American Heart Association | American Stroke Association
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INTERNATIONAL STROKE CONFERENCE 2018

Stroke News

Thursday, January 25, 2018

The American Heart Association/American Stroke Association announced the 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke on Wednesday. See the highlights on pages 4-5.

Presidential Address opens ISC 2018

American Heart Association President John Warner, MD, FAHA, addresses the Opening Session of the International Stroke Conference on Wednesday. Warner stressed the importance of stroke systems of care and urged attendees to "say yes" to expand their influence "to amplify the work that you do and the important discoveries you'll see in meetings like this to affect more people."

Pioglitazone may be effective in preventing secondary stroke

Pioglitazone, a drug that appears to act on the same biological pathways as lifestyle interventions, can be similarly effective in secondary stroke prevention, a researcher said Wednesday.

"Pioglitazone is the only diabetes drug shown to prevent vascular disease," Walter N. Kernan, MD, said during an ISC seminar on diabetes and stroke. "It is a very useful drug for secondary stroke prevention."

Kernan, professor of medicine at Yale School of Medicine, is the principle investigator of IRIS (Insulin Resistance Intervention after Stroke).

Pioglitazone improves glucose metabolism, fat metabolism and endothelial function while reducing inflammation. While it has fallen out of favor due to a black box warning for congestive heart failure and a subsequent warning for increased bone fracture risk, it's the only drug shown to prevent diabetes. It also reduces the risk of stroke or myocardial infarction by 34 percent.

see PIOGLITAZONE, page 14

Battling global burden of stroke requires solid data and policies

Stroke is a global health threat that affects populations disproportionately, but that disparity can be addressed with more data and more government interventions, researchers said Wednesday.

"In middle and low-income countries, the volume of stroke is twice as worse compared to high-income countries," said Mayowa Owalabi, MBBS, MSc, DrM, MWACP, FMCP, FAAN, from the College of Medicine at the University of Ibaden in Nigeria, who moderated the session called "Tackling stroke in low- and middle-income countries — placing proof in pragmatism."

World Health Organization data indicates that although stroke incidence, prevalence, mortality and disability-adjusted life-years rates declined from 1990 to 2013, the absolute number of people affected by stroke has increased across the globe in men and women of all ages.

> "Data is really important. It can provide an impetus of action."
>
> Amanda Thrift, BSc(Hons), PhD, PGDipBiostat

"Strokes occur at younger ages in low- and middle-income countries, when people are still working age," said presenter Amanda Thrift, BSc(Hons), PhD, PGDipBiostat from Melbourne, Australia.

Yet, in many low- and middle-income countries (LMICs), high-quality incidence and mortality data gaps exist to indicate the true burden of disease. Without solid epidemiological evidence, it's difficult to drive research and persuade governments to establish acute and comprehensive stroke centers as well as patient education programs and policies that reduce stroke risk, Thrift said.

"Data is really important," she said. "It can provide an impetus of action."

To address these gaps in incidence and mortality data, the Lancet Commission on Stroke in LMICs is relying on hospital-based registries to help identify populations at risk for stroke.

Meanwhile, some LMICs are making

see GLOBAL, page 11

Stroke News on the move

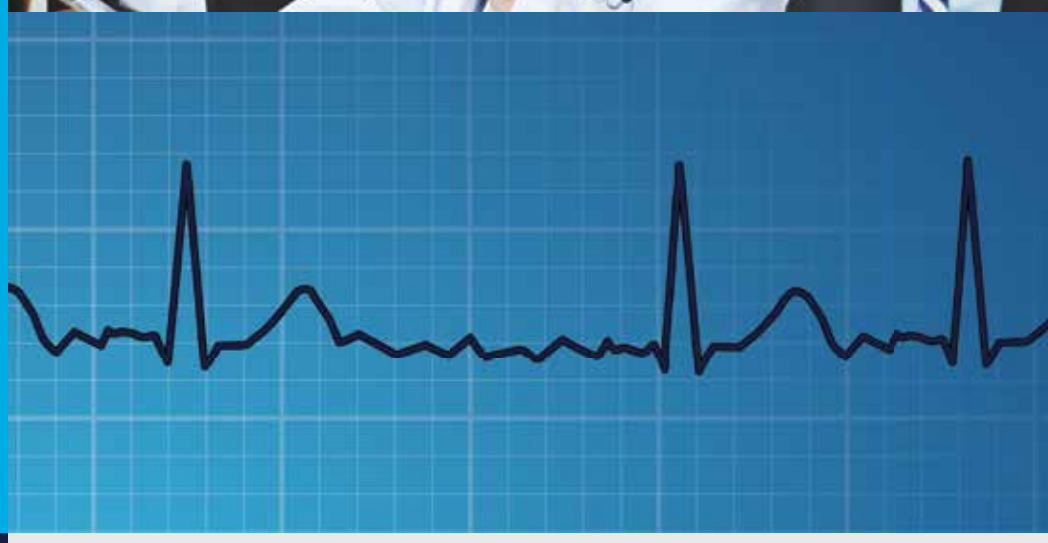
Download the **Mobile Meeting Guide app** from the Apple App Store or Google Play.

JOIN US TODAY!

Thursday, January 25
Expert Theater

12:10–12:40 p.m.
Exhibit Hall Floor
Booth #401

This event is not part of the official International Stroke Conference 2018 as planned by the International Stroke Conference Program Committee.



CRYPTOGENIC STROKE — THE MISSING LINQ

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‘Crossfire Debates’ return as part of Closing Main Event

Controversies surrounding anticoagulation therapy, hemicraniectomy and cardiac ambulatory monitoring will be hashed out during “Crossfire Debates” in the first hour of Friday’s Closing Main Event at 10:30 a.m. in Hall K.

“These are topics that clinicians are struggling with every day,” said Bruce Ovbiagele, MD, ISC 2018 program chair. “The debates present the opportunity for the audience to hear both sides of fundamental clinical issues by speakers chosen for their expertise and opinions.


Bruce Ovbiagele, MD

“We chose speakers based on either their published opinion or on studies they’ve invested time and effort in and who would have a stronger perspective on the issue.”

The debates were so popular after being introduced last year that the program committee brought them back this year, Ovbiagele said.

“The original idea was for us to have ‘Crossfire’ one year and alternate with ‘Next Best Thing,’” he said. “But ‘Crossfire’ was so popular, not just in terms of the audience participation, but also lots of anecdotal comments and emails from people saying they loved it. That’s why we decided to do it two years in a row.”

The debates cover three topics, with each session lasting about 20 minutes:

- “Anticoagulation Therapy Should Not Be Restarted in Patients With Anticoagulation-Related Lobar Intracerebral Hemorrhage” will be moderated by Joseph P. Broderick, MD, professor of neurology and director at the University of Cincinnati Gardner Neuroscience Institute.

  “The big issue is trying to balance the need to avoid the repeat of the lobar hemorrhage with the need to also prevent ischemic stroke from occurring,” Ovbiagele said.

