s): *Kathryn L. Holloway, Joseph Samir Neimat*
Speakers: *Kendall H. Lee, Andre Machado, Francisco A. Ponce*
Learning Objectives: *Upon completion of this course the participant will be able to:*

- Discuss new applications of deep brain stimulation and other forms of neuromodulation.
- Apply recent advances in research to the clinical practice of functional neurosurgery.

7:00 – 7:30 AM
Closed Loop DBS
Kendall H. Lee

7:30 – 8:00 AM
Awake vs. Asleep DBS
Francisco A. Ponce

8:00 – 8:30 AM
New Indications for DBS
Andre Machado

COUNCIL OF STATE NEUROSURGICAL SOCIETIES

AFFORDABLE CARE ACT UPDATE: SUCCESSFULLY NAVIGATING UNKNOWN TERRITORIES

Moderator(s): *Stephen L. Ondra, John Allen Wilson*
Speakers: *Moustapha Abou-Samra, Katie O. Orrico, Michael P. Steinmetz*
Course Description: The CSNS has begun a major initiative to understand the components and potential impact of the ACA on neurosurgical practice. The goal is to educate neurosurgeons and provide tools so that we may proactively address ACA related issues that will likely impact our practices. As a result, this important socioeconomic section session will provide the foundation for future sessions and practical courses at Annual Meetings in the coming years.
Learning Objectives: *Upon the completion of the meeting the attendees will be able to:*

- Describe the initial premises behind the ACA and how these have evolved

to current day understanding/ interpretation of the law.
- Analyze the possible future direction of the ACA and its impact on neurosurgical practice patterns.
- Assess the financial impact of the Affordable Care Act on neurosurgical practice.

SECTION ON CEREBROVASCULAR

CONTROVERSIES IN CEREBROVASCULAR NEUROSURGERY: A QUESTION OF BALANCE

Moderator(s): *Adam S. Arthur, Peter Nakaji*
Faculty: *Felipe Albuquerque, Ralph G. Dacey, Carlos A. David, Robert E. Harbaugh, Brian Lim Hoh, Michael Kerin Morgan, Andrew J. Ringer, Babu Guai Welch, John Allen Wilson*
Learning Objectives: *Upon the completing of the meeting the attendees will be able to:*
- Discuss the current controversies in the treatment of small unruptured aneurysms.
- Discuss the current controversies in the treatment of brain AVMs.
- Discuss the current controversies in the treatment of carotid disease.

Controversies in Aneurysm Treatment: The Small Unruptured Anterior Circulation Aneurysm

Finding Balance in Aneurysm Treatment

7:00 – 7:10 AM
Argument for a Coil First Strategy
Andrew J. Ringer

7:10 – 7:20 AM
Argument for a Clip First Strategy
Carlos A. David

7:20 – 7:30 AM
Finding Balance in Brain AVM Treatment

7:30 – 7:45 AM
The Case for Embolization + Radiosurgery: Is This a Viable Strategy?
Babu Guai Welch

7:30 – 7:40 AM
Surgery without Embolization for AVM
Michael Kerin Morgan

Finding Balance in Stroke Treatment: Stent vs. Endarterectomy for the Older Patient

7:40 – 7:50 AM
The Case for Stenting
Felipe Albuquerque

7:50 – 8:00 AM
The Case for Endarterectomy
Robert E. Harbaugh

8:00 – 8:05 AM
Introduction of Drake Lecturer
Brian Lim Hoh

8:05 – 8:30 AM
Drake Lecturer
Ralph G. Dacey

WOMEN IN NEUROSURGERY

NAVIGATING A NEUROSURGICAL CAREER: ALWAYS A QUESTION OF BALANCE

Moderator(s): *Aruna Ganju, Uzma Samadani*
Speakers: *Deborah L. Benzil, Fernando G. Diaz, Karin M. Muraszko, Julie G. Pilitsis, James T. Rutka*
Learning Objectives: *Upon completion of this session the attendee will be able to:*
- Discuss strategies for negotiating the landscape of private and academic neurosurgical positions.
- Discuss strategies for conflict resolution.
- Describe techniques for advancement of one's neurosurgical career.

7:00 – 7:15 AM
Negotiation in a Neurosurgical Career
Fernando G. Diaz

7:15 – 7:30 AM
Conflict Resolution in a Neurosurgical Career
Deborah L. Benzil

7:30 – 7:45 AM
Graceful Self-Promotion in a Neurosurgical Career
James T. Rutka

7:45 – 8:00 AM
Mentorship Throughout Your Neurosurgical Career
Julie G. Pilitsis

8:00 – 8:15 AM
Leadership and Your Neurosurgical Career
Karin M. Muraszko

8:30 AM – 4:30 PM
EXHIBITS

8:30 – 9:00 AM
COFFEE BREAK
in the Exhibit Hall

GENERAL SCIENTIFIC SESSION II
9:00–11:30 AM MONDAY, OCTOBER 20

MONDAY, OCT 20

Presiding Officer: *Nathan R. Selden*
Moderator(s): *Steven N. Kalkanis, Ganesh Rao*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe how changes in health care economics will affect the practice of neurosurgery.
- Explain the advantages and disadvantages of aggressive versus conservative treatment of skull base meningiomas.
- Explain the advantages and disadvantages of open surgery versus pipeline/flow diversion for vascular conditions.
- Explain the advantages and disadvantages of surgery versus conservative care of cervical myelopathy.

9:00–9:03 AM
Introduction and Disclosures
Nathan R. Selden

9:03–9:23 AM
TUMOR – Skull Base Meningioma Aggressive vs. Conservative
Douglas Kondziolka, Laligam N. Shekar

9:23–9:43 AM
VASCULAR – Open Surgery vs. Pipeline/Flow Diversion
Elad I. Levy, Jacques J. Morcos

9:43–10:03 AM
SPINE – Surgery vs. Conservative Care for Cervical Myelopathy
Zoher Ghogawala , James S. Harrop

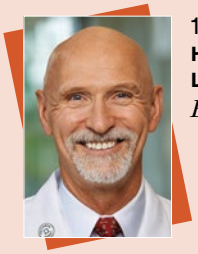
10:03–10:05 AM
Introduction of CNS Resident Award Winner
Krystal L. Tomei

10:05–10:17 AM
CNS Resident Award
Julio C. Furlan

10:17–10:20
Introduction of CNS President
Robert J. Dempsey

10:20–10:45 AM
Presidential Address
Daniel K. Resnick

10:45 –10:48 AM
Introduction of Honored Guest
Gregory R. Trost



10:48–11:08 AM
HONORED GUEST LECTURE
Edward C. Benzel

11:08–11:10 AM
Introduction of Featured Speaker
Adnan Hussain Siddiqui

11:10–11:30 AM
FEATURED SPEAKER
Michael Ensley

11:45 AM–12:15 PM
Live Surgery in the Exhibit Hall
Expanded Endonasal Endoscopy
CME is not offered for this session.
Operating: *Paul A. Gardner*
Moderator(s): *James K. Liu, Jacques J. Morcos*

12:30–2:00 PM
Luncheon Seminars
M01 – M09
(See Page 28 for Full Listing)
All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $95 each ($75 for Residents/Fellows/Medical Students/Advance Practice Providers).

2:00–3:30 PM
Hot Topics I
The Management of Concussion in Children and Young Adults
PEDIATRICS
Moderator(s): *Jeffrey P. Greenfield, Thomas G. Luerssen*
Faculty: *Richard G. Ellenbogen, Hugh Garton, Mark R. Proctor*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Explain the important clinical considerations in initial concussion assessment and return to play criteria for pediatric patients.
- Discuss existing public health efforts in education and advocacy with emphasis on opportunities for neurosurgeons to engage the lay conversation on concussion in sports.

2:00–2:15
Introduction
Jeffrey P. Greenfield, Thomas G. Luerssen

2:15–2:40 PM
Education and Advocacy
Richard G. Ellenbogen

2:40–3:05 PM
Return to Play Criteria
Mark R. Proctor

3:05–3:30 PM
The Basic Science of Concussion
Hugh Garton

MONDAY, OCTOBER 20

Hot Topic 2
The Balance Due: Payment for Neurosurgeons Practical Guide to the Current Health Delivery System
Moderator(s): *John Allen Wilson*
Speakers: *Joseph S. Cheng, Steven A. Toms, Clarence B. Watridge*
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Gain familiarity with changes in reimbursement under the Affordable Care Act (ACA).
- Improve practice management to insure stable, appropriate remuneration for provided services under changing compliance guidelines.

2:00–2:30 PM
New Reimbursement Models for Neurosurgeons in the Era of the Affordable Care Act
Steven A. Toms

2:30–3:00 PM
Update on the RUC and Coming Revaluation of Neurosurgical Codes
Joseph S. Cheng

3:00–3:30 PM
Reimbursement vs. Payment: Are We Ambivalent About Being Paid for Our Work?
Clarence B. Watridge

2:00–3:30 PM
CONTROVERSIES
Extent of Resection of Benign Skull Base Tumors
Moderator(s): *Frederick George Barker, Ricardo Jorge Komotar*
Speakers: *Ossama Al-Mefty, Andrew T. Parsa*
Conservative Resection
Andrew T. Parsa
Aggressive Resection
Ossama Al-Mefty

Neo-adjuvant Radiosurgery Followed by Resection of Brain Metastases: Yes vs. No
Moderator(s): *Steven N. Kalkanis, Mark E. Linskey*
Speakers: *Stuart H. Burri, Douglas Kondziolka*
Pro–Treat
Stuart H. Burri
Con–Treat
Douglas Kondziolka

3:30–4:15 PM
EXHIBIT HALL BREAK

4:15–5:30 PM
CONSENSUS SESSION I
Management of Gliomas
Moderator(s): *Mitchel S. Berger*
Speakers: *Susan Chang, E. Antonio Chiocca, Andrew E. Sloan*
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Discuss current management options for gliomas.
- Describe the current state of knowledge regarding glioma genetics.
- Discuss indication for treatment of low grade gliomas and roles of adjuvant therapies.

