

ASN 44TH ANNUAL MEETING

VIRTUAL



JANUARY 25-31, 2021 • VIRTUAL



44TH ANNUAL MEETING OF THE AMERICAN SOCIETY OF NEUROIMAGING

Table of Contents

| | |
|--|----|
| CE Information | 2 |
| Objectives | 3 |
| Program At-a-Glance | 5 |
| Annual Meeting Faculty..... | 6 |
| Program Details..... | 8 |
| Abstract Index | 18 |
| ASN Board and Committee Leaders..... | 19 |
| Fellowship in the American Society of Neuroimaging (FASN)..... | 20 |
| Award Winners..... | 20 |
| Disclosure Statements | 22 |

Thank you to our Social Media Ambassadors for engaging ASN members in growing our social media presence. Be sure to follow the Facebook and Twitter accounts of the Journal of Neuroimaging (JON) @JNeuroimaging and ASN @asneuroimaging. Bring the Neuroimaging community into the conversation by tagging ASN and JON in your posts and tweets!

ASN Social Media Ambassadors:

Jerome Graber, MD, MPH

@neuroimagingdoc

Belinda Oyinkan Marquis, MD

@Drmizyinks

Richard Genova, BA, RVT, NVS, RPhS

@neurosonologist



#ASN2021

@asneuroimaging

CE INFORMATION

Target Audience

This activity is designed to meet the needs of neurologists, neurosurgeons, neuroradiologists, vascular sonographers, and other neuroscientists.

Method Of Participation

Statements of credit will be awarded based on the participant's attendance. A statement of credit will be available upon completion of an online evaluation/claimed credit form available at: akhcme.com/akhcme/pages/asn

Please claim your credit by March 1, 2021

If you have questions about this CE activity, please contact AKH inc. at jgoldman@akhcme.com.

CE credit provided by AKH Inc., Advancing Knowledge in Healthcare. This activity is jointly-provided by AKH Inc., Advancing Knowledge in Healthcare and American Society of Neuroimaging.



JOINTLY ACCREDITED PROVIDER™
INTERPROFESSIONAL CONTINUING EDUCATION

In support of improving patient care, this activity has been planned and implemented by AKH Inc., Advancing Knowledge in Healthcare and American Society of Neuroimaging. AKH Inc., Advancing Knowledge in Healthcare is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Physicians

AKH Inc., Advancing Knowledge in Healthcare designates this live activity for a maximum of 24.0 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Planner And Reviewer Disclosures

The following planners and reviewers have no significant financial relationships with pharmaceutical or medical product manufacturers:

- Dorothy Caputo, MA, BSN, RN - Director of Accreditations
- ASN Staff and Planners
- AKH Inc. Staff and Planners

Commercial Support

This activity is supported by an educational grant from Longeviti and Phillips Healthcare.

Disclosures

It is the policy of AKH Inc. to ensure independence, balance, objectivity, scientific rigor, and integrity in all of its continuing education activities. The planners and faculty must disclose to the participants any significant relationships with ineligible companies whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients." or with the commercial supporter of this accredited continuing education activity. Identified conflicts of interest are mitigated by AKH prior to the planners/faculty assuming their role in this accredited continuing education activity.

ASN ANNUAL MEETING COURSE OBJECTIVES

- Review current practices of utilizing transcranial Doppler ultrasound in pediatric neurocritical care.
- Discuss how transcranial Doppler ultrasound can be applied in a variety of states of children with critical illness.
- Discuss controversies in management when applying transcranial Doppler ultrasound to guide clinical management in critically ill children.
- Evaluate key neuroimaging features of MS
- Review the role of conventional MRI in MS diagnosis
- Discuss neuroimaging of NMOSD, ADEM & other common MS mimics.
- Describe accepted applications of transcranial Doppler ultrasound for cerebrovascular disease
- Define the diagnostic criteria for each clinical application of transcranial Doppler
- Describe basic principles used to interpret spectral waveforms
- Recognize specific neuroimaging features in vascular ocular, orbital & spinal cord disorders
- Provide an update on the high-resolution vessel wall imaging techniques, & their applications in intracranial vasculopathies, such as reversible cerebral vasoconstriction syndrome, intracranial atherosclerotic disease, cerebral vasculitis
- Review the application of temporal artery ultrasound in large vessel vasculitis
- Define & discuss neurosonology applications in the intensive care unit setting
- Define & discuss emerging clinical applications of neurological ultrasound
- List clinical risk factors for neurologic thiamine deficiency
- Recognize neuroimaging clues to thiamine deficiency
- Identify the physiology of neurologic thiamine deficiency & supplementation
- Illustrate how to calculate the ASPECTS score & its clinical implication in acute stroke management
- Review the use of multimodal imaging in acute stroke management
- Illustrate the use of neuroimaging in prognosticating patient outcomes post-cardiac arrest
- Describe non-invasive intracranial pressure monitoring techniques
- Describe the uses of neuromuscular ultrasound in neurological patients
- Discuss neuroimaging modalities in the management of neurological patients with demyelinating diseases
- Develop an understanding of what drives value in health care
- Utilize patient satisfaction surveys
- Explain physics of carotid ultrasonography & transcranial Doppler ultrasonography
- Review the clinical indications & usefulness of the carotid ultrasound & TCD & apply contemporary protocols & practices in common neurovascular disorders

- Discuss the coding & billing for neurosonology such as the appropriate CPT & Medicare & local carriers' coverages
- Identify the anatomy in the head & neck of pediatric patients on MRI & CT imaging.
- Review common infections in pediatric patients as visualized on neuroimaging of the head on CT & MRI.
- Discuss new research findings on neuroimaging in Covid patients.
- Identify the causes of secondary headache disorders & discuss how the findings on MRI & CT imaging may clarify diagnosis & treatments.
- Review the safety of imaging in pregnancy & causes of headaches during pregnancy as identified on neuroimaging.
- Discuss neuroimaging findings of headaches caused by variations in CSF pressure.
- Identify Nuclear Neurology studies that are currently available to help manage patients, including which radiopharmaceuticals are FDA-approved.
- Identify what clinical questions can be addressed in different neurologic disease states by clinically available PET & SPECT.
- Decide how best to incorporate Nuclear Neurology into clinical practice, either through collaboration with other physician groups or pursuing government-mandated nuclear training.
- Review basic ultrasound physics.
- Apply the fundamentals of ultrasound physics to neurosonology.
- Review instrumentation & examination technique of carotid duplex, transcranial duplex & transcranial Doppler.
- Define & discuss ultrasound modalities for the rapid diagnosis of treatable lesions in acute ischemic stroke
- Define & discuss the rationale behind & clinical evidence for ultrasound for acute stroke therapy (sonothrombolysis)
- Describe the key principles of TCD performance & interpretation
- Describe the key principles of CUS performance & interpretation
- Define & discuss neurosonology applications in pediatric populations
- Define & discuss TCD monitoring rationale, technique & clinical evidence



ASN 2021 VIRTUAL MEETING

PROGRAM AT-A-GLANCE • JANUARY 25-31, 2021

| | Monday, January 25 | | Tuesday, January 26 | | Wednesday, January 27 | |
|---|-------------------------------------|---|--|---|--|---|
| 11:00 - 12:30 ET 10:00 - 11:30 CT 9:00 - 10:30 MT 8:00 - 9:30 PT | Basic neurosonology - Mark Rubin | Neuroimaging and thiamine deficiency - Jerome Graber | Basic neurosonology - Mark Rubin | Neuroimaging of MS and MS Mimics - Konstantin Balashov | Advanced neurosonology - Mark Rubin | Patient Satisfaction and Value Creation for Neuroimagers - Peter Kalina |
| | 30-Minute Break | | 30-Minute Break | | 30-Minute Break | |
| 1:00 - 2:30 ET 12:00 - 1:30 CT 11:00 - 12:30 MT 10:00 - 11:30 PT | Basic neurosonology - Mark Rubin | Clinical Nuclear Neurology of dementia, parkinsonism, epilepsy, and traumatic brain injury - Robert Miletich | Advanced neurosonology - Mark Rubin | Neuroimaging of Headache - Jennifer McVige | Advanced neurosonology - Mark Rubin | Neuroimaging in distinctive stroke syndromes: a case-based approach - Oana Dumitrascu |
| | | | | | | 30-Minute Break |
| 2:00 - 4:30 ET 2:00 - 3:30 CT 1:00 - 2:30 MT 12:00 - 1:30 PT | | | | | | Advanced Neurosonology: Diagnostic & Therapeutic TCD in Acute Stroke - Andrei Alexandrov |

