Improving Outcomes Through Interdisciplinary Collaborations

2014

SEATTLE

SEPTEMBER 11-14, 2014
THE WESTIN SEATTLE • SEATTLE, WA

www.neurocriticalcare.org
Welcome to the 12th Annual Meeting of the Neurocritical Care Society!

Recent growth of the Neurocritical Care Society has been rapid and exciting. NCS membership has broadened in terms of educational and professional backgrounds, and levels of training and experience. In consideration of this growth and diversity, the Annual Meeting Planning Committee, with its diverse members (e.g., emergency physicians, trauma surgeons, neurologists, scientists, neurosurgeons, pharmacists, internists, nurses, anesthesiologists and members-in-training) has worked to ensure that everyone attending the meeting in Seattle will find something professionally enriching. Given the focus on integration of neurocritical care’s different disciplines, the Committee chose the theme: “Interdisciplinary Collaboration to Improve Outcomes.” Indeed, we find that in our subspecialty, in caring for patients with challenging, multifaceted, rapidly changing problems, the integration of disciplines is key to better outcomes.

Our meeting has grown from one day in the early years to four days as of last year. This year we will add one more day for a total five days. The pre-meeting day dedicated to early career members is new this year. The following three days will form the core of the meeting. The meeting will then close on Sunday with sessions centering on NCS Spirit. Each day will have a distinct focus, but all five days will serve the theme of “Interdisciplinary Collaboration to Improve Outcomes.”

Pre-meeting Day (September 10): Early Career Members
The pre-meeting day will focus on topics of high importance to early-career members. Wednesday’s sessions will have three tracks: Practice Update, Mentorships, and Workshops. The day-long Practice Update Session, co-chaired by Dave Greer and Ed Manno, will cover neurocritical care’s core topics: General Critical Care, Cerebrovascular, Trauma and Post-Operative, Neurocritical Care Principles, Coma and Prognosis, and Special Conditions.

The Research Mentorship session, co-chaired by Jonathan Rosand and Kevin Sheth, will focus on training junior NCS members for a career in the academic practice of neurocritical care.

The Future Leaders session, chaired by Wendy Wright, will enhance leadership abilities and opportunities for junior members within and outside of the NCS. The topics of Wednesday’s workshops are Neuropharmacotherapy and Basic EEG in the ICU.

All are invited to the Welcome Reception, which will round out the evening.

Day 1 (September 11): Keynote Address, NCS Business Meeting and Guidelines
Thursday, the opening day of the Annual Meeting, is packed with important sessions, such as the Business Meeting, the Presidential Address, the Keynote Address, and Guideline and Consensus Sessions. A new session, nursing in neuro-critical care, will be presented by nurses on this day. Business to be addressed during the Business Meeting, will include, but is not limited to: by-laws amendments, election results, and recognition to meritorious members.

The NCS is honored to feature General Henry Hugh Shelton (Ret.) as the 2014 Keynote Speaker. General Shelton was the 14th Chairman of the Joint Chiefs of Staff and is presently the Chairman of the Henry and Carolyn Shelton Military Neurotrauma Foundation.

Several important consensus statements and guidelines will be highlighted on this day. The first is the Multimodality Monitoring Consensus Statement, developed in collaboration with ESICM and other organizations. The second is Practice Guidelines on the Management of Large Hemispheric Infarctions (LHI), which was developed in collaboration with the German Neuro-Intensive Care Society. The third will address the dilemma in anticoagulation in neurocritical care/neurosurgical procedures.

Day 2 (September 12): Targeted Temperature Management and Translational Science in Intracerebral Hemorrhage
Friday’s sessions will provide cutting-edge science, clarity in the practice of complex clinical problems, and even some that are controversial.

The Science Subcommittee has planned a comprehensive and cutting-edge Translational Science session on intracerebral hemorrhage (ICH). Co-chaired by Hooman Kamel and Kevin Sheth, this session will cover global epidemiology, pathophysiology, clinical trials, and state-of-the-art developments in ICH management. These speakers in this session are some of the very best in the field of ICH research and practice.

Talks on the topic of the management of challenging cases will continue when SNACC speakers join the NCS in a session on the management of the most complex post-operative cases.
Just when we thought we knew how to provide hypothermia for cardiac arrest survivors, another intriguing study comes along. Dr. Niklas Nielsen, the lead investigator for the TTM study, will join us, along with distinguished experts on post-resuscitation brain injury to discuss the best ways to manage brain injury after CPR.

**Day 3 (September 13): Clinical Trials, Challenging Practice and Pediatric Neuro-ICU**

Saturday will bring an update on a cutting-edge TBI clinical trial. Clinical investigators of ProTECT III, led by David Wright, will update us with the latest on the use of progesterone in the treatment of TBI. A multidisciplinary panel will provide a wider perspective on the clinical trial outcome.

The topic of infection will be addressed on this day. Renowned experts will provide updates in the diagnosis and management of acute encephalitis in the Neuro-ICU. Additionally, a session addressing the latest in ARDS and sepsis will be presented in collaboration with speakers from the American College of Chest Physicians (ACCP).

New this year, a series of cutting-edge sessions in Pediatric Neurocritical Care will be presented on Saturday and Sunday. Special acknowledgement goes to Mike Bell, Mark Wainwright, Jose Pineda and the Pediatric Neurocritical Care Research Group for this exciting collaboration.

**Day 4 (September 14): NCS Spirit Day**

All great things come to an end, but not without a bang. The last morning of the meeting will feature “quintessential NCS” sessions. Peter LeRoux and Jose Suarez will start the day with the results of NCS PRINCE Study. The Member-Submitted Session, “Extracorporeal Therapies in Neurocritical Care,” directed by Neeraj Badjatia, will follow. Then, the entertaining-yet-educational NCS Debates chaired by Matt Koenig, will close the day and the 2014 meeting. These debates – considering the match-ups and topics – will be epic!