  Some clinicians wait six weeks before restarting anticoagulation and others three months. Others don’t restart it to avoid the risk of another lobar hemorrhage, managing blood pressure instead. Some decide to put patients on antiplatelet therapy to strike a middle ground.

  “The evidence for doing any of these things is not very strong,” he said. “There have been some observational data that has suggested that actually stopping these patients on anticoagulation is beneficial because you prevent them from having ischemic strokes down the line even though they might be at increased risk in lobar hemorrhage. But you’re really able to offset the risk of an ischemic stroke by stopping them on anticoagulation.”
- “Hemicraniectomy Versus Not in Patients Over 60” will be moderated by William J. Mack, MD, associate professor of neurological surgery in the Keck School of Medicine of the University of Southern California in Los Angeles.

  Hemicraniectomy is performed to reduce intracranial pressure caused by middle cerebral artery ischemic strokes.

  “We know, based on three clinical trials, that hemicraniectomy works in patients that are less than 60,” Ovbiagele said. “However, above the age of 60, the data are not so clear.

  “The age distinction was made owing to the fact that brains shrink with age. For a time with older patients, we said, ‘Because they have more space to expand, maybe we didn’t have to do this surgical procedure to relieve pressure in their brains.’ So we would restrict it to the younger patients. Since that time, we’ve had one trial that has suggested that this procedure might be beneficial in older patients. But the results were not overwhelming like they were in the younger patients.”


Werner Hacke, MD, PhD

Werner Hacke, MD, PhD, professor and chair of neurology at the University of Heidelberg in Germany, will argue on the pro side. Ashfaq Shuaib, MD,

see DEBATES, page 7

> “These are topics that clinicians are struggling with every day. The debates present the opportunity for the audience to hear both sides of fundamental clinical issues by speakers chosen for their expertise and opinions.”
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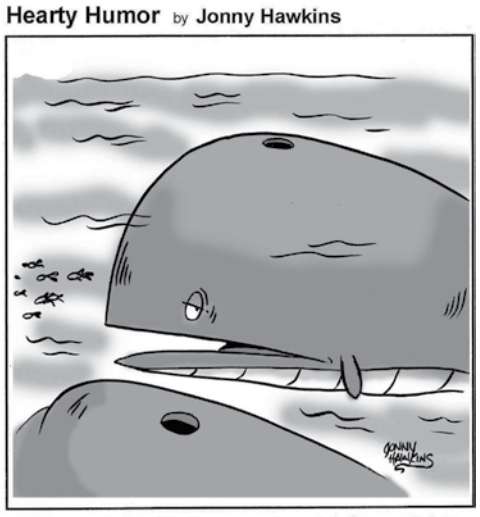
> Bruce Ovbiagele, MD

Hearty Humor by Jonny Hawkins


“Forget the krill, I’m on a low-blubber diet.”

Stroke News

Thursday, January 25, 2018

Stroke News is produced for the American Heart Association/American Stroke Association’s International Stroke Conference by Ascend Integrated Media, LLC (**ascendmedia.com**). Paid advertisements are not reviewed by the AHA for scientific accuracy.

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Session to explore global stance on hypertension and stroke risk

ISC 2018 attendees can explore a global view of hypertension and stroke risk in a Friday morning session.

“The Global Impact of Hypertension and Stroke: A Call to Action,” held at 8:45-10:15 a.m. in Room 408, is on the heels of the recent release of the 2017 Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults.

“We’ve known for many years that the No. 1 factor associated with stroke is high blood pressure,” said Daniel T. Lackland, DrPH, FACE, FAHA, president of the World Hypertension League. “As new guidelines and ideas are introduced regarding blood pressure and stroke risk, it’s an opportunity to recognize the global impact of hypertension and stroke beyond North America and Europe.”

> “We’ve known for many years that the No. 1 factor associated with stroke is high blood pressure.”
>
> Daniel T. Lackland, DrPH, FACE, FAHA

In the United States, one in 20 deaths are due to stroke annually, making it the fifth leading cause of mortality. But in other major populations in countries and regions such as Brazil, China, India and Sub-Saharan Africa, stroke is the leading cause of death.

The most common risk factor globally, hypertension is responsible for 174 million disability-adjusted life years (DALYs) every year. The Global Burden of Disease Study 2013 indicated that 17.3 million people die from cardiovascular diseases annually, accounting for nearly one-third of total deaths worldwide. About 53 percent of DALYs are related to ischemic heart disease, the most common type of cardiovascular disease and the leading cause of death in the world.

ISC 2018 is providing a forum for the American Heart Association/American Stroke Association, the World Hypertension League and the World Stroke Organization to discuss primary and secondary prevention strategies from around the world.

As a framework for discussion, the moderators will present: “How do we take this new evidence and apply it globally?”

The session will include a presentation on hypertension treatment in diabetic patients to lower stroke risks by Philip B. Gorelick, MD, MPH, executive medical director at Mercy Health Hauenstein Neurosciences in Grand Rapids, Michigan.

Speakers will address practical prevention strategies for global populations, including those in the United States, with a

see HYPERTENSION, page 10

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/awards andlectures** for more information.

Highlights From the 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke

The 2018 Acute Ischemic Stroke (AIS) Guideline provides an up-to-date, comprehensive set of recommendations for clinicians caring for adult patients with AIS. Working jointly with the American Heart Association and American Stroke Association, a panel of 19 scientists and health experts analyzed more than 400 studies to develop this Guideline.

Stroke is the No. 2 cause of death worldwide and the No. 5 cause of death in United States. In fact, more than 690 000 Americans per year have an AIS due to a blood clot, and more than one third of these strokes result from a large-vessel clot, which increases the chance of severe brain damage and death. *Time lost is brain lost* means that brain damage increases with every minute that treatment is delayed. But urgent stroke treatment can reduce brain damage, save lives, and improve patient recovery.

Key Recommendations in the 2018 AIS Guideline

To help improve care for stroke patients, the AIS Guideline has been updated to include new and revised recommendations about pre-hospital care; urgent and emergency evaluation and treatment with intravenous and intra-arterial therapies; and in-hospital management, including appropriately instituting secondary prevention measures within the first 2 weeks. The Guideline emphasizes that effective stroke treatment and measures to prevent stroke recurrence should begin as quickly as possible, and it highlights the need for public stroke education programs that are tailored for diverse races, ages, and genders. The Guideline also expands patient eligibility criteria for stroke treatments, including intravenous (IV) alteplase and mechanical thrombectomy:

- ***Alteplase***, a clot-breaking drug that is administered via IV, remains an important initial AIS treatment in the updated Guideline, including in the recommendation to evaluate patients up to 4.5 hours after the onset of stroke and to use telestroke conferencing when stroke specialists are not available on-site (refer to Table 6 in the 2018 AIS Guideline for more information about alteplase eligibility). Additional recommendations include faster door-to-needle times for IV alteplase treatment and careful evaluation of AIS patients, including those with mild stroke, to determine whether the potential benefits of alteplase outweigh the risks. Alteplase is covered in greater detail later in this publication.
- ***Mechanical thrombectomy***, a procedure in which a doctor inserts a catheter into a large blood vessel inside the head and uses a device to pull out a clot, has proven effective in lowering disability from stroke. The updated Guideline increases the recommended time frame for mechanical thrombectomy in select patients from 6 hours to 24 hours after the stroke begins. Unchanged from the previous Guideline is the recommendation that the mechanical thrombectomy be performed at an experienced stroke center; however, patients or families who suspect stroke should call 9-1-1 and let the doctors and emergency responders determine the best hospital for care. Mechanical thrombectomy is also discussed later in this publication.

