Endovascular treatment of AIS - what's new? Where are we going?

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STORY
OF THE
WORLD
IDPATH

The New England
Journal of Medicine

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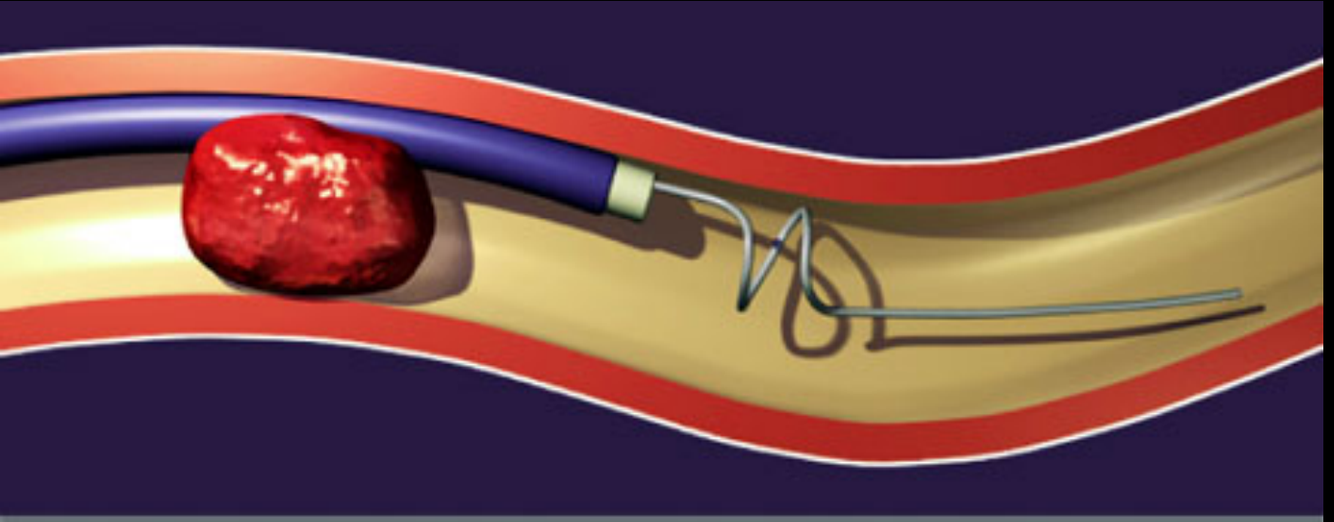
TISSUE PLASMINOGEN ACTIVATOR FOR ACUTE ISCHEMIC STROKE

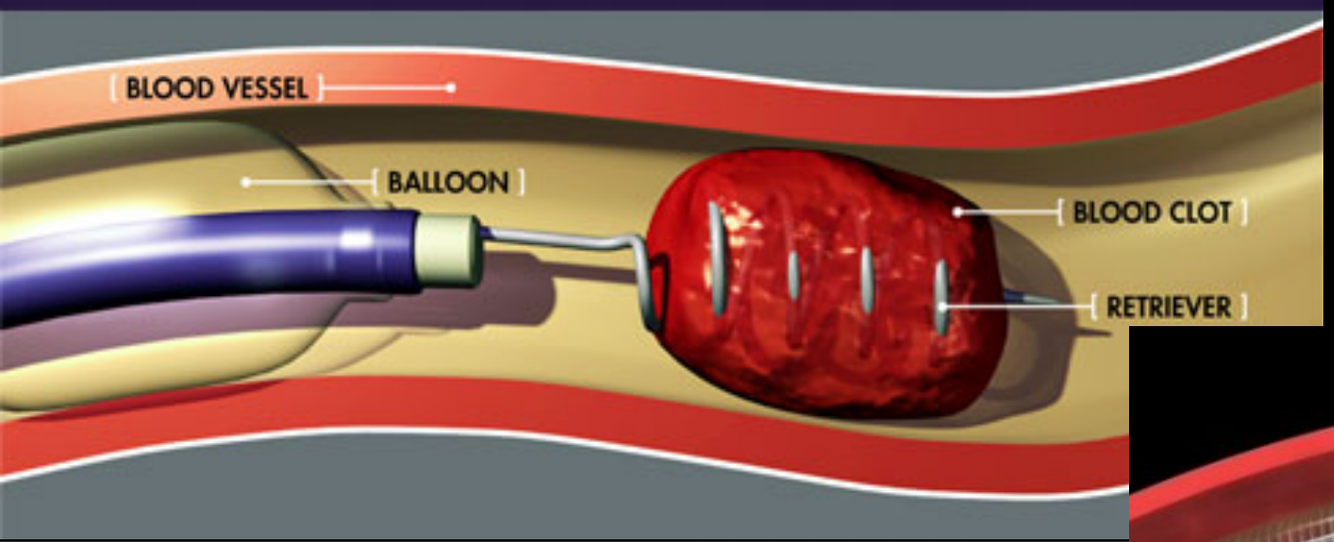
THE NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE rt-PA STROKE STUDY GROUP*