4:15–4:34 PM
Low Grade Gliomas
Mitchel S. Berger

4:34–4:53 PM
Management of High Grade Gliomas
E. Antonio Chiocca

4:53–5:11 PM
Impact of Genetics on Glioma Management
Andrew E. Sloan

5:11–5:30 PM
Multimodality Treatment of Gliomas
Susan Chang

4:15–5:30 PM
INTERNATIONAL FORUM
Moderator(s): *Feridun Acar, Zeev Feldman, Koji Iihara, Shekar Kurpad, Charles Y. Liu, Mika Risto Niemela, Vadantam Rajshekhar*
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Discuss the findings of neurosurgical studies from around the World.
- Critique the design and methodology of these studies.
- List important areas for further knowledge development and research.

4:15–5:30 PM
3-D Neurosurgery: Techniques to Advance Safety and Efficacy in Micro-neurosurgery
Moderator(s): *Mustafa Kemal Baskaya, Aaron A. Cohen-Gadol*
Speakers: *Bernard R. Bendok, William T. Couldwell, Ziya L. Gokaslan, Ali F. Krisht, Michael T. Lawton*
Course Description: This course will review the important technical and anatomic nuances for the successful management of complex cranial cases. Information will be delivered through 3-D high definition surgical videos and step-by-step discussion by experts in the field. Topics to be reviewed include surgical techniques and anatomy for both cranial and spinal vascular and neoplastic lesions.
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Discuss the management of complex cranial cases.
- Discuss the management of complex spinal cases.
- Discuss relevant anatomy of complex cranial cases.
- Discuss relevant anatomy of complex spinal cases.
- Incorporate new techniques and management strategies into surgical practice.

6:00–8:30 PM
DINNER SEMINARS
DIN03–DIN04
(See Page 32 for Full Listing)

PROGRAM HIGHLIGHTS
TUESDAY, OCTOBER 21

EXHIBIT HALL OPEN FROM 8:30 AM – 4:15 PM

7:00 - 8:30 AM
SECTION SESSIONS ORAL PRESENTATIONS

11:45 AM - 12:15 PM
LIVE SURGERY IN THE EXHIBIT HALL
Sylvian Fissure Dissection

Operating: ***Robert F. Spetzler***

Moderator(s): ***Fady T. Charbel, Michael T. Lawton, Fredric B. Meyer***

12:30 – 2:00 PM
RESIDENT SANS CHALLENGE CHAMPIONSHIP ROUND

4:15 – 5:30 PM
NEUROSURGICAL FORUM

5:30 – 6:30 PM
RESIDENT RECRUITMENT SOCIAL
Residents have the opportunity to make connections with recruiters and practicing physicians who are looking to add to their practice.

TUESDAY, OCTOBER 21

7:00–8:30 AM

SECTION SESSIONS ORAL PRESENTATIONS

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

- Analyze the findings of novel neurosurgical studies, critique the design and methodology of these studies.
- List important areas for further knowledge development and research.
- Identify the most important ongoing clinical trials.

SECTION ON CEREBROVASCULAR

Moderator(s): *Ketan R. Bulsara, Louis J. Kim*

7:00–7:09 AM

124 Minimally Invasive Transpalpebral "Eyelid" Craniotomy for Anterior Circulations Aneurysms: 71 Cases Experience
Khaled M. Aziz, Kenan Alkhalili, Mohab M. Darwish, Gasser Alshyal

7:09–7:18 AM

125 Safety and Efficacy of the Pipeline Embolization Device in 100 Small Intracranial Aneurysms
Nohra Chalouhi, Mario Zanaty, Alex Whiting, Steven Yang, Stavropoula I. Tjoumakaris, David M. Hasan, Robert M. Starke, Shannon W. Hann, Christine Hammer, David Kung, Robert H. Rosenwasser, Pascal Jabbour

7:18–7:27 AM

126 Cost Utility of Serial CTA versus MRA for Small, Unruptured, ICA Aneurysms: Are Either Worth It?
Matthew Fusco, Ajith J. Thomas, Suresh A. Reddy, Christopher S. Ogilvy

7:27–7:36 AM

127 Carotid Revascularization for Stenosis Improves Blood Flow and Executive Cognitive Function
Zoher Ghogawala, Jill Curran, Henry H. Woo, Brian Lim Hoh, Michael Westerveld, Sepideh Amin-Hanjani

7:36–7:45 AM

128 Long-term Outcomes After Intraventricular Thrombolysis and Endovascular Therapy for High-Grade Aneurysmal Subarachnoid Hemorrhage
John H. Wong, Alim P. Mitha, Andreas H. Kramer

7:45–7:54 AM

129 A Multicenter International Study of Surgical Clipping for Unruptured Very Small Intracranial Aneurysms
Michael Bruneau, Sepideh Amin-Hanjani, Paivi Koroknay-Pal, Philippe Bijlenga, Behnam Rezai Jahromi, Hanna Lehto, Riku Kivisaari, Karl Schaller, Fady T. Charbel, Sajeel Kahn, Christian Melot, Mika Risto Niemela, Juha Antero Hernesniemi

7:54–8:03 AM

130 Prospective Randomized Study Comparing Clinical, Functional and Aesthetics Results of Classical Pterional and Minipterional Craniotomies
Leonardo Welling, Eberval G. Figueiredo, Hung T. Wen, Marcos Q. Gomes, Edson Bor-Seng-Shu, Wellingson S. Paiva, Cesar Casaroli, Vinicius P. Guirado, Manoel Jacobsen Teixeira

8:03–8:12 AM

131 Arteriovenous Malformations of the Posterior Circulation
Wuyang Yang, Hanbing Shang, Justin M. Caplan, Joanna Wang, Maria Braileanu, Alice Hung, Varun Patel, Geoffrey P. Colby, Alexander Lewis Coon, Rafael J. Tamargo, Judy Huang

8:12–8:21 AM

SYNTHES CEREBROVASCULAR AWARD

132 Treatment of Ruptured Anterior Communicating Artery Aneurysms: Equipoise in the Endovascular Era
Karam Moon, Peter Nakaji, Felipe Albuquerque, Joseph M. Zabramski, Cameron G. McDougall, Robert F. Spetzler

8:21–8:30 AM

GALBRAITH AWARD

133 Bilateral Failure of Cerebral Autoregulation is Related to Unfavourable Outcome After Subarachnoid Hemorrhage.
Karol P. Budohoski, Peter J. Kirkpatrick, Peter Smielewski, Matthias Reinhard, Georgios V. Varsos, Magdalena Kasprowicz, Miroslaw Zabek, John Douglas Pickard, Marek Czosnyka

COUNCIL OF STATE NEUROSURGICAL SOCIETIES

Moderator(s): *Darlene Angela Lobel, Clemens M. Schirmer*

7:00–7:09 AM

134 Inter-hospital Transfer of Neurosurgical Patients to a High Volume Tertiary Care Center: Comprehensive Analysis and Opportunities for Process Improvement
Christopher Michael Holland, Evan W. McClure, Brian M. Howard, Owen B. Samuels, Daniel L. Barrow

7:09–7:18 AM

JULIUS GOODMAN RESIDENT AWARD

135 A Conservative Policy of Intraoperative Neuromonitoring for Spinal Surgery: Costs and Outcomes
Shane Hawksworth, Nicholas Andrade, Colin Son, Viktor Bartanusz, David F. Jimenez

7:18–7:27 AM

136 Preoperative Predictors of 3 Month and 1 Year Change in Quality of Life (EQ-5D) Following Multilevel Lumbar Laminectomy and Fusion
Stephen Kyle Mendenhall, Jesse E. Bible, Patrick David Kelly, Priya Sivasubramaniam, David Shau, Matthew J. McGirt, Clinton J. Devin

7:27–7:36 AM

137 Risk Modeling Predicts Complication Rates for Spinal Surgery
Kristopher T. Kimmell, G. Edward Vates, Babak S. Jahromi

TUESDAY, OCTOBER 21

7:36–7:45 AM
138 Effect of Medicare Eligibility on Utilization of Deferrable Spine Surgery
Joshua P. Aronson, Leila S. Agha, Brian V. Nahed

7:45–7:54 AM
SAMUEL HASSENBUSCH YOUNG NEUROSURGEON AWARD
139 Anterior Cervical Diskectomy and Fusion (ACDF) in the Ambulatory Care Setting: Defining its Value Across the Acute and Post-acute Care Episode
Matthew J. McGirt, Saniya S. Godil, Tim E. Adamson, Domagoj Coric, E. Hunter Dyer, Anthony L. Asher

7:54–8:03 AM
140 Memory When You Need It Most: Review of Personalized Video Recording of Doctor-Patient Consultations at a Neurosurgical Institution
Randall W. Porter, Andrew J. Meeusen, Michele Grigaitis

8:03–8:12 AM
141 Preoperative Narcotic Use is Associated with Worse Post-operative Self-reported Outcomes in Patients Undergoing Spine Surgery
Stephen Kyle Mendenhall, Dennis S. Lee, Sheyan J. Armaghani, Jesse E. Bible, David Shau, Harrison F. Kay, Chi Zhang, Matthew J. McGirt, Clinton J. Devin

8:12–8:21 AM
142 Race and Outcomes after Elective Spine Surgery
Andreea Seicean, Sinziana Seicean, Duncan Neuhauser, Edward C. Benzel, Robert John Weil

8:21–8:30 AM
143 Cost-Effectiveness Analysis in Minimally Invasive Spine Surgery
Doniel Drazin, Lutfi Al-Khouja, Eli M. Baron, Terrence T. Kim, J. Patrick Johnson