| | Thursday, Jan. 28 | Friday, January 29 | Saturday, January 30 | | |
|---|--|---|---|---|--|
| 11:00 - 12:30 ET 10:00 - 11:30 CT 9:00 - 10:30 MT 8:00 - 9:30 PT | Covid imaging - Andrei Alexandrov | Emerging Clinical Application for Transcranial Doppler Ultrasound in Pediatric Critical Care: A Case-Based Discussion - Brian Appavu | Neuroimaging fundamentals a case study approach - Ryan Hakimi and Emma Fields | *** 8:45 MT *** Transcranial Doppler Interpretation Skills - Colleen Douville and Brenda Rinsky | |
| | 30-Minute Break | 30-Minute Break | 30-Minute Break | | |
| 1:00 - 2:00 ET 12:00 - 1:00 CT 11:00 - 12:00 MT 10:00 - 11:00 PT | Business meeting/ awards - Staff and Leadership | Implementation of Neuroimaging in Pediatric Arterial Ischemic Stroke Management - Brian Appavu | Neuroimaging fundamentals: a case study approach - Ryan Hakimi and Emma Fields | Transcranial Doppler Interpretation Skills - Colleen Douville and Brenda Rinsky | |
| 2:00 - 2:30 ET 1:00 - 1:30 CT 12:00 - 12:30 MT 11:00 - 11:30 PT | Longeviti Sponsored Program: Exploration of ClearFit Implants Postoperative Ultrasound Implications for Neuroimaging | | | | |
| | 30-Minute Break | 30-Minute Break | 30-Minute Break | | |
| 3:00 - 4:30 ET 2:00 - 3:30 CT 1:00 - 2:30 MT 12:00 - 1:30 PT | Virtual Poster Session | Advanced neurosonology - Mark Rubin | Pediatric Imaging - Jennifer McVige | Neuroimaging fundamentals: a case study approach - Ryan Hakimi and Emma Fields | Transcranial Doppler Interpretation Skills Colleen Douville and Brenda Rinsky |

| | Sunday, January 31 | | Sunday, February 7 |
|---|--|--|---|
| 11:00 - 12:30 ET 10:00 - 11:30 CT 9:00 - 10:30 MT 8:00 - 9:30 PT | Practice updates - Neurosonology - Jongyeol Kim | Practice updates - MRI - Marc Malkoff | Neurosonology and Neurovascular Specialist Exam |
| | 30-Minute Break | | |
| 1:00 - 2:30 ET 12:00 - 1:30 CT 11:00 - 12:30 MT 10:00 - 11:30 PT | Practice updates - Neurosonology - Jongyeol Kim | Practice updates - MR/CT - Marc Malkoff | |

ASN 2021 ANNUAL MEETING FACULTY

Todd Abruzzo, MD, FAHA

Mayo Clinic College of Medicine &
University of Arizona
Phoenix, AZ

Andrei Alexandrov, MD, RVT, NVS, RPNI

The University of Tennessee
Health Science Center
Memphis, Tennessee

Brian Appavu, MD

Barrow Neurological Institute at Phoenix
Children's Hospital, University of Arizona
College of Medicine
Phoenix, Arizona

Konstantin Balashov, MD, PhD, FAAN

Rutgers-Robert Wood Johnson
Medical School
New Brunswick, New Jersey

John Bennett, PhD, RVT, FICA, NVS

Neurology & Stroke Associates
Lititz, Pennsylvania

Eduardo Cortez- Garcia, DO

Prisma Health Upstate
Affiliated with University of South Carolina
Greenville, SC

Keith Dombrowski, MD

University of South Florida/Tampa
General Hospital
Tampa, FL

Colleen Douville, RVT, NVS

Swedish Neuroscience Institute
Seattle, Washington

Oana Dumitrascu MD, MSc

Cedars-Sinai Medical Center
Los Angeles, California

Zhaoyang Fan, MD, PhD

Keck School of Medicine of University of
Southern California
Los Angeles, CA

Emmaculate Fields, APRN-CNP

University of Oklahoma
Health Sciences Center
Oklahoma City, Oklahoma

Joseph Fritz, PhD

Dent Neurologic Institute
Buffalo, New York

Jerome Graber, MD, MPH

University of Washington Medicine
Seattle, WA

Ryan Hakimi, DO, MS, FCNS, NVS, RPNI

University of South Carolina School of
Medicine-Greenville
Greenville, South Carolina

Dana Harrar, MD

Children's National
Washington, D.C.

Emily Ho, MD, PhD, RPNI

Swedish Neuroscience Institute
Seattle, WA

Elie Isenberg-Grzeda, MD, FACPC

Sunnybrook Health Sciences Centre
University of Toronto
Toronto, Canada

Dara Jamieson, MD

Weill Cornell Medicine
New York, NY

Peter Kalina, MD, MBA, FACR

Mayo Clinic College of Medicine
Rochester, Minnesota

Leni Karr, BA

University of Washington Medical Center
Seattle, WA

Jongyeol Kim, MD

University Medical Center – Texas Tech
University Health Sciences Center
Lubbock, Texas

**Joshua Klein, MD, PhD, FANA, FASN,
FAAN**

Brigham and Women's Hospital
Harvard Medical School
Boston, Massachusetts

Gyanendra Kumar, MD

Mayo Clinic
Phoenix, Arizona

Kerri LaRovere, MD

Boston Children's Hospital
Boston, Massachusetts

Karen Lidsky, MD

Wolfson Children's Hospital
University of Florida
Gainesville, Florida

Sarah Lee, MD

Pediatric Stroke Program at Stanford
University
Stanford, CA

David Liebeskind, MD, FAHA, FAAN

UCLA Department of Neurology
Los Angeles, California

Marlina Lovett, MD

Nationwide Children's Hospital
The Ohio State University
Columbus, Ohio

Marc Malkoff, MD, FAAN, FAHA, RPNI

University of Tennessee
Health Science Center
Memphis, Tennessee

Doug Mayson, MD

Georgetown University Medical Center
Washington, DC

Jennifer McVige, MD

Dent Neurological Institute
Amherst, New York

**Laszlo Mechtler, MD, FAAN, FASN,
FEAN, FAHS**

Dent Neurologic Institute
Buffalo, New York

Darryl Miles, MD

UT Southwestern Medical Center
Dallas, Texas

Robert Miletich, MD, PhD, FAAAS

Jacobs School of Medicine & Biomedical
Sciences
University at Buffalo
Buffalo, NY

Nicole O'Brien, MD

Nationwide Children's Hospital
Columbus, OH

Jorge Ortiz-Garcia, MD

University of Oklahoma Health Sciences
Center
Oklahoma City, OK

Marina Mir Parramon, MD

Montreal Children's Hospital
Montreal, Canada

Hooman Poor, MD

Mount Sinai Health System
New York, NY

Nando Pinter, MD

Dent Neurologic Institute
Buffalo, NY

Venkatakrishna Rajajee, MBBS

University of Michigan
Ann Arbor, MI

**Alexander Razumovsky, PhD, FAHA,
NVS**

TCD Global Inc.
Hunt Valley, Maryland

**Karin Reuter-Rice, PhD, NP, FCCM,
FAAN**

Duke Institute for Brain Sciences
Durham, North Carolina

Alexandra Reynolds

Mount Sinai Hospital
New York, New York

Brenda Rinsky, RDMS, RVT, NVS

Cedars Sinai
Los Angeles, California

Mark Rubin, MD, NVS

University of Tennessee
Health Science Center
Memphis, Tennessee

Aarti Sarwal, MD, FNCS, FAAN

Wake Forest School of Medicine,
Wake Forest Baptist Health Center
Winston-Salem, North Carolina

Konrad Schlick, MD

Cedars Sinai
Los Angeles, California

Reza Bavarsad Shahripour, MD

University of California San Diego
La Jolla, CA

Aaron Stayman, MD

Swedish Neuroscience Institute
Seattle, Washington

Charles Tegeler, IV, MD

Wake Forest School of Medicine, Wake
Forest Baptist Health Center
Winston-Salem, North Carolina

**Georgios Tsivgoulis, MD, PhD, MSc,
FESO, FEAN, FAAN**

National & Kapodistrian University of
Athens, Greece

Nicholas Zalewski, MD, PhD

Mayo Clinic
Phoenix, AZ

ASN 2021 ANNUAL MEETING PROGRAM

ALL TIMES MOUNTAIN STANDARD TIME

Monday, January 25

Basic Neurosonology: Ultrasound Physics, Instrumentation and Examination Technique

Course Director: Mark Rubin
9:00 am - 12:30 pm MT

Course Description/Abstract: This course will cover the basics of the physics of ultrasound, how those principles are applied to neurological ultrasound, as well as demonstrate the instrumentation and examination technique for three common neurosonology applications: carotid duplex, transcranial duplex, and transcranial Doppler.