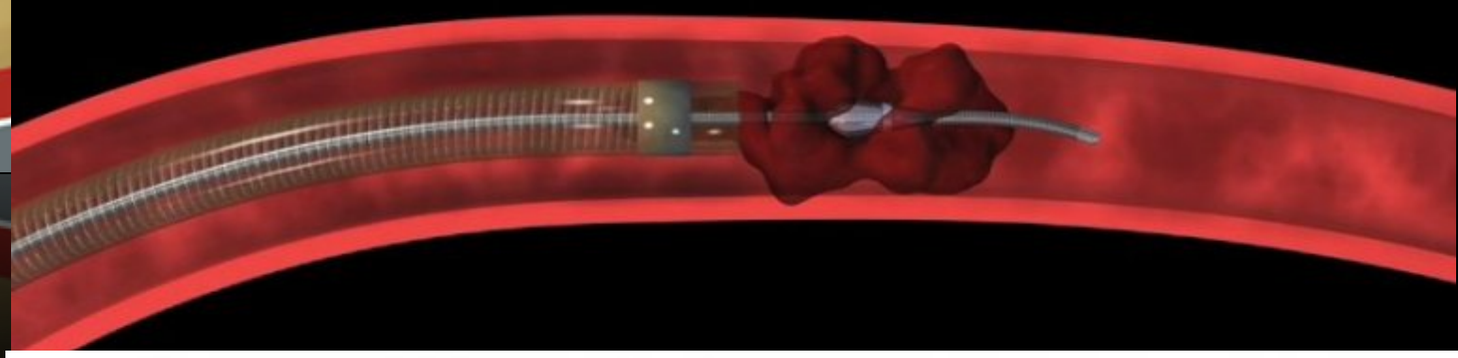
The New York Times

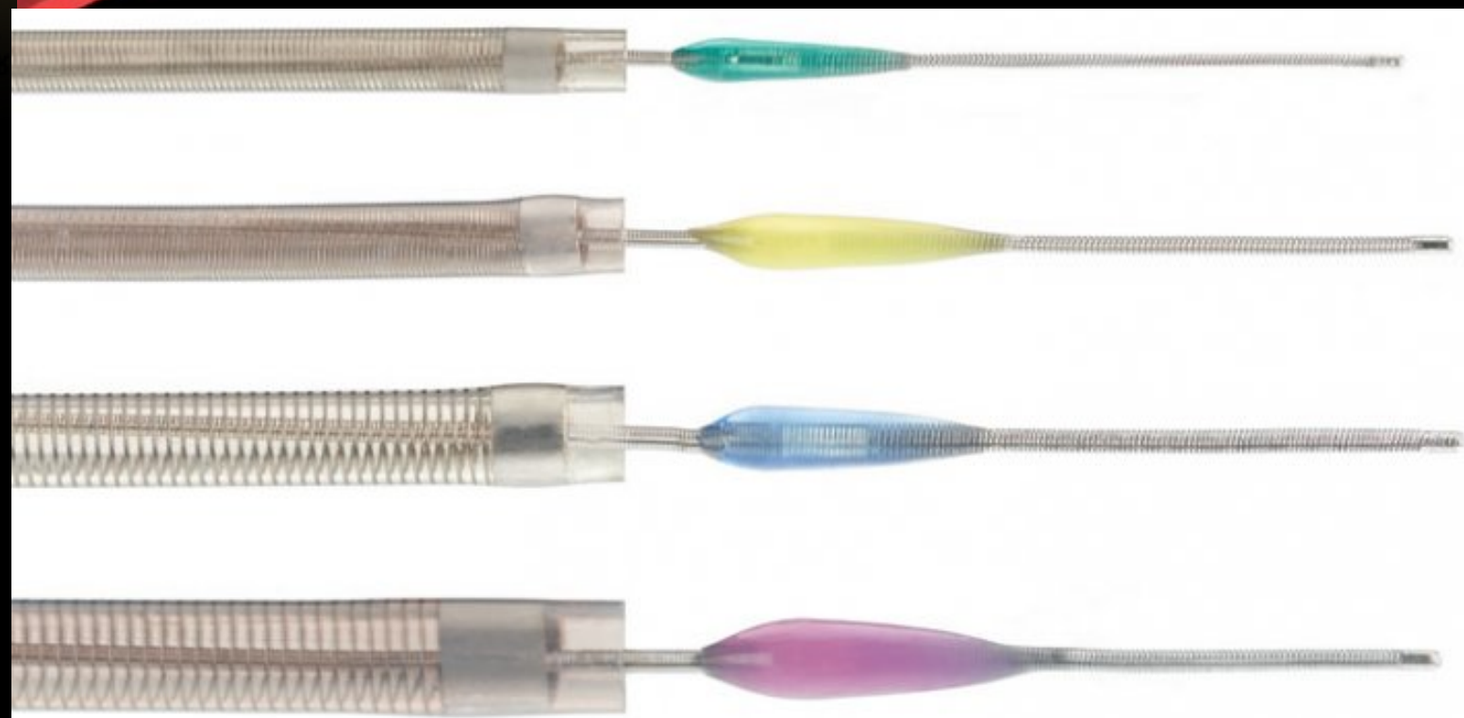
For Many Strokes, There's an Effective Treatment. Why Aren't Some Doctors Offering It?