**Throughout the Meeting**

**The Science of NCS**

The Science subcommittee, led by Kevin Sheth, has been working hard to bring out the best of NCS science in three platform presentation sessions and three e-poster sessions, which will take place on Thursday, Friday, and Saturday. The Abstract Selection Workgroup, chaired by Marion Buckwalter, met the challenge of choosing the best scientific abstracts from the 300+ excellent abstracts that were submitted. New this year is the Late-Breaking Abstract Session.

Also new this year is our departure from traditional poster boards to e-Posters. The e-Poster sessions, co-chaired by Nerissa Ko and Luke James offers more meaningful opportunities to interact and share knowledge. Another benefit is that it frees presenters from not only lugging around those long poster tubes, but it saves the cost of printing large posters.

**Expanding the Workshops**

This year, the Workshop Subcommittee, led by Josh Goldstein, has expanded from 13 to 16 workshops. I'd like to thank the Workshop Subcommittee, the Course Directors, and Faculty for this year’s exciting offerings. The following workshops are new this year: Diagnosing Brain Death, Neuro-Ethics of End-of-Life, and Coding and Billing. Of course, the old favorites will still be offered. Workshops will be going on during the pre-meeting day, in the afternoons of the main session, and in the morning of the final day.

**Social and Special Events**

We like to work hard, study hard, and of course, play hard! Saturday is the day for play! A Fun Run and Walk has been added this year and will kick off Saturday’s events. Be sure to bring your running shoes, so you can have a healthy dose of fun. After Saturday’s plenary sessions, everyone will head over to the Experience Music Project Museum for the NCS Annual Banquet. In the hall that houses the exhibits on Jimi Hendrix and Nirvana, NCS will again show off its own brand of music with Bubba’s Taxi. A guest DJ will provide dance music until midnight. For the fun on this day and social events throughout the meeting, I thank Arash Afshinnik and Jen Robinson, and the Annual Meeting Socials Subcommittee.

I look forward to having a wonderful time learning, networking and having fun with all of you in Seattle!

Romergyko Geocadin, MD
Chair, 2014 Annual Meeting Program Committee
Vice President, Neurocritical Care Society
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Annual Meeting Learning Objectives

• Apply clinical practice guidelines developed for multimodality monitoring in neurocritical care patients and the management of patients with large hemispheric infarction.
• Identify the advances in recent clinical trials in neuroprotection after Traumatic Brain Injury and Targeted Temperature Management for brain injury after cardiac arrest
• Apply current best clinical practices to the management of patients with encephalitis, ARDS and sepsis
• Describe how emerging translational and clinical research in intracerebral hemorrhage are directly relevant to the clinical practice of neurocritical care
• Describe the advances and challenges in pediatric neurocritical care research and practice
• Integrate the neurocritical care management of complex post-operative patient in the ICU
• Describe the challenges and best practices in bedside neurocritical care nursing

Workshop Learning Objectives (varies depending on workshops attended)

• Describe unique aspects of airway and ventilation management for neurocritical care patients
• Implement procedures such as bronchoscopy and ultrasound as applicable to neurocritical care patients
• Describe current issues in neuropharmacy for neurocritical care patients
• Explain principles of diagnostic electroencephalography and imaging as they apply to neurocritical care patients
• Interpret relevant diagnostic studies involved in acute management of neurocritical care patients including, intracranial pressure neuroimaging and electrophysiology
• Direct management of systemic and cerebral hemodynamics to optimize the care of neurocritically ill patients
• Perform and interpret the brain death examination
• Identify ethical principles relating to near end-of-life and end-of-life decision-making and medical care
• Describe the process related to billing and coding in the neuro-ICU

Target Audience

• Physicians in neurosurgery and neurology
• Physicians in critical care and pulmonary medicine
• Physicians in anesthesiology
• Physicians in surgery
• Physicians in emergency medicine
• Physicians in pediatric intensive care
• Physicians in internal medicine
• Critical care nurses
• Neurological nurses
• Advanced critical care nurse practitioners
• Physician assistants
• Pharmacists
• Translational neuroscientists
• Physicians in training
• Medical students

Platinum Level
Bard Medical
The Medicines Company
Ornim Medical
UCB

Gold Level
NeurOptics
ZOLL Medical Corporation

Silver Level
American Medical Response
Codman Neuro
CSL Behring
Genentech
Integra Foundation
Medtronic

Exhibition
The Neurocritical Care Society welcomes the following exhibitors for 2014:
(As of August 15, 2014)

ABRET
AIT Austrian Institute of Technology GmbH
Akorn Pharmaceuticals
Arbor Pharmaceuticals, LLC
ASET
Bard Medical
Brainlab
Cadwell
Cheetah Medical, Inc.
Chiesi USA, Inc.
Compumedics ISA, Inc.
Edge Therapeutics
Edwards Lifesciences
Genentech, Inc.
Global Neuro-Diagnostics
Hemedex, Inc.
Hummingbird Neuro Monitoring
InfraScan, Inc.
Integra
Jan Medical
M Dialysis
Moberg
Moeller Medical GmbH
NeuroLogica
Neuroptics
NIHON KOHDEN AMERICA
Niveus Medical
Ornim
Otsuka
RAUMEDIC, Inc.
RosmanSearch, Inc.
Springer
Texas Stroke Institute
The Medicines Company
ZOLL Medical Corporation

Endorsements
The following organizations endorse the Neurocritical Care Society’s 12th Annual Meeting:
**Practice Update Overview**  
David Greer, MD, FNCS and Edward Manno, MD  
Practice Updates Chair and Co-chair

The Practice Update in the 2014 Annual Meeting is not limited to preparation for the UCNS board exam but will serve all members who desire up-to-date information about neurocritical care clinical practice topics, whether you are a nurse, fellow, international member, or already UCNS-certified. The bulk of the update will occur on the first day of the conference, with core topics covered in significant detail by high-level speakers. The talks will focus on reviews of core principles of management and care. New this year will be a “Hot Topic” Practice Update which will occur on Thursday, Friday, and Saturday mornings and will give an update on recent research and developments in more rapidly changing aspects of neurocritical care. A high-quality syllabus will continue to accompany the Practice Update.