SECTION ON DISORDERS OF THE SPINE AND PERIPHERAL NERVES

Moderator(s): *Patrick C. Hsieh, Justin S. Smith*

7:00–7:09 AM
144 Predicting Recovery After a Spinal Cord Injury: The Role of Diffusion Basis Spectrum Imaging (DBSI) as a Biomarker of Corticospinal Tract Integrity
Rory K.J. Murphy, Paul Gamble, Peng Sun, Yong Wang, Eileen Jacobs, Sheng-Kwei Song, Wilson Zachary Ray

7:09–7:18 AM
145 Evaluating Initial Spine Trauma Response: Injury Time to Trauma Center
James S. Harrop, George M. Ghobrial, Rohan Chitale, Kelly Krespan, Laura Odorizzi, Tristan Fried, Mitchell Gil Maltenfort, Murray Cohen, Alexander R. Vaccaro

7:18–7:27 AM
146 Diffusion Tensor Imaging Metrics Correlate with Quantitative Tests of Physical Function in Cervical Spondylotic Myelopathy
Marjorie C. Wang, Aditya Vedantam, Brian Schmit, Shekar N. Kurpad

7:27–7:36 AM
147 Risk of Development of New Onset Post Operative Cervical Deformity (CD) in Thoracolumbar Adult Spinal Deformity (ASD) and Effect on Clinical Outcomes at 2 year Follow Up
Alex Soroceanu, Peter G. Passias, Anthony Boniello, Justin K. Scheer, Frank Schwab, Christopher I. Shaffrey, Han Jo Kim, Themistocles Protopsaltis, Gregory Mundis, Munish Gupta, Eric Klineberg, Virginie Lafage, Justin S. Smith, Christopher P. Ames

7:36–7:45 AM
148 Smoking Effects on Perioperative Outcomes and Fusion Rates Following Anterior Cervical Corpectomy and Fusion: Does Quitting Really Help?
Darryl Lau; Dean Chou, John E. Ziewacz, Praveen V. Mummaneni

7:45–7:54 AM
149 Outcomes and Complications in Patients with Uncontrolled Diabetes Undergoing Cervical Spine Surgery
Branko Skovrlj, Javier Zabdi Guzman, Andrew Hecht, Sheeraz Qureshi, Samuel K. Cho

7:54–8:03 AM
150 Spinal Pelvic Radiographic Thresholds for Regional Lumbar Disability are Age Dependent: Analysis of Multicenter Database of 833 Patients
Justin K. Scheer, Justin S. Smith, Virginie Lafage, Christopher I. Shaffrey, Renaud Lafage, Eric Klineberg, Munish Gupta, Richard A. Hostin, Khaled Kebaish, Shay Bess, Frank Schwab, Christopher P. Ames

8:03–8:12 AM
151 Intermediate Dosing of Recombinant Human Bone Morphogenetic Protein-2 (rhBMP-2) Improves Fusion Rates With No Increase in Major Complications but Does Not Improve Health Related Quality of Life for Adult Spinal Deformity (ASD) at Minimum Two Years: A Prospective, Multicenter Analysis
Shay Bess, Breton G. Line, Virginie Lafage, Christopher P. Ames, Oheneba Boachie-Adjei, Douglas C. Burton, Robert Hart, Munish Gupta, Eric Klineberg, Gregory Mundis, Richard A. Hostin, Frank Schwab, Christopher I. Shaffrey, Justin S. Smith

TUESDAY, OCTOBER 21

8:12–8:21 AM
152 Rate of Symptomatic Adjacent Segment Disease after MIS vs. Open Transforaminal Lumbar Interbody Fusion
Scott L. Parker, Tim E. Adamson, Matthew J. McGirt, Vinay R. Deshmukh

8:21–8:30 AM
153 Surgical Outcome of Single-portal Endoscopic Carpal Tunnel Release Using a Forward-facing Knife in 1,000 Consecutive Hands
Hyung Sik Hwang, Se-Hyuck Park

SECTION ON NEUROTRAUMA AND CRITICAL CARE

Moderator(s): *Patricia B. Raksin, Shelly D. Timmons*

7:00–7:09 AM
DEPUY-SYNTHES AWARD FOR RESIDENT RESEARCH RESEARCH ON SPINAL CORD AND SPINAL COLUMN INJURY
154 Age as a Key Determinant of Inflammatory Response, Glial and Axonal Survival After Traumatic Spinal Cord Injury
Julio C. Furlan, Yang Liu, Dalton Dietrich, Michael Norenberg, Sydney Croul, Michael G. Fehlings

7:09–7:18 AM
DEPUY-SYNTHES AWARD FOR RESIDENT RESEARCH ON BRAIN AND CRANIOFACIAL INJURY
155 Blood Metabolic Patterns Correlate with the Severity of Traumatic Brain Injury
Jussi Posti, Tuulia Hyötyläinen, Sirkku Jäntti, Henna Ala-Seppälä, Jonathan Coles, Ari Katila, Anna Kyllönen, Henna-Riikka Maanpää, David K. Menon, Joanne Outrim, Peter J. Hutchinson, Keri Carpenter, Jussi Tallus, Marko Sysi-Aho, Riikka Takala, Matej Orea, Olli Tenovuo

7:18–7:27 AM
156 Efficacy of Continuous Multimodality Monitoring on Preventing Cerebral Metabolic Crisis
Michael F. Stiefel, Corrado Marini, Christy Stoller, Nicole R. Eiden, Arthur Wang, Anu Amin, Yin C. Hu

7:27–7:36 AM
157 The Effectiveness of CT Angiography on Cervical Spine Fracture Outcomes
Megan Lockwood, Andreea Seicean, Joseph Tanenbaum, Daniel Lubelski, Edward C. Benzel, Thomas E. Mroz, Michael P. Steinmetz

7:36–7:45 AM
158 Cognitive, Funcional and Psychosocial Outcome After Severe Traumatic Brain Injury: A Cross Sectional Study at a Tertiary Care Trauma Center
Sumit Sinha, Ashima Nehra, Bhawani S. Sharma,

7:45–7:54 AM
159 Antiplatelet Therapy after Traumatic Intracranial Hemorrhage
Keith A. Kerr, Chris Wilkerson, Scott R. Shepard, Alex Choi, Ryan Seiji Kitagawa

7:54–8:03 AM
160 A Decade of ICP-Guided Treatment of Severe Head Injury: An Analysis of Exposure to Raised ICP and Effect on Outcome
Ji Min Ling, Tze Phei Kee, Kah Keow Lee, Serene LH Tan, Nicolas KK King

8:03–8:12 AM
161 Complications and Duration of Vasopressor Usage for Acute Traumatic Central Cord Syndrome
Sanjay S. Dhall, Geoffrey T. Manley, Tomoo S. Inoue, William Whetstone

8:12–8:21 AM
162 Higher Mean Arterial Blood Pressures Following Spinal Cord Injury are Associated With Greater Neurological Recovery
Gregory W.J. Hawryluk, William Whetstone, Rajiv Saigal, Adam Ferguson, Jason Talbott, Jacqueline Bresnahan, Jonathan Pan, Michael Beattie, Sanjay S. Dhall, Geoffrey T. Manley

8:21–8:30 AM
163 Brain Tissue Oxygenation and 3 and 6-month Neurological Outcome in Severe Traumatic Brain Injury
David Michael Panczykowski, Ava Puccio, Yue-Fang Chang, Lori Anne Shutter, David O. Okonkwo

SECTION ON PAIN

Moderator(s): *Erika A. Petersen, Jason M. Schwalb*

7:00–7:09 AM
164 Degree of Nerve Atrophy on Preoperative Imaging Predicts Outcome after Microvascular Decompression for Trigeminal Neuralgia
Jonathan Miller, Yifei Duan, Jennifer A. Sweet

7:09–7:18 AM
RONALD R. TASKER YOUNG INVESTIGATOR AWARD
165 Promoting Endogenous GABAergic Analgesia via Kinase Modulation of Neuronal Ion Plasticity
Kristopher Thomas Kahle, Geng Gao, Jinwei Zhang, Alban Latremoliere, Nick Andrews, Yuze Shang, Dario Alessi, Clifford Woolf, Stephen Elledge, David Clapham

7:18–7:27 AM
166 Cervical and Cervicomedullary Spinal Cord Stimulation for Chronic Pain: Efficacy and Outcomes
Srinivas Chivukula, Zachary J. Tempel, Gregory Weiner, Ching-Jen Chen, John Jefferson Moossy

7:27–7:36 AM
167 The Cost Effectiveness of Surgery For Trigeminal Neuralgia in Surgical Naïve Patients, A Retrospective Study
Marshall Thomas Holland, Jennifer Noller, John M. Buatti, Wenzhuan He, Patrick W. Hitchon

TUESDAY, OCTOBER 21

7:36–7:45 AM
168 Randomized Control Study of Percutaneous Epidural Neuroplasty and Translaminar Epidural Steroid Injection in Cervical Disc Disease with 6 Months of Follow-up
Chang Hyun Oh, Gyu Yeul Ji, Seung Hyun Choi, Hyun Goo Kim, Young Sul Yoon, Dong Ah Shin

7:45–7:54 AM
169 Microvascular Decompression for Hemifacial Spasm: Analysis of Surgical Failures and Repeat Surgery
Mark G. Bigder, Anthony M. Kaufmann

7:54–8:03 AM
170 Do Advanced Programming Options Make a Difference in Spinal Cord Stimulation?
Steven G. Roth, Jessica Haller, Meghan Heran, Steven Lange, Joannalee C. Campbell, Priscilla De La Cruz, Julie G. Pilitsis

8:03–8:12 AM
171 An Investigation of the Effects of Subthalamic Deep Brain Stimulation on Thermal and Mechanical Thresholds in Parkinsonian Rats
Lucy Gee, Joannalee C. Campbell, Damian Shin, Julie G. Pilitsis

8:12–8:21 AM
172 Two Stage Procedure of Spinal Cord Stimulator for Neuropathic Pain
Muhammad Jalaluddin