Course Schedule:

| | |
|---------------------|---|
| 9:00 - 9:45 am | Ultrasound Physics - Mark Rubin |
| 9:45 - 10:30 am | Applied Ultrasound Physics - Andrei Alexandrov |
| 10:30 - 11:00 am | Break |
| 11:00 - 11:30 am | Carotid Duplex Ultrasonography: Instrumentation and Technique - John Bennett |
| 11:30 am - 12:00 pm | Transcranial Duplex Ultrasonography: Instrumentation and Technique - Colleen Douville |
| 12:00 - 12:30 pm | Transcranial Doppler Ultrasonography: Instrumentation and Technique - Brenda Rinsky |

Course Objectives:

1. To review basic ultrasound physics.
2. To apply the fundamentals of ultrasound physics to neurosonology.
3. To review instrumentation and examination technique of carotid duplex, transcranial duplex and transcranial Doppler.

Modalities: Ultrasound: Carotid Duplex, Transcranial Duplex, Transcranial Doppler

Neuroimaging & Thiamine Deficiency

Course Director: Jerome Graber
9:00 - 10:30 am MT

Course Description/Abstract: Neurologic thiamine deficiency (Wernicke's) remains underrecognized and is a treatable cause or cofactor in neurologic illness. While traditionally associated with alcohol use, several other clinical risk factors have been described associated with neurologic thiamine deficiency, and clinical criteria have been studied to diagnosed thiamine deficiency. Classic and atypical neuroimaging features can help to recognize neurologic thiamine deficiency and improve diagnosis and adequate treatment, especially in at-risk populations.

Course Schedule:

| | |
|-----------------|--|
| 9:00 - 9:20 am | Case presentation - Jerome Graber |
| 9:20 - 9:35 am | Review of neuroimaging features of thiamine deficiency - Jerome Graber |
| 9:35 - 9:55 am | Case presentation - Jerome Graber |
| 9:55 - 10:30 am | Review on risk factors for thiamine deficiency and underlying pathophysiology and treatment - Elie Isenberg-Grzeda |

Course Objectives:

1. Improved knowledge of clinical risk factors for neurologic thiamine deficiency.
2. Improved recognition of neuroimaging clues to thiamine deficiency.
3. Better understanding of the physiology of neurologic thiamine deficiency and supplementation.

Modalities: MR

Monday, January 25

Clinical Nuclear Neurology of Dementia, Parkinsonism, Epilepsy, & Traumatic Brain Injury

Course Director: Robert Miletich

11:00 am - 12:30 pm MT

Course Description/Abstract: Although most in the neurology and clinical neuroscience communities have some familiarity with positron emission tomography (PET) and single photon emission computed tomography (SPECT), knowledge of the practical utilization of these modalities for clinical patients is not as prevalent. This lack of knowledge of applied Nuclear Neurology extends to what clinical questions can be addressed by PET and SPECT, what radiopharmaceuticals are clinically available (ie. Approved by FDA) and what types of studies can be performed. This course focuses on practical, present day, clinical application of Nuclear Neurology, presenting some basic science, but illustrating concepts and applications through clinical material. The capacity of Nuclear Neurology to address management questions which arise in multiple disease states will be discussed. Radiopharmaceuticals available clinically will be presented. Imaging indications in the disease states of dementia, neurodegenerative disease, parkinsonism, epilepsy, and traumatic brain injury will be reviewed. Standard and newly developed imaging techniques will be discussed. Finally, government-mandated training requirements for Nuclear Neurology will be presented.

Course Schedule:

| | |
|------------------|---|
| 11:00 - 11:20 am | Dementia - Robert Miletich |
| 11:20 - 11:40 am | Parkinsonism - Robert Miletich |
| 11:40 -12:00 pm | Epilepsy - Robert Miletich |
| 12:00 -12:15 pm | Traumatic Brain Injury - Robert Miletich |
| 12:15 -12:30 pm | Regulatory Requirements to Practice Nuclear Neurology - Robert Miletich |

Course Objectives:

1. Know what kind of Nuclear Neurology studies are currently available to help manage patients, including which radiopharmaceuticals are FDA-approved.
2. Understand what clinical questions can be addressed in different neurologic disease states by clinically available PET and SPECT.
3. Decide how best to incorporate Nuclear Neurology into clinical practice, either through collaboration with other physician groups or pursuing government-mandated nuclear training.

Modalities: PET, SPECT, Nuclear Scintigraphy

Tuesday, January 26

Basic Neurosonology: TCD and CUS

Course Director: Mark Rubin

9:00 am – 12:30 pm MT

Course Description/Abstract: This course will build on the basics of ultrasound physics, instrumentation and examination technique learned in the previous course to introduce the application of these principles for transcranial Doppler (TCD) and carotid duplex ultrasound (CUS). These in-depth reviews will cover critical principles for understanding performance and interpretation as well as an overview of clinical indications for each modality.

Course Schedule:

| | |
|---------------------|---|
| 9:00 - 10:30 am | Basic Neurosonology: TCD – Alexander Razumovsky |
| 10:30 - 11:00 am | Break |
| 11:00 am - 12:30 pm | Basic Neurosonology: CUS – Charles Tegeler |

Course Objectives:

1. To describe the key principles of TCD performance and interpretation.
2. To describe the key principles of CUS performance and interpretation.

Modalities: Ultrasound: Carotid Duplex, Transcranial Duplex, Transcranial Doppler

Neuroimaging of MS & MS Mimics

Course Director: Konstantin Balashov

9:00 - 10:30 am MT

Course Description/Abstract: This course is designated for neurologists and other physicians interested to improve their knowledge and skills in neuroimaging of patients with MS and major MS mimics. In the first part of this course, we are going to review the role of MRI in disease diagnosis and monitoring disease activity. In the second part, we will discuss neuroimaging of common demyelinating disorders of the CNS other than MS. The list of common MS mimics includes but is not limited to NMOSD, ADEM, Neurosarcoidosis, and Neuroborreliosis.

Course Schedule:

| | |
|-----------------|---|
| 9:00 - 9:40 am | Neuroimaging in MS - Konstantin Balashov |
| 9:40 - 9:50 am | Break |
| 9:50 - 10:30 am | Neuroimaging in NMOSD and other MS mimics - Konstantin Balashov |

Course Objectives:

1. To evaluate key neuroimaging features of MS.
2. To review the role of conventional MRI in MS diagnosis.
3. To discuss neuroimaging of NMOSD, ADEM and other common MS mimics.

Modalities: MRI

Headache

Course Director: Jennifer McVige

11:00 am – 12:30 pm MT

Course Description/Abstract: The Neuroimaging of Headache course was designed to aid in diagnosis and treatment through the use of neuroimaging in a patient presenting with headaches. The course will review the imaging characteristics and how the findings relate to the pathology.

Course Schedule:

| | |
|---------------------|--|
| 11:00 - 11:30 am | Neuroimaging of Secondary Headache Disorders - Laszlo Mechtler |
| 11:30 am - 12:00 pm | Neuroimaging of Headache in Pregnancy- Dara Jameison |
| 12:00 - 12:20 pm | Low and High Pressure Headaches - Jennifer McVige |
| 12:20 - 12:30 pm | Questions |

Course Objectives:

1. Identify the causes of secondary headache disorders and discuss how the findings on MRI and CT imaging may clarify diagnosis and treatments.
2. Review the safety of imaging in pregnancy and causes of headaches during pregnancy as identified on neuroimaging.
3. Discuss neuroimaging findings of headaches caused by variations in CSF pressure.

Modalities: MRI, MRA, CT, CTA

Wednesday, January 27

Pediatric and Advanced Neurosonology

Course Director: Mark Rubin

9:00 am – 12:30 pm MT

Course Description/Abstract: These courses will cover the breadth of neurosonology in the pediatric population as well as the first course in advanced neurosonology discussing the rationale, technique and evidence for TCD monitoring.

