American Stroke Association.
A division of the American Heart Association.

International Stroke Conference 2023

Science & Technology Hall Map and Exhibitor List
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ISC News

ISSUE 2
Thursday
FEBRUARY 9, 2023

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Opening Main Event:

AHA/ASA to take 'big swing' with health equity initiatives

The Opening Main Event on Wednesday celebrated the American Stroke Association's 25th anniversary and promised a dramatic expansion of initiatives to further reduce death and disability from stroke in the coming years.

"We are committed to making the next 25 years even more impactful," said AHA CEO Nancy Brown, as she listed four key initiatives.

- The HCA Healthcare and HCA Healthcare Foundation's $15 million commitment to Getting to the Heart of Stroke initiative to inspire more collaboration between neurology and cardiology to improve patient care.
- The Leona M. and Harry B. Helmsley Charitable Trust recently contributed $12.1 million to rural health solutions. The investment helps fuel HealthCorps, the AHA's new public health workforce program in rural communities and to increase access to care via telehealth.
- AHA also has $20 million in Health Equity Research Network grants available for use.
- Working with the Rockefeller Foundation and Kroger Health, the AHA is launching a $250 million program to create definitive evidence that Food as Medicine improves health and is cost effective when integrated into the health care system.

"We aim to prove that food and nutrition programs help prevent and treat chronic disease and should be a reimbursable benefit from both public and private health insurers," Brown said. "This is the type of big swing we like to take."

It's not the only big swing the association is taking. The

AHA committed to fund $100 million on new solutions to health inequities and structural racism and to expanding opportunities for those underrepresented in research.

"We have already exceeded this commitment," said AHA President Michelle Albert, MD, MPH, FAHA. "And the AHA has added specific requirements for its large research programs to ensure that teams are diverse."

Among other requirements, at least a quarter of key research team personnel and at least half of named trainees must be from groups underrepresented in science. These equity elements affect application overall evaluation score — and the chance of funding.

Dr. Albert is the Walter A. Haas-Lucie Stern Endowed

see **OPENING SESSION**, page 7

Late-Breaking Science: SPAN results, monitoring ischemic stroke in small- and large-vessel disease and positive neuroprotective effects from aptamer

Late-Breaking Science presented during the Wednesday Opening Main Event reported that:

- A novel preclinical model of ischemic stroke suggests uric acid improves functional outcomes.
- 20% of cardioembolic stroke survivors have atrial fibrillation.
- Aptamer trial shows neuroprotection after ischemic stroke.

A novel Stroke Preclinical Assessment Network (SPAN) identified potential neuroprotective effects from intravenous uric acid (UA) given with thrombolysis following acute ischemic stroke. Six independent laboratories performed a standard transient middle cerebral occlusion in equal numbers of males and females of young mice, young rats, aging mice, mice with diet-induced obesity, and rats with spontaneous hypertension. Following surgery, animals were given thrombolysis plus UA or five other promising neuroprotective candidates. UA exceeded a predetermined efficacy boundary while other treatments did not.

"There are many reasons animal trials do not translate well into human clinical trials — heterogeneity of our stroke populations, inappropriate drug dose or timing and lack of rigor in preclinical trials," said Lauren H. Sansing, MD,

see **LATE-BREAKING**, page 11

Medtronic

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Mark your calendar

Don’t miss our learning studio sessions at #ISC23

Wednesday, February 8

Maintaining Legacy and Exploring Distal Frontiers
12:45 – 1:15pm CST
Learning Studio I,
ISC Exhibit Hall

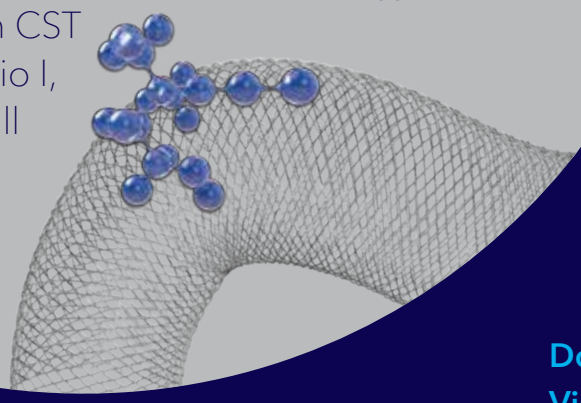
STROKE AF
Results and discussion
7 – 8:30pm CST
Omni Hotel

Registration >

Thursday, February 9

Cases in AF monitoring: Who, when and for how long?
12:45 – 1:15pm CST
Learning Studio II,
ISC Exhibit Hall

Strength in Numbers: Largest multicenter experience with Pipeline™ Flex with Shield Technology™
1:30 – 2:00pm CST
Learning Studio I,
ISC Exhibit Hall



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These events are not part of the official International Stroke Conference 2023 as planned by the AHA/ASA Committee on International Stroke Programming.

Session to debate over therapeutic options for secondary stroke prevention in AF patients

Managing atrial fibrillation (AF) patients prompts a "lively" debate: Which is the better therapeutic option — anticoagulants or AF ablation?

That question is the foundation of Thursday's session, "Controversies in Secondary Stroke Prevention in Patients With AF (Debate)."


Birnbaum

Novel oral anticoagulant (NOAC) therapeutics are the standard of care. But sometimes AF ablation or left atrial appendage closure also make sense.

"I am looking forward to a lively discussion of the pros and cons of the various therapeutic options," said co-moderator Lee Birnbaum, MD, professor of neurology, neurosurgery and radiology at the University of Texas Health San Antonio.

"Some physicians might opt to use a NOAC because they say it is the standard of care, but ablation and appendage closure clearly have a role in the treatment algorithm. One size does not fit all."

UPCOMING SESSION

Controversies in Secondary Stroke Prevention in Patients With AF (debate)
7:30-9 a.m.
Thursday, Feb. 9
Hall E

There are several unanswered questions regarding the use of anticoagulants versus AF ablation, Dr. Birnbaum said. Newer evidence points to the success of AF ablation in reducing stroke risk, particularly when used early after diagnosis.

