Acute Ischemic Stroke Guidelines 2018 released today

The Acute Ischemic Stroke Guidelines 2018 — presented today in a one-hour session in Hall K — will change the way clinicians treat large vessel/ severe strokes.

The session will cover four main areas that will have implications for your practice and patients:

- **1:35-1:45 p.m.**
  **Systems of Care**
  **Speaker:** Opeolu M. Adeoye, MD, University of Cincinnati Gardner Neuroscience Institute, Neurocritical Care Program, Cincinnati, Ohio

- **1:45-1:55 p.m.**
  **IV Thrombolysis**
  **Speaker:** Alejandro A. Rabinstein, MD, Mayo Clinic, Rochester, Minnesota

- **1:55-2:05 p.m.**
  **Endovascular Treatment**
  **Speaker:** Thabele M. Leslie-Mazwi, MD, Massachusetts General Hospital, Boston, Massachusetts

- **2:05-2:15 p.m.**
  **In-Hospital Care**
  **Speaker:** William J. Powers, MD, Department of Neurology, University of North Carolina School of Medicine, Chapel Hill, North Carolina

To allow more time to answer your questions, a Panel Discussion/Q&A Session will be held at 8:45-10:45 a.m. Thursday in Theater 411.

Stroke triage, bundled care initiative focus of nursing symposium

The State-of-the-Science Stroke Nursing Symposium shares innovative best clinical practices to optimize patient outcomes throughout the stroke continuum of care. Here are highlights from the 2018 morning session.

**Implementing Mission: Lifeline into hospitals, systems of care**

Because time is brain, the hospital where acute stroke patients are initially transported can be critical.

“Transporting patients with a small vessel occlusion to a hospital that can administer tPA within 60 minutes improves outcomes, including a reduction in hospital mortality and long-term disability,” said Deborah Summers, MSN, RN, with Saint Luke’s Health System in Kansas City. “Similarly, patients with a large vessel occlusion would benefit from treatment at a thrombectomy-capable stroke center.”

The hospital decision typically lies with EMS personnel, who are required to identify the presence of stroke and the type of stroke. Mission: Lifeline Stroke, the AHA/ASA’s severity-based stroke triage algorithm, helps EMS personnel triage stroke patients.

“The intent of the algorithm was to get the right patient to the right stroke center in the right amount of time,” said Lynn Hundley, MSN, RN, CCNS, with Norton Healthcare in Louisville, Kentucky. But there are still knowledge gaps with EMS providers, and to triage stroke patients appropriately, stroke nurses must step in.

“Finding tools for your EMS to use when doing your education is critical for all of us,” Hundley said. She suggested the app, Stroke Scales for EMS. The AHA also provides resources to help educate EMS personnel at Strokeassociation.org/ HIStoolkit.

Stroke patients do best when receiving the appropriate level of care, which may not indicate treatment at a comprehensive stroke center, according to the case studies shown.

“Acute stroke ready hospitals and primary stroke centers are the core foundation of our care,” Hundley said. She encouraged stroke nurses to work with their local EMS organizations to improve processes and care.

Connect with ISC 2018

- **@AHAmmeetings #ISC18**
- **facebook.com/ahameetings**
- **strokeconference.org**
This program is limited to licensed healthcare professionals only. This event is not part of the official International Stroke Conference 2018 as planned by the International Stroke Conference Program Committee.
Researchers explore new translational research in pre-conference symposium

Researchers on Tuesday addressed the failure to find a neuroprotective agent and explored alternatives to traditional translational research in a pre-International Stroke Conference 2018 symposium.

“Stroke in the Lab World: Reversing Stroke Translational Research — Bedside-to-Bench and Back Again” featured leading researchers who have successfully achieved reverse translation, starting with human samples and applying cutting-edge big data techniques to identify genes/proteins of relevance.

“I think we need an infusion of big data from a very different approach to complement forward translational research,” said Jin-Moo Lee, MD, PhD, professor of neurology at the University of Cincinnati in Ohio, agreed.

“Thus far, animal models for neuroprotection have held many promises but no deliveries,” he said. “This suggests that what works in these animal models does not translate well into humans.”

The reverse-translation approach begins at the bedside, taking biologic or cellular samples from patients with disease, and extracting big data such as genomics, transcriptomics and other -omics.

“Using these techniques, novel genes, proteins and pathways that may include risk as well as protective association with disease traits can be identified,” Lee said. “By employing the power of systems biology, much can be learned about these pathways as they relate to each other and to disease.”

Further investigation of these disease-related pathways can be explored at the lab bench by exploiting appropriate animal models and cell culture systems.

**More intensive recovery program may better engage stroke patients**

A more intensive stroke recovery program that includes cognitive, aerobic and resistance training engages adult patients more effectively than traditional rehab programs, early results from a randomized clinical trial suggest.

The trial is part of the 2017 Bugher Collaborative reports on three centers presented Wednesday at 3 p.m. in Room 502 A.

“Our reports this year will be updates from the fourth year of the fourth cycle of the Bugher Collaborative,” said Ralph L. Sacco, MD, MS, director of the Bugher Collaborative Center at the University of Miami Miller School of Medicine and co-moderator of the session. “The three centers will be presenting updates check full of clinically important progress on all three projects.”

The Bugher Collaborative is a unique venture sponsored by the American Stroke Association and the Bugher Foundation. Each year four collaborative focuses on specific topics within stroke and recovery.

“There has been a lot of excitement in stroke in recent years, but a lot of it has been in acute treatment and some considerable progress in prevention,” said Sacco, professor and Oel- berg Chair of Neurology, executive director of the McKnight Brain Institute and director of the University of Miami Clinical & Translational Science Institute.

“The three Bugher Centers focus on issues related to the recovery from stroke in basic science as well as translational and clinical work. Each site has multiple projects, but the beauty and the secret ingredient is collaboration and research that crosses traditional boundaries.”

The other co-moderators are:
• Thomas Carmichael, MD, PhD, director of the University of California Los Angeles Bugher Center, is associate professor of pediatrics and co-director of the Colorado Pediatric Stroke Program.
• Timothy J. Bernard, MD, director of the University of Colorado Bugher Center, is associate professor of neurology and co-director of the Colorado Pediatric Stroke Program.