Course Schedule:

| | |
|---------------------|--|
| 9:00 - 10:30 am | Pediatric Neurosonology - Kerri LaRovere, MD & Nicole O'Brien, MD |
| 10:30 - 11:00 am | Break |
| 11:00 am - 12:30 pm | Advanced Neurosonology: TCD Monitoring - Mark N Rubin, MD, RPVI, NVS |

Course Objectives:

1. To define and discuss neurosonology applications in pediatric populations.
2. To define and discuss TCD monitoring rationale, technique and clinical evidence.

Modalities: Ultrasound, Carotid Duplex, Transcranial Duplex, Transcranial Doppler

Patient Satisfaction and Value Creation

Course Director: Peter Kalina

9:00 – 10:30 am MT

Course Description/Abstract: Creating value, optimizing customer service and maintaining patient satisfaction are the goals of any health care provider. While these concepts have many unifying themes, they are also open to a degree of variability and interpretation. We will address these from two potentially unique perspectives. We hope and anticipate that the subjective nature of these principles will stimulate a great deal of discussion.

Course Schedule:

| | |
|-----------------|---|
| 9:00 – 9:45 am | Patient Satisfaction and Value Creation – Radiologist's Perspective - Peter Kalina |
| 9:45 – 10:30 am | Patient Satisfaction and Value Creation – Neurologist's Perspective - Laszlo Mechtler |

Course Objectives:

1. Develop an understanding of what drives value in health care.
2. Become familiar with patient satisfaction surveys.
3. Understand that there are a multitude of factors that contribute to optimal patient outcomes.
4. Our definition of value, satisfaction, and service may have similarities but may also vary with our perspective.

Wednesday, January 27

Neuroimaging in Distinctive Stroke Syndromes: A Case-Based Approach

Course Director: Oana Dumitrascu

11:00 am – 12:30 pm MT

Course Description/Abstract: This course is designed to provide an update on various neuroimaging modalities and their applications in distinctive neurovascular syndromes. Following a case-based approach, we will review ocular, orbital and spinal cord vascular syndromes. We will discuss various cerebral vasculopathies and the value of neuroimaging in establishing the positive diagnosis. Imaging modalities to evaluate the extracranial large vessel vasculitis will be appraised. More specifically, the course will review current advances and limitations of MRI, CT, high-resolution vessel wall imaging and temporal artery ultrasound in specific syndromes.

Course Schedule:

| | |
|---------------------|---|
| 11:00 - 11:20 am | High-resolution vessel wall imaging in intracranial vasculopathies - Zhaoyang Fan |
| 11:20 - 11:40 am | Neuroimaging in vascular spinal cord syndromes - Nickolas Zalewski |
| 11:40 am - 12:00 pm | Neuroimaging in vascular eye disorders - Oana Dumitrascu |
| 12:00 - 12:15 pm | Temporal artery ultrasound and its applications in giant cell arteritis - Gyanendra Kumar |
| 12:15 - 12:30 pm | Neuroimaging in CNS vasculitis - Reza Bavarsad Shahripour |

Course Objectives:

1. To recognize specific neuroimaging features in vascular ocular, orbital and spinal cord disorders.
2. To provide an update on the high-resolution vessel wall imaging techniques, and their applications in intracranial vasculopathies, such as reversible cerebral vasoconstriction syndrome, intracranial atherosclerotic disease, cerebral vasculitis.
3. To review the application of temporal artery ultrasound in large vessel vasculitis.

Modalities: MRI, CT, MR/CT angiogram, ultrasound, high-resolution vessel wall imaging

Advanced Neurosonology: Diagnostic & Therapeutic TCD in Acute Stroke

Presented by: Andrei Alexandrov

1:00 – 2:30 pm MT

Course Description: This lecture will cover the yield and expected outcomes of rapid ultrasound testing in acute stroke as well as monitoring intracranial occlusions, including potential therapeutic effect on tPA induced recanalization.

Course Objectives:

1. Learn diagnostic applications of Neurovascular ultrasound in acute stroke.
2. Learn the implications of TCD monitoring for blood pressure management post recanalization and diagnosis of re-occlusion.
3. Learn the latest clinical trials of sonothrombolysis.

Thursday, January 28

COVID Imaging

Course Director: Andrei Alexandrov

9:00 – 10:30 pm MT

Course Description/Abstract: Pending

Course Schedule:

| | |
|-----------------|---|
| 9:00 – 9:45 am | Neurological Complications - Georgios Tsvigoulis, MD, PhD, MSc, FESO |
| 9:45 – 10:30 am | TCD & Pulmonary Shunting in CGVIP Patients - Hooman Poor, MD & Alexandra Reynolds, MD |

COVID Session Objectives

1. Learn Neuroimaging findings suggestive of COVID-19
2. Learn Neurological manifestations and complications of COVID-19
3. Learn latest published data on this evolving subject during COVID-19 pandemic.

Business Meeting and Awards

11:00 am – 12:00 pm MT

| Topic | Speaker |
|--|---|
| Welcome to the 2021 ASN Annual Meeting | Andrei Alexandrov, MD, RVT, NVS, RPNI – President |
| New Credential – Registered Physician in Neurovascular Interpretation (RPNI) | Andrei Alexandrov, MD, RVT, NVS, RPNI – President |
| Save the Dates – 2022 & 2023 ASN Annual Meetings | Andrei Alexandrov, MD, RVT, NVS, RPNI – President |
| 2021 Election Results – New VP & Program Chair, Secretary, Treasurer, Board Member | Andrei Alexandrov, MD, RVT, NVS, RPNI – President |
| Thanks to our outgoing Board Members | Andrei Alexandrov, MD, RVT, NVS, RPNI – President |
| 2021 Award Winners: Lifetime Achievement Award – Charles H. Tegeler IV, MD Resident Abstract Award – Shayan Torabi, MD Oldendorf Award – Abdulmajeed Alotaibi, MD, PhD Qureshi Award – Robert W. Regendhard, MD, PhD | Andrei Alexandrov, MD, RVT, NVS, RPNI – President |
| Passing of the Gavel | Andrei Alexandrov, MD, RVT, NVS, RPNI – President |
| Closing Statements | Marc Malkoff – Vice President & Program Chair, incoming President |

Longeviti Sponsored Program: Exploration of ClearFit Implants Postoperative Ultrasound Implications for Neuroimaging

12:00 - 12:30 pm MT

Speakers: Christopher Duma, MD, FACS & Jan-Karl Burkhardt, MD

Presentation description: This talk is designed to provide information on the utilization and benefits of Longeviti Neuro Solution's ClearFit implants. Longeviti ClearFit implants are neuro reconstructive implants that surgeons use to reconstruct a patient's cranium. These implants are intended to correct and/or restore bony voids and defects of the cranium and allow for post-operative imaging using ultrasound. Christopher Duma, MD, FACS will discuss his experience implanting a ClearFit after tumor resection, and his use of post-operative ultrasound imaging for tumor bed monitoring. Jan-Karl Burkhardt, MD will discuss monitoring flow and patency of an extra- to intracranial bypass using ultrasound post-operatively through the Longeviti ClearFit. This session will end with time for questions and answers from the audience.

Friday, January 29

Emerging Clinical Application for Transcranial Doppler Ultrasound in Pediatric Critical Care: A Case-Based Discussion

Course Director: Brian Appavu, MD
9:00 – 10:30 am MT

Course Description / Abstract: Transcranial Doppler (TCD) ultrasonography is a non-invasive, bedside monitor that allows for real-time measurements of cerebral blood flow, and is gaining popularity in the pediatric neurocritical care population. In this session, we will review existing literature describing the usage of transcranial Doppler ultrasound in pediatric neurocritical care, and consensus recommendations regarding its usage. Then, the speakers will engage in a lively case-based discussion of how they would use transcranial-Doppler ultrasound as a tool in critical care management, and how they would address controversial findings. Cases discussed will include patients with traumatic brain injury, cerebral vasospasms, cardiac arrest, and those undergoing extra-corporeal membrane oxygenation. Each case will include time for initial case presentation, speaker-based discussion on how data can be used, case progression and audience question and answer.