The updated Guideline increases the recommended time frame for mechanical thrombectomy in select patients from 6 hours to 24 hours after the stroke begins.

New Recommendations for Healthcare Providers

Systems of Care

The updated Guideline recommends developing regional systems of stroke care with facilities that can

- Provide initial emergency care, including administration of IV alteplase
- Perform more advanced care, such as endovascular treatment with comprehensive periprocedural care
- Facilitate rapid transport to advanced centers when appropriate
- Participate in a stroke data repository to improve adherence to treatment guidelines, continuous quality improvement, and patient outcomes

In addition, the Guideline recommends that these systems of care establish door-to-needle times within 60 minutes in 50% or more of stroke patients who are treated with IV alteplase, with secondary door-to-needle times within 45 minutes considered reasonable.

Telestroke/Teleradiology

For hospitals that do not have neurologists on call, the updated Guideline recommends telestroke evaluations to determine a patient's eligibility for IV alteplase; stroke specialists who participate in these video conferences can provide alteplase treatment guidance that's as effective as treatment given at stroke centers. Telestroke may also be reasonable for triaging patients with AIS who may be eligible for transfer to receive mechanical thrombectomy.

Brain Imaging

The updated Guideline recommends brain imaging—typically a noncontrast computerized tomography (CT) scan—within 20 minutes after a patient with suspected stroke arrives at the hospital. A hospital's goal should be to achieve this in at least 50% of patients who may be eligible for IV alteplase or mechanical thrombectomy.

Powers WJ, Rabinstein AA, Ackerson T, et al; for the American Heart Association Stroke Council. 2018 Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association [published online ahead of print January 24, 2018]. *Stroke*. 2018. doi: 10.1161/STR.0000000000000158.

KJ1303

Alteplase

Studies and experience have shown the benefits of using IV alteplase for treating AIS; therefore, all patients who are eligible for alteplase should receive it, even patients being considered for mechanical thrombectomy. Exclusion and inclusion criteria for alteplase therapy has evolved over the years, so it's important to review the updated criteria in Table 6 of the 2018 AIS Guideline.

The goal for IV alteplase treatment is unchanged—treat as soon as possible up to 4.5 hours after symptom onset. Treatment with alteplase may also benefit those with mild symptoms and adults with AIS who have sickle cell disease.

Mechanical Thrombectomy

The updated Guideline recommends that AIS patients should receive mechanical thrombectomy if they

- Have a prestroke modified Rankin Scale score of 0 to 1
- Have causative occlusion of the internal carotid artery or middle cerebral artery segment 1 (M1)
- Are age 18 years or older
- Have a National Institutes of Health Stroke Scale score of 6 or greater
- Have an Alberta Stroke Program Early CT score of 6 or greater
- Can receive treatment (groin puncture) within 6 hours of symptom onset

In addition, mechanical thrombectomy is recommended for select patients who

- Are within 6 to 24 hours of symptom onset
- Have large-vessel occlusion in the anterior circulation
- Meet other DAWN[1] or DEFUSE-3[2] eligibility criteria

Revascularization

The updated Guideline recommends performing noninvasive imaging of the cervical vessels within 24 hours of admission for patients who have mild or nondisabling AIS in the carotid territory and are candidates for carotid endarterectomy or stenting to prevent subsequent stroke. If there are no contraindications, it is reasonable to perform the revascularization procedure between 48 hours and 7 days of the index event.

Antiplatelet and Anticoagulant Therapy

Aspirin is recommended for AIS patients within 24 to 48 hours after symptom onset, as follows:

For AIS patients who	Recommendation
Were treated with IV alteplase	Aspirin is generally withheld for 24 hours.
Were treated with IV alteplase and have concomitant conditions	Earlier aspirin treatment might be considered if • It is known to provide substantial benefit in the absence of IV alteplase, *or* • Withholding such treatment is known to cause substantial risk
Have mild stroke symptoms and were not treated with IV alteplase	Dual antiplatelet therapy with aspirin and clopidogrel started within 24 hours and continued for 21 days may prevent secondary stroke.

It is reasonable that patients with atrial fibrillation start oral anticoagulants within 4 to 14 days of the AIS event. Immobile patients with AIS should receive intermittent pneumatic compression to prevent venous thromboembolism, such as deep vein thrombosis.

It is unclear if prophylactic-dose subcutaneous heparin (unfractionated heparin or low-molecular weight heparin) is beneficial in these patients.

Blood Pressure Management

The updated Guideline recommends the following to manage blood pressure in AIS patients:

For AIS patients who	Recommendation
Have comorbid conditions requiring blood pressure reduction	Early hypertension treatment to lower blood pressure by 15% is probably safe.
• Did not receive IV alteplase or endovascular treatment • Do not have a comorbid condition that requires acute antihypertensive treatment	• If blood pressure is less than 220/120 mm Hg, treatment of hypertension within the first 48 to 72 hours after an AIS is of no benefit. • If blood pressure is 220/120 mm Hg or higher, the benefit of lowering blood pressure is unknown, but lowering by 15% in the first 48 to 72 hours after an AIS is reasonable.
Receive IV alteplase	Blood pressure should be maintained below 180/105 mm Hg during and for 24 hours after the administration.
Are undergoing mechanical thrombectomy	It is reasonable to maintain blood pressure below 180/105 mm Hg during and for 24 hours after the procedure.

Additional Patient Care Considerations

In patients with AIS, evidence does not support the routine use of these diagnostic tests:

- Brain magnetic resonance imaging (MRI)
- Intracranial computerized tomographic angiography (CTA) and magnetic resonance angiography (MRA)
- Prolonged cardiac monitoring
- Echocardiography
- Blood cholesterol (if not on a statin)
- Obstructive sleep apnea
- Hyperhomocysteinemia
- Thrombophilic states
- Antiphospholipid antibodies

If AIS patients have atrial fibrillation, they should receive cardiac monitoring for at least the first 24 hours after AIS. Prolonged cardiac monitoring to detect atrial fibrillation after AIS may not be useful.

For AIS patients who were already taking statins, it is reasonable to resume their medication while they are hospitalized. Measuring blood cholesterol of patients already on an optimized statin regimen may be useful to identify eligible candidates for PCSK9 inhibitor therapy, which may further reduce the risk of heart attack or stroke.

For AIS patients who are hospitalized, screening for dysphagia before the patient begins eating, drinking, or receiving oral medications to identify patients at increased risk for aspiration is reasonable. If the patients' ability to eat is limited by dysphagia, healthcare providers should start tube feeding within 7 days.