Small vessel disease is common in humans, but few treatments focus on recovery from small vessel stroke.

Small vessel disease is common in humans, but few treatments focus on recovery from small vessel stroke. Researchers have identified specific pathways and genetic markers involved in white matter repair as well as specific drug targets that could alter pathways to promote repair and recovery after stroke.

The UC Bugher Center focuses on the mechanisms of recovery from pediatric stroke and how recovery may differ in adults.

Much of the work involves neuropsychological outcomes following childhood stroke and the role of lesion-specific plasticity in the developing brain. Mechanisms and pathways to recovery appear to be different. Depending on where the stroke injury occurred, recovery may follow pathways that emphasize function reorganization, a reorganization of the brain to recover lost cognitive function or local recovery of the injured region.

UM researchers are focusing on adult recovery. Expect an update on a feasibility study that compares usual recovery treatment versus a combination of intensive cognitive and physical therapy involving aerobic and resistance training.

The current study follows patients for 90 days to assess compliance with both rehab regimens. Later trials will look for signals of improved recovery.

“Patients who are randomized to usual care seem to get more bored and drop out more often,” Sacco said. “Patients in the intensive program seem to be very engaged, but follow-up will not be completed until April or May.”

“Our next frontier in improving treatment for stroke needs to focus on recovery with more research on the mechanisms of repair and cognitive outcomes in both children and adults with stroke.”
Government agencies to explain infrastructure, support of research

stroke researchers can learn about U.S. government agencies and how to get involved during “The Role of the Government Agencies in Fostering the Stroke Innovation Ecosystem.”

The session, held Thursday at 8:45-10:15 a.m. in Room 408, will include representatives from the Food and Drug Administration, the Centers for Disease Control and Prevention, and the National Institute of Neurological Disorders and Stroke.

“Here’s the place where one of the primary funders of stroke research at NIH — which is NINDS — and the CDC, the FDA, as well as the international center, Fogarty, are together to answer questions about opportunities for stroke researchers,” said Clinton Wright, MD, director of the Division of Clinical Research at NINDS.

Wright will present NINDS Funding for Clinical Stroke Research focusing on StrokeNet, a clinical trial network made up of 25 regional centers and more than 200 hospitals in the United States that conduct clinical trials and research studies to advance acute stroke treatment, stroke prevention, and recovery and rehabilitation following a stroke. StrokeNet is the infrastructure and pipeline for new potential treatments for stroke patients and those at risk for stroke.

“We want researchers to know how to get access to the network to propose clinical trials,” Wright said. “It can be a phase II trial, it can be a phase III trial, it can be a biomarker study. We’ll tell them about the mechanisms and how to get involved in StrokeNet.”

Robert Merritt, health scientist at the CDC, will discuss the evolution of the Paul Coverdell National Acute Stroke Program, which began 16 years ago as a registry focused on stroke patient quality of care data in the hospital setting. Today, the program spans the full care continuum that begins in the community and moves through emergency services, hospitalization, discharge coordination and rehabilitation.

“The program is built in a way that new technologies, new treatments can be worked into this continuum of care,” Merritt said. “You can be more adept at responding to changes in practice guidelines or new data because it’s not tied to one treatment per se, it’s tied to a set of treatment outcomes that are agreed upon by the AHA, the Joint Commission and CDC. So you’re always in good company.”

Merritt also will follow up on the CDC’s VitalSigns report from September, which examined the stall in progress of the decline in stroke deaths.

International researchers will be especially interested in “International Stroke Research: Partnering with NIH,” presented by Claudia Moy, PhD, acting director of the NINDS Office of International Activities.

The Fogarty International Center at the NIH supports and facilitates global health research conducted by U.S. and international investigators. Its signature initiative — the Global Brain Disorders Research grant program — has provided support for research and capacity building in low- and middle-income countries since 2003.

“Awards made through this program to U.S. institutions and their partner institutions in sub-Saharan Africa and other regions have provided opportunities to address questions of barriers to care, testing prevention strategies and improving outcomes,” Moy said. “This is information that will help reduce the burden of stroke in the affected populations and may translate to other populations and settings.”

Carlos Peña, PhD, MS, director of the Division of Neurological and Physical Medicine Devices at the FDA, will speak on “Navigating the FDA Regulatory Landscape for Stroke Devices.”

### ISC 2018 ABSTRACT CATEGORIES
- Acute Endovascular Treatment
- Acute Neuroimaging
- Acute Nonendovascular Treatment
- Aneurysm
- Basic and Preclinical Neuroscience of Stroke Recovery
- Cerebral Large Artery Disease
- Clinical Rehabilitation and Recovery
- Community/Risk Factors
- Diagnosis of Stroke Etiology
- Emergency Care/Systems
- Experimental Mechanisms and Models
- Health Services, Quality Improvement and Patient-Centered Outcomes
- In-Hospital Treatment
- Intracerebral Hemorrhage
- Nursing
- Pediatric Stroke
- Preventive Strategies
- SAH and Other Neurocritical Management
- Vascular Biology in Health and Disease
- Vascular Cognitive Impairment
- Vascular Malformations
- Late-Breaking Science

### CED Talks package stroke wisdom in breezy, brainy presentations

CED Talks provide a brief format to highlight key insights from industry experts.

**Cerebrovascular Education and Discovery Talks return to ISC 2018 with more insights from experts in basic and clinical science in stroke.**

Inspired by the popular TED Talks, the four 15-minute CED Talks at 3-4 p.m. Wednesday in Room 151 will be punctuated with snappy visuals and examples by winners of prestigious ISC awards.