There's also technological advances and improved safety of left atrial appendage occluder devices. Cardiologists are doing more ablation procedures as well, improving skill and precision.

In debating the challenge of treating patients with AF prior to and after a stroke, Dr. Birnbaum said the first step is making an accurate AF diagnosis, then assessing all aspects of the patient's risk of recurrent stroke. The CHADS-VASc score assists in determining risk.

Anticoagulation is a well-established preventive treatment. However, breakthrough embolic strokes occur, and some patients are vulnerable to bleeding complications. In this instance, ablation may allow the patient to forgo lifelong anticoagulant medicine.

Physicians must also determine a patient's threshold of AF and its correlation to recurrent risk.

Ablation is particularly helpful for AF and rapid ventricle response, Dr. Birnbaum said. But AF can return even after ablation, suggesting the patient may continue to need lifelong monitoring.

"Cardiologists are doing more of these procedures every day," Dr. Birnbaum said. "It is a promising option for patients who can't be on anticoagulants or perhaps do not want to take blood thinners for their entire life. One's cumulative risk from lifelong anticoagulation needs to be considered in this treatment algorithm. The HAS-BLED score was developed to assess bleeding risk in clinical practice."

For patients who require or choose ablation, however, there's minimal increased risk at the time of the procedure. This includes bleeding at the groin or experiencing AF. More serious complications, though rare, can occur as well. ●

Session to feature advances, potential ways to manage hypertensive cerebral small vessel disease

An expert panel in Thursday's session, "Hypertensive Arteriolosclerosis: Common but Understudied," will discuss advances in understanding hypertensive cerebral small vessel disease (HTN-cSVD) and potential approaches to manage it.


Gurol

HTN-cSVD is the most common type of brain microangiopathy that can result in acute and chronic brain injuries. It can cause acute lacunar infarcts and hypertensive deep-seated brain bleeds that can be fatal or highly disabling, especially in patients taking oral anticoagulants. Chronic damage results from decreased blood flow to brain structures.

"Small vessel diseases of the brain are responsible not only for ischemic and hemorrhagic strokes, but also vascular cognitive impairment and dementia," said M. Edip Gurol, MD, MSc, director of the High Hemorrhage Risk Stroke Prevention Clinic at Massachusetts General Hospital in Boston. "They are also major sources of disability and death in older adults."

UPCOMING SESSION

Hypertensive Arteriolosclerosis: Common but Understudied
7:30-9 a.m.
Thursday, Feb. 9
Room C155/156

Yet, mechanisms linking HTN-cSVD to brain tissue injury and cognitive impairment are not well known.

"Consequently, specific preventive or therapeutic methods targeting physiopathological processes are scarce," Dr. Gurol said. "For a chronic progressive disease such as HTN-cSVD, it's important to understand the expected clinical findings and differentiate it from other conditions that might have different treatments."

Clinically, ischemic and hemorrhagic strokes and cognitive and gait problems are commonly seen along with a large spectrum of brain MRI findings. Cognitive impairment is a frequent occurrence in later stages of the disease. Some of the pathological findings seen on imaging are white matter disease, microinfarcts, covert lacunes and microbleeds.

"Diagnosing HTN-cSVD isn't complicated when neurologists recognize the clinical presentation and brain imaging findings," Dr. Gurol said.

Because HTN-cSVD can significantly increase the risk of fatal brain bleeds, presenters will address safer stroke prevention methods and potentially unsafe drugs, such as anticoagulants, including the newer direct oral anticoagulants.

"We will also discuss ischemic stroke prevention methods, such as left atrial appendage closure versus lifelong oral anticoagulant use for patients with HTN-cSVD who also have atrial fibrillation," Dr. Gurol said.

Potentially promising new therapies and racial, ethnic and sex-based disparities in HTN-cSVD management will also be discussed, he said. ●

ISC News is produced for the American Heart Association/American Stroke Association's International Stroke Conference by Ascend Media, LLC (**ascendmedia.com**).

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International Stroke Conference 2023

American Stroke Association
A division of the American Heart Association.

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Get With The Guidelines-Stroke is the American Heart Association's in-hospital quality improvement program focused on improving stroke care by providing medical teams with tools and resources to increase adherence to the latest scientific treatment guidelines. Target: Stroke is a Get With The Guidelines-Stroke initiative that aims to improve acute ischemic stroke care by reducing door-to treatment times for patients eligible for intravenous thrombolysis and endovascular therapy. **heart.org/gwtgstroke**

Quality Improvement Research
The American Heart Association's suite of Quality Improvement programs promote excellence in prospective and retrospective research. A key component of these quality programs, such as Get With The Guidelines, is the collection of data that participating hospitals can use for their own quality improvement efforts. Additionally, there is the opportunity for scientific research from our National Level Database. The AHA offers a cloud-based research data analysis platform, the Precision Medicine Platform, with secure, private workspaces equipped with tools for data analysis, machine learning and artificial intelligence. Stop by to learn more about this innovative opportunity.
heart.org/qualityresearch

Research
The AHA currently funds more than 1,379 projects across the U.S. In FY 2020-21,the AHA invested $135.8 million to fund 598 new proposals. Follow us on Twitter **@AHA_Research** or visit **professional.heart.org/research**.

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This is your source for the latest in Stroke Continuing Education. Find the AHA online educational activities or claim CE for ISC 2023 at **learn.heart.org**.

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Immediate impact. Global influence.
Access the 13 AHA scientific journals' content via **AHAjournals.org**. Print copies of *Stroke* will be available in the booth. Scan the QR code here for the AHA Journals' Publishing Guide and Overview and quickly review publishing requirements and policies. Also learn about special features available in each journal. For the AHA's scientific statements and clinical practice guidelines, visit **professional.heart.org/statements**.
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American Heart Association. Support Network

Patient Support
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Vascular Health Programs
Legs and feet could hold a clue to heart health. Peripheral artery aisease is largely overlooked – together we can change that. Review the Peripheral Artery Disease (PAD) National Action Plan: *A road map for a coordinated, enduring approach to PAD care.* Download a full copy of the plan:
heart.org/PADActionPlant

AHA International
The American Heart Association is actively working in more than 100 countries and with 200 cardiovascular societies and organizations around the world to educate and inform, implement programs, advocate for policy change, and strengthen health care systems to help improve and save lives. Discover more about our international work in stroke center certification and health care quality improvement, advocacy and science advancement.
international.heart.org

Experts to explore astrocytes' role in central nervous system injury and repair

Presenters will discuss the emerging role of astrocytes for augmenting brain recovery in ischemic stroke in the "Paracrine Protection by Neurons by Astrocytes in Ischemic Stroke" session.