By Gina Kolata March 26, 2018




BLOOD VESSEL
BALLOON
BLOOD CLOT
RETRIEVER





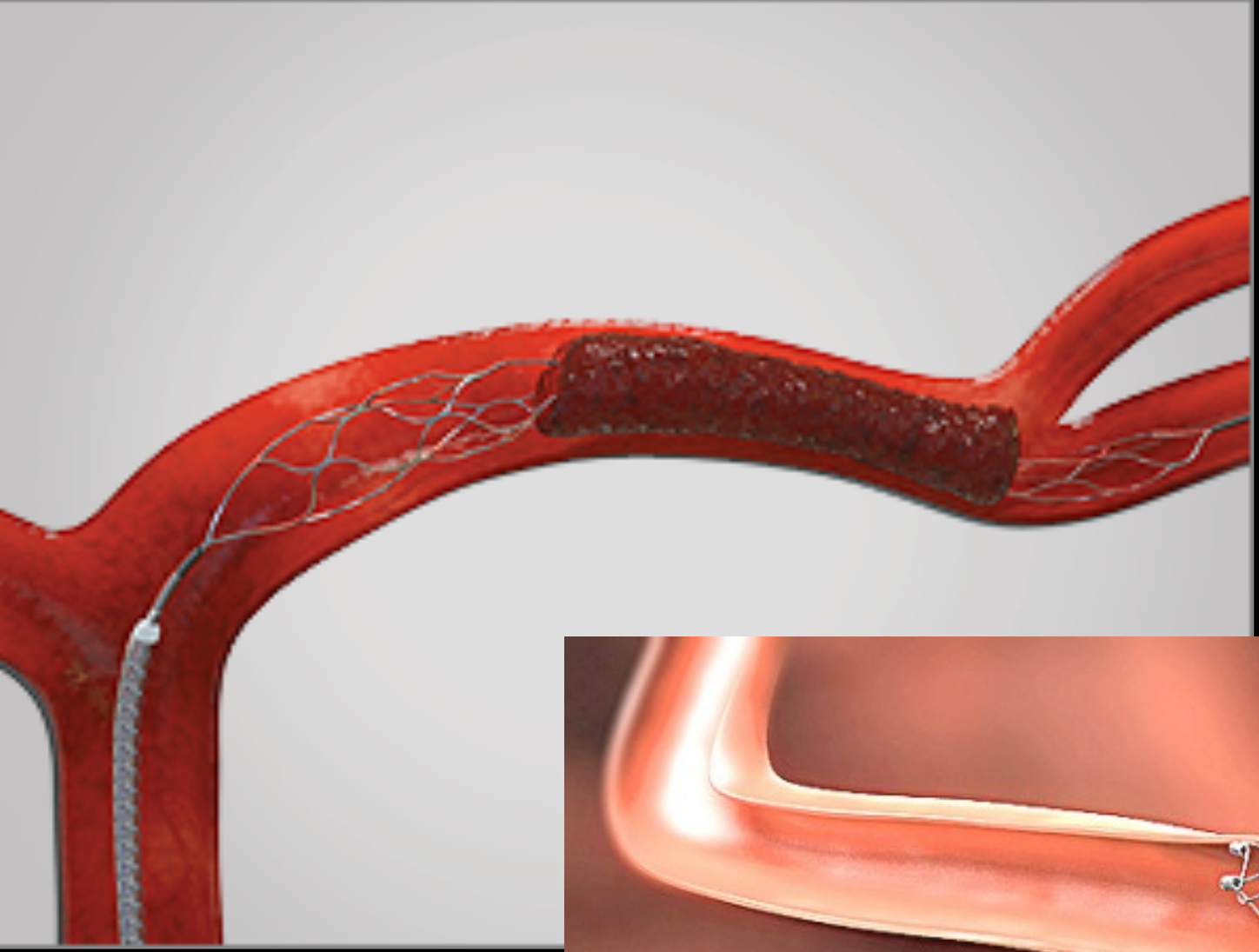
Endovascular Treatment for Acute Ischemic Stroke — Still Unproven

