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Neuroimaging, experts, and detailed chronologies are crucial to showing the jury that every second counts in stroke prevention and treatment.

PRESENT THE WHOLE PICTURE IN STROKE CASES

By || Matthew W. Sowell

Stroke is a leading cause of long-term disability and the fourth leading cause of adult death in the United States.[1] As our population continues to age, stroke will be an even greater public health problem. By 2030, nearly one in every 25 adults will suffer a stroke, the American Heart Association and American Stroke Association have projected.[2] This translates to an additional 3.4 million people having a stroke by 2030.[3] At some point, any attorney who handles personal injury cases is likely to represent a client who has suffered brain damage from stroke because of an underlying injury.

Most strokes can be broadly categorized as either hemorrhagic or ischemic. A hemorrhagic stroke occurs when a blood vessel ruptures, releasing blood into the brain tissue, whereas an ischemic stroke results from reduced blood flow to the brain. Because 87 percent of all strokes are ischemic,[4] the focus here is primarily on acute ischemic strokes, particularly those caused by blood clots traveling to and obstructing the brain's arteries.[5]

Stroke claims fall into four categories: stroke resulting from an injury, medication-induced stroke, failure to recognize or treat a person about to have a stroke, and negligent treatment of a person having a stroke.

Stroke caused by injury. Damage to the internal wall of an artery leading to the brain can cause a clot to form at the site of the injury. If the clot grows or a piece breaks off and travels to a smaller artery, a stroke can result from the decreased blood flow to the brain. Such injuries occur from blunt trauma to the neck or when the head and neck are

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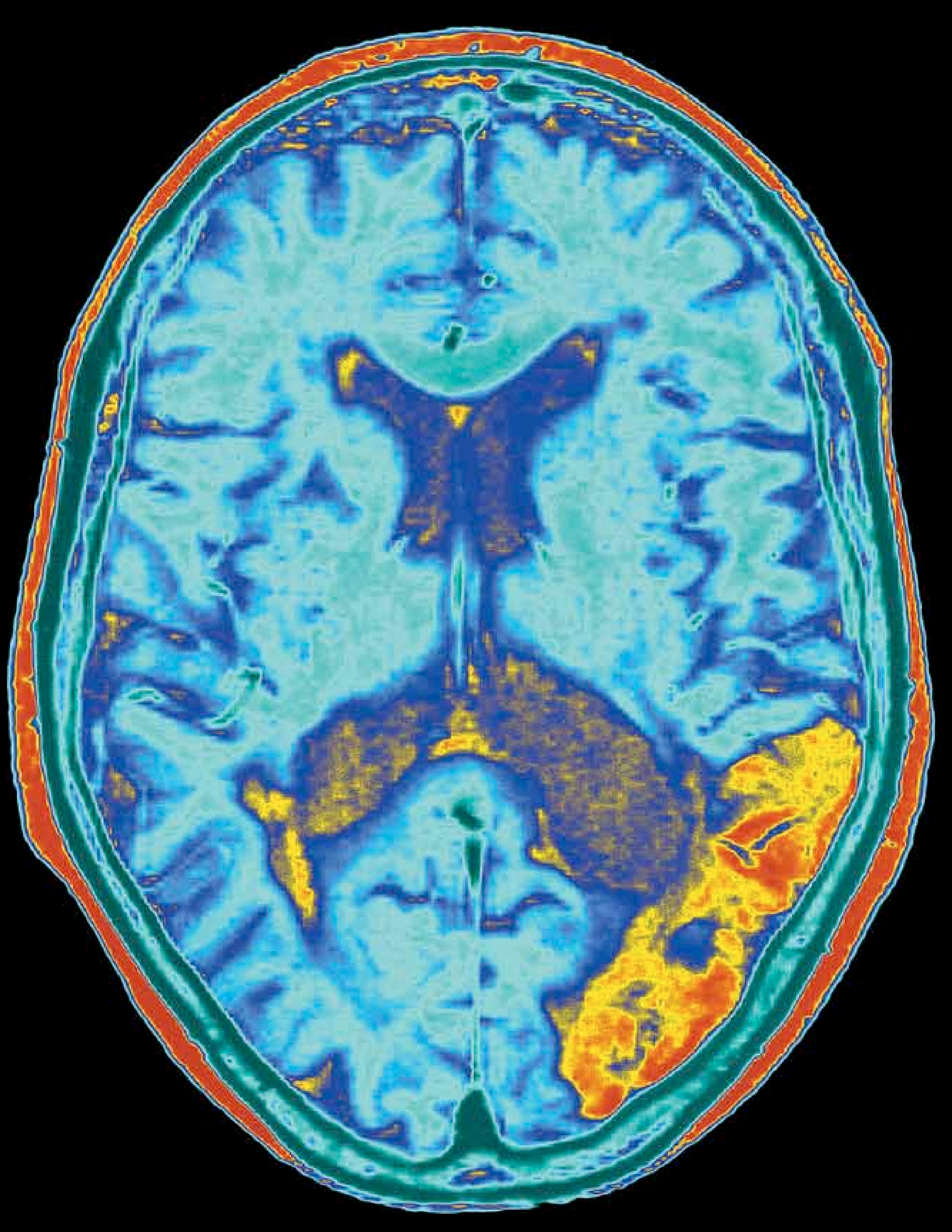