The speakers are:
- Donna M. Ferriero, MD, director of the Neonatal Brain Disorder Laboratories, co-director of the Newborn Brain Research Institute at the University of California San Francisco and the 2010 Thomas Willis Award winner, will present “Neonatal Stroke: Little Brains, Big Consequences.”
- Ferriero’s laboratory has been critical in defining the role of oxidative stress during hypoxia-ischemia and the relationship of selectively vulnerable populations of neural cells during maturation-dependent injury.
- Thomas G. Brott, MD, professor of neurology and director of research at the Mayo Clinic in Jacksonville, Florida, and 1997 winner of the William M. Feinberg Award for Excellence in Clinical Stroke, will present “Free Fallin’ — Can the Megadrop in Stroke Mortality Continue?”
- As the decline in stroke mortality has flattened out, there are concerns about population trends, said Bruce Ovbiagele, MD, ISC 2018 program chair.
- “There has been anticipation that with diabetes and obesity and the aging population, how are we going to be able to further affect stroke mortality?” he said. “The other aspect of it is that stroke disproportionately affects ethnic minorities as the population demographically changes race/ethnic-wise.”
- “Is Blood Pressure in Acute Stroke: To Treat or Not to Treat — That Is Still the Question.”
- It’s a burning question and may be a little bit surprising that we haven’t gained broader insight into this issue,” Ovbiagele said. “The issue is, how much do you reduce the blood pressure and how long?”
- Bruce Ovbiagele, MD, director of neuroscience research at Ottawa Hospital Research Institute in Canada and the 2007 Thomas Willis Award winner, will present “Small Vessel Disease — A Major Health Challenge and Opportunity.”
- As the cause of most strokes, cerebral small vessel disease has a substantial health impact, Ovbiagele said.
- “The good news, of course, is we think it is rather treatable because it correlates with all the established risk factors that we know and that we are supposed to address, but it’s how to prevent it before it actually begins to cause any overt or covert issues.”
- Miguel A. Perez-Pinzon, PhD, director of the Cerebral Vascular Disease Research Center at the University of Miami, and Ovbiagele will moderate the talks.
Novel therapies offer hope for managing ICH

Translational research is altering every step of managing intracranial cerebral hemorrhage — from ambulance to emergency room to pharmacologic and surgical treatments.

“For half of all stroke patients, the first medical person they see is a paramedic,” Nerses Sanossian, MD, said in “Stroke in the Real World: There Will Be Blood,” a Tuesday pre-ISCI 2018 symposium. “Paramedics have a unique opportunity to alter the course of stroke.”

Sanossian, associate professor of neurology and director of the Roxanna Todd Hodges Stroke Program at the University of Southern California Keck School of Medicine, said early recognition and treatment of ICH is key. Although half of ICH patients show visible signs of deterioration between the first assessment in the ambulance and the first assessment in the ER, paramedics identify fewer than a quarter of ICH patients. And patients with ICH are more likely to have worse outcomes.

A simple Glasgow Coma Score assessment in the ambulance and again in the ER may help. The FAST-MAG trial in Los Angeles found that a one-point change in GCS between ambulance assessment and ER assessment identifies 85 percent of ICH patients. A two-point change identifies 91 percent of ICH patients.

Starting treatment before admission saves minutes and brain function, he said. Ambulance-based treatment could slow or delay hematoma expansion, provide supportive care and offer neuroprotection. The question is how to take advantage of these pre-admission steps.

As an example, standard ambulance personnel aren’t trained to administer thrombolytic agents for acute ischemic stroke. They may be able to treat elevated blood pressure using existing agents such as nitroglycerin patches and minocycline.

“Early and aggressive lowering of blood pressure is a good hypothesis, but there is no evidence to support its use in the real world,” Sanossian said. “Not yet.”

Stabilization and triage in the ER is the next step. Early imaging should guide diagnosis and treatment.

“Agressive therapy is needed in that first golden hour,” said Kyle B. Walsh, MD, MS, associate professor of emergency medicine at the University of Cincinnati.

AHA guidelines call for a target blood pressure of 140 or lower for most ICH patients, as well as anticoagulation using warfarin or direct acting anticoagulants, vitamin K antagonists and fresh frozen plasma or prothrombin complex concentrates. Factor VIIa is not recommended due to lack of evidence for efficacy.

Current data suggest transferring patients from the ER to a tertiary care center or a neurologic ICU.

Treating ICH still offers more questions than answers. The usual progression is hematoma expansion, brain edema, necrosis and brain atrophy. The mechanisms involved are beginning to emerge.

“The size of the hematoma is the most important factor,” said Guohua Xi, MD, professor of neurosurgery and Richard C. Schneider Research Professor at the University of Michigan. “The larger the hematoma, the worse the outcome.”

Erythrocyte lysis, hemoglobin degradation, iron overload, toxic plasma proteins and white blood cells are all potentially druggable targets.

Surgical removal of the hematoma is another option.

“If there is less clot, we might be in better shape regardless of what biochemical approach we might be using,” said Daniel F. Hanley, MD, FAHA. “The evidence is incomplete, but pretty darn good that clot volume removed is proportional to benefit.”

The three options for clot removal are craniotomy, endoscopy and minimally invasive surgery. It’s not clear which method is more appropriate for which patients.

“The removal of clots is probably the way to go,” said Mario Zuccarello, MD. “Today, we don’t know if minimally invasive is better than craniotomy.”

Craniootomy subjects the brain to more surgical trauma, but removes more clot, he said. Minimally invasive surgery causes less trauma, but removes less clot, has a steep learning curve and requires expensive equipment available in only a few academic centers.

“MIS will have a role, but the key is early treatment that removes as much clot as possible,” Zuccarello said.

Guohua Xi, MD, spoke regarding the size of the hematoma and its effect on outcomes. Nerses Sanossian, MD, (right) opened the session, addressing the need for early detection of ICH, beginning with paramedic response.

Daniel F. Hanley, MD, FAHA, (above) noted that “clot volume removed is proportional to benefit.”

For half of all stroke patients, the first medical person they see is a paramedic. Paramedics have a unique opportunity to alter the course of stroke.

Nerses Sanossian, MD

Improving stroke care in China leaders from the Chinese Stroke Association and the American Stroke Association met Tuesday at ISC to discuss implementing a stroke quality improvement program modeled after Get With The Guidelines-Stroke.
DON'T STOP AT THE SHOES AND SOCKS

PAD IS A RISK FACTOR FOR STROKE
LEARN TO RECOGNIZE THE SIGNS FOR PAD

Peripheral artery disease (PAD) affects more than 200 million adults worldwide and over 8.5 million in the United States. While it is a serious risk factor for coronary artery disease and cerebrovascular disease, PAD remains a largely overlooked disease. But together, we can change that.