8:21–8:30 AM
173 Peri-Operative IV Acetaminophen in Lumbar Spinal Surgery - Initial Results
James Leonard West, Nicole A. Colwell, Sergio M. Gonzalez-Arias

SECTION ON PEDIATRIC NEUROLOGICAL SURGERY

Moderator(s): *Liliana Goumnerova, Mark M. Souweidane*

7:00–7:09 AM
174 Epilepsy Surgery in Infants Under a Year of Age
Ramesh Mohan Kumar, Brent R. O'Neill, Susan Koh, Pramote Laoprasert, Kelly Knupp, Kristin Park, Kevin Chapman, Michael H. Handler

7:09–7:18 AM
175 Treatment Outcomes and Prognostic Factors of Pediatric Glioblastoma Multiforme
Terence Verla, Ranjith Babu, Vijay Agarwal, Kyle Gregory Halvorson, D. Cory Adamson,

7:18–7:27 AM
176 Microbubble Assisted Ultrasound Guidance for Assessing the Adequacy of Endoscopic Membrane Fenestration in Multiloculated Hydrocephalus in Children
Llewellyn Padayachy, Graham A. G. Fieggen

7:27–7:36 AM
177 New Designs of Ventricular Catheters for Hydrocephalus by 3-D Computational Fluid Dynamics
Marcelo Galarza, Angel Gimenez, Olga Pellicer, Juan Valero, Jose M. Amigo

7:36–7:45 AM
178 A Comparison of Prophylactic and Symptomatic Detethering of Patients with Lumbosacral Lipomas in a Modern Era
Albert Tu, Ross Hengel, Douglas Cochrane

7:45–7:54 AM
179 Assessing Health-Related Quality of Life in Adults with Spina Bifida
Brandon George Rocque, Ralee' Bishop, Mallory Scogin, Betsy D. Hopson, Anastasia A. Arynchyna, Christina J. Boddiford, Chevis N. Shannon, Jeffrey P. Blount

7:54–8:03 AM
180 Impacts that Cause Transiently Symptomatic mTBI Can Also Cause Intracranial Tissue Schisis in a Juvenile Rodent Model
David M. Frim, David W. Wright, Julian E. Bailes

8:03–8:12 AM
181 Incidence of Cervical Spine Injury Among Pediatric Victims of Non-Accidental Trauma.
Monica L. Melgar, Jonathan Russin, Amy P. Bansal, Mark D. Krieger

8:12–8:21 AM
182 Pediatric Craniotomies: Incidence, Predictors, and Costs for a Tri-State Analysis with 1-Year Readmission Follow-Up
Bryan Iorgulescu, Mark M. Souweidane, Jeffrey P. Greenfield, Andrew T. Parsa

8:21–8:30 AM
183 Intracranial Arachnoid Cysts and Hemorrhage
Hoon Choi, Joseph R. Madsen, R. Michael Scott, Benjamin C. Warf, Alan R. Cohen, Mark R. Proctor, Emma Huebenthal, Sarah C. Jernigan, Liliana Goumnerova

SECTION ON STEREOTACTIC AND FUNCTIONAL NEUROSURGERY

Moderator(s): *Karl A. Sillay*

7:00–7:09 AM
184 Minimally Invasive Transpalpebral Endoscopic Assisted Amygdalohippocampectomy
Mauricio Mandel, Eberval G. Figueiredo, Manoel Jacobsen Teixeira

7:09–7:18 AM
185 3-T MRI Track Density Imaging to Identify Thalamic Nuclei for Functional Neurosurgery
Timothy M. Shepherd, Sohae Chung, Christopher Glielmi, Alon Y. Mogilner, Fernando Boada, Douglas Kondziolka

TUESDAY, OCTOBER 21

7:18–7:27 AM
186 Spinal Cord Stimulation and Functional MRI: Pain Relief Correlates with Decreased Connectivity Between Somatosensory and Limbic Brain Networks
Milind Deogaonkar, Chima Oluigbo, Dylan Nielson, Xiangyu Yang, Mayur Sharma, Louis Vera-Portocarrero, Greg Molnar, Amir Abduljalil, Per Sederberg, Ali R. Rezai

7:27–7:36 AM
187 Memory Loss After Brain Injury Is Improved by Theta Burst Stimulation of the Fornix
Jonathan Miller, Charles Nelson Munyon, Philip Fastenau, Christopher Bailey, Jennifer A. Sweet

7:36–7:45 AM
188 Decoding the Inferior Temporal Cortex at the Speed of Perception
Kai Miller, Gerwin Schalk, Dora Hermes, Jeffrey G. Ojemann, Rajesh Rao

7:45–7:54 AM
STEREOTACTIC AND FUNCTIONAL NEUROSURGERY RESIDENT AWARD
189 The Physiology of Heteromodal Proper Naming in the Human Anterior Temporal Lobe
Taylor J. Abel, Ariane Rhone, Kirill Nourski, Hiroto Kawasaki, Hiroyuki Oya, Timothy Griffiths, Matthew A. Howard, Daniel Tranel

7:54–8:03 AM
190 Mechanism for Sudden Unexpected Death in Epilepsy (SUDEP): The Amygdala as a Pathway to Seizure-induced Apnea, Respiratory Agnosia and Sudden Death
Brian J. Dlouhy, Brian K. Gehlbach, Collin J. Kreple, Hiroto Kawasaki, Hiroyuki Oya, Colin Buzza, Mark A. Granner, Michael J. Welsh, Matthew A. Howard, John A. Wemmie, George B. Richerson

8:03–8:12 AM
191 Methodology for Critical Evaluation of Laser Placement in Stereotactic Laser Ablation for Mesial Temporal Lobe Epilepsy: A Pilot Study
Chengyuan Wu, Richard Gorniak, Meela Mehdi, Michael Sperling, Ashwini Dayal Sharan

8:12–8:21 AM
192 Stereotactic Striatal Injection of a Regulated GDNF Expression System: Preclinical Testing in a Primate Model
Seth Franklin Oliveria, Kelly D. Foote, Ronald Mandel

8:21–8:30 AM
193 The Human Neocortex Demonstrates Projectors and Receivers of Influence: A Consideration in Neuromodulation Therapy
Laszlo Entz, Emilia Toth, Corey J. Keller, David Groppe, Pierre Megevand, Daniel Fabo, Istvan Ulbert, Lorand G. Eross, Ashesh Mehta

SECTION ON TUMORS

Moderator(s): *James Bradley Elder, Gelarch Zadeh*

7:00–7:09 AM
SHERRY APPLE RESIDENT TRAVEL SCHOLARSHIP
194 Assessment of Treatment Response in IDH-mutant Gliomas by Quantification of 2-Hydroxyglutarate with in-vivo 3D Magnetic Resonance Spectroscopy
Franziska Loebel, Daniel P. Cahill, Wolfgang Bogner, Malgorzata Marjanska, Elizabeth Gerstner, Tracy Batchelor, Bruce R. Rosen, Andrew S. Chi, Ovidiu C. Andronesi

7:09–7:18 AM
COLUMBIA SOFTBALL CHARITY AWARD
195 Urinary Biomarkers Identify Pediatric Brain Tumors Non-invasively and Correlate with Prognostic Risk Factors
Xuezhe Han, Katie Pricola, Rajarshi Majumder, Micah Duggins-Warf, Michael Robert Raber, Edward R. Smith

7:18–7:27 AM
BRAINLAB NEUROSURGERY AWARD
196 IDH-1 Mutated Glioblastomas Have a Less Invasive Phenotype Than IDH-1 Wild Type Glioblastomas: A Diffusion Tensor Imaging Study
Stephen J. Price, Natalie R. Boonzaier, Victoria Lupson, Timothy Larkin

7:27–7:36 AM
NATIONAL BRAIN TUMOR SOCIETY MAHALEY CLINICAL RESEARCH AWARD
197 Confocal Laser Endomicroscopy for Real Time Histomorphological Diagnosis: Our Clinical Experience with 150 Brain and Spinal Tumor Cases.
Cleopatra Charalampaki

7:36–7:45 AM
AMERICAN BRAIN TUMOR ASSOCIATION YOUNG INVESTIGATOR AWARD
198 Circulating Tumor Cells in Patients with Glioblastoma
Brian V. Nahed, James P. Sullivan, Marissa W. Madden, Samantha M. Oliveira, Andrew S. Chi, Simeon Springer, Hiro Wakimoto, Deepak Bhere, Ajay Shah, Phil Spuhler, Tracy Batchelor, David N. Louis, Mehmet Toner, Shyamala Maheswaran, Daniel A. Haber

(continued at bottom of page 50)

GENERAL SCIENTIFIC SESSION III
9:00–11:30 AM TUESDAY, OCTOBER 21

Presiding Officer: *Alan M. Scarrow*
Moderator(s): *Bernard R. Bendok*
Learning Objectives: *Upon completion of this session, participants will be able to:*

- Describe strategies to achieve compliance with the Accountable Care Act.
- Discuss neurosurgical management of aneurysm remnants.
- Recognize the implications of important neurosurgical research.