**Practice Update Learning Objectives**

- Achieve an update to practice and care on core subjects in neurocritical care
- Identify updates in research and developments in core subjects in neurocritical care
- Describe advances in the more rapidly moving aspects of neurocritical care (“Hot Topics”)

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**Scientific Program Overview**  
Kevin Sheth, MD, FAHA, FCCM  
Science Committee Chair

This year’s scientific program is packed with exciting sessions such as: a presentation of original data from the pivotal ProTECT III Traumatic Brain Injury Study; a high-profile session on Therapeutic Temperature Modulation; and, in response to demand from the membership, we will once again offer the Translational Science Symposium. The topic of this year’s symposium is intracerebral hemorrhage (ICH). Internationally-recognized, high-impact investigators will share the depth and breadth of their knowledge as well as present their latest findings on ICH.

The core of the scientific program, however, is the showcase of the work from the most important investigators — ALL OF YOU! For the first time, abstract presenters will have the opportunity to share their work in the interactive ePoster environment. This new mode of presentation will facilitate the dissemination of original research and eliminate the burden of printing and lugging around traditional posters. Also new this year is the Late-Breaking abstract submission process which leverage our membership’s rapidly advancing work. Finally, the Best Abstract and Christanne Wijman Outstanding Young Investigator Awards will honor deserving applicants.

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**Neurocritical Care Society 2014 Annual Meeting**

**Keynote Speaker**  
General Henry Hugh Shelton, U.S. Army (R)

General Shelton was the fourteenth Chairman of the Joint Chiefs of Staff from 1997 until his retirement in 2001. He previously served as Commander-in-Chief of U.S. Special Operations Command (SOCOM). He was knighted by Queen Elizabeth II in 2001 and awarded the Congressional Gold Medal in 2002. Since January 2002, he has served as the Executive Director of the General H. Hugh Shelton Leadership Center at North Carolina State University. Together with his wife Carolyn, General Shelton founded the Hugh and Carolyn Shelton Military NeuroTrauma Foundation with the goal of significantly improving survival rates for injured soldiers and preventing the long-term consequences of brain injury.

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**Annual Meeting Planning Committees and Subcommittees**  
We would like to acknowledge the following individuals for their time and dedication in making this meeting possible.

**Annual Meeting Planning Committee**
Meeting Chair: Romer Geocadin, MD  
Aimee Aysenne, MD  
Christopher Zacko, MD  
J. Claude Hemphill, III, MD  
Dave Seder, MD  
David Greer, MD  
Deborah Stein, MD  
Ed Manno, MD  
Eljim Tesoro, PharmD  
Giuseppe Citerio, MD  
Jennifer Robinson, APRN  
Joshua Goldstein, MD  
Julian Boesel, MD  
Kevin Sheth, MD  
Matthew Koenig, MD

**Science Subcommittee**
Chair: Kevin Sheth, MD  
Hooman Kamel, MD  
Nerissa Ko, MD  
Marion Buckwalter, MD  
Giuseppe Citerio, MD  
Michael (Luke) James, MD  
Michael Bell, MD  
Panayiotis Varelas, MD  
Sam Tisherman, MD  
Sarah Livesay, RN  
Shawn Rowe, PharmD  
Arash Afshinnik, MD  
Alan Garber, MD

**Fundraising Subcommittee**
Chair: Panayiotis Varelas, MD  
Paul Vespa, MD  
Stephan Mayer, MD  
Sherry Chou, MD  
Ryan Hakimi, DO  
Tarvez Tucker, MD  
Arash Afshinnik, MD  
Carmelo Graffagnino, MD  
Denise H. Rhoney, PharmD  
Mohammed Fazlur Rehman, MD  
Michael Schneck, MD  
Michael Diringer, MD  
Julian Boesel, MD  
Jesse Corry, MD  
J. Claude Hemphill, III, MD  
Gene Sung, MD  
Gary Bernardini, MD  
Diana Greene, MD

**Workshops Subcommittee**
Chair: Josh Goldstein, MD  
Kristine O’Phelan, MD  
David Seder, MD  
Soojin Park, MD

**Practice Update Subcommittee**
Chair: David Greer, MD  
Co-Chair: Ed Manno, MD

**Socials and Special Event Subcommittee:**
Chair: Arash Afshinnik, MD  
Co-chair: Jennifer Robinson, APRN  
Aimee Aysenne, MD
Every person attending the annual meeting should plan to participate in a workshop. We will give you more than your money’s worth in practical information, pearls, and techniques you can use immediately. We want to give away the secrets of neurocritical care!

Can’t wait to see you in Seattle!

2014 Workshop Descriptions
(Workshop information is subject to change upon further program development, prior to annual meeting)

Pre-Meeting Day
Wednesday, September 10, 2014
1:00 p.m. – 5:00 p.m.

Continuous EEG 101
Course Director: Emily Gilmore, MD
Course Faculty: Andres Fernandez, MD; Brandon Foreman, MD; Nicolas Gaspard, MD; PhD; Eric Rosenthal, MD
Do you work in the neuro-ICU and want a better understanding of continuous EEG monitoring? This workshop will enhance the participant’s practical utilization of continuous EEG in the ICU. We will teach you the basics – how to work the equipment, how to attach the leads. We will give you an introduction to bedside EEG pattern and artifact recognition, the role of quantitative EEG displays in EEG analysis, nursing and technical issues, and case studies with various EEG systems. We will also cover common start-up, business and coding issues.

Neurocritical Care in Pharmacotherapy
Course Director: Theresa Human, PharmD, BCPS, FNCS
Course Faculty: Jennifer Bushwitz, PharmD, BCPS; Amber Castle, PharmD; Raj Dhar, MD; Chad Miller, MD; Christopher Morrison, PharmD
Designed to cover the hottest topics in neurocritical care pharmacotherapy today! Experts will discuss the use of antibiotics in CSF Leak, review the role of Beta-Blockers after acute neurologic injury, identify the role of drugs after brain death, review neurostimulants in acute brain injury and elucidate a practical approach to reversal of anticoagulants. Case-based, small-group discussions will highlight controversies and areas of interest.