Course Schedule:

| | |
|------------------|--|
| 9:00 - 9:05 am | Introduction – Brian Appavu |
| 9:05 - 9:15 am | Emerging literature on Transcranial Doppler Ultrasound in Pediatric Critical Care – Nicole O'Brien |
| 9:15 - 9:30 am | Transcranial Doppler Ultrasound in TBI Management - Case presentation, Karin Reuter-Rice |
| 9:30 - 9:41 am | Transcranial Doppler Ultrasound in Cerebral Vasospasm Management - Case presentation, Marlina Lovett |
| 9:41 - 9:51 am | Transcranial Doppler Ultrasound in Cardiac Arrest - Case Presentation: Darryl Miles |
| 9:51 - 10:08 | Transcranial Doppler Ultrasound in Extracorporeal Membrane Oxygenation - Case Presentation: Karen Lidsky |
| 10:08 - 10:20 | Transcranial Doppler Ultrasound in Congenital Heart Disease - Case Presentation: Marina Mir |
| 10:20 - 10:30 am | Live Group Discussion |

Course Objectives:

1. Review current practices of utilizing transcranial Doppler ultrasound in pediatric neurocritical care.
2. Discuss how transcranial Doppler ultrasound can be applied in a variety states of children with critical illness.
3. Discuss controversies in management when applying transcranial Doppler ultrasound to guide clinical management in critically ill children.

Modalities: Transcranial Doppler Ultrasound

Implementation of Neuroimaging in Pediatric Arterial Ischemic Stroke Management

Course Director: Brian Appavu, MD
11:00 am – 12:30 pm MT

Course Description / Abstract: High-level evidence-based guidelines for the diagnosis and management of adult arterial ischemic stroke and certification of stroke centers that follow these guidelines has led to standardization of adult stroke management. In contrast, childhood arterial ischemic stroke carries less evidence-based guidelines, making diagnostic and management strategies more challenging. In this session, we will discuss the role of neuroimaging in pediatric stroke management. We will discuss existing evidence for perfusion imaging and the role of mechanical thrombectomy after pediatric arterial ischemic stroke. We will discuss how transcranial Doppler ultrasound may be used in clinical decision support of children at risk of stroke. We will discuss imaging modalities implemented in the diagnosis of Bow Hunter Syndrome, a unique cause of pediatric posterior fossa strokes. We will also describe how to employ effective neuroimaging protocols in the development of an institutional pediatric acute stroke response protocol. The session will end with time allotted for questions and answers with the audience.

Course Schedule:

| | |
|---------------------|---|
| 11:00 - 11:05 am | Introduction – Brian Appavu |
| 11:05 - 11:23 am | Perfusion Imaging and the Role of Mechanical Thrombectomy in Pediatric Arterial Ischemic Stroke – Sarah Lee |
| 11:23 - 11:41 am | Use of Transcranial Doppler Ultrasound in Children at Risk of Pediatric Stroke – Kerri LaRovere |
| 11:41 - 11:59 am | Diagnosis and Management of Bow Hunter Syndrome: A Unique Cause of Pediatric Stroke – Todd Abruzzo MD |
| 11:59 am - 12:17 pm | Developing a Pediatric Acute Stroke Response Protocol – Dana Harrar |
| 12:17 - 12:30 pm | Question and Answers |

Course Objectives

1. Review applicability perfusion-weighted imaging and ultrasound in pediatric stroke management
2. Discuss usage of various neuroimaging modalities in the diagnosis of unusual pediatric stroke conditions
3. Discuss strategies of implementing neuroimaging protocols as part of a clinical pathway for pediatric acute stroke management

Modalities Addressed Within This Session

1. CT and MR Perfusion weighted imaging
2. Digital Subtraction Cerebral Angiography
3. Transcranial Doppler Ultrasound
4. CT imaging, including angiography
5. MR imaging, including angiography

Friday, January 29

Advanced Neurosonology: Critical Care and Emerging Applications in Neurosonology

Course Director: Mark Rubin

1:00 – 2:30 pm MT

Course Description/Abstract: This course will cover neurosonology applications in the intensive care unit, including the role of neurosonology in multimodal monitoring, as well as emerging applications of neurological ultrasound.

Course Schedule:

| | |
|----------------|---|
| 1:00 - 1:45 pm | Advanced Neurosonology: Critical Care Neurosonology - Ryan Hakimi |
| 1:45 - 2:30 pm | Advanced Neurosonology: Emerging Applications of Neurological Ultrasound - Aarti Sarwal |

Course Objectives:

1. To define and discuss neurosonology applications in the intensive care unit setting.
2. To define and discuss emerging clinical applications of neurological ultrasound.

Modalities: Ultrasound, Carotid Duplex, Transcranial Duplex, Transcranial Doppler

Pediatric Imaging

Course Director: Jennifer McVige

1:30 – 3:00 pm MT

Course Description/Abstract: The Pediatric Neuroimaging course was designed to highlight diseases in pediatric neurology where neuroimaging can aid in diagnosis and treatment. The course will review the imaging characteristics and how the findings relate to the pathology.

Course Schedule:

| | |
|----------------|--|
| 1:30 - 2:10 pm | Pediatric Head and Neck - Peter Kalina |
| 2:10 - 2:50 pm | The Neuroimaging of Infections in Pediatric Patients with a focus on Covid - Jennifer McVige |
| 2:50 - 3:00 pm | Questions |

Course Objectives:

1. Identify the anatomy in the head and neck of pediatric patients on MRI and CT imaging.
2. Review common infections in pediatric patients as visualized on neuroimaging of the head on CT and MRI.
3. Discuss new research findings on neuroimaging in Covid patients.

Modalities: MRI, MRA, CT, CTA

Saturday, January 30

Neuroimaging Fundamentals: A Case Study Approach

Course Directors: Ryan Hakimi & Emma Fields
9:00 am - 2:30 pm MT

Course Description/Abstract: This course is intended for providers in training as well as the Advanced practice providers (Physician Assistants, Nurse Practitioners and Clinical Nurse Specialists) practicing in both outpatient and acute care settings to be knowledgeable in interpreting neuro-imaging for accurate diagnosis and timely interventions to ensure better patient outcomes.

Course Schedule:

| | |
|--------------------|---|
| 9:00 - 9:05 am | Welcome and Program Overview - Emma Fields |
| 9:05 - 9:30 am | Fundamentals of neuroimaging modalities - Emma Fields |
| 9:30- 10:00 am | How to calculate an ASPECTS score and its clinical implication - Doug Mayson |
| 10:00 -10:30 am | Multi-modality acute stroke neuroimaging - Jorge Ortiz-Garcia |
| 10:30 - 11:00 am | Break |
| 11:00 - 11:45 am | Incorporating neuroimaging in prognostication post-cardiac arrest - Ryan Hakimi |
| 11:45 am -12:30 pm | Using optic nerve sheath diameter and TCD for ICP assessment - Venkatakrishna Rajajee |
| 12:30 - 1:00 pm | Break |
| 1:00-1:40 pm | Introduction to neuromuscular ultrasound - Eduardo Cortez-Garcia |
| 1:40-2:10 pm | A case-based approach to demyelinating diseases - Keith Dombrowski |
| 2:10 -2:30 pm | Q & A |

Course Objectives:

1. Illustrate how to calculate the ASPECTS score and its clinical implication in acute stroke management.
2. Review the use of multimodal imaging in acute stroke management.
3. Illustrate the use of neuroimaging in prognosticating patient outcomes post-cardiac arrest.
4. Describe non-invasive intracranial pressure monitoring techniques.
5. Describe the uses of neuromuscular ultrasound in neurological patients.
6. Discuss neuroimaging modalities in the management of neurological patients with demyelinating diseases.

Modalities: MRI, CT /CTA/CTP, Conventional cerebral angiography, Optic nerve sheath ultrasound, TCD, Peripheral nerve ultrasound

Transcranial Doppler Interpretation Skills

Course Director: Colleen Douville BA, RVT, CPMM, NVS & Brenda Rinsky RDMS, RVT, NVS
8:45 am – 2:15 pm MT

Course Description/Abstract: This one day intensive course is designed to provide an overview of the use of Transcranial Doppler (TCD) in patients with multiple forms of cerebrovascular disease and specifically on how to interpret TCD exam findings. It is intended for those engaged in performing and/or interpreting TCD studies in a variety of specialized clinical settings.

The course is designed to be interactive with ample opportunity to practice interpretation skills in real-time. Physician faculty with expertise in transcranial Doppler will present an overview of each clinical topic and representative case studies. Expert neurovascular sonographers and physician faculty will then work in breakout sessions with participants to interpret case studies. Materials will be provided in advance with detailed diagnostic criteria for each topic.