Visit AHA Booth 445 to pick up your free copy of the PAD Toolkit, designed specifically for healthcare professionals.

GETTING TO THE HEART OF VASCULAR HEALTH

heart.org/PADtoolkit

Aralez Pharmaceuticals is a proud sponsor of the American Heart Association’s efforts to educate patients about peripheral artery disease.
ISC honors awardees

The ISC Main Event Sessions will feature lectures by the Feinberg, Sherman, and Willis award recipients. The ISC Stroke Research Mentor Award will be presented during the Late-Breaking Science Concurrent Oral Abstract Session.

Six ISC abstract-based awards will be presented to the award recipients in the concurrent oral abstract session in which their abstract is being presented. These ISC awards honor investigators for their stroke-related research. Abstract-based awards also provide opportunities for funding to attend ISC for junior investigators.

ISC ABSTRACT-BASED AWARDS

SAH and Other Neurocritical Management Oral Abstracts

Wednesday, Jan. 24
9:45 a.m.
Room 515 B
Stroke Basic Science Award
Han-Gil Jeong, MD
Seoul, Republic of Korea
Biocompatible, Aminocaproic Acid Stabilized Ceria Nanoparticles Rescue the Injured Brain After Subarachnoid Hemorrhage (40)
This award encourages investigators to undertake or continue stroke research in basic or translational science, and it must be laboratory-based.

Clinical Rehabilitation and Recovery Oral Abstracts II

Wednesday, Jan. 24
1:30 p.m.
Room 408
Stroke Rehabilitation Award
Steven Warach, MD, PhD
Austin, Texas
Validation of an Ordinal, Six-Item Functional Outcome Scale for Speech and Language Disability in Stroke: The Austin Speech Lab Communication Disability Scale (42)
This award encourages investigators to undertake or continue research and/or clinical work in the field of stroke rehabilitation and submit an abstract to the International Stroke Conference.

Emergency Care/Systems Oral Abstracts II

Thursday, Jan. 25
7:12 a.m.
Room 408
Stroke Care in Emergency Medicine Award
Brittany Megan Bogle, PhD
Chapel Hill, North Carolina
Using Discrete Event Simulation to Assess the Regionally Specific Impact of the Severity-Based Stroke Triage Algorithm for EMS on Patient Outcomes and Overtriage (93)
This award encourages investigators to undertake or continue research in the emergent phase of acute stroke treatment and submit an abstract to the International Stroke Conference.

Acute Neuroimaging Oral Abstracts II

Thursday, Jan. 25
8:45 a.m.
Room 515 A
Mordecai Y.T. Globus New Investigator Award in Stroke
Edrich J. Rodrigues, MBChB
Melbourne, Australia
CT Perfusion Mismatch Identifies More Thrombectomy Patients Than Clinical Core Mismatch (113)
This award recognizes Dr. Mordecai Y.T. Globus’ major contributions to research in cerebrovascular disease and his outstanding contributions to the elucidation of the role of neurotransmitters in ischemia and trauma; the interactions among multiple neurotransmitters; mechanisms of hypothermic neuroprotection; and the role of oxygen radical mechanisms and nitric oxide in brain injury.

Vascular Cognitive Impairment Oral Abstracts

Thursday, Jan. 25
1:42 p.m.
Room 515 A
Vascular Cognitive Impairment Award
Ken Uekawa, MD
New York, New York
CD36 in Perivascular Macrophages Contributes to Neurovascular and Cognitive Dysfunction and Amyloid Angiopathy in Mice Overexpressing the Alzheimer Aβ Peptide (149)
This award encourages investigators to undertake or continue research or clinical work in the field of vascular cognitive impairment and submit an abstract to the International Stroke Conference.

ISC 2019 AWARD NOMINATIONS

AHA Members: Submit your nominations for the ISC 2019 Feinberg, Sherman, Willis and Research Mentor awards.
Nomination Period Opened: Wednesday, Jan. 24, 2018
Nomination Period Closes: Wednesday, June 27, 2018
Go to strokeconference.org/awardsandlectures for more information.

Follow ISC on Twitter
Tweet your questions/comments or talk about what is happening at ISC 2018. #ISC18
THE POWER TO
TREAT, BEAT
REDUCE STROKE RISK.

Let’s transform the acute ischemic and cryptogenic stroke care continuum. Together.

medtronic.com/stroke


© 2017 Medtronic. All rights reserved. Medtronic, Medtronic Bage and Further Together are trademarks of a Medtronic company. DCN00076935 Rev A, DEC/2017. UAC:201806391EN

The Solitaire™ Revascularization Device is indicated for use to restore blood flow in the neurovasculature by removing thrombus for the treatment of acute ischemic stroke to reduce disability in patients with a persistent, proximal anterior circulation, large vessel occlusion, and smaller core infarcts who have first received intravenous tissue plasminogen activator (IV t-PA). Endovascular therapy with the device should be started within 6 hours of symptom onset.

The Solitaire™ Revascularization Device is indicated to restore blood flow by removing thrombus from a large intracranial vessel in patients experiencing ischemic stroke within 8 hours of symptom onset. Patients who are ineligible for IV t-PA or who fail IV t-PA therapy are candidates for treatment.

CAUTION: Federal law (USA) restricts this device to sale by or on the order of a physician.
REDUCE STROKE RISK IN CRYPTOGENIC STROKE PATIENTS

Transform the standard of care with the world’s smallest, most accurate insertable cardiac monitor.¹

**CRYSTAL AF STUDY**
Reveal™ ICM: Superior to standard monitoring.²

**Detection of Atrial Fibrillation by 36 months**
- Hazard ratio: 8.8 (95% CI: 3.5 - 22.2)
- P < 0.001 by log-rank test

![Graph showing detection of atrial fibrillation over 36 months with and without the Reveal ICM.](image)

**8.8X**
- Detection of Atrial Fibrillation by 36 months

**6.4X**
- Control

**7.3X**
- Reveal ICM

**84 DAYS**
- Median time to AF detection in cryptogenic stroke patients³

**88%**
- Of patients who had AF would have been missed if only monitored for 30 days³

The CRYSTAL-AF Study found that continuous monitoring with Reveal ICM is superior to standard monitoring for the detection of AF in cryptogenic stroke patients.