Thursday, September 11, 2014
1:00 p.m. – 5:00 p.m.

Advanced ICU Hemodynamics
Course Director: William McGee, MD, MHA
Course Faculty: Mary Kay Bader, RN, MSN, CCNS, FNCS; Christopher Junker, MD; Kiwon Lee, MD; Joseph Meltzer, MD
Want to optimize patient outcomes and cerebral blood flow? Hemodynamic monitoring and manipulation play a huge role in Neurocritical care, and the science is evolving rapidly. Nurses are encouraged to participate in our workshop as the use of hemodynamic monitoring technology can be challenging. Our workshop will focus on the use of hemodynamic therapy to provide optimal outcomes in TBI, SAH/vasospasm, and those with acute lung injury/ARDS. The workshop will also cover hemodynamic therapy of the brain dead organ donor which has been shown to increase organ yield in these physiologically complex patients. Small group sessions will focus on use of the various technologies and data interpretation. The emphasis will be on arterial pulse contour analysis along with an overview of essential ECHO techniques for practicing Neuro-Intensivists. Our workshop will include description and use of “the physiologic optimization program” through real case interactive simulation sessions to emphasize course content. Included in this session will be content addressing bedside interpretation of data and identification of common pitfalls in practice. The workshop is particularly useful to bedside nurses responsible for accurate physiologic assessment. Attendees will be able to bring both the cases and the principles of physiologic optimization back to their units to train staff.

Coding, Billing and ICD-10
Course Director: Owen Samuels, MD
Course Faculty: Krista Garner, ACNP; Brad Thompson, MD
You have the world’s most awesome ICU, but you need to get paid for your work. Your training program may have taught you the medicine but did they teach you how to bill? This workshop will give an in-depth overview of how to code, how to bill...and what is the deal with ICD-10 anyway?

Intracranial Monitoring
Course Director: Benjamin Emanuel, DO
Course Faculty: Amedeo Merenda, MD; Tracey Berlin, BSN; Yince Loh, MD; Kristine O’Phelan, MD
A hands-on workshop in which you will learn and practice basic techniques for the insertion, management, troubleshooting, data interpretation, and removal of intracranial monitoring devices! Includes ventricular catheterization, ICP, brain tissue oxygen, cerebral blood flow monitoring, and cerebral microdialysis technologies.
ICU EEG terminology, and management of complex Alpha Delta Ratio (ADR) for detection of vasospasm in the ICU, Quantitative EEG methods (QEEG) such as applications. Topics will include EEG interpretation and techniques) will broaden your knowledge with at least a functional knowledge of EEG rhythms advanced ICU EEG course (intended for individuals critical, non-invasive form of neuromonitoring. This ICU EEG techniques continue to expand as a PhD, FNCS; Paul Vespa, MD, FNCS

Continuous EEG 201
Course Director: William D. Freeman, MD and Ira Chang, MD
Course Faculty: Thomas Bleck, MD; Brad Kolls, Chang, MD
Kathleen Ledwick , ARNP
Course Faculty: Dany Ghannam, MD; Jon Rittenberger, MD, MS
Course Faculty: Phillip Empey, PharmD, PhD, BCPS; Margo Holm, PhD, OTR/L; David Seder, MD; Ketki Raina, PhD
TTM is being used in an increasing number of disease states, but where is this therapy headed? Learn what the future holds for TTM and how this will impact care for specific patient populations. Topics will include current practice and research areas, emerging uses in clinical care, and state-of-the-art technologies. This workshop will include: didactic and small group break-out sessions run by expert, multidisciplinary leaders in the field.

Neuroethics at the End of Life
Course Director: Jessica McFarlin, MD
Course Faculty: Alan Garber, MD
Some of the most important work you will ever do is navigate the difficult issues at the end of life. Is there a best practice for having a family meeting? How do you discuss goals of care in stressful situations? This is not just a lecture, but a hands-on session for those “boots on the ground” who are front and center with families, friends, and loved ones in their most fragile states. This course is a great companion to the Diagnosing Brain Death workshop.

Essentials of Neurocritical Care
Course Directos: Cherylee Chang, MD, and Tom Bleck, MD
Course Faculty: Katherine Johnson, MS, APRN; Matthew Koenig, MD

Bronchoscopy/Pleural Procedures
Course Director: Dale Hoekema, MD
Course Faculty: Dany Ghannam, MD; Kathleen Ledwick , ARNP
Basic bronchoscopy, thoracentesis, and chest tube placement are fundamental critical care skills...are you up to speed? Ultrasound and vastly improved procedure kits have made these procedures easier and safer than ever before. Learn basic airway inspection and bronchoalveolar lavage techniques, quick ultrasonographic localization of fluid, and chest drain placement using state-of-the-art pigtail and/or Seldinger-technique based kits. Can you afford not to take this workshop?

Neuroimaging for the Non-neurologist
Course Director: Chris Horn, MD
Course Faculty: William A. Knight IV, MD; Vishal Patel, MD; Tommy Thomas, MD
Intensive, instruction on fundamental to challenging cases of neuro imaging in neurocritical care. Review key parts of neuroanatomy in both CT and MRI. Develop and hone your skills with basic cases and challenge yourself with the difficult scenarios. Highlights will include acute ischemic stroke, subarachnoid hemorrhage, intracerebral hemorrhage, and trauma.

Neurovascular Ultrasound
Course Director: Art Lam, MD
Course Faculty: David McDonagh, MD; Andrei Alexandrov, MD
An intensive introduction to transcranial doppler (TCD), transcranial color-coded sonography (TCCS), and carotid ultrasound. A didactic session will cover vascular ultrasonic basics. Attendees will then rotate through stations where they will practice hands-on ultrasound or use US data to manage clinical scenarios such as stroke, subarachnoid hemorrhage, and vasospasm.