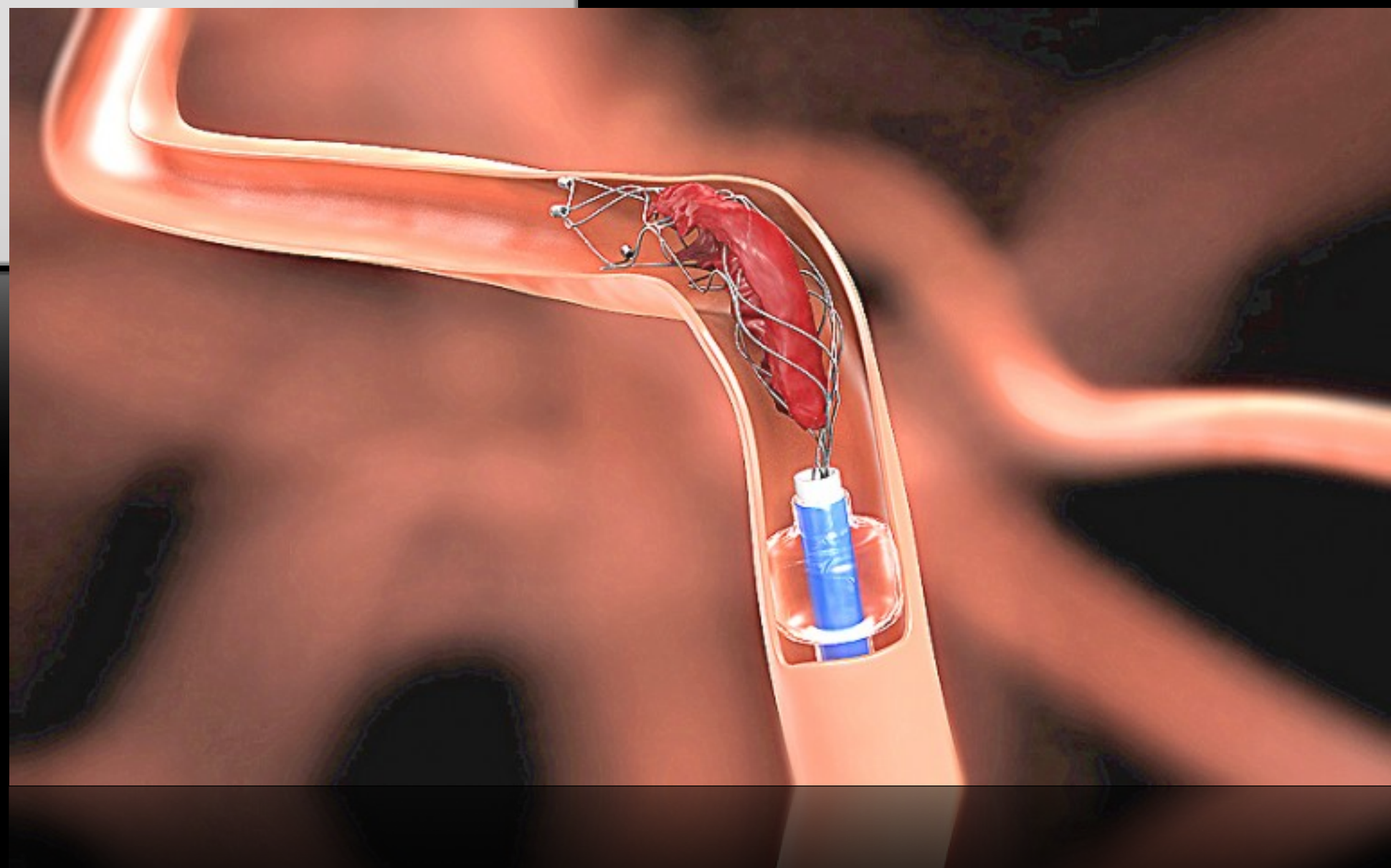
Marc I. Chimowitz, M.B., Ch.B.