Brief Statement: REVEAL LINQ™ LQ11 Insertable Cardiac Monitor and Patient Assistant

INDICATIONS: REVEAL LINQ™ LQ11 Insertable Cardiac Monitor: The REVEAL LINQ Insertable Cardiac Monitor is an implantable, patient-activated and automatically-accelerated monitoring system that records subcutaneous ECG and is indicated in the following cases: 1) patients with clinical syndromes or situations at increased risk of cardiac arrhythmias; 2) patients who experience transient symptoms such as dizziness, palpitation, syncope, and chest pain that may suggest a cardiac arrhythmia. This device has not been specifically tested for pediatric use. Patient Assistant: The Patient Assistant is intended for unsupervised patient use away from a hospital or clinic. The Patient Assistant activates the data management feature in the Reveal Insertable Cardiac Monitor to initiate recording of cardiac event data in the implanted device memory. CONTRAINDICATIONS: There are no known contraindications for the implant of the Reveal LINQ Insertable Cardiac Monitor. However, the patient's particular medical condition may dictate whether or not a subcutaneous, chronically implanted device can be tolerated. WARNINGS/ PRECAUTIONS: REVEAL LINQ™ LQ11 Insertable Cardiac Monitor: Patients with the Reveal LINQ Insertable Cardiac Monitor should avoid sources of diathermy, high sources of radiation, electrocautery cautery, external defibrillation, lithotripsy, therapeutic ultrasound and radiofrequency ablation to avoid electrical reset of the device, and/or inappropriate sensing as described in the Medical Procedure and EM precautions manual. MRI scans should be performed only in a specified MRI environment under specified conditions as described in the Reveal LINQ™ LQ11 Technical Manual. Patient Assistant: Operation of the Patient Assistant near sources of electromagnetic interference, such as cell phones, computer monitors, etc., may adversely affect the performance of this device. POTENTIAL COMPLICATIONS: Potential complications include, but are not limited to, device rejection phenomena (including local tissue reaction), device migration, infection, and erosion through the skin. See the device manual for detailed information regarding the implant procedure, indications, contraindications, warnings, precautions, and potential complications/adverse events. For further information, please call Medtronic at 1-800-338-2518 and/or consult Medtronic’s website at www.medtronic.com.

CAUTION: Federal law (USA) restricts this device to sale by or on the order of a physician.
**Poster tours, sessions kick off today**

**TRIAGE**

*continued from page 1*

systems of care," said Jean D. Luciano, NP, with Penn Medicine in Philadelphia.

Bottom line on bundled payments for care improvement program

A focus on a contractual agreement that health systems voluntarily enter into with CMS, including financial and performance accountability for episodes of care, rounded out the morning session.

The Bundled Payments for Care Improvement Initiative incentivizes health systems to work together to be more efficient about post-acute care. BPCI data can help hospitals spot trends, such as an increase in hospital readmissions from an acute care facility at specific times, such as on weekends. It may lead to higher quality and more coordinated care at a lower cost to Medicare — and it may be a wave of the future, according to Kathy J. Morrison, MSN, RN, CNRN, SCRN, FAHA, a certified stroke nurse with Penn State Hershey Medical Center.

BPCI resulted from the need to better prepare patients for discharge, because outcomes data showed that nearly two-thirds of Medicare beneficiaries discharged after ischemic stroke died or were re-hospitalized within one year because of comorbidities, Morrison said.

Medical centers participating in BPCI are required to establish a structure and processes with skilled facilities that focus on key metrics, including length of stay, readmission rates at the skilled facility and complications. Hospitals partner with post-acute care facilities to comply with best practices for hospital discharge and follow-up care.

Representatives from Penn State Health and Kiersten Espaillat, DNP, APN, from Vanderbilt University Medical Center, presented the outcomes of their hospital’s experience with BPCI. Financially, the results were mixed, but patient outcomes improved across the board.

“When patients are discharged to rehab, you really don’t know what happens to them after that,” said Alicia Richardson, RN, MSN, stroke program coordinator for Penn State Health. “The bundle makes everyone work together, resulting in better care.”

**Professor-Led Poster Tours**

5:30-6:30 p.m.

Posters WMP1-WMP120

1. Acute Endovascular Treatment
   Moderated Poster Tour I

2. Acute Neuroimaging Moderated Poster Tour

3. Aneurysm & SAH and Other Neurocritical Management
   Moderated Poster Tour

4. Cerebral Large Artery Disease
   Moderated Poster Tour

5. Community/Risk Factors
   Moderated Poster Tour I

6. Diagnosis of Stroke Etiology
   Moderated Poster Tour

7. Experimental Mechanisms and Models Moderated Poster Tour

8. Health Services, Quality Improvement and Patient-Centered Outcomes Moderated Poster Tour I

9. Intracerebral Hemorrhage
   Moderated Poster Tour

10. Nursing & Vascular Biology in Health and Disease Moderated Poster Tour

**Regular Poster Sessions**

6:30-7 p.m.

Posters WP1-WP427

These posters are not included in the 5:30 p.m. Professor-Led Poster Tour Session.