Difficult Mechanical Ventilation
Course Director: Patrick Mailloux, MD, Do, FCCP
Course Faculty: Richard Riker, MD; Bogdan Tiru, MD; Jeff Singh, MD
Hands on the ventilators! If you want to know how to ventilate your patients, come here for tips, tricks, and a rational approach from the experts. Not just a lecture, this is a hands-on experience including complex and difficult cases. Learn how to manage common and life-threatening ventilatory challenges. Learn mechanical ventilation goals and techniques specific to brain injured patients. Learn state-of-the-art noninvasive ventilation, including new ventilators and masks, and how to select the patients most likely to benefit from treatment.

Neurocritical Care Ultrasound
Course Director: Venkatakrishna Rajajee MD
Course Faculty: Mohammed Rehman, DO; Fred Rincon, MD, MS; Gregory Rapinos, MD
This is the critical care skill you always wanted but didn’t have time to learn! Critical care ultrasound is quickly becoming a required skill in the ICU. The workshop consists of didactic teaching and hands-on stations covering the fundamentals of critical care echocardiography, lung ultrasound, assessment of volume status, detection of lower limb DVTs, and optic nerve sonography for the detection of raised intracranial pressure. Learn this and more...
# NCS WORKSHOP SCHEDULE

<table>
<thead>
<tr>
<th>Time</th>
<th>Wednesday</th>
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<tbody>
<tr>
<td>8:00am - 12:00pm</td>
<td>Continuous EEG 101&lt;br&gt;Elliott Bay</td>
<td>Advanced ICU&lt;br&gt;Hemodynamics&lt;br&gt;Pine Room</td>
<td>Bronchoscopy/Pleural Procedures&lt;br&gt;Puget Sound</td>
<td>Diagnosis Brain Death&lt;br&gt;Pine Room</td>
<td>Essentials of Neurocritical Care&lt;br&gt;Pine Room</td>
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<tr>
<td>1:00pm - 5:00pm</td>
<td>Neurocritical Care in Pharmacotherapy&lt;br&gt;Pike Room</td>
<td>Coding, Billing and ICD-10&lt;br&gt;Puget Sound</td>
<td>Continuous EEG 201&lt;br&gt;Elliott Bay</td>
<td>Neurocritical Care Airway&lt;br&gt;Puget Sound</td>
<td>Neurocritical Care Ultrasound&lt;br&gt;Elliott Bay</td>
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<td>1:00pm - 5:00pm</td>
<td>Intracranial Monitoring&lt;br&gt;Pike Room</td>
<td>Neuroethics at the End of Life&lt;br&gt;Pike Room</td>
<td>Targeted Temperature Management&lt;br&gt;Pine Room</td>
<td>Neuroimaging for the Non-neurologist&lt;br&gt;Pine Room</td>
<td>Difficult Mechanical Ventilation&lt;br&gt;Vashion</td>
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## SPECIAL INTEREST BREAKFAST CORNERS
Friday, September 12, 7:00 am - 8:00 am
Activity Co-chairs: Fred Rincon, MD, FNCS and Michel Torbey, MD FNCS

**Fellowship Directors**
- Puget Sound
  - Facilitators: David McDonagh, MD
  - Anise Ardelt MD, PhD

**ICU Directors**
- Pine Room
  - Facilitators: James Szalados, MD, MBA, JD
  - Neeraj Naval, MD

**International Members**
- Denny/Mercer
  - Facilitators: Guadalupe Castillo Abrego, MD
  - Julian Boesel, MD, PhD

**Neurohospitalists**
- Adams
  - Facilitator: Scott Brehaut, MD
  - Katya Axelrod, MD

**Nurses**
- Elliot Bay
  - Facilitators: Jennifer Robinson, RN, NP, APRN, CNRN
  - Cindy Bautista, PhD, RN

**Pharmacists**
- Pike Room
  - Facilitators: Theresa Human, PharmD, BCPS, FNCS
  - Amber Castle, PharmD, BCPS

**Residents and Fellows**
- Olympic
  - Facilitator: Benjamin Miller, MD
  - Mohit Datta, MD

**Advanced Practice Providers**
- Orcas
  - Facilitator: Robert Blessing

**Non-Neurologist Neurointensivists**
- Whidbey
  - Facilitators: Rachel Garvin, MD
  - Alan Garber, MD

**Research Professionals**
- Baker
  - Facilitators: Sherry Chou, MD, CM, MMSc
  - Gail Pyne-Geithman, Dphil

**Pediatric Neurocritical Care**
- Vashon II
  - Facilitators: Jose Pineda, MD, MSc
  - Mike Bell, MD

Special thanks to our nursing and pharmacy faculty for the NCS workshops:
- Rebecca van Vliet, APN, CNRN
- Christina Smith, ARNP
- Kathleen Ledwick, ARNP
- Katherine Johnson, MS, APRN
- Jennifer Bushwitz, PharmD, BCPS
- Amber Castle, PharmD
- Christopher Morrison, PharmD
- Phillip Empey, PharmD, PhD, BCPS
**WEDNESDAY, SEPTEMBER 10**

### Pre-Meeting

**8:00 am - 5:00 pm**  
**Practice Update**  
Co-chairs: David Greer, MD, MA, FCCM, FAHA, FNCS; Ed Manno, MD

### Cerebrovascular

- Acute Ischemic Stroke
- Nerissa Ko, MD, MAS
- Neuroendovascular Interventions
- Thabile Leslie-Maziw, MD
- Subarachnoid Hemorrhage
- Eric Rosenthal, MD

### Special Conditions

- Neurorheumatic: Jennifer Fugate, DO  
  - Post-op Neurosurgical Care
- Stephen Hanus, MD