Lyden

"One novel idea we'll explore is that astrocytes secrete substances that protect neurons during stroke," said Patrick Lyden, MD, professor of physiology and neuroscience at the Zilkha Neurogenic Institute of USC in Los Angeles.

Dr. Lyden's presentation will focus on the direct paracrine protection astrocytes may provide by communicating calcium oscillations and other complex and interdependent signalling pathways and fundamental mechanisms.

Astrocytes comprise the major non-neuronal cell population in the mammalian neurovascular unit, which is a complex multicellular structure consisting of endothelial cells, neurons, glia, smooth muscle cells and pericytes.

Traditionally, these glial cells play broad roles in central nervous system (CNS) homeostasis, including managing extracellular ion balance and pH, regulating neurotransmission and controlling cerebral blood flow and metabolism. Astrocytes are also known for their bad reputation.

"We know that astrocytes get activated during stroke and make a glial scar; that glial scar kills neurons," Dr. Lyden said. "Within the last year or two, however, recent data has begun demonstrating the functional properties of astrocytes and their contribution to injury and repair after CNS injury and disease."

The session for both scientists and clinicians will also include a discussion of another surprising new mechanism in the neurovascular unit: the capability of astrocytes to release and transfer mitochondria into adjacent neurons.


Hayakawa

"The endogenous mitochondrial transfer mechanism gives us a hint to utilize isolated mitochondria transplantation for brain protection and repair," said presenter Kazuhide Hayakawa, PhD, assistant investigator of radiology at the Mass General Research Institute in Boston and assistant professor of radiology at Harvard Medical School.

"Astrocytes are one of the important cell types in the brain allowing us to promote brain recovery after ischemic stroke. Hopefully, astrocyte-originated mitochondria or its mitochondrial component transplants may become a novel therapeutic intervention in stroke."

UPCOMING SESSION

Paracrine Protection of Neurons by Astrocytes in Ischemic Stroke
7:30-9 a.m.
Thursday, Feb. 9
Ballroom C3/C4

The robust session will conclude with a discussion on how treatments may inadvertently suppress astrocyte-neuron interactions, which may partly explain some previous clinical translational failures.

"When we ignore the functional properties of astrocytes, we inadvertently cause harm either because we suppress the magic from astrocytes or we promote astrocyte activation in the wrong direction," Dr. Lyden said. •

Potential blood flow treatment still faces hurdles

Sold under the brand names TNKase, Metalyse and Elaxim, the thrombolytic drug tenecteplase has recently shown promise to restore blood flow in stroke patients.

The potential for the treatment — and some hesitancy for it to replace FDA-approved alteplase — will be the focus of Thursday's session, "The Road to Tenecteplase in Routine Clinical Practice: Are We There Yet?"


Bandela

"One of the main reasons for reluctance is that tenecteplase is not level 1 on the American Stroke Guidelines despite multiple clinical trials and retrospective studies favoring tenecteplase as opposed to alteplase," said Sujani Bandela, MD, assistant professor of vascular neurology at the University of Texas Health Science Center in San Antonio.

"Another reason is that many academic and larger comprehensive centers are still transitioning, so once that happens maybe it will push others in rural and smaller hospitals to make the switch."

Shlee Song, MD, FAHA, neurology professor and director of the Comprehensive Stroke and Telestroke Program at Cedars Sinai Health System in Los Angeles, said another reason for the reluctance is clinical trials at comprehensive stroke centers and university hospitals haven't allowed for tenecteplase to replace alteplase in research protocols in ongoing clinical trials.


Song

"This has been changing with a few study steering committees that gave latitude to each hospital to allow for their local standard-of-care to be determined," Dr. Song said.

Whatever obstacles remain, Dr. Bandela said a universal shift to tenecteplase is likely and should be focused on at larger academic centers making the shift first, followed by the smaller hospitals that are connected to them. This, she said, will help move treatment away from the classic "drip and ship" model, in which patients receive emergency treatment at a community hospital, and are then transferred to a comprehensive stroke center.

"Tenecteplase will have an easier transition that will allow quick administration of the thrombolytic, and then ship (the patient) toward a larger center for thrombectomy," she said. "I would call it the 'bolus and ship' model."

A universal shift to tenecteplase will be more likely once the AHA/ASA Acute Ischemic Stroke Guidelines adopt it as a reasonable alternative to alteplase and if it receives FDA approval, Dr. Song said.

Meanwhile, evidence for tenecteplase as a viable blood flow treatment continues to mount in ongoing trials and retrospective studies of multiple demographic populations, Dr. Song said.

"Our tenecteplase study in the state of Texas started out with two areas of Austin and San Antonio and now includes all academic centers statewide," she said. "We have enough evidence at this point as many centers have already transitioned or are in the process of transitioning to tenecteplase."

UPCOMING SESSION

The Road to Tenecteplase in Routine Clinical Practice: Are We There Yet?
2-3 p.m.
Thursday, Feb. 9
Ballroom D1/D2

Even with the inevitable change, it will take some time to replace alteplase because it has been firmly entrenched in most medical systems for years, Dr. Song said.