- Acute Endovascular Treatment Posters I
- Acute Neuroimaging Posters I
- Acute Nonendovascular Treatment Posters I
- Aneurysm Posters I
- Basic and Preclinical Neuroscience of Stroke Recovery Posters I
- Cerebral Large Artery Disease Posters I
- Clinical Rehabilitation and Recovery Posters I
- Community/Risk Factors Posters I
- Diagnosis of Stroke Etiology Posters I
- Emergency Care/Systems Posters I
- Experimental Mechanisms and Models Posters I
- Health Services, Quality Improvement and Patient-Centered Outcomes Posters I
- In-Hospital Treatment Posters I
- Intracerebral Hemorrhage Posters I
- Nursing Posters I
- Pediatric Stroke Posters I
- Preventive Strategies Posters I
- Vascular Biology in Health and Disease Posters I
- Vascular Cognitive Impairment Posters I
- Vascular Malformations Posters I
- Late-Breaking Science Posters I

**Are You an AHA Member?**

Renew or join as a professional member today to make a difference. You can effect change and reduce the global burden of cardiovascular disease and stroke through collaboration and knowledge transfer with other clinicians, scientists and healthcare professionals.

[https://professional.heart.org/professional](https://professional.heart.org/professional)
‘Game of Strokes’ returns to ISC 2018 after triumphant debut last year

Game of Strokes — inspired by the HBO drama series “Game of Thrones” — will return to the International Stroke Conference 2018.

Bruce Ovbiagele, MD, this year’s ISC program chair and “Game of Thrones” uber-fan, introduced the wildly popular and fiercely competitive session to stroke experts last year.

“I think it’s fair to say of all the things that we introduced, the ‘Game of Strokes’ was very, very, very popular,” Ovbiagele said of the standing-room-only session. “Response to the session was overwhelming to the extent that I got about three or four emails from people saying they didn’t want their sessions to go up against ‘Game of Strokes’.”

This success had led to reducing the session from 90 minutes to 60 minutes.

“We don’t want to cannibalize other coexisting sessions,” Ovbiagele said. “And we’re also trying to be careful that hopefully the people who might be drawn to ‘Game of Strokes’ would be different from the people who might want to attend sessions that are occurring concurrently.”

José Biller, MD, professor and chairman of neurology at Loyola University in Chicago and editor-in-chief of the Journal of Stroke and Cerebrovascular Diseases, will again moderate and present questions to three teams vying for the Gold Brain Trophy.

Topics will cover the natural history of stroke, stroke mechanisms, syndromes, diagnosis and treatment, and the portrayal of stroke in pop culture.

The audience can play along on the ISC 2018 Mobile Meeting App.

This year’s teams hail from Africa, Europe and the Middle East; Asia, Australia and South America; and Canada and the United States (the returning champions).

Members of the winning team will receive free registration for ISC 2019 and the coveted Gold Brain Trophy will be engraved with their team name/regions. To avoid a true “Game of Thrones” bloodbath, the trophy will reside at the AHA/ASA National Center.
Visit the Science & Technology Hall to extend your clinical and professional education with interactive learning, new products and services, and networking opportunities.

Showcasing more than 90 companies Wednesday and Thursday at 10 a.m.-5 p.m., the hall lets you investigate diagnostic and monitoring equipment, clinical reporting and support services, new technology, staffing support services, education and more.

Also, stop by the American Heart Association/American Stroke Association’s HeadQuarters in Booth 445. There, you can learn more about AHA/ASA initiatives, education, membership and publications.

For more information about the 2018 ISC exhibitors, please refer to the Mobile Meeting Guide app.

Listings current as of Jan. 9, 2018.

LISTINGS HIGHLIGHTED IN BLUE ARE PAID ADVERTISEMENTS

2018 ISC Exhibitors

A-D
4D Motion 313
www.4DMotionSports.com

Abbott 317
www.abbott.com

AHAA/ASA HeadQuarters 445
Get information on professional education, consumer awareness activities, quality improvement programs, professional membership opportunities and scientific publications.

American Association of Neuroscience Nurses (AANN) 244
www.AANN.org

ABNIN 242
www.ABNINCertification.org

Apex Innovations 217
www.ApexInnovations.com

Asahi Intecc 460
www.asahi-intecc.co.jp

Azuiza 116
www.azuiza.com

Bardy Diagnostics www.bardydi.com

Baylor Scott & White Health 360
www.jobs.baylorsctandwhtexas.com

Bedside Viewer 358
www.bedsideviewer.com

Billings Clinic www.billingclinic.com

Biogen 413
www.biogen.com

BioTel Heart CardioNet & LifeWatch 406
www.gabo.com

Blue Sky Neurology www.blueskyneurology.com

Boehringer Ingelheim Pharmaceuticals, Inc. 323
www.us.boehringer-ingelheim.com

Bravinitis Ltd. 319
www.bravinitis.com

Bristol-Myers Squibb / Pfizer 354
www.bms.com

California Rehabilitation Institute 259
www.californiarehabstitute.com

Centre for Neuro Skills 414
www.neuroskills.com

Cerebrotech Medical Systems 614
www.cerebrotechmedical.com

CERENOVUS 245, B377
www.cerenovus.com

Chiesi USA, Inc. 639
www.chiesiusa.com

Chinese Stroke Association 538
www.cnistanstroke.net

Cincinnati Children’s Hospital 238
www.cincinnachildren.org

COMPASS 439
www.ncompass-ssudy.org

Ceraxa, Inc. 613
www.ceraxa.com

Cleveland Clinic Foundation 355
www.clevelandclinic.org

COWL USA Inc. 318
www.cowl.us

Dynafoos 253
www.dynafoos.com

Dynafax 253
www.dynafax.com

E-J
Edge Therapeutics, Inc. 109
www.edgetherapeutics.com

Edwards-Emilhurst Health 513
www.emilhurst.com

Expert Theater 401
The Expert Theater offers targeted educational programs and features products and therapeutic treatments from industry supporters.