Course Schedule:

| | |
|-------------|---|
| 08:45-08:50 | Welcome - Instructions - Brenda Rinsky RDMS, RVT, NVS & Colleen Douville BA, RVT, CPMM, NVS |
| 08:50-09:30 | Principles of Waveform Interpretation - Aarti Sarwal MD |
| 09:30-10:00 | Intracranial Stenosis/Thrombosis and Microemboli - Aaron Stayman MD |
| 10:00-10:20 | Breakout |
| 10:20-10:35 | Break |
| 10:35-11:05 | Collateral Flow - Emily Ho MD, PhD |
| 11:05-11:25 | Breakout |
| 11:25-11:55 | Patent Foramen Ovale Grading - Mark Rubin, MD |
| 11:55-12:15 | Breakout |
| 12:15-12:30 | Break |
| 12:30-1:00 | Vasospasm - Aarti Sarwal MD |
| 1:00-1:20 | Breakout |
| 1:20-1:50 | Intracranial Pressure and Cerebral Circulatory Arrest - Konrad Schlick MD |
| 1:50-2:10 | Breakout |
| 2:10 | Closing Remarks |

Course Objectives:

1. Describe accepted applications of transcranial Doppler ultrasound for cerebrovascular disease.
2. Define the diagnostic criteria for each clinical application of transcranial Doppler.
3. Describe basic principles used to interpret spectral waveforms.

Modalities: The focus is neurovascular ultrasound using transcranial Doppler. CT, MRI and Arteriography may be used as part of the case studies presentation, for correlation only, but these modalities will not be taught specifically.

Sunday, January 31

Practice Updates - Neurosonology

Course Director: Jongeyol Kim

9:00 am – 12:30 pm MT

Course Description/Abstract: This Neurosonology Course will provide a comprehensive update on physics, indications, clinical applications, interpretation, and coding and billing for Neurosonology (carotid ultrasonography and TCD). Nationally and internationally renowned faculty of leaders in the field of Neurosonology will provide the up-to-dated reviews in retrospective areas of expertise. This will be accomplished via didactic lectures but will be enhanced by ample time for faculty panel discussions to provide interaction with the audience.

Course Schedule:

| | |
|------------------|---|
| 9:00 - 9:45 am | Physics - Leni Karr |
| 9:45 - 10:30 am | Carotid Ultrasound - Charles Tegeler |
| 10:30 - 11:00 am | Break |
| 11:00 - 11:45 am | Transcranial Doppler - Aarti Sarwal |
| 11:45 - 12:30 pm | Coding and Billing - Alexander Razumovsky |

Course Objectives:

1. Explain physics of carotid ultrasonography and transcranial Doppler ultrasonography.
2. Review the clinical indications and usefulness of the carotid ultrasound and TCD and apply contemporary protocols and practices in common neurovascular disorders.
3. Discuss the coding and billing for neurosonology such as the appropriate CPT and Medicare and local carriers' coverages.

Modalities: Ultrasound, Carotid ultrasound, Transcranial Doppler

Practice Updates - MRI/CT

Course Director: Marc Malkoff

9:00 am – 12:30 pm MT

Course description: This update course is designed to update practitioners on the latest imaging developments and to review key topics in CT and MRI.

Course Schedule:

| | |
|---------------------|--|
| 9:00 – 9:45 am | MRI Physics – Joseph Fritz and Nandor Pintor |
| 9:45 – 10:30 am | Neurooncology – Laszlo Mechtler |
| 10:30 – 11:00 am | Break |
| 11:00 – 11:45 am | Stroke Imaging – David Liebeskind |
| 11:45 am – 12:30 pm | ADEM – Joshua Klein |

Course Objectives:

1. Understand new updates in MRI sequences.
2. Understand advances in neurooncology images.
3. Understand the use of imaging in stroke therapy.
4. Understand imaging in ADEM.

INDEX OF ASN ABSTRACTS

01: Treatment of Recurrent Basilar Artery Occlusion from Carotid Dissection and related Pseudoaneurysm after Remote Trauma

Kian Adabi¹, Mayur Patel¹, Manzure Mawla^{1,2}, Lawrence K Conrad^{1,2}, Jefferson T Miley^{1,2}, David Paydarfar^{1,3}, Steven J Warach^{1,4}

¹Dell Medical School at the University of Texas at Austin, Austin, USA. ²Ascension Seton Medical Center, Austin, USA. ³Mulva Clinic for the Neurosciences, Austin, USA. ⁴Seton Dell Medical School Stroke Institute, Austin, USA

02: Glioblastoma Multiforme arising from the Optic Chiasm and Hypothalamus leading to Hydrocephalus

Hashaam Arshad, Catherine Tran, Sean Gratton
University of Missouri Kansas City, Kansas City, USA

03: A Case Report of Progressive Myelopathy

Priyanka V Atit¹, Jean-Raphael Schneider²
¹Arizona College of Osteopathic Medicine, Midwestern University, Glendale, USA. ²MS & Neuromuscular Center of Excellence, Clearwater, USA

04: Not Another Non-con: The Role of Non-contrast CT and Alternative Modalities in the Emergency Department

Jane Ball¹, Jagan Gupta²
¹LSU Health Sciences Center New Orleans, New Orleans, USA. ²Southeast Louisiana Veterans Health Care System, New Orleans, USA

05: Massive air embolism in COVID-19 patient

Jorge Carrizosa¹, Lorena Moreno²
¹Fundacion Santa Fe de Bogota, Bogotá, Colombia. ²Universidad del Rosario, Bogotá, Colombia

06: Patent Foramen Ovale Detection Using Transforaminal Insonation of the Basilar Artery

Nikita Chhabra, Gyanendra Kumar, Jennifer Fruin, Oana M Dumitrascu
Mayo Clinic, Scottsdale, USA

07: Rare presentations of MELAS

Lakshay Chopra¹, Karanbir Singh², Mili Rohilla³
¹All India Institute of Medical Sciences, New Delhi, India. ²Apex Hospital, Jalandhar, India. ³Maulana Azad Medical College, New Delhi, India

08: Hyperemia on TCD can suggest EVD related ventriculitis despite negative CSF cultures

Fatemeh Hajighasemi¹, Ryan Hakimi²
¹Tufts Medical Center, Boston, USA. ²Prisma Health-Upstate, Greenville, USA

09: Primary Dural Based Marginal Zone B-Cell Lymphoma Camouflaging as Focal Dura Thickness with Pacymeningeal Enhancement

Maya Hrachova¹, Xiao-Tang Kong²
¹Mayo Clinic, Phoenix, USA. ²University of California Irvine, Orange, USA

10: The complementary role of Ultrasound and MRI in the evaluation of Lissencephaly type 1.

Paul Maertens, Matthew Cauley, Ameera Sheikh
University of South Alabama, Mobile, USA

11: Clinical and Neuroimaging findings of an Unusual Pediatric Presentation of Sturge Weber Syndrome Type III

Karishma Parikh¹, Andzelika Dechnik², Belinda Oyinkan Marquis¹
¹Department of Pediatrics, Division of Pediatric Neurology, Weill Cornell Medicine, New York, USA. ²Department of Pediatrics, Boston Children's Hospital, Boston, USA

12: DWI-FLAIR mismatch radiomics in large vessel occlusion stroke: Histogram kurtosis and gray level cluster shade

Robert W Regenhardt, Martin Bretzner, Anna K Bonkhoff, Maria C Zanon Zotin, Mark R Etherton, Alvin S Das, Naif M Alotaibi, Justin E Vranic, Christopher J Stapleton, Aman B Patel, Thabele M Leslie-Mazwi, Natalia S Rost
Massachusetts General Hospital, Boston, USA

13: Case Report: First fully Autonomous Transcranial Doppler Robotic System during Carotid Artery Stenting

Kavya Sinha, Pooja Tekula, Busra Tok Cekmecelioglu, Zsolt Garami, Alan B Lumsden
Houston Methodist Hospital, Houston, USA

14: Initial Experience With Autonomous Robotic Transcranial Doppler For Detecting Right-Left Shunts In Hepatopulmonary Syndrome

Steven To, Pooja Reddy Tekula, Nastassija S Omire, Sherif Nagueh, John J Volpi, Zsolt Garami
Vascular Ultrasound Laboratory, Echocardiogram Laboratory, DeBakey Heart and Vascular center, Houston Methodist Hospital, Houston, USA

15: Real-Time Transcranial Doppler Monitoring and Correlation with Cerebral Oximetry During Carotid Endarterectomy

Pooja Tekula, Busra Tok Cekmecelioglu, Charudatta Bavare, Kavya Sinha, Zsolt Garami, Martin Giesecke, Alan B Lumsden
DeBakey Heart and Vascular center, Houston Methodist Hospital, Houston, USA

16: Initial Experience With Autonomous Robotic Transcranial Doppler For Detecting Patent Foramen Ovale With Bubble Studies