9:00–9:02 AM
Introduction of CNS International Division
Charles Liu

9:02–9:14 AM
Obamacare – What It Means for You
Fernando G. Diaz

9:14–9:38 AM
Aneurysm Remnants
Michael T. Lawton, Erol Veznedaroglu

9:38–9:41 AM
Introduction of Distinguished Service Award
Ali R. Rezi
Award Winner
Jamie S. Ullman

9:41–9:44 AM
Introduction of Founder's Laurel Award
Ali R. Rezai
Award Winner
Michael L.J. Apuzzo

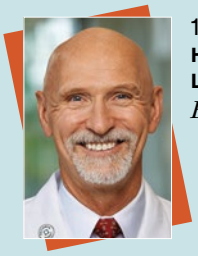
9:44–9:47 AM
Introduction of Japanese President
Nathan R. Selden

9:47–9:57 AM
Japanese Presidential Address
Koji Iihara

9:57–10:00 AM
Introduction of Christopher C. Getch Fellowship Winner
Aviva Abosch

10:00–10:12 AM
Christopher C. Getch Fellowship
Kristopher T. Kahle

10:12–10:24 AM
Convergence of Stereotactic Surgery and Epilepsy: sEEG
Jorge Gonzalez Martinez



10:24–10:49 AM
HONORED GUEST LECTURE
Edward C. Benzel

10:49–11:01 AM
Neurosurgeons as Healers
Anil Nanda

11:01–11:04 AM
Introduction of Michael L. J. Apuzzo Lecture on Creativity and Innovation
Arun Amar, Daniel K. Resnick

11:04–11:30 AM
MICHAEL L.J. APUZZO LECTURE ON CREATIVITY AND INNOVATION
Philip Glass

(continued from page 49)

7:45–7:54 AM
STRYKER NEURO-ONCOLOGY AWARD
199 Insular Glioma Resection: The MD Anderson Experience
Sabih Tariq Effendi, Dima Suki, Nicholas Brandon Levine, Frederick F. Lang

7:54–8:03 AM
INTEGRA FOUNDATION AWARD
200 Intraoperative Mapping During Repeat Awake Craniotomy Reveals the Functional Plasticity of Adult Cortex
Derek G. Southwell, Shawn L. Hervey-Jumper, Mitchel S. Berger

8:03–8:12 AM
201 Intraoperative Cerebral Glioma Characterization with Contrast Enhanced Ultra-Sound (CEUS)
Francesco Prada, Luca Mattei, Assunta Filippini, Cecilia Casali, Federico G. Legnani, Alessandro Moiraghi, Alessandro Perin, Carla Richetta, Ignazio G. Vetrano, Francesco DiMeco

8:12–8:21 AM
202 5-Aminolevulinic Acid-Induced Protoporphyrin IX Fluorescence in Low-Grade Gliomas
Pablo A. Valdes, Valerie L. Jacobs, Brent T. Harris, Brian Wilson, Frederic Leblond, Keith Paulsen, David W. Roberts

8:21–8:30 AM
203 Seven-Year Update of Multi-Center Prospective Study of Large Vestibular Schwannomas: Acoustic Neuroma Subtotal Resection Study (A.N.S.R.S)
Ashkan Monfared, Eduardo Corrales, Philip V. Theodosopoulos, Nikolas Blevins, John Steven Oghali, Samuel H. Selesnick, Howard Lee, Richard Gurgel, Marlan Hansen, Rick F. Nelson, Bruce Gantz, Walter Kutz, Brandon Isaacson, Peter Roland, Richard Amdur, Robert Jackler

8:30 AM–4:15 PM
EXHIBITS

8:30–9:00 AM
COFFEE BREAK
in the Exhibit Hall

TUESDAY, OCTOBER 21

11:45 AM–12:15 PM
Live Surgery in the Exhibit Hall
Sylvian Fissure Dissection
CME not offered for this session.
Operating: *Robert F. Spetzler*
Moderator(s): *Fady T. Charbel, Michael T. Lawton, Fredric B. Meyer,*

12:30–2:00 PM
Luncheon Seminars
T10–T18
(See Pages 29-30 for Full Listing)
All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $95 each ($75 for Residents/Fellows/Medical Students/Advance Practice Providers).

12:30–2:00 PM
RESIDENT SANS CHALLENGE CHAMPIONSHIP ROUND

Come and enjoy the crème de la crème at the SANS Challenge Championship Round! Don't miss this fun and engaging competition as residents go head-to-head and test their knowledge. Audience participation is encouraged!

2:00–3:30 PM
HOT TOPICS
Hot Topic 3
Balancing Quality and Cost in the Era of the Affordable Care Act
Moderator(s): *Anthony L. Asher*
Speakers: *William A. Friedman, Zoher Ghogawala, Rachel Groman, Alexander A. Khalessi*
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Define Physician Quality Reporting Systems (PQRS) under the Affordable Care Act.
- Recognize provider participation in PQRS will carry repercussions for reimbursement.
- Discuss efforts by the federal government and third party payers to define neurosurgical quality.
- Describe organized neurosurgery's efforts to catalogue neurosurgical outcomes through N2QOD.
- Explain reimbursement implications for PQRS participation in private and academic practice settings.
- Undertake the initial steps for incorporating PQRS into their practice and insuring stable remuneration for services provided.

2:00–2:22 PM
Defining Quality in Neurosurgery: How Will Our Efforts Be Measured?
William A. Friedman

2:22–2:44 PM
N2QOD: Defining Quality for Ourselves
Zoher Ghogawala

2:44–3:07 PM
ACAA: Implications for Private Practice Neurosurgeons
Anthony L. Asher

3:07–3:30 PM
ACAA: Implications for Academic Neurosurgeons
Alexander A. Khalessi

Hot Topic 4
The Management of Chiari Type 1 Malformation
Moderator(s): *Mark D. Krieger*
Faculty: *Douglas L. Brockmeyer, Cormac O. Maher, W. J. Oakes*
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Describe the clinical and radiographic criteria for Chiari I malformation.
- Explain the downstream clinical consequences of progressive symptomatology including syrinx development.
- Review competing surgical alternatives for Chiari decompression with or without duroplasty.
- Discuss factors impacting surgical timing and surveillance imaging strategy for patients managed conservatively.

2:00–3:30 PM
Controversies
Degenerative Scoliosis
Moderator(s): *Christopher I. Shaffrey*
Speakers: *Charles Kuntz, Juan S. Uribe*

Short
Juan S. Uribe

Long
Charles Kuntz

TL Burst
Moderator(s): *Michael G. Fehlings*
Speakers: *Charles Fisher, David O. Okonkwo*

MIS
David O. Okonkwo

Brace
Charles Fisher

3:30–4:15 PM
EXHIBIT HALL BREAK

3:30–4:30 PM
Annual Business Meeting

4:15–5:30 PM
Consensus Session II
Management of Metastatic Tumors of the Spine
Moderator(s): *Mark H. Bilsky*
Speakers: *Ziya L. Gokaslan, John E. O' Toole, Timothy C. Ryken, Jason P. Sheehan*
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Discuss current recommendations in management of metastatic tumors of the spine.
- Describe uses of radiotherapy and surgery for spine metastases.
- Explain the unique role of minimally invasive surgery for spinal metastases.

Surgery for Spinal Metastases
Ziya L. Gokaslan

Indications and Uses of Radiotherapy for Spinal Metastases
Jason P. Sheehan

Integrating New Guidelines for Spinal Metastases into a Community Setting
Timothy C. Ryken

MIS Techniques and Applications
John E. O' Toole

4:15–5:30 PM

Neurosurgical Forum

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

- Discuss the findings of novel neurosurgical studies.
- Describe important areas for further research.
- Identify the most important ongoing clinical trails.

Section on Cerebrovascular
Moderator(s): *Judy Huang, Michelle Janine Smith*

Council of State Neurosurgical Societies
Moderator(s): *Hooman Azmi, Karin R. Swartz*

Section on Disorders of the Spine and Peripheral Nerves
Moderator(s): *Charles A. Sansur, Cheerag D. Upadhyaya*

Section on Neurotrauma and Critical Care
Moderator(s): *Martina Stippler, Fahad Alkherayf*

Section on Pain
Moderator(s): *Jeffrey E. Arle, Parag G. Patil*

Section on Pediatric Neurological Surgery
Moderator(s): *Taryn McFadden Bragg, Brent R. O'Neill*

Section on Stereotactic and Functional Neurosurgery
Moderator(s): *Francisco A. Ponce, Nader Pouratian*

Section on Tumors
Moderator(s): *John S. Kuo, Andrew T. Parsa*

4:15–5:30 PM

2-D Neurosurgery: Intraoperative Complications Avoidance and Management
Moderator(s): *Mustafa Kemal Baskaya, Aaron A. Cohen-Gadol, Paul A. Gardner*
Speakers: *Daniel L. Barrow, Ketan R. Bulsara, Michael T. Lawton, Jacques J. Morcos, Anil Nanda, Mika Risto Niemela*
Course Description: This session will discuss specific strategies for avoidance and management of intraoperative complications. Information will be delivered through operative examples via intraoperative videos and anatomy review with discussion and guidance provided by experts.
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe specific strategies for avoidance and management of inoperative complications.
- Discuss anatomic considerations to avoid complications.
- Incorporate into practice new techniques for management on intraoperative complications.

5:30–6:30 PM

RESIDENT RECRUITMENT SOCIAL

6:00–8:30 PM

DINNER SEMINARS
DIN05–DIN06
(See Page 33 for Full Listing)

SANS Challenge Championship Round

Tuesday, October 21
12:30–2:00 PM

Come and watch the SANS Challenge Championship Round and cheer on your team! Back by popular demand, the challenge format will be ***"Are You Smarter Than...?"***

You won't want to miss this fun and engaging competition as residents go head-to-head and test their knowledge. Audience participation is encouraged!

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The global leader in neurosurgical education

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Education

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Access

We hosted the first modern day live video surgery. With the largest offering of online training, we continue to share the latest techniques in engaging and accessible ways. To improve patient care internationally, we provide free online courses to surgeons in low-income countries. We are investing in our member experience with a website optimized for mobile and desktop use.

Global Network

Scientific exchange for neurosurgical advancement is the core of our mission. Collaboration among members sustains an environment of discovery and innovation. This strong global discourse within our membership is unparalleled.

Advocacy

Fifty percent of every dollar received by the Washington Office for Neurosurgery comes from the CNS. Our support makes sure neurosurgery, quality patient care and our patients' needs are well represented and defended in the state and federal governments.