Fibromuscular Dysplasia Society of America 248
www.fmdsa.org

Firstkind Ltd 400
www.firstkind.com

FUJIFILM VisualSonics 524
www.visualsonics.com

Gemtech 207
www.gemtech.com

Gunderson Health System 215
www.gundersenhealth.org

HCA 638
www.practiceplus.com

HFAP 149
www.hfap.org

Houston Methodist Hospital 139
www.houstonmethodist.org

ImageTrend 263
www.imagaTrend.com

Innovative Communications LLC 454
www.track-ems.com

Intermountain Healthcare 382
www.emhealth.org

Interfaith HealthCare 101, B277
www.interfaithhealth.org

iHytech Technology, Inc. 512
www.ihytech.com

iChemAvie, Inc. 338
www.lachemaviie.com

Jackson & Coker LT 221
www.jacksoncoker.com

JAMA Network, The 438
www.jamanetwork.com

Janssen Pharmaceuticals, Inc. 324
www.janssen.com/us

Joint Commission, The 640
www.jointcommission.org

K-O
LocumTenens.com 311
www.locumtenens.com

Loma Linda University Faculty Physicians Group 210
www.caldocs.com

Max Life 212
www.maxlifelive.com

Medtronic 231, B171, B271
www.medtronic.com

Mentice Inc. 265
www.mentice.com

MicroVention 131, B371
www.microvention.com

Multigun Industries, Inc. 417
www.multigun.com

National Death Index 408
http://www.cdc.gov/nchs/ndi.htm

National Disease Research Interchange (NDRI) 145
www.ndriresource.org

National Stroke Association 155
www.stroke.org

Neesoft USA 441
www.neosoft.com

NETSMART 320
www.learnsstroke.org

Neural Analytics 349
www.neuralanalytics.com

NeurOptics 300
www.neuroptics.com

Nico Corporation 301
www.nicmeanre.com

NINDS 254
www.ninds.nih.gov

NINDS CDE Project 252
www.commdataelements.ninds.nih.gov

OhioHealth 612
https://www.ohiohealth.com

Olea Medical Solutions Inc. 366
www.oleahealth.com

Onirim, Inc. 615
www.onirim.com

P-T
Parkview Health 143
www.parkview.org

Patrinos Neurology 213
www.patrinusneurology.com

Penumbra, Inc. 521
www.penumbra.com

Perimed Inc. 208
www.perimed-instruments.com

phones GmbH 416
www.phones.info

Portola Pharmaceuticals, Inc. 339
www.portolab.com

Practical Neurology 522
www.practicalneurology.org

Pulsara 352
www.pulsara.com

REACH Health, Inc 307
www.reachhealth.com

Rimed USA Inc. 617
www.rimed.com

RosmanSearch, Inc. 302
www/rosmansearch.com

RottaMD 113
www.rosttamed.com

Salerno Pharmacare Sciences 517
http://www.salernopharma.com/

Samsung 223
www.samsung.com

Simeins Healthllifers 431
www.usa.siemens.com/healthllers

Simulation Zone 159
Head to this interactive training area during scheduled sessions or at your convenience to test your knowledge, skills and critical thinking.

Society of NeuroInterventional Surgery 240
www.snosis.org

Society of Vascular and Interventional Neurology 356
www.svin.org

Specialists On Call 456
www.specialistsoncall.com

St. John Health System 261
www.stjohnhealthsystem.com

Stroke Association of Southern California 141
www.strokeorg.org

Stryker Neurovascular 531, B276, B279
www.strykerneurovascular.com

Tele-specialists 201
www.mytelemed.info

Tenet Advanced Neuroscience Network 312
www.tenetfn.com/neuropsychology

The JAMA Network 438
www.jamanetwork.com

The Joint Commission 640
www.jointcommission.org/isc

TICH-2 and RIGHT-2 Trials 442

TolSense, Inc. 540
www.tolssensor.com

Twiage 257
www.twiage.com

U-Z
UMiami Gordon Center for Research in Medial Ed. 516
www.gorme.miami.edu

United Biologics, Inc 319
www.unitedbiologics.com

United Stroke Alliance 153
www.stroakamp.org

University of Florida Comprehensive Stroke Center 440
www.stroke.ufl.org

VasBel, Inc. 357
www.vasbelinc.com

Virginia Mason Medical Center 314
http://vijb.VirginiaMason.com

Virtual Medical Staff 515
www.virtualmedstaff.com

Vitility 415
www.vitility.com

Viz 421
www.viz.ai

Wolters Kluwer 539
www.wolterskluwer.com

World Effica 255
http://worldeffica.com

World Stroke Organization 250
www.world-stroke.org

Zoll Medical Corporation 322
www.zoll.com

strokeconference.org
Simulation Zone

The Simulation Zone (Booth 159) features two interactive displays:

- **Body Interact**: A 3-D immersive training platform that virtualizes acute and chronic neurovascular disorders.
- The Mentice VIST® GS Simulator is a portable high-fidelity endovascular simulator enabling hands-on procedural training for clinicians and medical professionals.

Schedule

**Wednesday, Jan. 24**
- Body Interact Sessions: Noon | 1 p.m. | 2 p.m.
- Mentice Sessions: 12:30 p.m. | 1:30 p.m. | 2:30 p.m.

**Thursday, Jan. 25**
- Body Interact Sessions: Noon | 1 p.m. | 2 p.m.
- Mentice Sessions: 12:30 p.m. | 1:30 p.m. | 2:30 p.m.

See the ISC 2018 Mobile Meeting Guide app or the online ISC 2018 Program Planner for more information about the sessions.

Science & Technology Hall (Hall J)

### AHA/ASA Headquarters

Learn more about AHA/ASA initiatives, education, membership and publications.

### Expert Theater

The Expert Theater offers targeted educational programs and features products and therapeutic treatments from industry supporters.

**Wednesday, Jan. 24**
- **Journey to ENRICH**: The Evolutionary Trend Supporting Early Surgical Intervention for Intracerebral Hemorrhage
  - Presenters: Gustavo Pradilla, MD, assistant professor of neurosurgery at Emory University School of Medicine, chief of neurosurgery service at the Marcus Stroke & Neuroscience Center at Grady Health System in Atlanta, Georgia; Mark Bain, MD, director of the Cerebrovascular Neurosurgery Fellowship Program at The Cleveland Clinic.
  - Supported by Nico

- **Cryptogenic Stroke — The Missing Linc**
  - Presenter: Robert Felberg, MD, medical director of the Overlook Hospital in Summit, New Jersey
  - Supported by Medtronic

* Provided to attendees by the AHA/ASA. These events are not part of the official ISC 2018 as planned by the AHA Committee on International Stroke Programming.