### General Critical Care

- Cardiovascular Monitoring  
  - J. Javier Provencio, MD
- Mechanical Ventilation
- Julian Boesel, MD, PhD
- Non-Neuro Trauma
- Samuel Tisherman, MD
- Sedation/Analgesia
- Paul Nyquist, MD, MPH

### Neurocritical Care Principles

- Quality Care Metrics  
  - Michelle VanDemark, CNP
- Neurorheumc: Jennifer Robinson, APRN
- Neupropharmacology
  - A. Shawn Rowe, PharmD
- Multimodal Neuromonitoring
  - Paul Vespa, MD, FNCS

### Coma/Brain Death/Prognosis

- Cardiac Arrest/HIE
  - David Greer, MD, MA, FCCM, FAHA, FNCS
- Coma/Brain Death
  - David Greer, MD, MA, FCCM, FAHA, FNCS
- Delirium
  - Panas Varelas, MD, PhD

### Trauma/Pediatrics

- Pediatrics Neurocritical Care  
  - Michael Bell, MD
- Traumatic Brain Injury  
  - Joshua Levine, MD
- Traumatic Spinal Cord Injury
  - William Coplin, MD

### HOT TOPICS - CONTROVERSY IN BP CONTROL IN ICH

**Speaker:** Adnan I. Qureshi, MD  
**Co-chairs:** David Greer, MD, MA, FCCM, FAHA, FNCS; Ed Manno, MD

**8:05 am - 8:30 am**  
**Hot Topics: Controversy in BP Control in ICH**  
**Speaker:** Adnan I. Qureshi, MD  
**Co-chairs:** David Greer, MD, MA, FCCM, FAHA, FNCS; Ed Manno, MD

**8:30 am - 9:45 am**  
**Int'l. Multimodality Monitoring (MMM) Consensus**  
**Joint session with ESICM**  
**Chair:** Peter Le Roux, MD

### Various Workshops

- 1:00 pm - 5:00 pm
  - Leadership Mentoring
  - Michaal D. Waite, MD
  - Speakers/Mentors: Judy Jacobi, PharmD, FCCM

### Business Meeting

**10:45 am - 11:15 am**  
**Keynote Address**  
**J. Claude Hemphill, III, MD**

### Business Meeting

**11:15 am - noon**  
**Break**

**11:15 am - noon**  
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**Break**

**11:15 am - noon**  
**Break**

## FRIDAY, SEPTEMBER 12

### HOT TOPICS - Updates in Neuroimaging

**Speaker:** Paul Lindell, MD  
**Co-chairs:** David Greer, MD, MA, FCCM, FAHA, FNCS; Ed Manno, MD

**8:30 am - 9:45 am**  
**Post-Operative Challenges in Neurocritical Care**  
**Joint Session with Society for Neuroscience in Anesthesiology and Critical Care (SNACC)**  
**Co-chairs:** Ines Koerner, MD, PhD; Atul Malhotra, MD

### Multi-Level Spinal Fusion with Massive Hemorrhage Complicated by TRALI

**Speaker:** Andrea Orfanakis, MD

### Hemostasis and Anti-Thrombotic Management in the NOAC Era

**Speaker:** Greg del Zoppo, MD

### NURSING IN NEUROCITRICAL CARE UNIT

**Speaker:** Mary Kay Bader, RN, MSN, CCNS, FAHA, FNCS

### Large Hemispheric Infarction (LHI) Guidelines

**Joint Session with Society for Neuroscience in Anesthesiology and Critical Care**  
**Co-chairs:** Ines Koerner, MD, PhD; A. Shawn Rowe, PharmD

### Update on decompressive surgery in stroke

**Speaker:** Stefan Schwab, MD

### Guidelines for the management of severe ischemic stroke

**Michel Torrey, MD, MPH**

### Pharmacotherapies in LHI

**Denise Rhoney, PharmD**

### Break

**3:15 pm - 3:45 pm**

**3:45 pm - 5:15 pm**  
**Anticoagulation and Neurocritical Procedures**  
**Co-chairs:** Christopher Zacko, MS, MD; John Lewis, PharmD
**SATURDAY, SEPTEMBER 13**

6:00 am - 8:00 am  
**Fun Run** (5k run; 1 mile walk) supported by Codman  
7:00 am - 8:00 am  
**Breakfast**

8:00 am - 8:30 am  
**Hot Topics: Controversy in Prognostication in Acute Brain Injury**  
Co-chairs: David Greer, MD, MA, FCCM, FAHA, FNCS; Ed Manno, MD  
Speaker: G. Bryan Young

8:30 am - 9:45 am  
**Updates on Sepsis & ARDS - Joint Session w/ American Coll. of Chest Physicians (ACCP)**  
Co-chairs: Wendy Ziai, MD; Elijah Tesoro, PharmD, BCPs

Recent Advances in Ventilatory Management of ARDS  
Robert Hyzy, MD  
Severe Sepsis: Why Everything Old is New Again  
Steven Q Simpson, MD

9:45 am - 10:15 am  
10:15 am - noon  
**Traumatic Brain Injury: ProTECT III Trial Study Results**  
Co-chairs: Joshua Goldstein, MD; Walter Videtta, MD  
**Highlighted Speaker:** David Wright, MD, FACEP  
**Translational studies**  
Donald Stein, PhD  
**Neuro-surgical insights**  
Geoffrey Manley, MD, PhD  
**Insights in clinical trials on TBI**  
Michael Bell, MD

**Acute Care in the ICU**  
Arun Venkatesan, MD PhD  
**Novel treatments in Refractory Status Epileptics**  
McKenzie Cerwenka, MD

**3:15 pm - 3:45 pm**  
**Break**

**3:45 pm - 5:15 pm**  
**Pediatric Neurocritical Care: Practical Application**  
Co-chairs: Ericka Fink, MD, MS; Monica Vavilala, MD  
**Interventional Studies in Pediatric Stroke – Lessons to Learn**  
Mark Wainwright, MD, PhD  
**Detecting Neurological Injuries in Children Using Biomarkers – Where are we now?**  
Melania Bembela, MD, PhD  
**Update on Cardiopulmonary Resuscitation and Cardiac Arrest Outcomes in Children**  
Alexis Topjian, MD, MSCE