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PROGRAM HIGHLIGHTS
WEDNESDAY, OCTOBER 22

LATE BREAKING SCIENCE 7:00 – 8:00 AM

10:45 – 11:15 AM
LIVE SURGERY IN THE EXHIBIT HALL

Fluoroscopic Lateral Approach to the Spine
Operating: *Robert G. Whitmore*
Moderator(s): *Zoher Ghogawala, John Pollina*

1:00 - 2:15 PM
HOT TOPICS

Hot Topic 5
Balancing Clinical Research and Individualized Care: The Era of "Personalized Medicine"

Hot Topic 6
Balancing the Future: Neurosurgery in 2025

1:00 – 2:15 PM
CONTROVERSIES

- **Management of Unruptured Intracranial Aneurysms**
- **Aneurysm Size and Location that Prompts Conservative Management Versus Surveillance Imaging**
- **Patient Age as a Factor in Guiding Surgical Versus Endovascular Treatment**
- **Referable Cranial Neuropathies as a Strong Open Surgical Indication Versus Dampened Pulsatility with Endovascular Treatment**
- **Endovascular Reconstruction Versus Clip Sacrifice and Bypass for Fusiform Anterior Circulation Aneurysms**
- **MCA Aneurysms: Always Clipping Versus Stent-Coiling and Intrasacular Technologies**

10:00 AM – 1:00 PM
LAST CHANCE TO VISIT THE EXHIBIT HALL

GENERAL SCIENTIFIC SESSION IV
8:00–10:30 AM WEDNESDAY, OCTOBER 22

7:00–8:00 AM
LATE BREAKING SCIENCE
Moderator(s): *Nelson Oyesiku*
Learning Objectives: *Upon completion of this course, participants will be able to:*
- Describe the implications of the most up-to-date neurosurgical studies.
- Recognize opportunities for further research or areas of study.

Presiding Officer: *Russell R. Lonser*
Moderator(s): *Aviva Abosch, Shekar N. Kurpad*
Learning Objectives: *Upon completion of this session, participants will be able to:*
- Discuss recent advances across a variety of neurosurgical subspecialties.
- List the implications of current studies on the practice of neurosurgery.

8:00–8:04 AM
Knowledge Gaps and How the CNS Addresses
Zoher Ghogawala

8:04–8:19 AM
Functional Neuronal Connectivity in Epilepsy
Emad N. Eskandar

8:19–8:34 AM
New England Journal Stroke Trials – What Do They Really Mean?
J D. Mocco

8:34–8:47 AM
Epilepsy – Temporal Lobectomy or Laser Ablation vs. Medication Management: Why Wait Until Your Brain is Fried?
Robert E. Gross

8:47–8:59 AM
Moyamoya in Kids – New Horizon
Edward R. Smith

8:59–9:00 AM
Introduction of Israeli President
Fredric B. Meyer

9:00–9:15 AM
Israeli Neurosurgeon Society President
Zeev Feldman

9:15–9:30 AM
Tumor Trials – Are We Better Off Today Than 5 Years Ago?
Frederick G. Barker

9:30–9:45 AM
Mayo Clinic: Advances in Repair of Peripheral Nerve Injury
Robert J. Spinner

9:45–9:46 AM
Introduction of John Thompson History of Medicine Lecturer
Elad I. Levy

9:46–10:01 AM
John Thompson History of Medicine Lecture
Janne Sirén

10:01–10:13 AM
NIH Trauma Trial and Advances
Geoffrey T. Manley

10:13–10:25 AM
Nanoparticles
R. Loch Macdonald

10:25–10:30 AM
AANS President
Robert E. Harbaugh

10:30 - 10:33 AM
Announcement of Neurosurgical Forum Winners
Steven K. Kalkanis

WEDNESDAY, OCTOBER 22

10:00 AM – 1:00 PM
EXHIBITS

10:45 – 11:15 AM
LIVE SURGERY IN THE EXHIBIT HALL
CME not offered for this session.
Fluoroscopic Lateral Approach to the Spine
Operating: *Robert G. Whitmore*
Moderator(s): *Zoher Ghogawala, John Pollina*

11:30 – 1:00 PM
LUNCHEON SEMINARS
W19 – W24
(See Page 30 for Full Listing)

All Luncheon Seminars include a plated lunch served in the seminar room. Luncheon Seminar fees are $95 each ($75 for Residents/Fellows/Medical Students/Advance Practice Providers).

1:00 – 2:15 PM

HOT TOPICS

Hot Topic 5

Balancing Clinical Research and Individualized Care: The Era of "Personalized Medicine"
Speakers: *Russell R. Lonser, Elizabeth C. Tyler-Kabera*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Describe the potential applications of biosensor and immunotherapy across neurosurgical subspecialties.
- Discuss the future direction, risks and benefits of gene therapy in neuro-oncology.
- Explain the application of patient self-reporting and biosensors in spine surgery.
- Review the application of these technologies in tailored neuro-rehabilitation therapies.

Personalized Medicine and Treatment of Tumors (Gene Therapy)
Russell R. Lonser

Personalized Medicine in Spine Surgery

Personalized Recovery
Elizabeth C. Tyler-Kabera

Hot Topic 6

Balancing the Future: Neurosurgery in 2025
Moderator(s): *Clark C. Chen*
Speakers: *Jaimie M. Henderson, Praveen V. Mummaneni, Elad I. Levy, Reid C. Thompson, Menashe Zaaroor*
Learning Objectives: *Upon completion of this course, participants will be able to:*

- Discuss coming improvements in imaging, visualization, technique or devices across neurosurgical subspecialties.
- Identify promising frontiers for research with these technology advancements.
- Describe the criteria for incorporating these potential advancements into practice.

Coming Changes in Spine Surgery
Praveen V. Mummaneni

The Future of Vascular Neurosurgery
Elad I. Levy

The Development of Functional Neurosurgery
Jaimie M. Henderson

The Future of Neurosurgical Oncology
Reid C. Thompson

Focused Ultrasound and its Use in Movement Disorders
Menashe Zaaroor

1:00 – 2:15 PM

Controversies

Management of Unruptured Intracranial Aneurysms
Moderator(s): *Alexander A. Khalessi*
Speakers: *Michael T. Lawton, Adam S. Arthur*

Aneurysm Size and Location that Prompts Conservative Management Versus Surveillance Imaging

Patient Age as a Factor in Guiding Surgical Versus Endovascular Treatment

Referable Cranial Neuropathies as a Strong Open Surgical Indication Versus Dampened Pulsatility with Endovascular Treatment

Endovascular Reconstruction Versus Clip Sacrifice and Bypass for Fusiform Anterior Circulation Aneurysms

MCA Aneurysms: Always Clipping Versus Stent-Coiling and Intrasacular Technologies

Congratulations
TO ALL THE 2014 AWARD WINNERS!

Taylor J. Abel, MD
STEREOTACTIC AND FUNCTIONAL NEUROSURGERY RESIDENT AWARD

Lukas Andereggen, MD
SYNTHES SKULL BASE SURGERY AWARD

Karol P. Budohoski, MD
GALBRAITH AWARD

Cleopatra Charalampaki, MD, PhD
NATIONAL BRAIN TUMOR SOCIETY MAHALEY CLINICAL RESEARCH AWARD

Sabih Tariq Effendi, MD
STRYKER NEURO-ONCOLOGY AWARD

Julio C. Furlan, MD, MBA, MSc, PhD
DEPUY-SYNTHES AWARD FOR RESIDENT RESEARCH RESEARCH ON SPINAL CORD AND SPINAL COLUMN INJURY

Seunggu J. Han, MD
JOURNAL OF NEURO-ONCOLOGY AWARD

Xuezhe Han, MD, PhD
COLUMBIA SOFTBALL CHARITY AWARD

Shane Hawksworth, MD
JULIUS GOODMAN RESIDENT AWARD

Kristopher Thomas Kahle, MD, PhD
RONALD R. TASKER YOUNG INVESTIGATOR AWARD

Ricky Raj Singh Kalra, MD
PREUSS AWARD

Franziska Loebel
SHERRY APPLE RESIDENT TRAVEL SCHOLARSHIP

Matthew J. McGirt, MD
SAMUEL HASSENBUSCH YOUNG NEUROSURGEON AWARD

Karam Moon, MD
SYNTHES CEREBROVASCULAR AWARD

Brian V. Nahed, MD
AMERICAN BRAIN TUMOR ASSOCIATION YOUNG INVESTIGATOR AWARD

Jussi Posti, MD, PhD
DEPUY-SYNTHES AWARD FOR RESIDENT RESEARCH ON BRAIN AND CRANIOFACIAL INJURY

Stephen J. Price, BSc, MBBS, FRCS, PhD
BRAINLAB NEUROSURGERY AWARD

Derek G. Southwell, MD, PhD
INTEGRA FOUNDATION AWARD

CNS COMING ATTRACTIONS

Look for these riveting, thought-provoking courses from the CNS:

- ***NEW!* Neurosurgical Oral Board Exam Preparation: Early Review Course**
  August 8-9, 2014
  Chicago, Illinois

- **2015 Spine Complications Course**
  January 25-28, 2015
  Lake Tahoe, California

- **2015 CNS SANS MOC Board Review Course**
  March 9-10, 2015
  Phoenix, Arizona

WINS
Symposium Reception

Tuesday, October 21
6:00-8:00 PM

Women Leading The Way Reception

Join us for an evening of networking opportunities, hors d' oeuvres and a Leadership Panel

REGISTRATION INFORMATION

Registration Methods

For your convenience, you can register and reserve your hotel room via these four methods:

Online:
www.cns.org

Phone*:
800.931.9543 US & Canada
972.349.5539 International
8:00 AM – 6:30 PM CT

Fax*:
972.349.7715

Mail*:
CNS Registration and Housing Center
6100 West Plano Parkway, Suite 3500
Plano, TX 75093

*Allow five business days for Registration and Housing Confirmation. The CNS Registration and Housing Center is not responsible for faxes not received due to mechanical failure or circumstances beyond our control.

Credit Card Payments

- US dollars and drawn on a US bank
- Visa
- MasterCard
- American Express

Materials Pick-Up

All materials should be picked up on site at the Boston Convention and Exhibition Center.