"Given that alteplase has been in use at many medical centers since the late 1990s and early 2000s — embedded in workflows, education materials, policies and order sets — it is a lot of work and requires a multidisciplinary approach to adopt a new drug," she said. "Thankfully, with many leaders and early adopters in this area sharing best practices, the updates are more manageable to roll out." •

Call for Science

ISC24, Nursing Symposium 2024 and HEADS-UP 2024

Session Ideas

Suggested Session Submitter opened: Monday, Feb. 6, 2023

Suggested Session Submitter closes: Monday, March 20, 2023

Abstracts

Submission opens: Wednesday, May 31, 2023

Submission closes: Tuesday, Aug. 22, 2023

Late-Breaking Science and Ongoing Clinical Trials Abstracts

Submission opens: Wednesday, Oct. 4, 2023

Submission closes: Wednesday, Nov. 1, 2023

The link to submit abstracts and/or session ideas can be found at **strokeconference.org/submitscience** on the applicable date above.

Session to explore stroke's inflammatory pathway to improve patient outcomes

Thursday's presentation, "From Bench to Bedside and Beyond: Acute and Chronic Neuroinflammation in Stroke: Potential Targets for Novel Therapies," will highlight the most up-to-date information on how inflammatory cells impact cerebrovascular disease.

"Inflammatory cells can modulate stroke evolution, from the initial onset to the stroke recovery stage," said Alexis N. Simpkins, MD, PhD, FAHA, who will moderate the session. "They are also important mediators of dementia-related cerebrovascular disorders."


Simpkins

Despite recent therapeutic advances:

- One in four people has a stroke — a 50% increase over the last 17 years.
- Stroke and cerebrovascular-related dementia remain the leading causes of long-term disability in adults.
- New research showing an 11% increase in intracerebral hemorrhage strokes among younger to middle-aged adults further underscores the importance of understanding the pathophysiology of stroke to improve patient outcomes.

Research has provided compelling evidence that modulating the inflammatory pathway could lead to more effective treatment for stroke patients, said Dr. Simpkins, staff clinician and director of vascular neurology research and the SkRIPT Research Program at Cedars-Sinai in Los Angeles.

"Future efforts toward understanding the mechanisms governing the emergence of so-called 'global brain inflammation' can help facilitate modulating this inflammation as a potential therapeutic strategy for stroke," she said.

The best medical practice for managing stroke risk includes addressing lifestyle and risk factors, including managing comorbidities, hypertension, diabetes, dyslipidemia and underlying cardiovascular disease.

"However, we are closer to translating important bench research on acute and chronic inflammation that can also help," Dr. Simpkins said. "Despite the advances, we still have much to learn. Continuing this work and including equitable patient representation in research studies will be important to ensure a broad clinical translation of these research findings."

With a focus on the harmful inflammatory cascade that occurs with acute ischemic stroke and intracerebral hemorrhage in the injured brain region and throughout the entire brain as a result of neuronal cell death, the session on Thursday will feature recent translational research findings to create an open dialogue within the stroke community on how to continue to move the needle. It will also include presentations featuring:

- Late-Breaking Science Oral Abstracts II
- Factors influencing stroke recovery
- Advanced practice providers and therapists oral abstracts
- Analytic complexity, risks and benefits of using clinical, imaging or patient reported surrogate outcomes in clinical trials
- Aneurysms and vascular malformations Oral Abstracts II
- Case Recordings in Live Conditions: Best Management Practices 2
- Multimodality monitoring in coma and disorders of consciousness after stroke (ASA and Neurocritical Care Society joint session)

UPCOMING SESSION

From Bench to Bedside and Beyond: Acute and Chronic Neuroinflammation in Stroke: Potential Targets for Novel Therapies
3:30–5:45 p.m.
Thursday, Feb. 9
Ballroom D3/D4

OPENING SESSION

continued from page 1

Chair and Cardiology and Professor in Medicine and founding director of the Center for the Study of Adversity and Cardiovascular Disease at the University of California in San Francisco. Her research focuses on the health effects of financial distress.

Albert

"We have a marked wealth gap by race and ethnicity," she said. "Too often, patients tell me, 'Don't let me die because I don't have enough money.'"

"This powerful shift is possible. Policymakers and medical professionals can lead systemic change. You can be involved by advocating through the AHA's You're the Cure network and your own research," she said. "And, however, you go forward, please remember this simple fact: We need not let people die from the effects of economic adversity."

Brown also gave a touching tribute to her friend and colleague Ralph Sacco who died in January.

See "Remembering Ralph Sacco" on this page. •

Remembering Ralph L. Sacco

Ralph L. Sacco, MD, MS, FAAN, FAHA, the only physician to have served as both the president of the American Heart Association and the American Academy of Neurology, the first neurologist to serve as president of the AHA, and an expert on stroke risk and prevention, died Jan. 17, 2023, of a brain tumor at his home in Long Island, New York. He was 65.

He was the founder of the Northern Manhattan Study, a professor of neurology, public health sciences, human genetics and neurosurgery at the University of Miami's Miller School of Medicine and the Olemberg Family Chair in Neurological Disorders.

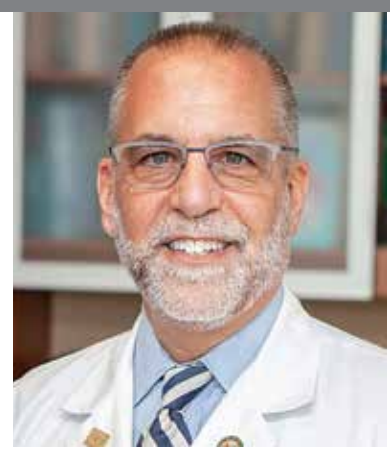
American Heart Association CEO Nancy Brown remembered Dr. Sacco as a dear friend and an unparalleled leader whose "warm, generous heart and care transcended his research and clinic to every person fortunate to meet him." she said, visibly emotional. "The association is forever grateful that he chose to share his time and extraordinary talents with us," she said. "We will continue to honor his memory through the work we do to champion health equity and longer, healthier lives for all people."

Dr. Sacco's many roles at Miami included chairman of the Department of Neurology, executive director of the Evelyn F. McKnight Brain Institute and — in an example of his leadership more broadly in medicine — he was director of the university's Clinical and Translational Science Institute.