References

1. Nogueira RG, Jadhav AP, Haussen DC, et al; for the DAWN Trial Investigators. Thrombectomy 6 to 24 hours after stroke with a mismatch between deficit and infarct [published online ahead of print November 11, 2017]. *N Engl J Med.* 2017. doi: 10.1056/NEJMoa1706442.
2. Albers GW, Marks MP, Kemp S, et al; and the DEFUSE 3 Investigators. Thrombectomy for stroke with perfusion imaging selection at 6–16 hours. *N Engl J Med.* In press.

To download the full version of the 2018 AIS Guideline, please visit http://stroke.ahajournals.org/lookup/doi/10.1161/STR.0000000000000158, or download a QR code reader app and scan this QR code with your smartphone.

Don't miss these important late-breaking trial results at ISC today and Friday!

Thursday Main Event
10:30 a.m.-Noon
Thursday, Jan. 25
Hall K

- **11 a.m.**
  A Comparison of Direct Aspiration Versus Stent Retriever as a First Approach (COMPASS): A Randomized Trial (LB4)
  J. Mocco, Mount Sinai Hospital, New York
- **11:12 a.m.**
  ARISE II Trial Results (LB5),
  Osama Zaidat, Mercy Health St. Vincent's Hospital, Toledo, Ohio
- **11:24 a.m.**
  Subgroup Analyses of the DEFUSE 3 Study (LB6)
  Maarten G. Lansberg, Stanford University, Stanford, California
- **11:36 a.m.**
  The Effect of Rivaroxaban With Aspirin on Stroke Outcomes in the Cardiovascular Outcomes for People Using Anticoagulation Strategies (COMPASS) Trial (LB7)
  Mukul Sharma, McMaster University, Hamilton, Ontario, Canada
- **11:48 a.m.**
  Ticagrelor With Aspirin on Platelet Reactivity in Minor Stroke or Transient Ischemic Attack (PRINCE Trial)-Final Analysis (LB8)
  Yilong Wang, Beijing Tiantan Hospital, Beijing, China

Friday Closing Main Event
10:30 a.m.
Friday, Jan. 26
Hall K

- **11:53 a.m.**
  Pharyngeal Electrical Stimulation for Early Decannulation in Tracheotomised Stroke Patients With Dysphagia (PHAST-TRAC): A Randomized, Single-blind, Pivotal, Superiority Trial (LB16)
  Philip M. Bath, University of Nottingham, Nottingham, United Kingdom
- **12:05 p.m.**
  DEFUSE 3 Angiographic Results Correlated With Clinical and Imaging Outcomes (LB17)
  Michael P. Marks, Stanford Hospital, Stanford, California
- **12:17 p.m.**
  Final Results of the RHAPSODY Trial
  Patrick Lyden, Cedars-Sinai Medical Center, Los Angeles, California

Session to highlight link between CVD brain health and cognitive decline

Speakers will discuss the relationship between cardiovascular brain health and cognitive decline in "Brain Health: A Cocktail for Healthy Aging" on Thursday at 1:30-3 p.m. in Room 151.

The session will also feature the recently published AHA/ASA Presidential Advisory "Defining Optimal Brain Health in Adults." The advisory complements the AHA's Strategic Impact Goal to improve cardiovascular health of all Americans by 20 percent and to reduce deaths from cardiovascular diseases and stroke by 20 percent by the year 2020.

The role of cardiovascular risk factors in cerebrovascular injury is closely associated with cognitive impairment and decline. Because many cardiovascular risk factors are modifiable, it may be possible to maintain brain health and prevent dementia in later life.

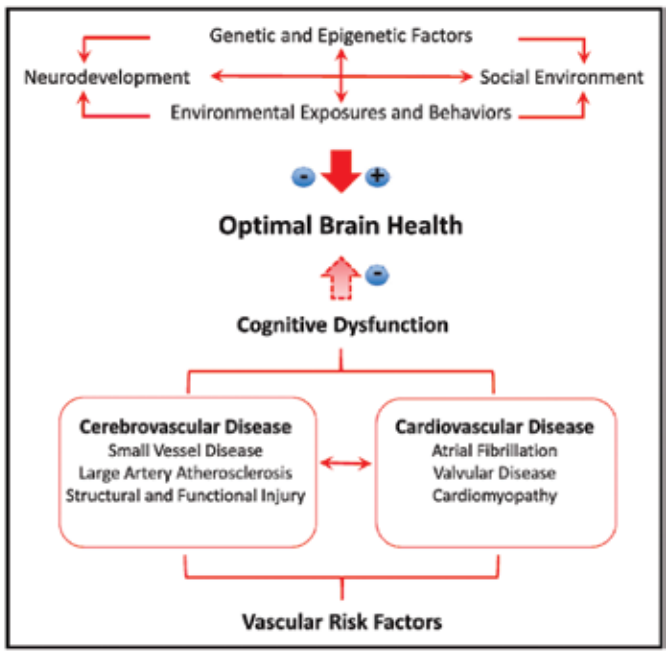
With this link, the AHA is entering a new clinical, scientific and advocacy work space: brain health.

"For many years, we thought about cognitive impairment and dementia as largely a neurodegenerative process that did not have anything to do with vascular risk factors and healthy lifestyle," said Philip B. Gorelick, MD, MPH, FAHA, executive medical director of Mercy Health Hauenstein Neurosciences in Grand Rapids, Michigan, and chair of the advisory's writing group.


Philip B. Gorelick, MD, MPH, FAHA

"Alzheimer's disease, the most common form of age-related cognitive impairment, has been the poster child of cognitively impairing diseases of later life. More recently, we have learned that vascular risk factors and lifestyle are linked to Alzheimer's disease. Thus, Alzheimer's disease may be preventable, or we may be able to slow down the process."

The writing group employed the AHA's Life's Simple 7 to outline a strategy for maintaining brain health. Seven metrics that define optimal brain health in adults include four ideal health behaviors (nonsmoking, physical activities, healthy diet consistent with current guidelines and body mass index of <25 kg/m2) and three ideal health factors (untreated blood pressure of <120/<80 mm Hg, untreated cholesterol <200 mg/dL and fasting blood glucose <100 mg/dL).



Genetic, environmental and behavioral factors can promote or hinder optimal brain health. Vascular risk factors negatively influence optimal brain health through cardiovascular and cerebrovascular alterations that produce brain dysfunction and damage, leading to cognitive dysfunction. (*Courtesy of* Stroke.)

"Achieving optimal cardiovascular health can have a dramatic impact on reducing the risk of heart attack, stroke and dementia," said Lee H. Schwamm, MD, FAHA, professor of neurology at Harvard Medical School in Boston, Massachusetts.


Lee H. Schwamm, MD, FAHA

"The audience will leave with a better understanding of why a broader definition of the impact of vascular disease on the brain is imperative, why brain health should be an important endpoint in trials studying interventions to reduce vascular events and how new strategies are needed to blunt that trajectory many decades upstream from when patients present with symptoms of cognitive decline."