Steven To, Pooja Reddy Tekula, Nastassija S Omire, Sherif Nagueh, John J Volpi, Zsolt Garami
Vascular Ultrasound Laboratory, Echocardiogram Laboratory, DeBakey Heart and Vascular center, Houston Methodist Hospital, Houston, USA

17: Neural Activation Patterns Predictive of Emotional State, and their Resting-State Connectivity

Shauna M Zodrow¹, Isabelle Kaminer¹, Karol Osipowicz²
¹Drexel University, Philadelphia, USA. ²Drexel University, Philadelphia, USA

RESIDENT ABSTRACT AWARD WINNER

18: Vasospastic Phenomenon and TGA Symptoms Following TCD with Bubble Study

Shayan Torabi¹, Abdullah Ibish², Gin Tang Huang¹, Navdeep Sangha¹
¹Kaiser Permanente Los Angeles Medical Center, Los Angeles, USA. ²Keck School of Medicine of USC, Los Angeles, USA

OLDENDORF AWARD WINNER

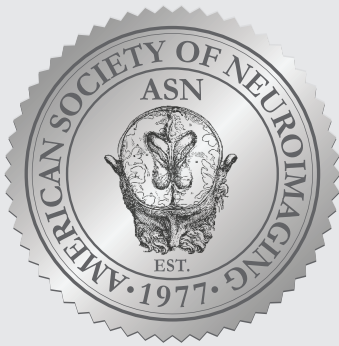
19: Investigating Brain Microstructural Alterations in Diabetes: A Systematic Review of Diffusion Tensor Imaging.

Abdulmajeed Alotaibi^{1,2}, Christopher Tench¹, Rebecca Stevenson¹, Ghadah Felimban^{1,2}, Amjad Altokhis^{1,3}, Ali Aldhebaibb², Robert Dineen¹, Cris S Constantinescu¹
¹University of Nottingham, Nottingham, United Kingdom. ²King Saud bin Abdul-Aziz University for Health Sciences, Riyadh, Saudi Arabia. ³Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia

QURESHI AWARD WINNER

20: Intravenous alteplase “drip-and-ship” treatment of large vessel occlusion stroke patients in a hub-and-spoke Telestroke model

Robert W. Regenhardt, Joseph A. Rosenthal, Neal M. Nolan, Joyce A. McIntyre, Cynthia M. Whitney, Naif M. Alotaib, Justin E. Vranic, Christopher J. Stapleton, Aman B. Patel, Natalia S. Rost, Lee H. Schwamm, Thabele M. Leslie-Mazwi
Massachusetts General Hospital, Boston, USA



The American Society of Neuroimaging

(ASN) invites attending physicians, residents, fellows, advanced practice providers and neurovascular technologists to join our community.

Education. We offer the only conference in the US focused specifically on Neuroimaging education, including opportunities to earn CE credits specific to MR/CT and Neurovascular ultrasound.

Advocacy. We represent the interests of neuroimagers in the American Medical Association's House of Delegates and tackle issues that threaten self-referral.

Certification. We offer the only physician and neurovascular technologist certification programs in Neurosonology allowing you to elevate your practice and recognize your expertise in Applied Principles of Physics and Fluid Dynamics, Carotid Duplex, Transcranial Doppler. Physicians who become certified in Neurosonology may use the credential RPNI. See page 22 for details. A Certification program for Neurovascular Technologists is now being offered as well.

Networking. We connect you to other medical professionals who use neuroimaging in their day-to-day clinical practice via our Annual Meeting and membership directory.

Professional Development. We have opportunities for you to get involved on committees, which allow you to sharpen your volunteer skills.

Become a member at asnweb.org

ASN BOARD AND COMMITTEE LEADERS

Officers:

Andrei Alexandrov, MD, RVT, NVS, RPNI
- *President*

Marc Malkoff, MD, FAAN, FAHA, RPNI
- *Vice-President / Scientific Program Chair*

Joshua Klein, MD, PhD, FANA, FASN, FAAN
- *Secretary*

Ryan Hakimi, DO, MS, FCNS, NVS, RPNI
- *Treasurer*

David Liebeskind, MD, FAAN, FAHA, FANA
- *Immediate Past President*

Board of Directors:

Bela Ajtai, MD, PhD
Emma Fields, APRN-CNP
Gregory Kapinos, MD, MS, FASN
Jongyeol Kim, MD, RPVI, RVT
Venkatachalam Mangeshkumar, MD, FRCP (I), FAAN
Jennifer McVige, MD
Brenda Rinsky, RVT, NVS
Aarti Sarwal, MD

Board Advisors:

Madhureeta Achari, MD
John Chawluk, MD
Dara Jamieson, MD
Joseph Masdeu, MD, PhD
Laszlo Mechler, MD, FAAN, FASN, FEAN, FAHS
Robert Miletich, MD, PhD
Charles Tegeler, IV, MD
Lawrence Wechsler, MD

Editor-in-Chief,
Journal of Neuroimaging
Rohit Bakshi, MD

Many thanks to the 2020 Scientific Program Committee for their work developing this year's program.

Marc Malkoff, MD, FAAN, FAHA, RPNI
- *Chair*

Andrei Alexandrov, MD, RVT, NVS, RPNI
Christy Cornwall, BS, RVT, NVS
Colleen Douville, RVT, NVS
Emma Fields, APRN-CNP
Eduardo Gonzalez- Toledo, MD
Ryan Hakimi, DO, MS, FCNS, NVS, RPNI
Dara Jamieson, MD
Peter Kalina, MD, MBA, FACR
Joshua Klein, MD, PhD, FANA, FASN, FAAN
Kerri LaRovere, MD
Paul Maertens, MD
Jennifer McVige, MD
Laszlo Mechtler, MD, FAAN, FASN
Alexander Razumovsky, PHD, FAHA, NVS
Brenda Rinsky, RDMS, RVT, NVS
Charles Tegeler, IV, MD

Fellowship in the American Society of Neuroimaging (FASN)

Fellowship in the American Society of Neuroimaging (FASN) is meant to recognize individuals who have made significant contributions to the field of neuroimaging and have impacted the growth and practice of neuroimaging at a regional and national level.

Current Fellows

Angelo Alves, MD, PhD, FASN

Patrick Capone, MD, PhD, FASN

John Choi, MD, FASN

Gregory Kapinos, MD, MS, FASN

William Kinkel, MD, FASN

Joshua Klein, MD, PhD, FANA, FASN, FAAN

Tomasz Kosierkiewicz, MD, FASN

Laszlo Mechtler, MD, FAAN, FASN, FEAN, FAHS

Methil Pradeep, MD, FASN

Gabriella Szatmáry, MD, PhD, FASN

Mohammed Zafar, MD, FASN

View eligibility criteria and apply for FASN status at www.asnweb.org.

CONGRATULATIONS TO OUR 2021 AWARD WINNERS!

Oldendorf Award

The Oldendorf Award is for the best abstract submitted by a student, resident or fellow. The abstract must be based in basic or clinical research in CT, MRI, SPECT or PET.

Investigating Brain Microstructural Alterations in Diabetes: A Systematic Review of Diffusion Tensor Imaging

Abdulmajeed Alotaibi, MD, PhD

University of Nottingham, Nottingham, United Kingdom; King Saud bin Abdul-Aziz University for Health Sciences, Riyadh, Saudi Arabia

Qureshi Award

The Qureshi Award is for the best abstract submitted by a student, resident or fellow. The abstract must be based in basic or clinical research in Diagnostic Angiography.

Intravenous alteplase “drip-and-ship” treatment of large vessel occlusion stroke patients in a hub-and-spoke Telestroke model

Robert W. Regenhardt, MD, PhD

Massachusetts General Hospital, Boston, MA

Resident Poster Awards

The Resident Award(s) are offered to persons in a neurology residency program. Selection is based on the quality of the abstract.

Vasospastic Phenomenon and TGA Symptoms Following TCD with Bubble Study

Shayan Torabi, MD

Kaiser Permanente, Los Angeles, CA



NEW NEUROSONOLOGY CREDENTIAL & CERTIFICATE

The ASN Board of Directors recently approved a formal credential for those who passed the ASN Neurosonology Exam. The new credential is called the Registered Physician in Neurovascular Interpretation (RPNI) credential. Anyone who has passed the Neurosonology Exam (physics as well as carotid and/or TCD) and whose certification is in good standing may now use the RPNI letters after their name (E.g., Jane Doe, MD, RPNI).