Dr. Sacco also was editor of the AHA's journal *Stroke*, the premier scientific journal for research in the stroke field. Overseeing the prestigious publication meant a lot to Dr. Sacco. Having long championed diversity and equity — particularly in his research — he insisted that half of the editorial board be represented by women and people of color. That was in 2020; by 2022, he'd achieved it.

"He saw that as part of his legacy — expanding the diversity of vascular neurologists and promoting the careers of the next generation of stroke leadership," said Dr. Mitchell Elkind, one of Sacco's proteges. "And he meant it. It's an example of why so many people in the stroke community adored him."

Dr. Elkind trained under Dr. Sacco at Columbia Presbyterian, then became co-director of the landmark research project that Dr. Sacco founded when Dr. Sacco went to Miami. He's since become the second neurologist to serve as AHA president and is now the organization's chief clinical science officer. These various vantage points gave Elkind a deep understanding of his mentor.



Sacco

"He gravitated toward leadership positions because he knew he had something to contribute," Dr. Elkind said. "He succeeded because he had that combination of operational brilliance and intellectual capacity

see **SACCO**, page 13

Willis Lecture highlights arterial ischemic stroke differences in neonates, children, adults

The familiar view of acute ischemic stroke (AIS) leading to inflammation, blood-brain barrier disruption and injury is familiar, but also simplistic and incomplete. AIS has a variety of pro-inflammatory effects, including microglial activation, leukocyte infiltration, cytokine and chemokine increases, accumulation of reactive oxygen species and lipid peroxidation. But the biological and clinical effects of those pro-inflammatory changes vary by age. Perinatal AIS (PAIS) and childhood AIS (CAIS) are very different biological and clinical entities, and both differ from adult AIS, said Zena Vexler, PhD, who presented The Thomas Willis Lecture during the Opening Main Event.

Dr. Vexler's presentation, "Immune-Neurovascular Interactions in Experimental Perinatal and Childhood Stroke," explored what is currently known about the biological and clinical differences between stroke in neonates and children.

Vexler

"Perinatal AIS is surprisingly common, one in 2,300 live births, and almost never recurrent," said Dr. Vexler, who is professor of neurology and director of research at the Neonatal Brain Disorders Center at the University California in San Francisco and the Weill Institute for Neurosciences. "It is caused largely by thrombus/embolus formation or infection. Childhood AIS (CAIS) is uncommon, one in 50,000 children, and is very recurrent. About 80% of CAIS are caused by arteriopathies."

Working with human patients as well as age-appropriate mouse and rat models, Dr. Vexler examined differences in neurons, local and peripheral immune cells, blood-brain barrier, pericytes, astrocytes and oligonucleotides in the brains of neonates, children and adults. One of the key clinical considerations of stroke in different age groups is the unsynchronized changes in the neurovascular and immune systems during physiological brain development. Age matters, but brain maturation is the real differentiator, she said.

Blood-brain barrier permeability is markedly different following acute ischemic stroke in neonates and in children, she said. Blood-brain barrier integrity is largely maintained after acute PAIS. Post-stroke blood-brain integrity begins to break down following CAIS and increases with age until permeability reaches familiar adult levels.

Differences in permeability can be seen based on dye diffusion, MRI, endothelial transcriptome and other methods. Tight junction proteins are better preserved in PAIS with essentially no infiltration of neutrophils into the parenchyma.

Dr. Vexler's work has transformed the role of microglia in neurovascular integrity and injury in PAIS. The conventional view has stroke activating resting microglia and transforming them into toxic

see **WILLIS**, page 12

ISC 2023 Exhibitors

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To complete your ISC 2023 conference evaluation and claim your CE credits for the live conference, select "Your Activities in Progress" at **learn.heart.org**.

CE credit for the ISC 2023 can't be claimed after Aug. 10, 2023, and participants are strongly encouraged to claim CE credit within 30 days of the live event.

In-person attendees

An AHA Certificate of Attendance is available at the registration counters in the Hall F Lobby or the Certificate of Attendance Counter in Hall D/E Lobby in the Kay Bailey Hutchison Convention Center.

Virtual attendees

Request an AHA Certificate of Attendance by choosing the Programming Tab at the top navigation bar on the event platform, then choosing "Certificate of Attendance."

NOTE: For the ISC 2023 live event, CE credit claim is limited to participation on Feb. 8-10, 2023, only.

Scan the QR code for more CE information.

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UT Southwestern Peter O'Donnell Jr. Brain Institute 1004
VIrtualMed Staff 501
Vituity 613
Vivalink 610
Viz.ai . . . . . 422, B 11161
Wolters Kluwer 702
World Stroke Organization 1016

Scan the QR code for exhibitor descriptions.

LISTINGS HIGHLIGHTED IN RED ARE PAID ADVERTISEMENTS

Science & Technology Hall Map

Learning Studios

Booth 530 and 830

Learn about the latest advances in stroke practices, services and technologies.

AHA/ASA HeadQuarters

Booth 708

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

Braindate at ISC

Booth 1110

Stop by the Braindate Lounge to participate in the new crowd-sourced peer-to-peer learning experience. YOU pick the topics — the best way to brainstorm, solve challenges and share expertise while creating meaningful connections. See what's trending and book your Braindate online at **https://isc23.braindate.com**. (for professional attendees only)

Puppy Snuggles

Booth 401

Need a break? Nothing beats a cuddle with a warm and fuzzy puppy. Snuggles lower blood pressure and help you relax.

Stroke Central

Learning Studio II, Booth 830

AHA/ASA Stroke Central is a mixed-use space for ISC attendees to learn, network and relax. Various programming from the Early Career & FIT Program, Women in Science & Medicine, AHA/ASA Science and Stroke Council is scheduled for Thursday.

Visit the Science & Technology Hall
9 a.m.-5 p.m.
Thursday

Poster Tours, Sessions

ISC 2023 offers two types of poster sessions: professor-led poster tours and one-on-one individual Q&A poster tour presentations.