Table 1. Key Features and Results of Trials Comparing Endovascular Procedures with Medical Treatment for Acute Ischemic Stroke.*

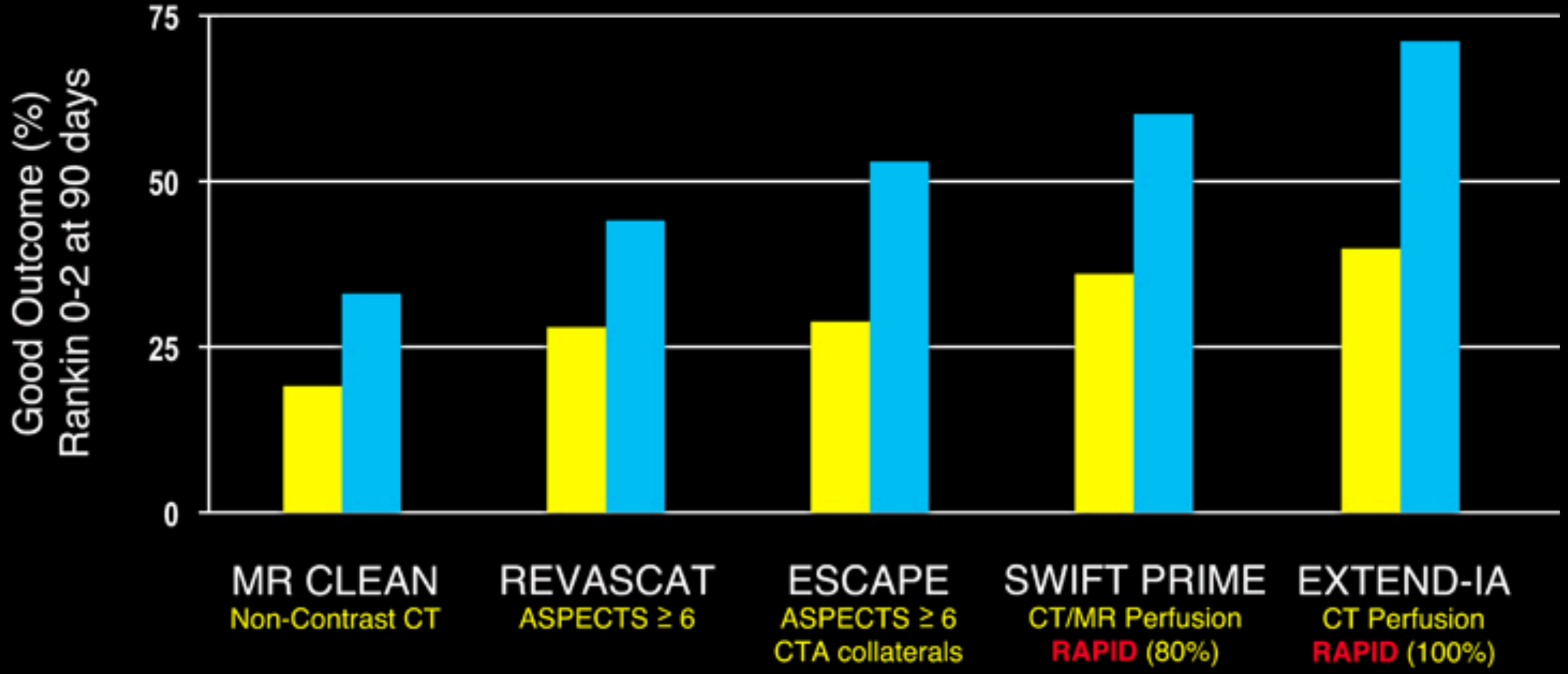
Trial	No. of Patients and Sites	Enrollment Period	Key Patient Characteristics	Test Treatment†
IMS III[7]	656 Patients enrolled (target, 900) at 58 sites	2006–2012	NIHSS score, ≥10¶; anterior or posterior circulation; 92% of 306 patients who underwent baseline CT angiography had large-artery occlusions	IV t-PA followed by endovascular therapy
SYNTHESIS Expansion[8]	362 Patients enrolled at 24 sites	2008–2012	No limit on NIHSS score; anterior or posterior circulation; no data on percentage of patients with large-artery occlusions‖	Endovascular therapy
MR RESCUE[9]	127 Patients enrolled at 22 sites but analysis restricted to 118 patients	2004–2011	NIHSS score, 6–29; large-vessel occlusion involving anterior circulation (ICA, M1, M2) required; 58% had favorable penumbral pattern	Endovascular therapy; 43.8% of patients in this group also initially received IV t-PA