Speakers also will examine the scientific definition of optimal brain health and the pathophysiologic mechanisms that link vascular and neuronal function.

Costantino Iadecola, MD, director of the Feil Family Brain and Mind Research Institute at Weill Cornell Medical College in New York City, will weigh in on the vascular contributions to cognitive impairment and dementia. He also will explore the role of the neurovascular unit, which is the focal point for vascular injury. A tightly coupled, highly functioning neurovascular unit may prevent the downstream consequences from the metabolic and genetic dysfunction that leads to cognitive decline.

Maintaining optimal brain health and preventing or controlling vascular risk factors isn't limited to the aging and elderly, Schwamm said. "We want to establish a platform for brain health in your 30s, which you can carry forward the rest of your life to enjoy your 70s and 80s. The longer you sustain a youthful brain, the longer you postpone cognitive decline and recognizable symptoms of brain injury."

Speakers also will identify recommendations of the AHA's Taskforce on Brain Health and Healthy Aging and the organization's advocacy efforts. ■

DEBATES

continued from page 3

professor of medicine and neurology, University of Alberta in Canada, will argue for the con side.

- "Prolonged Cardiac Ambulatory Monitoring Wide Use Versus Not" is the third debate being presented.

"We know that a substantial proportion of patients who experience a stroke also have undiagnosed atrial fibrillation, and that AFib in many cases is likely what caused their stroke to begin with," Ovbiagele said. "But, by the time they come into the hospital and the time that we work them up, they've gone back to sinus rhythm and no AFib. It's hard to say cause and effect.

"The question is, 'How long do you monitor patients after the stroke and what impact will that have in terms of timely prevention of a recurrent stroke?' Some clinicians say patients should be monitored for a week, others say for a month and still others for six months to one year. It's an important issue because the treatment for atrial fibrillation is unique in itself. So if somebody is thought to have AFib, we switch them to anticoagulation versus putting them on antiplatelet therapy."

Alejandro A. Rabinstein, MD, professor of neurology at Mayo Clinic College of Medicine and Science in Rochester, Minnesota, will argue the pro side. J. David Spence, MD, professor of neurology and clinical pharmacology at the University of Western Ontario London in Ontario, Canada, will present the con side.

The audience will be polled before and after the debates. ■

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

CRYSTAL AF STUDY

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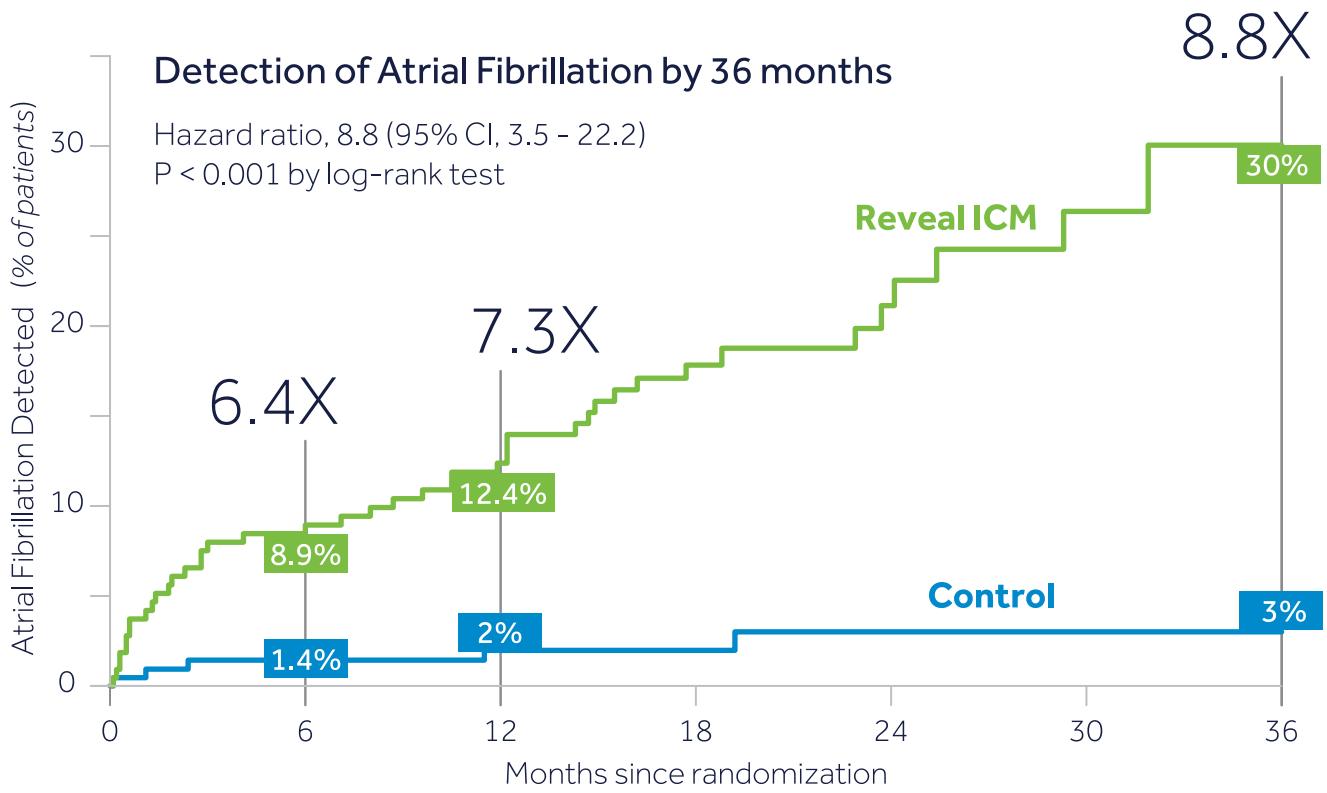

Short- and intermediate-term cardiac monitoring may miss many patients with paroxysmal AF.[2]

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.

84 DAYS

median time to AF detection in cryptogenic stroke patients[2]

88%

of patients who had AF would have been missed if only monitored for 30 days[2]

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Researchers exploring interactions, mechanisms of stroke, diabetes

The effects of interactions between stroke and diabetes are clear — but the mechanisms aren't, a presenter said in a seminar Wednesday at ISC.

"Diabetes triggers systemic inflammation, arterial stiffness and endothelial dysfunction that leads to atherosclerosis and stroke," said Wuwei Feng, MD, MS, associate professor of neurology and director of the Post-stroke Spasticity Clinic at the Medical University of South Carolina. "By the time you diagnose diabetes, the risk for stroke is already elevated."

Stroke and diabetes share multiple risk factors, including obesity, hypertension, hyperlipidemia, inactivity, smoking and poor dietary habits.

Diabetes is a recognized risk factor for stroke, particularly ischemic stroke. AHA/ASA guidelines for primary stroke prevention recommend blood pressure below 140/90 mmHg and statins for adults with diabetes. The organization also recommends diabetes screening following an initial stroke or TIA for secondary stroke prevention. In addition, the American Diabetes Association recommends glycemic control and cardiovascular risk factor management.