Choose from 10 professor-led Poster Tours 6-7 p.m. today in Hall F. 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 view the Thursday moderated Poster Sessions in the online Program Planner or on the Mobile Meeting Guide App. Decide which section/category of posters you would like to attend. Then, at 5:55 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, poster presenters will be at their posters for informal Q&As with attendees 7-7:30 p.m. today in Hall F. These one-on-one posters are not a part of the professor-led Poster Tours. To see the posters featured in today's regular Poster Sessions, view the Poster Sessions in the online Program Planner or on the Mobile Meeting Guide App.

Posters also will be available for viewing 8 a.m.-7:30 p.m. today in the Poster Hall (Hall F).

Poster Hall Hours

8 a.m.-7:30 p.m.
Thursday
Level 2, Hall F

Professor-Led Poster Tours

6-7 p.m.
Posters TMP1– TMP120

1. Acute Treatment: Systemic Thrombolysis and Cerebroprotection & Cerebrovascular Manifestations of COVID-19 Moderated Poster Tour
2. Aneurysms and Vascular Malformations and Pediatric Cerebrovascular Disease Moderated Poster Tour
3. Brain Health Moderated Poster Tour
4. Cerebrovascular Systems of Care Moderated Poster Tour
5. Health Services, Quality Improvement and Patient-Centered Outcomes Moderated Poster Tour II
6. Imaging Moderated Poster Tour II
7. Intracerebral Hemorrhage Moderated Poster Tour
8. Neuroendovascular Moderated Poster Tour II
9. Risk Factors and Prevention Moderated Poster Tour II
10. Translational Basic Science Moderated Poster Tour II

Regular Poster Sessions

7-7:30 p.m.
Posters TP1– TP244

These posters are not included in the 6 p.m. professor-led Poster Tour sessions.

- Acute Treatment: Systemic Thrombolysis and Cerebroprotection Posters II
- Brain Health Posters
- Cerebrovascular Nursing Posters II
- Cerebrovascular Systems of Care Posters II
- Health Services, Quality Improvement and Patient-Centered Outcomes Posters II
- Imaging Posters II
- In-Hospital Care; from the ICU to Discharge Posters
- Intracerebral Hemorrhage Posters II
- Neuroendovascular Posters II
- Pediatric Cerebrovascular Disease Posters
- Risk Factors and Prevention Posters II
- Translational Basic Science Posters II
- Ongoing Clinical Trials Posters

ISC 2023 Abstract Categories: Thursday

- Acute Treatment: Systemic Thrombolysis and Cerebroprotection
- Advanced Practice Providers and Therapists
- Aneurysms and Vascular Malformations
- Brain Health
- Cerebrovascular Manifestations of COVID-19
- Cerebrovascular Nursing
- Cerebrovascular Systems of Care
- Clinical Rehabilitation and Recovery
- Health Services, Quality Improvement and Patient-Centered Outcomes
- Imaging
- In-Hospital Care: From the ICU to Discharge
- Intracerebral Hemorrhage
- Large Vessel Disease From Arteries to Veins (Non-Acute Treatment)
- Neuroendovascular
- Pediatric Cerebrovascular Disease
- Risk Factors and Prevention
- Translational Basic Science
- Ongoing Clinical Trials

LATE-BREAKING

continued from page 1

MS, FAHA, associate professor of neurology and academic chief of stroke and vascular neurology at Yale School of Medicine.

"Experimental rigor is something we can control," she said.

Sansing

SPAN was created to address the lack of experimental rigor impeding the translation of promising neuroprotective agents from animal models to clinical trials. The network linked six laboratories, a central coordinating center, and the National Institute of Neurological Disorders and Stroke (NINDS) using a clinical trial design to develop neuroprotective interventions, which can be rapidly moved from preclinical assessment into clinical trials.

Research centers included the University of Georgia, Augusta; Yale University, Massachusetts General Hospital; University of Iowa; University of Texas, Houston; and Johns Hopkins University. Interventions included fasudil, a rho-associated kinase (ROCK) inhibitor; remote ischemic conditioning; veliparib, a poly (ADP-Ribose) Polymerase (PARP) inhibitor; tocilizumab, an interleukin 6 receptor antibody; uric acid, a potent free radical scavenger; and fingolimod, a sphingosine 1-phosphate (S1P) analogue.

Researchers randomized 2,518 animals to treatment, control and sham surgical arms. All animals were treated with thrombolysis after surgically induced stroke, followed by one of six interventions or placebo. The primary outcome was a corner test at day 28. Treatment assignment was concealed from surgeons while all examiners and raters were blinded to treatment.

"SPAN demonstrated the highest possible rigor and phenomenal data quality, protocol adherence, throughput and timeline," Dr. Sansing said. "Congratulations to the Iowa team that proposed uric acid, which we believe is appropriate for further investigation."

20% of cardioembolic stroke survivors have atrial fibrillation

Three-year results of the STROKE-AF trial showed that 21.7% of patients with ischemic stroke attributed to small- or large-vessel disease with an insertable cardiac monitor (ICM) have atrial fibrillation (AF) detected over the following three years, a 10-fold increase in the incidence of AF detected by usual care. In the ICM arm, the median duration of the longest AF single episode was 10 minutes (and 37.2% of patients had a single episode ≥1 hour). The median maximum daily AF burden was 18 minutes.

"We found that 88.0% of the AF episodes in the ICM arm were asymptomatic," said Lee H. Schwamm, MD, chief digital advisor at Massachusetts General Brigham, C. Miller Fisher Endowed Chair in

Schwamm

Vascular Neurology and professor of neurology at Harvard Medical School. "You can't rely on the patient to tell you they are having palpitations or irregular heartbeats, and you can't monitor for just 30 days because you will miss 87% of the AF. You have to monitor for AF if you don't want to miss it."

STROKE-AF randomized 492 patients with ischemic stroke attributed to large- or small-vessel disease to evaluation with an ICM or usual care. Patients were ≥60 years with a median CHA2DS2-VASc score of 5. Over the first year, 12.1% of patients in the ICM group had AF detected versus 1.8% of usual care patients. At three years, 21.7% of ICM patients had confirmed AF versus 2.4% in the usual care arm, a hazard ratio of 10.0 (95% CI 4.0-25.2, p<0.001).