N Engl J Med 2013;368:952-5

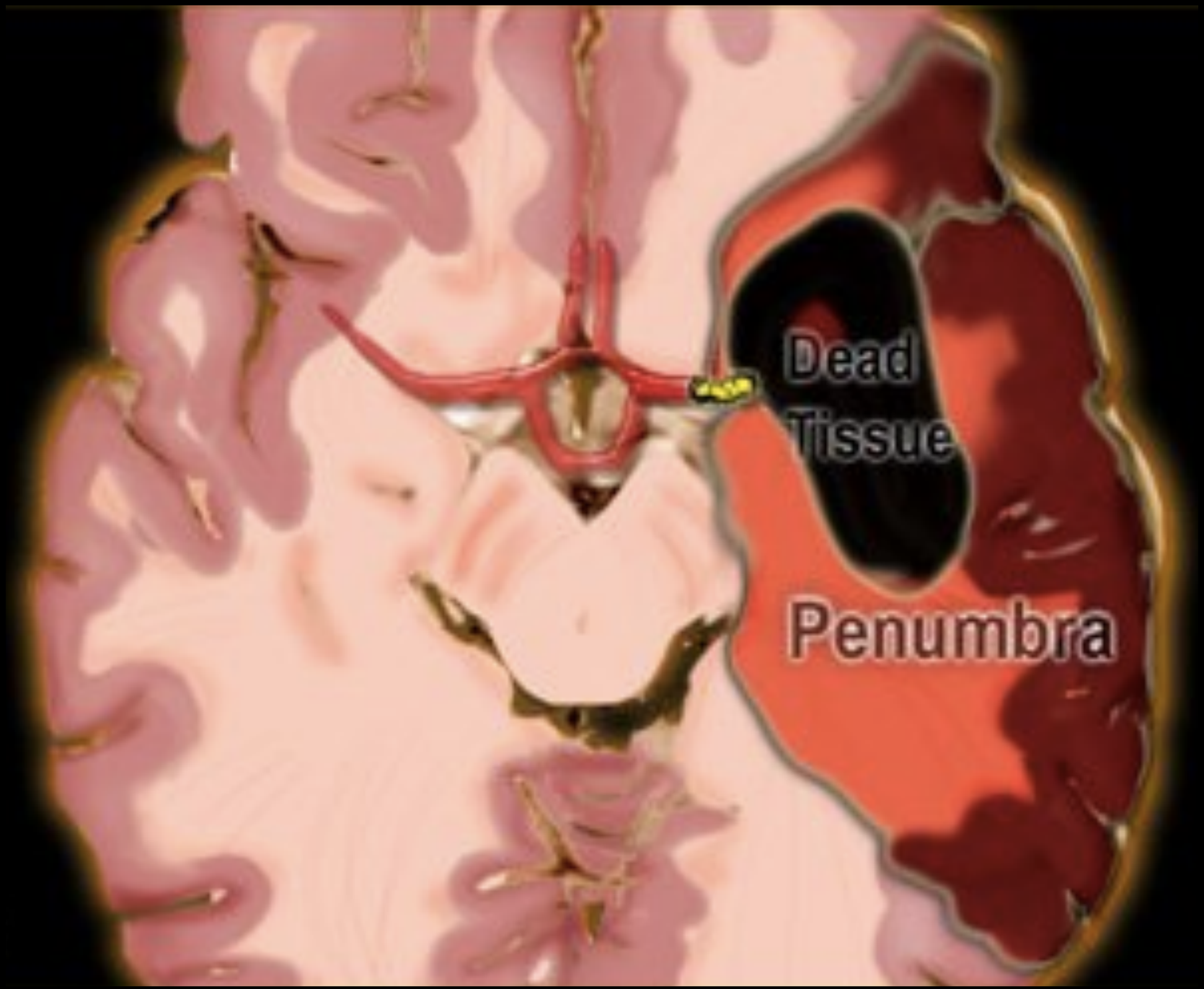