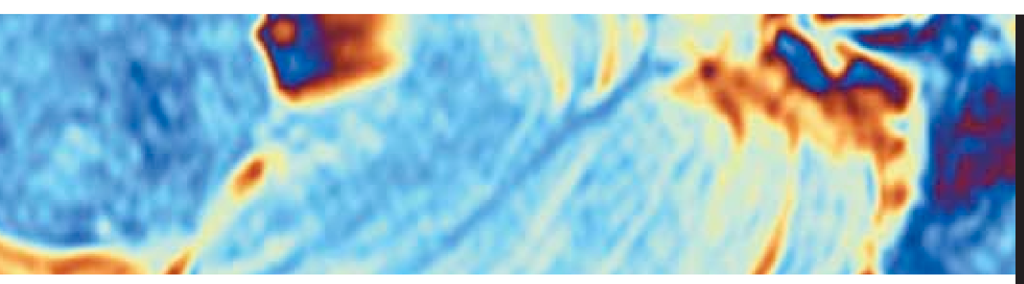

WARNING SIGNS OF STROKE

The most common warning signs of stroke include the sudden onset of facial drooping, numbness and/or weakness of one side of the body (particularly an arm), slurred or babbled speech, dizziness, loss of or doubled vision, or severe headache.[15]

rapidly twisted, such as in automobile collisions and chiropractic manipulations. Also, people with certain heart conditions known to cause stroke (such as atrial fibrillation or artificial heart valves) often take blood thinners. If they suffer an injury that requires surgery or causes dangerous bleeding, they may be forced to stop taking blood thinners, which can dramatically increase their risk of stroke.

Medication-induced stroke. Numerous medications are known to increase a person's propensity to clot and thereby increase the risk of stroke. When these clots form in or travel to an artery leading to the brain, a stroke occurs. Such strokes have been the basis of numerous pharmaceutical products liability and medical malpractice claims.

Failure to recognize or treat a person about to have a stroke. A transient ischemic attack (TIA), also called a "mini-stroke" or "warning stroke," has the same symptoms as a stroke, goes away rapidly, and leaves no permanent brain damage. However, because a TIA is caused by the same conditions that cause strokes, a TIA strongly indicates a stroke may soon follow.[6] Approximately one-third of people who experience a TIA later suffer a stroke, and half of patients who suffer a stroke after a TIA do so within 48 hours.[7] Early treatment of TIAs and minor strokes has been found to reduce recurrent stroke.[8]

When evaluating a case where a stroke occurred shortly after a TIA, you should investigate the urgency with which the attending health care provider attempted to identify the cause of the symptoms and implement treatment to reduce the risk of a stroke.

> **For proper case selection, you should create a detailed chronology based on medical record entries and witness accounts, noting the beginning and ending times of stroke symptoms, as well as the absence of any such symptoms.**

Common causes of action involve the failure to recognize, appreciate, or communicate the warning signs of stroke. (See "Warning Signs of Stroke" box at right.)

Failure to timely treat a stroke. Virtually every malpractice case involving the treatment of an acute stroke will focus on the failure to timely

- recognize, appreciate, or communicate its signs and symptoms;
- implement treatment to restore blood flow to the brain; or
- implement treatment to prevent further interruption of blood flow to the brain.