The ASN Board of Directors took up this consideration at the request of members and leaders in the community and recognize that the ASN Neurosonology credentials for physicians and now sonographers, which represent a high-level of expertise in the field and grant clinical laboratory privileges in the United States and Internationally, may go under- or unrecognized by credentialing bodies without an easily verifiable, lettered credential at the end of the specialist's name. A similar credential exists for interpreters in vascular ultrasound; it is called Registered Physician in Vascular Interpretation (RPVI) and it's recognized by accrediting bodies as demonstration of proficiency to interpret ultrasound studies and serve as a medical Director of an ultrasound laboratory. Our Neurosonology credential has also been recognized in a similar way, but until this decision we did not have a formal acronym. RPNI follows the accepted format by our vascular ultrasound colleagues.

If you would like to order an RPNI Certificate, please complete the order request form on this webpage - www.asnweb.org/i4a/pages/index.cfm?pageid=4100. This new certificate is not to replace your previous neurosonology certificate, but rather to provide a clearly recognized acronym and a registry number that can be used by credentialing bodies to check your good status with our Society.

2021 ASN FACULTY DISCLOSURE STATEMENT

KEY:

P = Scientific Program Committee

F = Annual Meeting Faculty

Andrei Alexandrov, MD, RVT, PIVS, RPNI (F/P)

Consultant: Nova Signal
Speakers Bureau:
Genentech, Inc.

Joe Fritz, PhD (F)

Consultant: Neuronet
Pro, Acadia
Speakers Bureau: Biogen

David Liebeskind, MD (F/P)

Consultant: Cerenovus,
Genentech,
Medtronic, Stryker

Jennifer McVige, MD (F/P)

Contracted Research:
Allergan/AbbVie, Amgen/
Novartis, Avanir, Biohaven,
Eli Lilly & Company,

Laszlo Mechtler, MD, FAAN, FASN, FEAN, FAHS (F/P)

Speaker: Allergan,
Biohaven, Teva, Amgen-
Novartis, Therenica

Nandor Pinter, MD

Consultant: NeuroNet Pro

No Disclosures

Todd Abruzzo, MD (F)

Brian Appavu, MD (F)

Konstantin Balashov, MD, PhD (F)

Reza Bavarsad, MD (F)

John Bennett, PhD, RVT, FICA, NVS (F)

Christy Cornwall, BS, RVT, NVS (F/P)

Eduardo Cortez-Garcia, DO (F)

Keith Dombrowski, MD (F)

Colleen Douville, RVT, NVS (F/P)

Oana Dumitrascu MD, MSc (F)

Zhaoyang Fan, PhD (F)

Emmaculate Fields, APRN-CNP (F/P)

Jerome Graber, MD, MPH (F)

Ryan Hakimi, DO, MS, NVS, RPNI (F/P)

Dana Harrar, MD, PhD (F)

Emily Ho, MD, PhD, RPNI (F)

Elie Isenberg-Grzeda, MD (F)

Dara Jamieson, MD (P)

Peter Kalina, MD (F/P)

Leni Karr, BA (F)

Jongyeol Kim, MD (F)

Joshua Klein, MD, PhD, FASN, FAAN (F/P)

Gyanendra Kumar, MD, FASN (F)

Kerri LaRovere, MD (F/P)

Sarah Lee, MD (F)

Karen Lidsky, MD (F)

Marlina Lovett, MD (F)

Paul Maertens, MD (P)

Marc Malkoff, MD, RPNI (F/P)

Douglas J. Mayson, MD (F)

Darryl Miles, MD (F)

Robert S. Miletich, MD, PhD, FAAAS (F)

Nicole O'Brien, MD (F)

Jorge Ortiz-Garcia (F)

Marina Mir Parramon, MD (F)

Hooman Poor, MD

Venkatakrishna Rajajee, MBBS (F)

Alexander Razumovsky, PhD, FAHA, NVS (F/P)

Karin Reuter-Rice, PhD, NP, FCCM, FAAN (F)

Alexandra Reynolds, MD (F)

Brenda Rinsky, RDMS, RVT, NVS (F/P)

Mark Rubin, MD (F)

Aarti Sarwal, MD, FNCS, FAAN (F)

Konrad Schlick, MD (F)

Aaron Stayman, MD (F)

Charles Tegeler, IV, MD (F/P)

Georgios Tsvigoulis, MD, PhD, MSc, FESO,
FEAN, FAAN (F)

Nicholas Zalewski, MD, PhD (F)

All of the relevant financial relationships listed for these individuals have been mitigated.

THANK YOU TO OUR ANNUAL MEETING SPONSORS

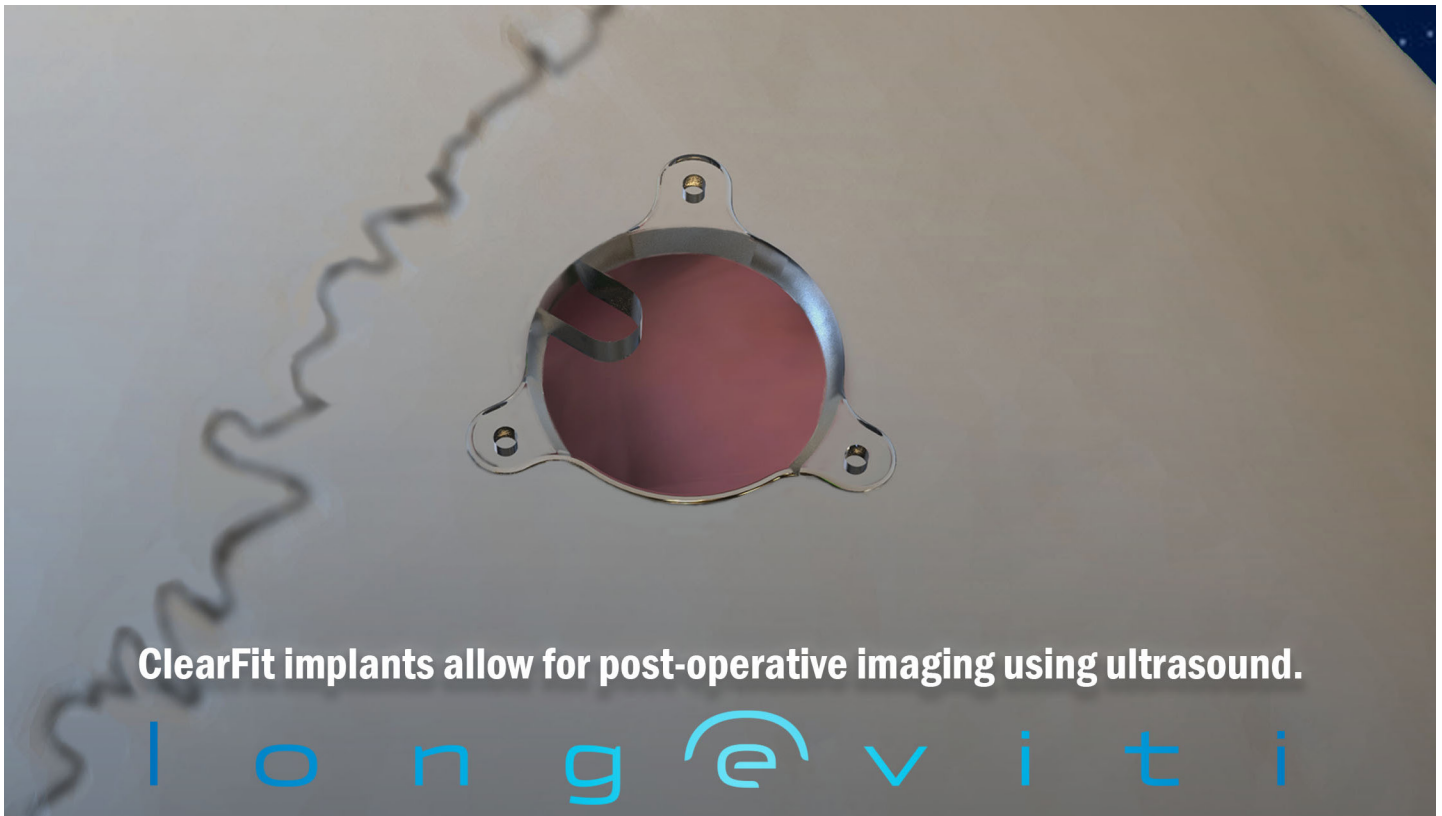
Platinum

l o n g e v i t i

WILEY

Gold

PHILIPS



SAVE THE DATES



THE SCOTT RESORT & SPA
SCOTTSDALE, AZ

ASN 2022: JANUARY 13-15 • ASN 2023: AUGUST 10-12