"We have quite a few options with both lifestyle modification and medication," Feng said.

Hyperglycemia, the defining diagnostic feature of all diabetes types, is involved, but the mechanisms are not clear. There may also be a deleterious effect from the recurrent hypoglycemia that commonly occurs during diabetes treatment.

Karen C. Johnston, MD, MSc, (left), and Kunjan R. Dave, PhD, were among the presenters sharing key study results at Wednesday's session "Impact of Diabetes on Stroke: From Bench to Bedside."

Ischemic stroke on its own increases inflammation in the brain as well as advanced glycation end products, reduced GABA release, increased oxidative stress, increased cell death and vascular changes.

Animal models show increased ischemic damage in the presence of diabetes.

Kunjan R. Dave, PhD, research associate professor of neurology at the University of Miami Miller School of Medicine, found that hypoglycemia increases glucose transporter levels in the brain, which increases intra-ischemic lactate levels. But the effects are unclear.

Hyperglycemia, the more prevalent state in diabetes, increases cerebral damage from stroke. Ischemia and reperfusion impair vascular endothelial growth factor, which reduces VEGF signaling and vascular function.

"The functional outcome of stroke is worsened in all models of diabetes even when there is no change in infarct size," said Adviye Ergul, MD, PhD, Regents Professor of Physiology at the Medical College of Georgia. "Both diabetes and stroke are vascular diseases and lack of vascular function is associated with poorer outcomes."

Hyperglycemia is associated with worse outcomes in acute ischemic stroke, but it's unclear how to treat hyperglycemia during stroke. The SHINE (Stroke Hyperglycemia Insulin Network Effort) trial may provide answers later this year.

"The trial will inform many of the questions we all have about hyperglycemia and stroke," said Karen C. Johnston, MD, MSc, professor of neurology at the University of Virginia and principle investigator of SHINE. ■

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
- Ongoing Clinical Trials

Researcher receives Dan Adams Award posthumously

The American Heart Association and the Henrietta B. and Frederick H. Bugher Foundation posthumously awarded the 2018 Dan Adams Thinking Outside the Box Award to Richard (Dick) Traystman, PhD, on Wednesday.

Richard (Dick) Traystman, PhD

The award honors a person whose work pushes scientific boundaries and helps accelerate science and research. During his decades-long career, Traystman made lasting scientific contributions, including in the field of cerebral blood flow and metabolism. He died Oct. 19, 2017.

The Bugher Foundation began in 1961 under the leadership of Nelson Adams, Dan's father. The foundation began working with the American Heart Association in the mid-1980s and a decade later Dan Adams joined his father as a trustee.

Dan died in 2015, and months later, the Bugher Foundation — led by the remaining trustees, his sons Bryan and Bruce, and longtime fellow trustee Gayliss Ward — donated $675,000 to the AHA to establish the award. Awardees show Dan's commitment to innovative thinking. ■

HYPERTENSION

continued from page 3

focus on lifestyle modification, blood pressure management and treatment.

"We know the lower the blood pressure, the better," said Lackland, who is also professor of neurology at Medical University of South Carolina. "But how we reach that lower blood pressure will probably differ, depending on the culture and availability of treatment. That's the theme we will be addressing."

For example, in sub-Saharan Africa, affordable anti-hypertensive medication is scarce and blood pressure readings aren't often measured. But in the United States, blood pressure readings are routine and inexpensive medication is prevalent.

More than 300 million people have hypertension caused by high dietary salt, according to the World Hypertension League. The World Health Organization recommends that adults consume less than 2,000 mg/sodium daily. Dietary guidelines indicate that the majority of American adults eat more sodium than they should — an average of more than 3,400 mg/day.

In the United States, 70 percent of sodium consumed comes from processed and restaurant foods. Only a small amount comes from the salt shaker, either during cooking at home or at the dinner table. Conversely, in China, where sodium intake ranges from about 2,491 mg to 4,377 mg per day, most excess sodium in the diet is derived from the soy sauce pervasively used in home cooking. Reducing sodium and thereby stroke risk in China will likely require a different strategy than in the United States, where convenience food plays a major role.

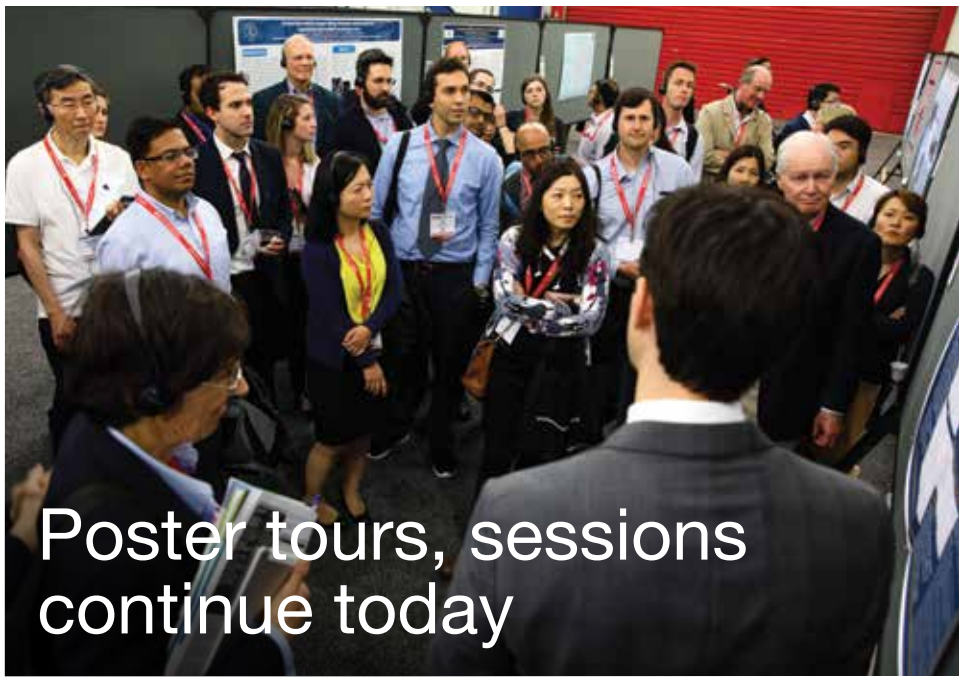
The session will also include:

- Implementation of Hypertension Control Strategies to Reduce Stroke Risks
- Janet Wright, director of Million Hearts, will discuss critical global considerations for blood pressure measurement and stroke prevention.

The forum is the first to bring hypertension specialists and stroke neurologists together to take a global stance on blood pressure regulation, stroke risk and international population health.

"It is a new frontier," Lackland said. ■

To download the full version of the 2017 hypertension guidelines, visit **http://professional.heart.org/hypertension**.



Poster tours, sessions continue today

ISC 2018 offers two types of poster sessions: professor-led poster tours and one-on-one individual Q&A poster presentations.

Choose from 10 Professor-Led Poster Tours today at 5:15 p.m.-6:15 p.m. in Hall H. Expert moderators will lead these tours, which are organized by category; they provide a short presentation and Q&A with each of the poster authors in that section.