Stroke symptoms manifest almost instantaneously when blood flow to the brain is interrupted. (And, because different parts and functions of the body are controlled by different parts of the brain, stroke symptoms generally correspond to the portion of the brain affected.) There is a limited window of time after a stroke within which therapies can be employed to safely and effectively restore blood flow to the brain before it is irreversibly damaged. That therapeutic window opens when a person exhibiting stroke symptoms was last known to be neurologically normal and closes after three to four and a half hours.[9]

You should evaluate how diligent the treating health care providers were in investigating the date and time stroke symptoms began, keeping in mind that if stroke symptoms go away and the patient returns to her neurologic normal (as in the case of a TIA), the therapeutic window resets and starts anew with the recurrence of symptoms.[10] For proper case selection, you should create a detailed chronology based on medical

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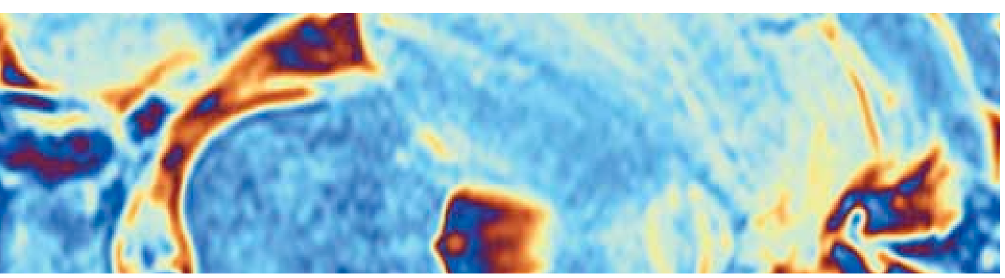

record entries and witness accounts, noting the beginning and ending times of stroke symptoms, as well as the absence of any such symptoms.

While the defense likely will challenge the time period within which you argue the stroke could have been reversed, new therapies and treatments are continually expanding and better defining that time period.[11] Nevertheless, for every known treatment for acute stroke, it is universally recognized that the earlier treatment is started, the greater the likelihood of a better outcome. This is the cornerstone of the current American Stroke Association public information campaigns known as "Time Lost Is Brain Lost" and "Spot a Stroke F.A.S.T. (face drooping, arm weakness, speech difficulty, time to call 911)," and it should serve as a major theme in any lawsuit involving the care of a patient exhibiting the warning signs of acute stroke.[12]

Too often, lawyers reject stroke cases because they misunderstand the role of neuroimaging.

Practice Tips

To establish the standard of care, investigate the hospital's stroke certifications to determine the level of stroke care it provides.[13] Also, the hospital's promotional materials used to announce its certification (for example, its billboards, press releases, and articles on its website) frequently contain statements reinforcing your arguments regarding the devastating effects of stroke and how imperative it is not to delay treatment. Once discovery begins, you should obtain the hospital's policies and procedures pertaining to stroke, criteria for activating a stroke code, materials used to train health care providers, and standing orders or other stroke care protocols. Materials used during in-service stroke training programs at the hospital usually contain a treasure trove of concessions that will buttress your trial themes regarding the standard of care your client was entitled to receive.

Making the most of neuroimaging. Too often, lawyers reject stroke cases because they misunderstand the role of neuroimaging. The first neuroimaging taken of a stroke patient almost always is a plain (without contrast) CT scan of the brain. CT is commonly used for the initial assessment of acute stroke, because it can be obtained rapidly and indicates whether the patient is neurologically fit for therapy that dissolves or breaks up the clot.[14] But it can take up to 24 hours for a stroke to become visible on a plain, non-contrast CT of the brain, so you should never reject a case based solely on the initial CT scan. MRIs can detect brain ischemia within minutes of a stroke's onset, but MRIs are more commonly used to confirm a diagnosis and validate a treatment plan. Be sure to include the exact time of the initial images in the case chronology.

A neurologist well experienced in the care and treatment of stroke must review your client's medical records and neuroimaging. Along with evaluating the care the stroke victim received and opining on the effectiveness of timely intervention, the expert should look for evidence (clinical or radiological) of any condition that might have produced similar symptoms. This assessment will prepare you for the defense's inevitable argument that the neurological symptoms were caused by some other preexisting condition, not an acute stroke.