About 70% of patients with AF detected were started on anticoagulation therapy. This trial was designed to detect AF and was not designed or powered to detect treatment differences or clinical outcomes. Because treatment strategies were not assigned or specified as part of the protocol, the reasons patients with AF were not given anticoagulation remain unknown, Dr. Schwamm said. Patients with large- or small-vessel disease stroke are typically not considered for AF detection, and there is limited evidence to guide management.

"The rate of unsuspected atrial fibrillation in this high-risk population is substantial," Dr. Schwamm said. "If, upon learning that substantive AF was detected, you would prescribe anticoagulation for patients similar to those enrolled in the Stroke AF trial, then you should definitely insert a monitor for patients with a stroke attributed to small- or large-vessel disease. If you would not start anticoagulation in them regardless of what you found on continuous monitoring, then don't insert a monitor. But if seeing an hour of AF is something you would act upon, you can't afford to use standard of care approaches and patient self-report to exclude AF.

Aptamer trial shows neuroprotection after ischemic stroke

ApTOLL, a novel aptamer targeting toll-like receptor 4 (TLR4) showed positive neuroprotective effects and good safety in combination with endovascular treatment — with or without intravenous thrombolysis as needed — in an early phase clinical trial. In the phase 1B/IIA APRIL trial, patients allocated to placebo presented

Ribo

a mortality rate of 18.2% versus 4.8% mortality in patients allocated to 0.2mg/kg of ApTOLL, a statistically significant difference. The final infarct volume measured on MRI at 72 hours and the distribution in the range of disability measured by modified Rankin Scale (mRS) at 90 days also favored patients who received 0.2mg/kg of ApTOLL

"We believe this is the first clinical trial to show neuroprotection in acute ischemic stroke," said Marc Ribo, MD, PhD, assistant professor of neurology at Hospital Vall d'Hebron in Barcelona, Spain, and chief medical officer of aptaTargets. "We are preparing a larger, phase III trial to confirm these results, which will launch in the second half of 2023. About 85% of ischemic stroke patients do not currently have any available treatments."

ApTOLL is a synthetic, single-strand DNA designed for high binding affinity to TLR4. The agent blocks downstream release of proinflammatory cytokines that are responsible for the initiation and progression of brain injury following ischemic stroke, said Dr. Macarena Hernandez, chief scientific officer at aptaTargets. APRIL phase IB compared safety in four ascending doses of ApTOLL in ischemic stroke patients with large vessel occlusion within 6 hours of onset at 16 European centers. Eligible patients had Alberta Stroke Program Early CT Score (ASPECTS) 5-10 and an estimated infarct core volume of 5-70 ml by CT-perfusion scan.

The data safety monitoring board selected two doses for phase IIA, 0.5 mg/kg and 0.2 mg/kg.

A total of 119 patients received 0.05mg/kg ApTOLL (36), 0.2mg/kg ApTOLL (36), or placebo (47). Both doses had similar safety profiles, Dr. Ribo said, but the higher dose had greater efficacy. Mortality at 90 days had a relative risk ratio of -0.13 for high-dose ApTOLL versus placebo. The higher dose also showed an odds ratio of 2.61 for better mRS score at 90 days versus placebo and a nonsignificant trend for reduced brain edema and hemorrhagic transformation.

"There does not seem to be any cross-reaction between ApTOLL and intravenous thrombolysis, which has been a problem in other trials of neuroprotective drugs," Dr. Ribo said. "From what we have seen, ApTOLL and IV tPA work in parallel pathways and do not interact with each other." ●

Follow ISC on Twitter

Tweet your questions/ comments or talk about what's happening at ISC 2023. Use hashtag: **#ISC23**.

Don't miss today's industry events

Learning Studios
Thursday, Feb. 9

12:45-1:15 p.m.
Management of Factor-Xa Inhibitor Related Life-Threatening or Uncontrolled Bleeding
Learning Studio I
Supporter: AstraZeneca Pharmaceuticals LP

12:45-1:15 p.m.
Cases in AF Monitoring: Who, When and for How Long?
Learning Studio II
Supporter: Medtronic, Inc.

1:30-2 p.m.
Strength in Numbers: Largest Multicenter Experience With Pipeline™ Flex With Shield Technology™
Learning Studio I
Supporter: Medtronic, Inc.

1:30-2 p.m.
Benefits of End-to-End Clot Control
Learning Studio II
Supporter: Cerenovus

2:15-2:45 p.m.
Advances in NeuroCardiology: Using Technology to Optimize Secondary Stroke Prevention
Learning Studio I
Supporter: Viz.ai

3:30-5 p.m.
NHLBI and NINDS ISC Innovation Showcase
Learning Studio I
Supporter: NHLBI and NINDS

Stroke Central Programming
Thursday, Feb. 9

9:15-9:45 a.m.
Early Career | Meet the Experts
Learning Studio II

10-10:30 a.m.
Early Career | Variations in Institutional Protocols
Learning Studio II

2:15-3 p.m.
PROWESS | Advancing the Study of Stroke in Women: Prevention and Outcomes in Women Enhancing Stroke Support
Learning Studio II

3:30-4:30 p.m.
Decoding Race — Exploring the Impact of Race and Racism on Stroke Care
Learning Studio II

Satellite Events
Thursday, Feb. 9

These events are not part of the official International Stroke Conference 2023 as planned by the International Stroke Conference Program Committee.

7-8:30 p.m.

Biogen
Omni Dallas Hotel
Dallas Ballroom, AB, Level 3

Bayer
Omni Dallas Hotel
Dallas Ballroom, AB, Level 3

NIHSS Survey

Take a minute and provide feedback to inform the redesign of the National Institutes of Health Stroke Scale (NIHSS).