To take part, simply review the Poster Abstracts section of the Final Program (page 87) or view the Moderated Poster Sessions on the Mobile Meeting Guide app. Decide which section/category of posters you would like to attend. Then, at 5:10 p.m., arrive at the correspondingly numbered "Section" sign for your selected section/category. Headsets will be available for ease of listening to the presenters.

During the Regular Poster Sessions, presenters will be at their posters for informal Q&As with attendees today at 6:15-6:45 p.m. in Hall H. These one-on-one posters are not a part of the earlier Professor-Led Poster Tours. To see the posters featured in today's Regular Poster Sessions, go to page 94 of the Poster Abstracts section of the Final Program or view the Poster Sessions on the Mobile Meeting Guide app.

Posters also will be available for viewing in the Poster Hall (Hall H) today at 8 a.m.-6:45 p.m. ■

Professor-Led Poster Tours
5:15-6:15 p.m.
Posters TMP1–TMP120

1. Acute Endovascular Treatment Moderated Poster Tour II
2. Acute Nonendovascular Treatment Moderated Poster Tour
3. Basic and Preclinical Neuroscience of Stroke Recovery Moderated Poster Tour
4. Clinical Rehabilitation and Recovery Moderated Poster Tour
5. Community/Risk Factors Moderated Poster Tour II
6. Emergency Care/Systems Moderated Poster Tour
7. Health Services, Quality Improvement and Patient-Centered Outcomes Moderated Poster Tour II
8. In-hospital Treatment & Vascular Cognitive Impairment Moderated Poster Tour
9. Pediatric Stroke, Vascular Biology in Health and Disease and Vascular Malformations Moderated Poster Tour
10. Preventive Strategies Moderated Poster Tour

Please see page 53 of the Final Program for the Poster Hall map.

Regular Poster Sessions
6:15-6:45 p.m.
Posters TP1– TP428
These posters are not included in the 5:15 p.m. Professor-Led Poster Tour Session.

- Acute Endovascular Treatment Posters II
- Acute Neuroimaging Posters II
- Acute Nonendovascular Treatment Posters II
- Aneurysm Posters II
- Basic and Preclinical Neuroscience of Stroke Recovery Posters II
- Cerebral Large Artery Disease Posters II
- Clinical Rehabilitation and Recovery Posters II
- Community/Risk Factors Posters II
- Diagnosis of Stroke Etiology Posters II
- Emergency Care/Systems Posters II
- Experimental Mechanisms and Models Posters II
- Health Services, Quality Improvement, and Patient-Centered Outcomes Posters II
- In-hospital Treatment Posters II
- Intracerebral Hemorrhage Posters II
- Nursing Posters II
- Preventive Strategies Posters II
- SAH and Other Neurocritical Management Posters II
- Vascular Biology in Health and Disease Posters II
- Vascular Cognitive Impairment Posters II
- Ongoing Clinical Trials Posters II

GLOBAL

continued from page 1

inroads to reduce stroke risk factors and improve health outcomes. In China, for example, the government has begun supplying a soy sauce substitute that contains only 50 percent sodium chloride, which is helping to reduce population-wide hypertension. Similarly, the governments of Sri Lanka and Northern Ireland have begun employing WHO's M Power Program, a tobacco-free initiative that is helping to reduce smoking.

"We all need to do our part to prevent stroke by going after the underlying causes and lobbying our government," said presenter M. Patrice Lindsay, BScN, PhD, from Etobicoke, Ontario, Canada. "The incidence of stroke isn't going to change unless we do something about it."

Policies that yield the greatest population impact target individuals, industry and government and also focus on prevention and risk factors such as sodium reduction, physical inactivity, smoking and high blood pressure, Lindsay said. "With every region in the world, blood pressure is No. 1."

Brazil is an example of how government policies can improve hyperacute and acute care in low-resource settings to impact stroke incidence and mortality, said presenter Sheila Martins, MD, PhD, from Alegre, Brazil.

For 20 years, stroke had been the leading cause of death. And initially, stroke prevention wasn't a priority for Brazil's Ministry of Health (MOH). "They argued that tPA was too expensive for Brazil's universal and free health system," Martins said. Yet, with stroke responsible for 400,000 deaths per year, the MOH came around.

Starting in 2008, the MOH launched several initiatives, including the Stroke Pilot Project, the Brazilian Stroke Network to improve stroke education and the National Policy for Stroke. Seventeen years after the FDA approved tPA use in the United States, it was approved to treat stroke in Brazil.

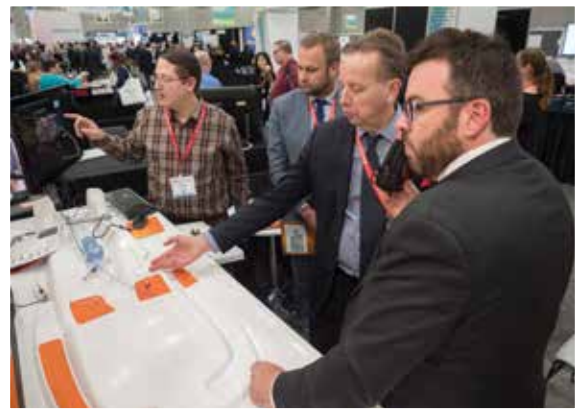
Because of these government programs and the development of 150 public and private stroke centers, stroke is now the second-leading cause of death in Brazil. "Involving the government to create a national stroke program in LMICs can be done," Martins said.

Foad Adb Allah, MD, from Cairo, Egypt, wrapped up the session with a discussion about a proven strategy for improving the quality of life for stroke survivors in LMICs: home-based stroke rehabilitation, guided by tele-rehabilitation or DVD. "Home-based rehabilitation is feasible and a cost-effective measure for stroke recovery, and an option that's available to LMICs," Allah said. ■

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 from 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** to learn more about AHA/ASA initiatives, education, membership and publications.



2018 ISC Exhibitors

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

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

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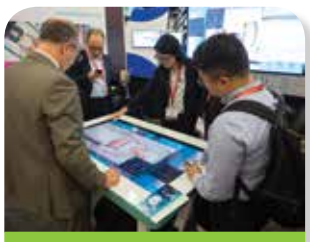

Simulation Zone

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® G5 Simulator** is a portable high-fidelity endovascular simulator enabling hands-on procedural training for clinicians and medical professionals.

Schedule

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.

Poster Hall

Be sure to visit the Poster Hall, located adjacent to the Science & Technology Hall in Hall H, to see more than 500 posters each day.

Expert Theater

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

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

HeadQuarters Theater Schedule

Thursday, Jan. 25

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

11-11:30 a.m.
Developments in Mission: Lifeline Stroke
Presenter: Peter Panagos and **James Lugtu**

Expert Theater Schedule

Booth 401
Enjoy complimentary lunch* while learning the latest advances in stroke practices, services and technologies.