Images from brain scans taken months after a stroke make powerful trial exhibits. In the first few months after a stroke, damaged brain tissue liquefies and is replaced with cerebrospinal fluid, leaving glaring holes in the brain. These images should be displayed alongside illustrations that identify the functions the damaged areas of the brain control. Record video of any depositions of treating physicians, experts, and defendant physicians who interpreted images of your client's brain to eliminate any doubt about references they make

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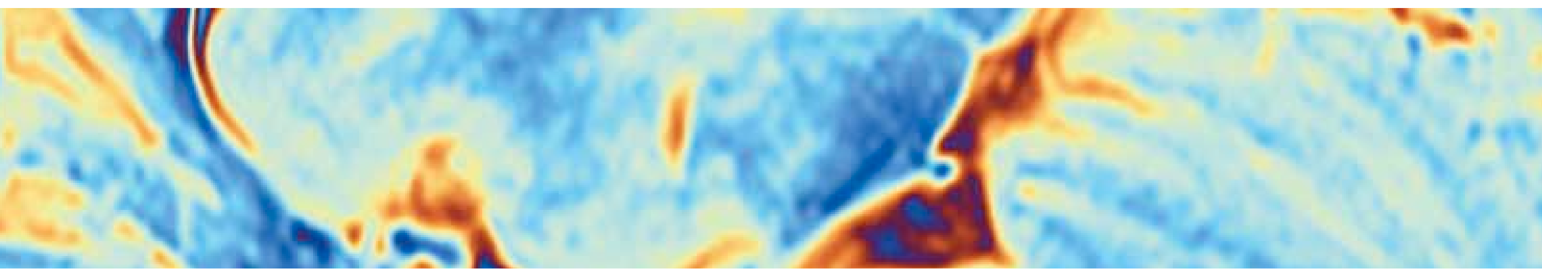

to the images and to prevent them from later adding or changing an opinion based on the neuroimaging.

You should ask witnesses who reviewed the images to identify the parts of the body and bodily functions that are controlled by the area of the brain that the stroke appears to have damaged.

In addition to having the witness review digital images, ask him or her to mark on a printout the exact location of any preexisting abnormality or concede that there is no radiographic evidence of an abnormality. The markings frequently differ among the witnesses, because meritless or exaggerated opinions that are ostensibly based on the imaging studies will not correspond to the markings made by more credible witnesses.

Finally, ask the witnesses to acknowledge that no existing therapy, medicine, or surgery will bring the dead brain tissue back to life. This helps combat the potential defense theme of neuroplasticity—the phenomenon that other parts of the brain will, over time, take over those parts that have been damaged.

Causation. Expect the defense to characterize any warning signs of stroke your client exhibited as "nonspecific" symptoms common in many conditions other than stroke, particularly those in your client's medical history. Attack such arguments with the basic principles of differential diagnosis. That is, emphasize the defendant health care provider's knowledge of any preexisting risk factors for stroke your client had. When each warning sign is added to the preexisting risk factors, the probability that a TIA or stroke caused the symptom becomes more evident. Many stroke cases require the expertise of an epidemiologist, particularly in cases involving the effectiveness of clot-busting medicine.

Maximizing damages. A powerful damages theme worth exploring is the role reversal a stroke can cause. Children of stroke survivors lose not only a parent figure but also their childhood, as they usually must help care for their injured parent. The relationship between stroke survivors and spouses also can change, such that it more closely resembles a parent-child relationship.

It is imperative not to succumb to the temptation of trying these cases strictly on the medicine.

As soon as the stroke victim's treating physician indicates that the client has recovered as much as can be reasonably expected (typically about one year), you should obtain an initial life care plan. Examine the defendant health care providers, treating physicians, and defense expert witnesses with the life care plan in mind.

Your questions should force the witness to support the stroke victim's damages or appear uncaring for not doing so. For example, ask the witness whether he or she would agree that a stroke like the one Mr. Smith suffered can leave a person unable to speak understandably, hold a job, walk without assistance, dress without assistance, bathe without assistance, go to the bathroom without assistance, eat without assistance, and so on.

Along with supporting the life care plan, each witness should concede that stroke can be so devastating that any stroke that can be prevented should be. The witnesses also should acknowledge that they have known about the catastrophic harm stroke can cause since the earliest phase of their medical or nursing education.

If the stroke survivor maintains a driver's license after the stroke, many defendants will use that fact to show that the survivor does not require close supervision or assistance. If the stroke victim drives, it is important for their and others' safety to closely investigate that ability. Relatives of stroke survivors frequently indicate that, since the stroke, the stroke survivor does not drive safely. This may prompt a neuro-ophthalmologic evaluation, the discovery of a visual field defect, and instructions from a treating physician to surrender the driver's license. The lack of a driver's license increases stroke survivors' need for supervision and assistance and decreases their ability to obtain and keep employment. Similarly, you should investigate the stroke survivor's ability to hold a professional license (such as nursing) after the stroke.