REGISTRATION RATES	ADVANCE REGISTRATION	AFTER SEPTEMBER 18, 2014
CNS Active (Domestic & International)	$685	$785
CNS Transitional Member	$650	$750
CNS International Vista Member	$685	$785
Non-member Neurosurgeon	$920	$1020
Non-member Physician	$875	$975
Non-member Non-physician (Clinical Researcher/Scientist)***	$920	$1020
Armed Forces	$475	$575
Resident Member (Domestic & Int'l)*	$150	$250
Resident Non-Member*	$285	$385
Fellow Member (Domestic & Int'l)**	$200	$300
Fellow Non-member**	$300	$400
Medical Student Member	$0	$0
Nurse Practitioner/Physician Assistant/Nurse/ Advanced Practice Provider Non-member	$500	$600
Affiliate	$300	$400
Neurosurgeon (Faculty)	$685	$785
Associate Member	$685	$785
Senior	$370	$470
Non-Member Medical Student	$250	$350
Corporate Representative	$1250	$1350

Non-Member registration categories are open to domestic and international registrants.

*All international **Residents** must have their Program Director sign registration form. If registering online, a letter from your Program Director certifying that you are a Resident in a neurosurgical training program accredited by the ACGME and the residency Review Committee for Neurosurgery must be faxed to 972-349-7715 or e-mailed to cns@wyndhamjade.com within one week of completing registration.

**All international Fellows must attach letter from Program Coordinator verifying Fellow status within one week of completing registration.

***Non-Member/Non-Physician category is limited to scientists, engineers, etc. involved in neurosurgical research and/or product development not affiliated with non-exhibiting company.

IMPORTANT DATES TO REMEMBER

September 18

Advance Registration Discount and Housing Deadline

Registration Change/Cancellation Information

Full registration refunds, less a $100 processing fee, will be granted if written requests for cancellation are received by September 25, 2014. Course, seminar and event tickets will be refunded in full until September 25, 2014. No refunds of any kind will be given after this date regardless of cause. Refunds will not be given for no-shows. Written requests may be e-mailed to cns@wyndhamjade.com, faxed to 972.349.7715 or mailed to 6100 West Plano Parkway, Suite 3500, Plano, TX 75093.

Cancellation requests accepted via:

E-mail: cns@wyndhamjade.com

Fax: 972.349.7715

Mail: CNS Annual Meeting
CNS Registration and Housing
6100 W. Plano Pkwy, Suite 3500
Plano, TX 75093

October 10

Any changes to hotel reservations must be made directly with hotel from this date on.

HOTEL INFORMATION

Contact the official CNS Registration and Housing Center to reserve your guest rooms.

Hotels will not accept reservations from the CNS meeting attendees directly.

Reservations can be made online or via fax, phone or mail. Visit www.cns.org to make your reservation today!

Be sure to complete the entire housing section of the registration form which can be found online at www.cns.org.

Hotel Reservation Information and Deadlines

Hotel reservations are only available to registered CNS attendees. You must first register for the CNS Annual Meeting before making your hotel arrangements – see pages 60-61 for hotel details.. Rooms are subject to availability. Reserve your room by **September 18, 2014.**

Deposits

A deposit of one night's room and tax is due at the time your hotel reservation is made. This payment must be submitted with your registration fees. Credit cards will be charged in early September. Please make checks payable to applicable hotel and send to CNS Registration and Housing Center at 6100 West Plano Parkway, Suite 3500, Plano, TX 75093. All rooms are subject to applicable state and local taxes. A small portion of your room rate will be used to help defray the cost of registration and housing services. Hotel reservations requested without deposit will not be processed.

Hotel Change/ Cancellation Policy

The deadline date for new reservations *(based on availability)* is October 8, 2014.

- The hotel requires a deposit of one night's room and tax to reserve your room. Please continue to make any reservations through the CNS housing bureau, Wyndham Jade, through October 8, 2014. Beginning October 10, and up to 72 hours prior to your arrival, changes and cancellations must be made with your assigned hotel.
- Note: Some hotels may charge an early departure fee. Any cancellations made within 72 hours of arrival date will result in forfeiture of your first night's deposit and tax.

Beginning October 10, 2014

- All changes and cancellations must be made directly with the hotel.
- If cancellation notice is not received according to the hotel policy, the deposit may be forfeited.
- Check your hotel confirmation and contact the hotel directly for information.

Complimentary Housing for CNS Resident Member Attendees

Complimentary housing at the CNS Annual Meeting is available to a limited number of CNS Resident Members on a first-come, first-served basis.

To be considered for this program, CNS Resident Members must:

- Register for the CNS Annual Meeting by September 18.
- Complete a separate CNS Resident Housing Form by September 18. (Included with Resident Member registration materials and can also be found at www.cns.org). This form is to be sent directly to CNS via e-mail to info@1cns.org, fax to 847 240 0804 or mail to 10 North Martingale Road, Suite 190, Schaumburg, IL 60173-2294.
- All residents enrolled in ACGME approved programs have been automatically given complimentary CNS Resident Membership.
- If you are not a CNS Resident Member, complete your application by August 26.

Residents who choose to reserve a room through the CNS Registration and Housing Center and are later accepted into the CNS Resident Housing Program are responsible for cancelling their original reservation.

Thank You for Your Continued Support of the CNS!

The CNS thanks you for your support in reserving your guest room through the official CNS Housing and Registration Center. The CNS, in negotiating contracts with convention centers and hotels, must commit to a minimum number of guest rooms. This commitment helps guarantee the availability of meeting space and helps control the cost of the meeting. A history of high utilization of our room block enables the CNS to negotiate better room rates for future meetings.

HOTEL ROOM RATES: (Rate includes tax)	SINGLE	DOUBLE	TRIPLE	QUAD
Westin Boston Waterfront (Headquarter Hotel)	$365.10	$365.10	$387.99	$410.88
Courtyard Boston Downtown	$291.85	$291.85	$314.74	$337.63
Fairmont Copley Plaza	$383.41	$383.41	$417.74	$452.08
Four Seasons Hotel Boston	$520.75	$520.75	N/A	N/A
InterContinental Boston	$443.77	$443.77	$473.82	$513.88
Marriott Boston Copley Place	$331.91	$331.91	$353.65	$376.54
Renaissance Boston Waterfront	$376.54	$376.54	$399.43	$422.32
Seaport Boston Hotel	$425.32	$425.32	$454.37	$482.98
Sheraton Boston	$337.63	$337.63	$360.52	$383.41
W Boston	$399.43	$399.43	$422.32	$445.21
Westin Copley Place	$360.52	$360.52	$383.41	$406.30

*All hotel rates are inclusive of 14.45% tax
A small portion of your room rate will be used to help defray the cost of housing and registration services.

HOTEL INFORMATION

Westin Boston Waterfront – Headquarter Hotel

425 Summer Street, Boston, MA 02210

Attached to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- On-site restaurant
- 24-hour room service

Courtyard Boston Downtown

275 Tremont St.
Boston, MA 02116

1.6 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet
- (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- Bistro: "Grab & Go"

Four Seasons Hotel Boston

200 Boylston Street
Boston, MA 02116

1.4 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- Coffee/specialty coffee, tea, pastries and fruit in the lobby from 5:00 – 8:00 AM on weekdays and 5:00 – 10:00 AM on weekends
- Bottled water, refreshed daily

Marriott Boston Copley Place

110 Huntington Avenue
Boston, MA 02116

2.2 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- 24-hour room service

Fairmont Copley Place

138 St. James Avenue
Boston, MA 02116

2.2 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- 24-hour business center

InterContinental Boston

510 Atlantic Avenue
Boston, MA 02210

1 mile to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- Same-day dry cleaning service

Renaissance Boston Waterfront

606 Congress Street
Boston, MA 02210

.3 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- Full service business center

HOTEL INFORMATION

Seaport Boston Hotel

1 Seaport Lane
Boston, MA 02210

.2 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- 24-hour full service business center
- On-site restaurants

W Boston

100 Stuart Street
Boston, MA 02116

1.4 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- Signature W Bed
- Room service

Westin Copley Place

10 Huntington Avenue
Boston, MA 02116

2.1 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- Room service
- Business center

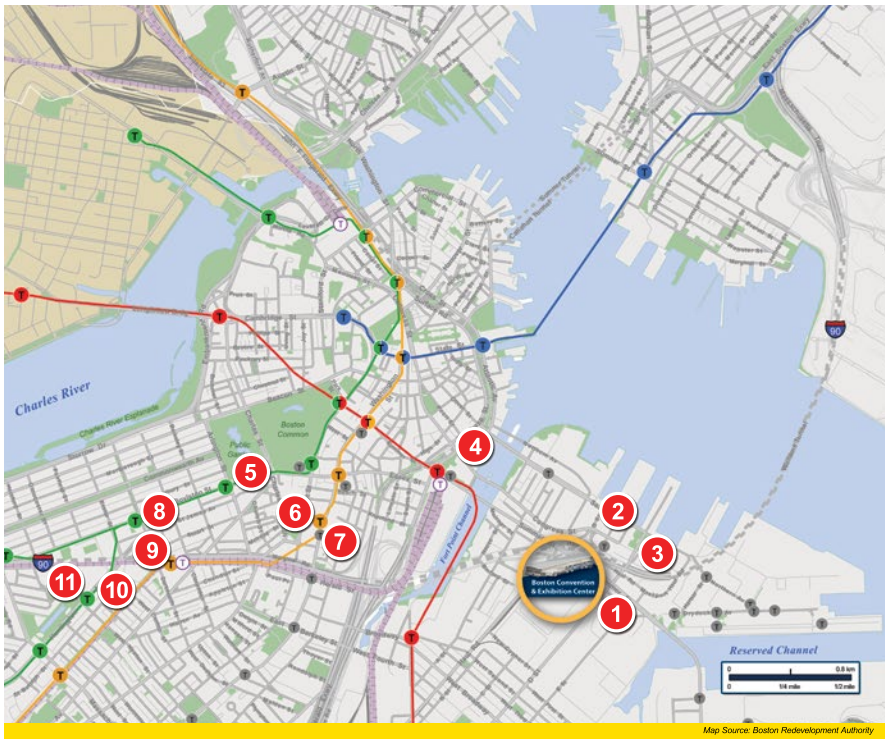
Sheraton Boston Hotel

39 Dalton Street
Boston, MA 02199

2.5 miles to Boston Convention and Exhibition Center

Amenities Include:

- High-speed Internet (complimentary to CNS guests)
- Fitness center (complimentary to CNS guests)
- Room service
- On-site restaurants
- Business center



Map Source: Boston Redevelopment Authority

	HOTEL NAME	Distance (BCEC)
1	Westin Boston Waterfront	Connected
2	Seaport Hotel & World Trade Center	2 blocks
3	Renaissance Boston Waterfront	3 blocks
4	Intercontinental	8 blocks
5	Four Seasons Hotel	1.3 mlles
6	W Boston	1.3 miles
7	Courtyard Boston Downtown	1.5 mlles
8	Fairmont Copley Plaza	2 miles
9	Westin Copley Place	2.2 mlles
10	Marriott Copley Place	2.3 miles
11	Sheraton Boston	2.5 mlles

GENERAL INFORMATION

Airport

The CNS Annual Meeting hotels and Boston Convention and Exhibition Center are located approximately 6 miles from Boston Logan Airport (BOS).

Taxis are readily available outside of baggage claim at Boston Logan Airport.

Americans with Disabilities Act

Wheelchairs, scooters, information booths, designated parking, TDD telephones and other services are available for visitors with disabilities. For wheelchair/electric scooter rental, please contact ScootAround, Inc. at 1-888-441-7575, or by visiting their website at http://scootaround.com/rentals/rentals_conventions.htm

Please let us know if, under the ADA, you require special accommodations or services in order to attend the 2014 CNS Annual Meeting. We want to ensure that no individual with a disability is excluded because of the absence of auxiliary aids and services. Your requirements should be sent directly to the CNS Housing and Registration Center at: cns@wynhdamjade.com or call 1-800-931-9543. Please provide any requests at least 30 days prior to the Annual Meeting to guarantee accommodation.

Attire

Professional attire is appropriate at the Annual Meeting and the Exhibit Hall. Some Boston restaurants require coats and ties for gentlemen. Please check each restaurant's policy when making reservations.

Spouse Hospitality Suite

All registered CNS Annual Meeting spouses and guests are invited to visit the Spouse Hospitality Suite, Monday through Wednesday for daily continental breakfast from 8:00 – 10:30 AM. (Please note that admittance to the Spouse Hospitality Suite is by Spouse/Guest badge only.) The Spouse Hospitality Suite is located in the Adams Room at the Boston Westin Waterfront Hotel.

Optional Evening Events are available to all registered attendees and our corporate supporters. We encourage you to share this information with your spouse or guest for their convenience when registering.

Children

Children over the age of 12 may register as a guest at the Guest Registration fee. (Please note that children under the age of 18 are not allowed in the Exhibit Hall.)

Should you require babysitting services, please contact the concierge desk at your hotel. The CNS has no control over and assumes no responsibility for the care that is provided through hotels or these services. This information is provided solely to assist participants in identifying possible sources for childcare.

Climate

October temperatures in Boston average a high of 64°F and a low of 49°F.

Course Agendas and Faculty

Agendas are occasionally subject to change. As we continue to strive to improve the quality of your educational experience, the CNS may substitute faculty with comparable expertise when necessary.

Digital Posters

Digital Posters will be displayed electronically, Monday through Wednesday in the Exhibit Hall, and can be searched by author, topic or keyword.

Disclaimer

The material presented at the 2014 Annual Meeting has been made available by the Congress of Neurological Surgeons for educational purposes only. The material is not intended to represent the only, nor necessarily the best, method or procedure appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement or opinion of the faculty which may be helpful to others who face similar situations.

Neither the content (whether written or oral) of any course, seminar or other presentation in the program, nor the use of a specific product in conjunction therewith, nor the exhibition of any materials by any parties coincident with the program, should be construed as indicating endorsement or approval of the views presented, the products used, or the materials exhibited by the CNS or by its Committees or Affiliates.

The CNS disclaims any and all liability for injury or other damages resulting to any individual attending the Annual Meeting, and for all claims which may arise out of the use of the techniques demonstrated therein by such individuals, whether these claims shall be asserted by physicians or any other person.

No reproductions of any kind, including audiotapes and videotape, may be made of the presentations at the CNS Annual Meeting. The CNS reserves all of its rights to such material, and commercial reproduction is specifically prohibited.

E-mail Stations

You will be able to check your e-mail at the E-mail Stations in the Exhibit Hall. Please be sure to have your mail server URL, e-mail account username and password.

Exhibit Hall

Monday, Oct. 20	8:30 AM–4:15 PM
Tuesday, Oct. 21	8:30 AM–4:15 PM
Wednesday, Oct. 22	10:00 AM–1:00 PM

Admittance to the Exhibit Hall is by the CNS name badge only. Children under the age of 18 are not allowed in the CNS Exhibit Hall.

Future Meetings

2015: New Orleans, Louisiana, September 26 – 30

2016: San Diego, California, September 24 – 28

2017: Boston, Massachusetts, October 7 – 11

Housing Information

See pages 59 - 61.

Items included in Registration Fee

Admission to Sunday – Wednesday:

- General Scientific Sessions
- Original Science Program

Admission Monday – Wednesday

- Consensus Sessions
- Section Sessions
- Exhibit Hall, Beverage Breaks
- Hot Topic and Controversy Sessions

One Ticket to:

- Opening Reception on Sunday, October 19

(Note: Children under the age of 18 are not allowed on the exhibit floor.)

Member Services Booth

The CNS Member Services Booth is located in the Exhibit Hall. Staff members will be available to assist you and answer any questions you may have about the CNS or your CNS Membership and its member services.

Press Room

Press activities will take place at the Boston Convention and Exhibition Center. Press registration is available on-site with proper credentials. Please stop by the Registration area for details.

Registration Information

Registration Hours:

Saturday, Oct. 18	7:00 AM–5:30 PM
Sunday, Oct. 19	7:00 AM–7:30 PM
Monday, Oct. 20	6:30 AM–4:30 PM
Tuesday, Oct. 21	6:30 AM–4:30 PM
Wednesday, Oct. 22	6:30 AM–3:00 PM

Shuttle Services

Complimentary shuttle service to the Boston Convention and Exhibition Center will be available from official CNS hotels located more than four blocks away from the convention center. A shuttle schedule will be posted at the hotels and convention center.

Smoking

Boston Convention and Exhibition Center and official CNS hotels are non-smoking facilities. There are designated areas outside the buildings where smoking is permitted.

Speaker Ready Room

All speakers and abstract presenters should visit the Speaker Ready Room at the Boston Convention and Exhibition Center prior to their presentations.

Saturday, Oct. 18	7:00 AM–5:30 PM
Sunday, Oct. 19	7:00 AM–6:00 PM
Monday, Oct. 20	6:30 AM–3:00 PM
Tuesday, Oct. 21	6:30 AM–3:00 PM
Wednesday, Oct. 22	6:30 AM–3:00 PM

Visa Information

The State Department of the United States encourages international participants to apply for their visas as early as possible – at least 3 months before the meeting. Some consulates may have backlogs in scheduling visa interviews so applicants should first contact the consulate to find out how long the wait is for an interview. Visa wait times are available at: http://travel.his.com/visa/temp/wait/wait_4638.html.

For information on the visa process, please visit www.nationalacademies.org/visas. The US State Department's visa site contains the official information on the visa application process: http://travel.his.com/visa.

2014 EXHIBITORS

Accuray
Ad-Tech Medical Instrument Corp.
Advanced Biologics
Allen Medical Systems, Inc.
Alpha Omega Co. USA Inc.
Alphatec Spine, Inc.
Amedica Corporation
American Association of Neurological Surgeons
American Surgical Company
Anatom-e Neuro Information Systems, Ltd.
Apex Medical, Inc.
Arbor Pharmaceuticals, Inc.
Arbor Pharmaceuticals, Inc.
ASSI-Accurate Surgical
Baxano Surgical, Inc.
BaylorScott & White Health
BeckerSmith Medical
Benvenue Medical, Inc.
BioDlogics, LLC
Biomet Microfixation
Bioplate, Inc.
BK Medical / Analogic Ultrasound
Boss Instruments, Ltd.
Boston Scientific
The Brain Aneurysm Foundation
Brainlab
Carl Zeiss Meditec
Centinel Spine
CFI Medical
CMF Medicon Surgical Inc.
Cosman Medical
Covidien
Designs For Vision, Inc.
DFine Inc.
DJO Global
Electrical Geodesics, Inc.
ELEKTA, Inc.
elliquence
Elsevier, Inc.
Fehling Surgical Instruments
Frontier Devices
Gauthier Biomedical
Globus Medical
Haag-Streit Surgical
Hawaiian Moon
Hayes Locums
HCA – Hospital Corporation of America
Hemedex, Inc.
Hitachi Aloka Medical
IMRIS
Inion Inc.
Innerspace Neuro, Inc.
Integra
Journal of Neurosurgery
K2M, Inc.
Kaiser Permanente – Southern California
Karl Storz Endoscopy
Kelyniam Global, Inc.
Kinamed, Inc.
Kirwan Surgical Products LLC
KLS Martin Group
Kogent Surgical
Koros USA, Inc.
LDR Spine
Leica Microsystems
Life Instrument Corporation
Mazor Robotics
Medtech Surgical
MicroVention
Misonix, Inc.
Mizuho America, Inc.
Monteris Medical
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