### Expert Theater Schedule

**Wednesday, Jan. 24**
- **PFO Closure — Addressing the Unmet Need for Reducing the Risk of Recurrent Ischemic Stroke**
  - Sheraton Grand Los Angeles
  - Supported and sponsored by Abbott

**Thursday, Jan. 25**
- **Cryptogenic Stroke — The Missing Linc**
  - Presenter: Robert Felberg, MD, medical director of the Overlook Hospital in Summit, New Jersey
  - Supported by Medtronic

The American Heart Association would like to thank the following supporters of ISC 2018:

- Abbott/St. Jude
- Asahi Intecc USA, Inc.
- Avizia
- BARD
- Brainomix LTD
- Cerebrotech Medical Systems
- DNV Healthcare Inc.
- DWL USA, Inc.
- Houston Methodist Outpatient Heart & Vascular Center
- LivaNova
- Medtronic
- NICO
- Specialist On Call
- Stroke Association of Southern California
- Stryker Neurovascular
- Tenet Advanced Neuroscience Network – Coastal Division
- Vituity (CEP America)
- Wolters Kluwer

AHA would also like to thank the following companies for their support of ISC 2018. This support was provided in the form of educational grants:

- CareVoyant
- Cerevask USA
- Medtronic

Use Schedule

**Wednesday, Jan. 24**
- **7-9 p.m.**
  - **PF0 Closure — Addressing the Unmet Need for Reducing the Risk of Recurrent Ischemic Stroke**
  - Sheraton Grand Los Angeles
  - Supported and sponsored by Abbott

HeadQuarters Theater Schedule

**Wednesday, Jan. 24**
- **11-11:30 a.m.**
  - Announcing the NEW Thrombectomy-Capable Stroke Center Certification Program
  - **Presidential Panel:** Patrick Phelan and Laura Riese
  - Noon-1 p.m.
  - Stroke Journal Webinar: Interventions in Stroke in Children
  - **Presenter: Heather Fullerton, MD, MAS, University of California, San Francisco**

**Thursday, Jan. 25**
- **10:15-10:45 a.m.**
  - Acute Stroke QI Project in China
  - **Presenter: Louise Morgan, director of International Quality Improvement**

**USE Schedule**

**Wednesday, Jan. 24**
- **7-9 p.m.**
  - **PFO Closure — Addressing the Unmet Need for Reducing the Risk of Recurrent Ischemic Stroke**
  - Sheraton Grand Los Angeles
  - Supported and sponsored by Abbott
“When you have big data sets that contain millions of SNPs, tens of thousands of genes, transcripts and proteins, you have to find ways to reduce the dimensionality of the data into smaller modules,” Lee said. “Dr. De Jager has a talent for integrating big data across the -omics — a systems biology approach,” focused on making sense of the big data coming from the bedside. Presenter Phil De Jager, MD, PhD, professor of neurology at Columbia University in New York, has used systems biology to discover and validate new therapeutics for Alzheimer’s disease.

Another presentation in the symposium, “Integrating big data across the -omics — a systems biology approach,” focused on making sense of the big data coming from the bedside. Presenter Phil De Jager, MD, PhD, professor of neurology at Columbia University in New York, has used systems biology to discover and validate new therapeutics for Alzheimer’s disease.

Martin Dichgans, MD, director of the Institute for Stroke and Dementia Research at Ludwig Maximilians-University in Munich, Germany, found such a pathway. Taking a gene that had demonstrated genome-wide association with large vessel stroke (HDAC9) and knocking it out in a mouse model, Dichgans demonstrated that HDAC9 was important for the pathogenesis of atherosclerosis. Dichgans then found small molecules that inhibited this pathway, and thereby attenuated atherosclerosis.

“This line of investigation went full circle from bedside to bench, identifying a drug-able target, and hopefully back to the clinic in the not-too-distant future,” Lee said.

Adam J. Engler, PhD, associate professor of bioengineering at the University of California in San Diego, presented “Harvesting human cells to develop disease-in-a-dish.” Engler, who studies the heart and heart disease, has created a three-dimensional fibrillar scaffold to which cells adhere that can be customized to a variety of disease conditions. He takes skin cells from patients with heart disease caused by genetic mutation, differentiating them into heart cells using his cell culture system. He then examines the phenotypes of these cells to see if it can model the disease directly in vitro.

Throughout the pre-conference, attendees also received up-to-date information on the strongest biologic associations identified through human big data systems research as well as examples of how some of these have been explored at the bench.
Solitaire™ Platinum 6x40 Revascularization Device

OPTIMIZED FOR DYNAMIC CLOT INTEGRATION AND RETRIEVAL.¹

- Complete visualization and coverage from M2 to ICA²
- Differentiated radial outward force³,⁴
- Unique Parametric™ design for dynamic clot integration¹
- Lower delivery force⁵,⁶

---

¹. TRX-IV/13007 Rev A
³. TRX-IV/12160 Rev A
⁴. Solitaire™ Platinum 6x40 device compared to Solitaire™ Platinum 4x40 device
⁵. TRX-IV/12306 Rev A
⁶. Solitaire™ Platinum 6x40 device compared to Solitaire™ 2.6x30 device

Indications, contraindications, warnings and instructions for use can be found on the product labeling supplied with each device. CAUTION: Federal law restricts this device to sale by or on the order of a physician.

The Solitaire™ Revascularization Device is indicated for use to restore blood flow to the neurovascular bed by removing thrombus for the treatment of acute ischemic stroke to reduce disability in patients with a persistently occluded circulation, large vessel occlusion, and smaller core deficits who have first received intravenous tissue plasminogen activator (IV tPA). Endovascular therapy with the device should be started within 6 hours of symptom onset.

The Solitaire™ Revascularization Device is indicated to restore blood flow by removing thrombus from a large intracranial vessel in patients experiencing pediatric stroke within 6 hours of symptom onset. Patients who are ineligible for IV tPA or who fail IV tPA therapy are candidates for treatment.

© 2017 Medtronic, Inc. All rights reserved. Medtronic, Medtronic logo and further together are trademarks of Medtronic, Inc. Other brands are trademarks of a Medtronic company. DCD0074124 Rev A OCT/2017