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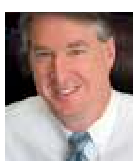
If the stroke victim has been incapacitated by the stroke, his or her loved ones should consider obtaining appropriate advice as to whether the survivor should have a guardian appointed. Such a judicial determination buttresses your experts' damages opinions and presents a challenging hurdle for the defense when it comes to damages.

Finally, it is imperative not to succumb to the temptation of trying these cases strictly on the medicine. Stroke cases involve extremely interesting issues, and it is easy for lawyers and juries to get lost in the weeds. Your job is to shepherd the case through the complexity of the medicine while emphasizing the defendant's misconduct. Keeping the jury focused on the defendant's bad conduct will dramatically increase the chances of a good result.



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Notes

1. Natl. Stroke Assn., *Stroke Facts*, www.stroke.org/understand-stroke/what-stroke/stroke-facts.
2. Bruce Ovbiagele et al., *Forecasting the Future of Stroke in the United States: A Policy Statement From the American Heart Association and American Stroke Association*, 44 Stroke 2361 (2013).
3. *Id.*
4. Natl. Stroke Assn., *supra* n. 1.
5. Hemorrhagic strokes present a very different set of challenges for plaintiff attorneys and are outside the scope of this article.

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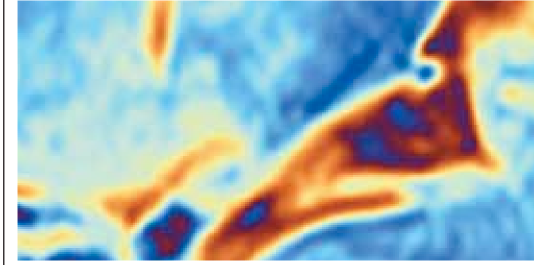

6. Shruti Sonni & David E. Thaler, *Transient Ischemic Attack: Omen and Opportunity*, 80 Clev. Clinic J. Med. 566 (2013).
7. *Id.*
8. Peter M. Rothwell et al., *Effect of Urgent Treatment of Transient Ischaemic Attack and Minor Stroke on Early Recurrent Stroke (EXPRESS Study): A Prospective Population-Based Sequential Comparison*, 370 Lancet 1432 (2007) (noting that early initiation of existing treatments after TIA or minor stroke was associated with an 80 percent reduction in the risk of early recurrent stroke).
9. Gregory J. del Zoppo et al., *Expansion of the Time Window for Treatment of Acute Ischemic Stroke With Intravenous Tissue Plasminogen Activator: A Science Advisory From the American Heart Association/American Stroke Association*, 40 Stroke 2945 (2009).
10. Edward C. Jauch et al., *Guidelines for the Early Management of Patients With Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association*, 44 Stroke 870 (2013).
11. For example, intra-arterial catheters permit restoration of blood flow in a blocked artery through the application of clot-busting medicine directly on a clot, the capture and retrieval of such clots, angioplasty, or stenting. *See* Christopher J. White et al., *Stroke Intervention: Catheter-Based Therapy for Acute Ischemic Stroke*, 58 J. Am. College Cardiology 101 (2011).
12. Am. Heart Assn. & Am. Stroke Assn., *With a Stroke, Time Lost Is Brain Lost*, www.stroke association.org/idc/groups/heart-public/@wcm/@global/documents/downloadable/ucm_312284.pdf; Am. Heart Assn. & Am. Stroke Assn., *Stroke Warning Signs and Symptoms*, www.stroke association.org/STROKEORG/Warning Signs/Stroke-Warning-Signs-and-Symptoms_UCM_ 308528_SubHomePage.jsp.
13. Philip B. Gorelick, *Primary and Comprehensive Stroke Centers: History, Value and Certification Criteria*, 15 J. Stroke 78 (2013).
14. Richard E. Latchaw et al., *Recommenda-*

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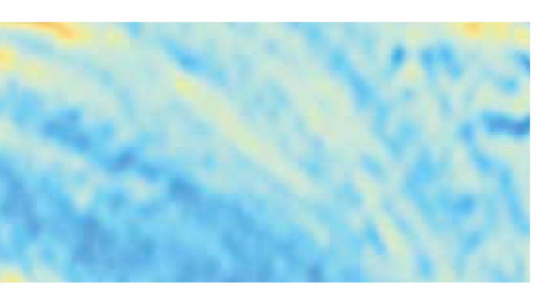

tions for Imaging of Acute Ischemic Stroke: A Scientific Statement From the American Heart Association, 40 Stroke 3646 (2009).
15. Natl. Stroke Assn., *supra* n. 1.

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