1:00 pm - 5:00 pm  
**Various Workshops**  
(see schedule on pg. 8)

**5:15 pm - 6:45 pm**  
**Scientific Abstracts: e-Poster Session 3**  
Co-chairs: Nerissa Ko, MD, MAS; Arash Afshinnik, MD  
**7:00 pm - midnight**  
**NCS Banquet at the Experience Music Project**  
Master of Ceremonies: Stephen Mayer, MD, PhD  
**Featuring: Bugabo’s Taxi, Surprise NCS Member-performers and a DJ Auction for NCS Research**

**SUNDAY, SEPTEMBER 14**

7:00 am - 8:00 am  
**Breakfast**

8:00 am - noon  
**Various Workshops**  
(see schedule on pg. 8)

**8:00 am - noon**  
**ENLS Train-the-Trainer**  
Instructors: Wade Smith, MD, PhD, FNCS and Chad Miller, MD

8:00 am - 8:30 am  
**NCS Research: Prince Study Results**  
Co-chairs: Panayiotis Varelas, MD; Sarah Livesay, RN, DNP; ACNP  
Speakers: Peter LeRoux, MD; Jose Suarez, MD

8:30 am - 9:45 am  
**Extracorporeal Therapies in Neurocritical Care**  
Session co-chairs: Gunjan Parikh, MD; Kristy O’Phelan, MD  
Speakers: Plasma Therapies

**10:15 am - 11:45 am**  
**NCS Annual Debates**  
Co-chairs: Matthew Koenig, MD; Arash Afshinnik, MD

**Debate 1:** Real neurocritical care begins in the Emergency Department.  
Pro: Rachel Gavin, MD  
Con: Tamer Abdelhak, MD

**Debate 2:** Poly-trauma patients don’t belong in the Neuro ICU.  
Pro: Sarah Livesay, RN, DNP  
Con: Kristine O’Phelan, MD

**Debate 3:** Guidelines are great for neurocritical care in general, but not for real experts like me.  
Pro: William Coplin, MD  
Con: Gretchen Brophy, PharmD, BCPS, FCCP  
**Debate 4:** ICP monitoring should not be undertaken without multi-modality monitoring.  
Pro: Andrew Kofke, MD  
Con: Michael Diringer, MD

10:15 am - noon  
**Pediatric Neurocritical Care: Neurotrauma Research**  
Co-chairs: Michelle Schobor, MD, MS; Sandra Buttram, MD

**Adherence to TBI Guidelines and Outcomes – The PEGASUS Study**  
(Pediatric Guideline Adherence and Outcomes Study)  
Monica Vavilala, MD

**When Pigs Fly – Modeling Pediatric TBI Care and Multimodality Monitoring in Swine**  
Stuart Friess, MD

**Targeting Mitochondria in Experimental TBI – What Therapies Show the Most Promise?**  
Courtney Robertson, MD
2014 AWARDS

Cristanne Wijman Young Investigator Award
An award will be given at the 12th Annual Meeting for the outstanding abstract submitted by a junior member of the society (student, resident, or fellow). Please note that one must be a member of the Neurocritical Care Society at the time the abstract is submitted. The recipient is required to attend the annual meeting.

This year’s winner is Rahul Damani for “Volumetric Integral Phase-shift Spectroscopy (VIPS) in Detecting Early Cerebral Edema: Hemodialysis as a Proof of Principle Model.”

Best Scientific Abstract Award
An award will be given at the 12th Annual Meeting for the outstanding scientific abstract submitted by a member of the society. Please note that one must be a member of the Neurocritical Care Society at the time the abstract is submitted. The recipient is required to attend the annual meeting.

This year’s winner is Jose Javier Provenco for “The Time-Window for Neutrophil Depletion after SAH to Prevent Delayed Deterioration.”

Congratulations to the 2014 Travel Grant Awardees
The 2014 NCS Travel Grant, supported by the Integra Foundation, provided financial assistance to neuroscience critical care nurses, pharmacists and resident/fellow physicians in order to attend the 2014 NCS Annual Meeting.

Fawaz Al-Mufli, MD
Premkumar Nattanmai Chandrasekaran, MD
Michelle Edwards, MS, RN
Kimberly Meyer, APRN, MSN, CNRN
Kathryn Morbitzer, PhD
Shanmugam Puvanendiran, MBBS
Gemmalyynn Sarapuddin, MD
Jason Sebesto, Resident Physician, DO
Starane Shepherd, MD
Sheri Tokumaru, PhD
Gentle Sunder, MD

Fellow of Neurocritical Care Society (FNCS)
The Neurocritical Care Society recognizes members who have demonstrated exceptional service, academic excellence, and leadership in the field of neurocritical care by awarding them the Fellow of Neurocritical Care Society (FNCS) status. Individuals who meet the requirements of this Fellowship can be identified with the letters, FNCS, after their respective titles. This year’s recipients are:

Cynthia Bautista, PhD, RN, CNRN, SCF, FNCS, Yale New Haven Hospital, Fairfield CT
Thomas P. Bleck, MD, FNCS, Rush University Medical Center, Chicago, IL
Gretchen M. Brophy, PharmD, BCP, FCCP, FCCM, FNCS, Virginia Commonwealth University, Richmond, VA
Sherry Hsiang-Yi Chou, MD, M.Msc, FNCS, Brigham and Women’s Hospital; Harvard Medical School, Boston, MA
William M. Coplin, MD, FNCS, Centura Health, Denver, CO
W. Andrew Kofke, Professor, FNCS, University of Pennsylvania, Philadelphia, PA
John J. Lewin III, PharmD, MBA, FNCS, The Johns Hopkins Hospital, Baltimore, MD
Yince Loh, MD, FNCS, Madigan Army Medical Center, University of California-Los Angeles, Seattle, WA
Susanne Muehlischegel, MD, MPH, FNCS, University of Massachusetts Medical School, Worcester, MA
DaWai M. Olson, PhD, RN, FNCS, The University of Texas Southwestern, Dallas, TX
Alejandro Rabinstein, MD, FNCS, The Mayo Clinic, Rochester, MN
Jonathan Rosand, MD, Msc, FNCS, Massachusetts General Hospital, Boston, MA
Kevin N. Sheth, MD, FNCS, Yale University School of Medicine, New Haven, CT
Michael J. Souter, Professor, FNCS, University of Washington, Harborview Medical Center, Seattle, WA
Susan Yeager, MS, RN, CCRN, ACNP, FNCS, The Ohio State University Medical Center, Hilliard, OH