Stroke simultaneous publications from ISC 2023

Ideal Foundational Requirements for Stroke Program Development and Growth: A Scientific Statement From the American Heart Association
https://www.ahajournals.org/doi/10.1161/STR.0000000000000424?utm_campaign=sciencenews22-23&utm_source=science-news&utm_medium=phd-link&utm_content=phd-02-07-23

Tenecteplase Treatment and Thrombus Characteristics Associated With Early Reperfusion: An EXTEND-IA TNK Trials Analysis
https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.041061

Rapid Activation of Neuroinflammation in Stroke: Plasma and Extracellular Vesicles Obtained on a Mobile Stroke Unit
https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.041422

Smoking-Cessation Pharmacotherapy After Stroke and Transient Ischemic Attack: A Get With The Guidelines-Stroke Analysis
https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.041532

Examining the Association Between Hospital-Documented Atrial Fibrillation and Central Retinal Artery Occlusion
https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.042292

Endovascular Therapy or Medical Management Alone for Isolated Posterior Cerebral Artery Occlusion: A Multicenter Study
https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.042283

Associations Between Long-Term Air Pollutant Exposure and 30-Day All-Cause Hospital Readmissions in U.S. Stroke Patients
https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.042265

Visit **https://www.ahajournals.org/journal/str** for more.

WILLIS

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microglia. The reality is activated microglia are protective against neuroinflammation and limit injury, according to Dr. Vexler. The depletion of microglia increases blood-brain barrier leakage and induces parenchymal hemorrhages.

Myeloid cells also contribute to injury as they are recruited to the blood-CSF barrier as a result of neutrophil trafficking. A functional monocyte deficiency is protective in part by diminishing neutrophil trafficking.

The picture is different in CAIS, she said. Based on juvenile mouse modeling, CAIS disrupts the vascular network, leading to sustained injury via neutrophil elastase (NE) signaling. In mouse models, inhibiting NE signaling has acute protective effects.

"Brain maturation at the time of stroke plays a key role in the pathophysiological injury mechanisms in both our animal models and in patients," Dr. Vexler said. "As factors such as blood-brain barrier leakage change in more mature brains, we see different physiologic and clinical effects. Acute ischemic stroke is not the same in newborns, children and adults." •

SACCO

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— all the things that make someone successful as an executive — as well as the warmth, compassion and humility of a physician."

Dr. Sacco held many key leadership roles with the AHA, including his presidency in 2010-11. His honors from the organization include the Distinguished National Leadership Award, the Gold Heart Award and the Distinguished Scientist Award.

"I was drawn to the organization because of the breadth of the people involved," Dr. Sacco said in the video chat with Dr. Elkind.

Many risk factors for heart diseases are also stroke risk factors. Dr. Sacco sought to emphasize that link, while delving deeper into those areas that would benefit both the heart and the brain. The success of his approach was best evidenced by his ascension to the presidency, the top spot for a science volunteer.

"It was sort of thinking ahead, evolving and expanding the mission, always looking forward to the next frontier," Dr. Sacco told Dr. Elkind.

His next frontier was becoming president of the American Academy of Neurology, from 2017-19. Sacco took great pride in strengthening the bond between the AHA and the AAN.

For more about Dr. Sacco, visit **www.heart.org.**

In Memory of Dr. Ralph Sacco

ISC was a special place for Dr. Ralph Sacco. As the first neurologist president of the American Heart Association and American Stroke Association, editor-in-chief for the journal *Stroke* and a revered scientist, he was truly in his element. At the family's request, donations in his memory can be made to the AHA/ASA.

Scan the QR code to donate to The Ralph Sacco Memorial Fund for Brain Health.

The American Heart Association thanks the following supporters of ISC 2023:

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- Encompass Health
- Imperative Care
- LocumTenens.com
- Medtronic, Inc.
- MicroVention, Inc.
- NeuroLogica
- OhioHealth Neuroscience
- Society for Cardiovascular Angiography and Interventions
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- VIZ.ai
- Wolters Kluwer

The AHA also thanks the following companies for their support of ISC 2023. Their support was provided through educational grants.

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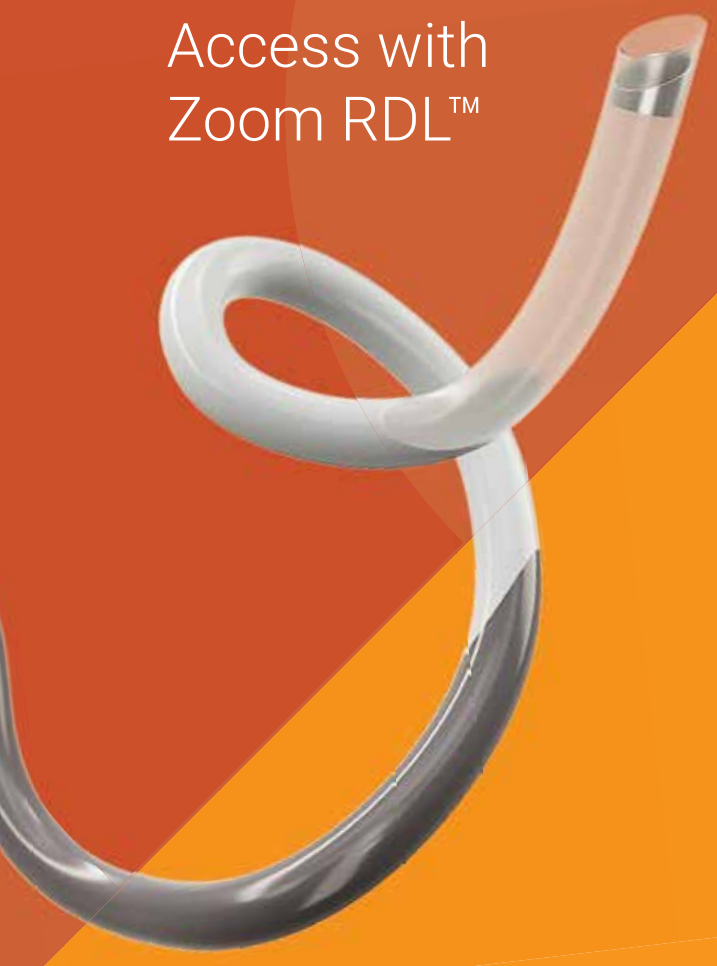

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