Thursday, Jan. 25

12:10-12:40 p.m.
Cryptogenic Stroke — The Missing Linq
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.*

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

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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:
Cerenovus • Chiesi USA • Medtronic

PIOGLITAZONE

continued from page 1

Kernan said the effects of pioglitazone on stroke alone are also very positive. The original IRIS results, published in 2016, showed a non-significant reduction in stroke occurrence.

A secondary analysis using current AHA stroke definitions showing significant secondary prevention effects will be presented during an oral presentation at 7-7:36 a.m. Thursday in 515 A.

The need for effective stroke prevention is significant, particularly for diabetes.

"Cardiometabolic risk factors — hyperlipidemia, excessive weight, physical inactivity, hyperglycemia, tobacco use and hypertension — are the top six leading causes of death in the world," said Nathan Wong, PhD, professor and director of the Heart Disease Prevention Program at the University of California, Irvine. "The risk of ischemic stroke more than doubles in the setting of diabetes."

Insulin resistance is among the hallmarks of both Type 1 and Type 2 diabetes. And while insulin resistance is just one of several deleterious effects of diabetes, it produces a variety of pro-atherosclerotic and pro-hypercoagulability changes: endothelial dysfunction, inflammation, dyslipidemia, proliferation of vascular smooth muscle cells and thrombosis. The culprits are familiar to a stroke specialist: hypertension, hyperlipidemia, and, most importantly, obesity.

Obesity is not just an excessive accumulation of adipose tissue, said Dawn Kleindorfer, MD, professor of neurology and vascular neurology at the University of Cincinnati. Adipose tissue is an endocrine organ.

Enlargement and inflammation of adipose tissue induce a change in its hormonal secretion profile. Changes in leptin production affect energy homeostasis. Increasing production of Interleukin 6 and TNF-α reduces insulin sensitivity and increases insulin resistance and systemic inflammatory responses. Secretion of procoagulants and PAI (plasminogen activator inhibitor)-1 increases thrombosis and fibrinolysis.

"One gets you seven," Kleindorfer said "Every one-unit increase in BMI above 20 kg/m^2 increases stroke risk by 7 percent."

Stroke also increases the risk of diabetes. The incidence of diabetes is significantly higher after stroke and after other cardiovascular diseases, said Joshua Z. Willey, MD, MS, assistant professor of neurology at Columbia University Medical Center. Stroke patients who develop diabetes are at increased risk of recurrent stroke. Diabetes also increases the risk of death and worsening disability and cognition.

"Every patient with a stroke should be screened for diabetes," Willey said. "For patients with stroke, their risk for diabetes goes far beyond what you might expect for age and ethnicity alone." ■

Start Planning Now for Your Science at ISC 2019!

ISC 2019 and Nursing Symposium 2019 Call for Science Dates

Session Ideas
Suggested Session Submitter Opened: Monday, Jan. 22, 2018
Suggested Session Submitter Closes: Monday, Feb. 26, 2018

Abstracts
Submission Opens: Wednesday, May 23, 2018
Submission Closes: Tuesday, Aug. 14, 2018

Late-Breaking Science and Ongoing Clinical Trials Abstracts
Submission Opens: Wednesday, Oct. 10, 2018
Submission Closes: Wednesday, Nov. 7, 2018

The link to submit abstracts and/or session ideas can be found at **strokeconference.org/submitscience** on the applicable date above. Start planning now for the International Stroke Conference 2019, **Feb. 6-8**, in Honolulu, Hawaii!

Claim Your CME/CE Credit

You have two ways to complete your conference evaluation and claim your CME/CE credits for the conference, pre-conference symposia and/or nursing symposium.

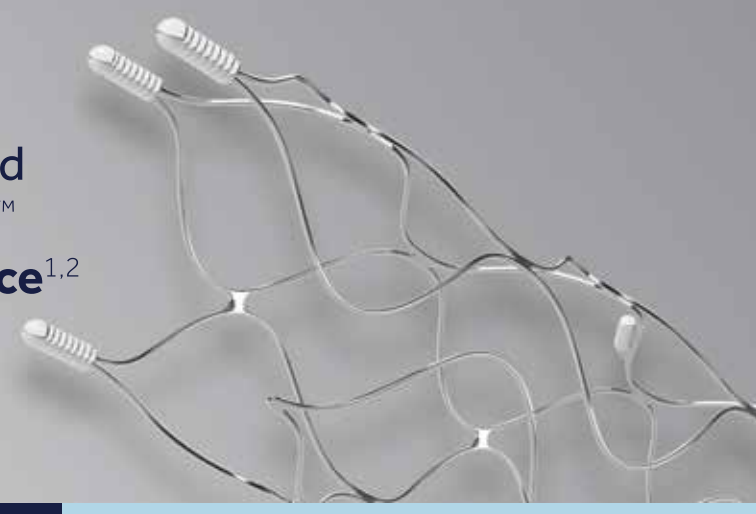
1. Stop by the Communication Center at Registration in front of Hall H, Level 1, in the Los Angeles Convention Center.
2. Visit **learn.heart.org** from any computer with an Internet connection.

CME/CE credit will no longer be available to claim for ISC 2018 after July 26, 2018.

International attendees may obtain an attendance verification form at one of the self-service terminals in Registration, located in the front of Hall H, Level 1.

STRATIS STROKE REGISTRY

Real-world, core lab adjudicated registry evaluating the safety and efficacy of the **Solitaire™ Revascularization Device**[1,2]



60% mRS 0-2

VS. 52.2%, p=0.02

HIGHER RATES OF FUNCTIONAL INDEPENDENCE @ 90 DAYS **WITH DIRECT ADMISSION**[3]

Patients admitted directly to endovascular-capable centers have **significantly higher rates of functional independence @ 90 days** (60.0% vs. 52.2%, p=0.02) than transfer patients who received endovascular therapy due to reduced delays to treatment.[3]

STRATIS is one of the largest Acute Ischemic Stroke studies published to date.
***Stroke* September 2017.**

61.8% mRS 0-2

VS. 50.2%, p=0.002

HIGHER RATES OF FUNCTIONAL INDEPENDENCE @ 90 DAYS **WITH BGC**[4]

Solitaire™ device + BGC vs. Solitaire™ device + Distal Access Catheter result in **higher rates of functional independence @ 90 days** (61.8% vs. 50.2%, p=0.002) with fewer passes (1.7 vs. 2.0, p=0.0008).[4]

FEWER PASSES WITH BALLOON GUIDE CATHETER 1.7 passes

VS. 2.0, p=0.0008[4]

Indications, contraindications, warnings and instructions for use can be found on the product labeling supplied with each device. CAUTION: Federal (USA) 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 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.

1 STRATIS Registry cases were performed using 97% Solitaire™ device (includes Solitaire™ 2 and Solitaire™ Platinum) and 3% Mindframe™ Capture LP revascularization device as first device.

2 Mueller-Kronast NH, Zaidat OO, Froehler MT, et al. Systematic Evaluation of Patients Treated With Neurothrombectomy Devices for Acute Ischemic Stroke: Primary Results of the STRATIS Registry. Stroke. 2017;48(10):2760-2768.

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