Emergency Neurological Life Support (ENLS) is designed to help healthcare professionals improve patient care and outcomes during the most crucial time - the critical first hours of the patient’s neurological emergency. ENLS covers a collaborative, multi-disciplinary approach that outlines a consistent set of protocols, practical checklists, decision points, and suggested communication to use during patient management. Completion of this course provides 15 hours of Level 1 CME credit and ENLS Certification.

ENLS offers:
• Advanced knowledge
• Ability to be up to date/current on advancements in treatment
• Topics that are directly relevant to neurocritical care
• Improved patient care

Topics:
• Acute Non-Traumatic Weakness
• Acute Stroke
• Airway and Ventilation and Sedation
• Coma
• Intracerebral Hemorrhage
• Ischemic Stroke
• Meningitis/Encephalitis
• Resuscitation following Cardiac Arrest
• Spinal Cord Compression
• Status Epilepticus
• Subarachnoid Hemorrhage
• Traumatic Brain Injury
• Traumatic Spine Injury

Sub-Topics:
• Elevated ICP and Herniation
• Glasgow Coma Scale (GCS)
• Hunt Hess Classification of SAH
• World Federation Neurological Scale

Pricing
There is individual and group pricing available as well as special international rates for those residing outside the US. For those interested in classroom training, please contact NCS at info2@neurocriticalcare.org.

Individuals – US Pricing
Nurses, Pharmacists, Physician Assistants & Healthcare Professions: $150
Physicians: $300
In-Training (Residents/Fellows/Students): $100

Groups – US Pricing
Designed for institutions, conferences, and bundled online units of 25 or more. Residency programs can use the Group Pricing structure. Access codes are good for one year from the date of purchase.

Nurses, Pharmacists, Physician Assistants & Healthcare Professions: $75
Physicians: $150
In-Training (Residents/Fellows/Students): $50

For more information on ENLS including how to register and begin taking the courses, visit: http://www.neurocriticalcare.org
GENERAL INFORMATION

Disclaimer
The information is provided for general medical education purposes only and is not meant to substitute for the independent medical judgment of a physician relative to diagnostic and treatment options of a specific patient’s medical condition. In no event will the Neurocritical Care Society be liable for any decision made or action taken in reliance upon the information provided through this activity.

Meeting Location
Westin Seattle
1900 Fifth Avenue
Seattle, WA 98101
Hotel Direct: (206) 727-5881
Reservations: (888) 627-8513
Website: www.westinseattle.com

Annual Meeting Registration
The NCS registration desk will be located on the Grand Level of the Westin Seattle. The registration desk will be open during the following dates and times.

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<tr>
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<tr>
<td>Tuesday, September 9</td>
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The pre-registration deadline is August 8, 2014. After this date, registration will be accepted onsite only at the Westin Seattle Hotel.

Exhibit Registration
The NCS exhibit registration desk will be located in the Grand Level of the Westin Seattle. The registration desk will be open during the following dates and times.

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Speaker Ready Room
The speaker ready room will be located in the Blakely room on the San Juan Level. The room will be open during the following dates and times.

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Registration Cancellation Policy
All cancellations received on or before August 8, 2014, are subject to a $50 cancellation fee. Written notification of your cancellation is required in order to process your refund. No refunds will be issued after August 8, 2014.

Exhibit & Poster Hall
This year’s exhibit & poster hall will be in Grand 1 and 2 located on the Grand Level of the Seattle Westin. Be sure to visit this year’s exhibitors for the following dates and times and join them on Tuesday evening for the Opening Reception!

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
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<tbody>
<tr>
<td>Thursday, September 11</td>
<td>7:00 a.m. - 3:45 p.m.</td>
</tr>
<tr>
<td></td>
<td>5:15 p.m. - 6:45 p.m.</td>
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<tr>
<td>Friday, September 12</td>
<td>7:00 a.m. - 4:00 p.m.</td>
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<td>5:15 p.m. - 6:45 p.m.</td>
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<tr>
<td>Saturday, September 13</td>
<td>7:00 a.m. - 4:00 p.m.</td>
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<td></td>
<td>5:15 p.m. - 6:45 p.m.</td>
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</tbody>
</table>

Attire
The attire for the Annual Meeting is business casual. Attire for the banquet is casual.

Climate
The average temperature in Seattle in September is 60 degrees and partly sunny.

Membership
To join the Neurocritical Care Society, please visit www.neurocriticalcare.org and click on “Join NCS”. Membership benefits include the Neurocritical Care journal subscription, discounted Annual Meeting rates, access to the members’ only discussion forum, and networking opportunities.

Accreditation
This activity has been planned and implemented by Ciné-Med and the Neurocritical Care Society. Ciné-Med is accredited by the American Nurses Credentialing Center (ANCC), the Accreditation Council for Pharmacy Education (ACPE), and the Accreditation Council for Continuing Medical Education (ACCME), to provide continuing medical education for the health care team.

Physicians
Ciné-Med designates this live activity for a maximum of 34 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Nurses
This activity is approved for 34 contact hours for nurses.

Pharmacists
This program has been accredited for 3.4 CEU (34 contact hours) of continuing education credit. ACPE #: 0399-9999-14-006-L01-P.
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Neurocritical Care Society

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