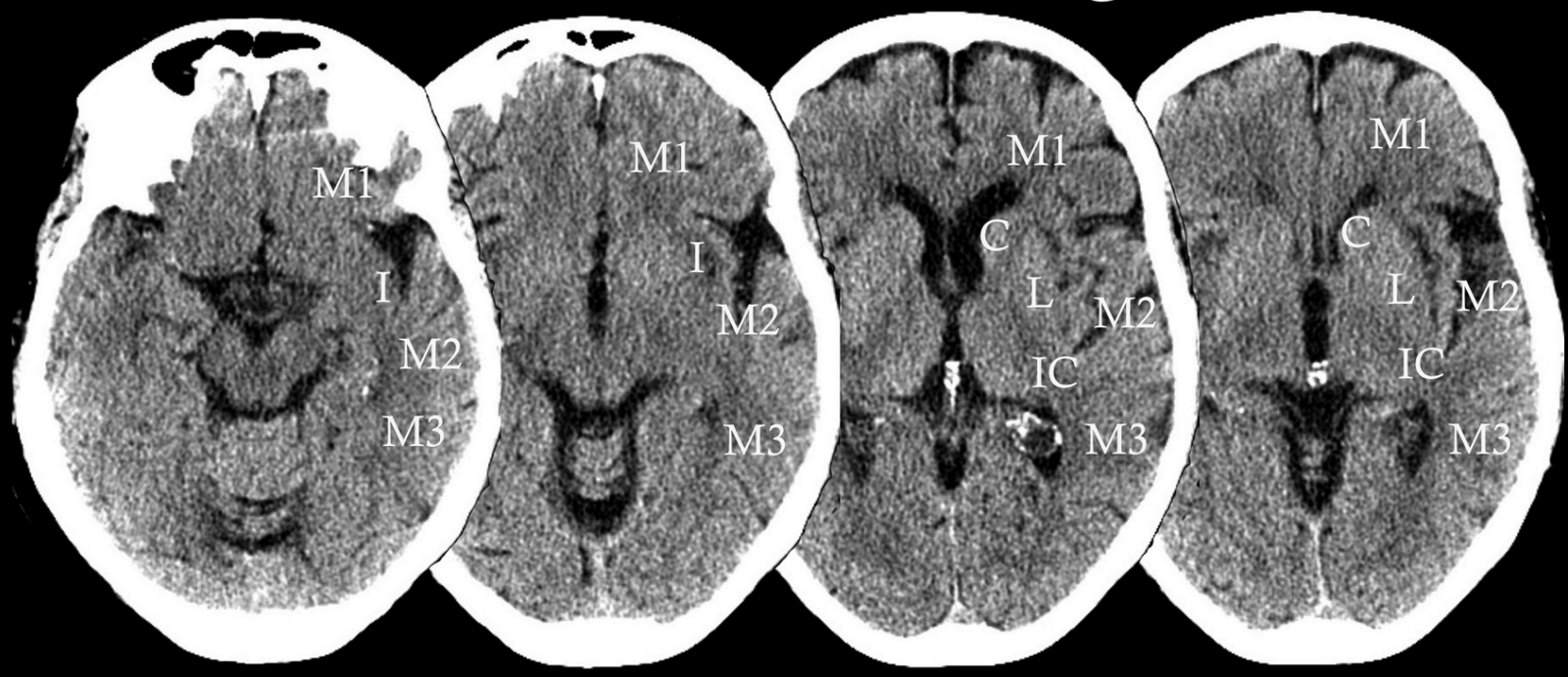
RANDOMIZED ENDOVASCULAR TRIAL RESULTS

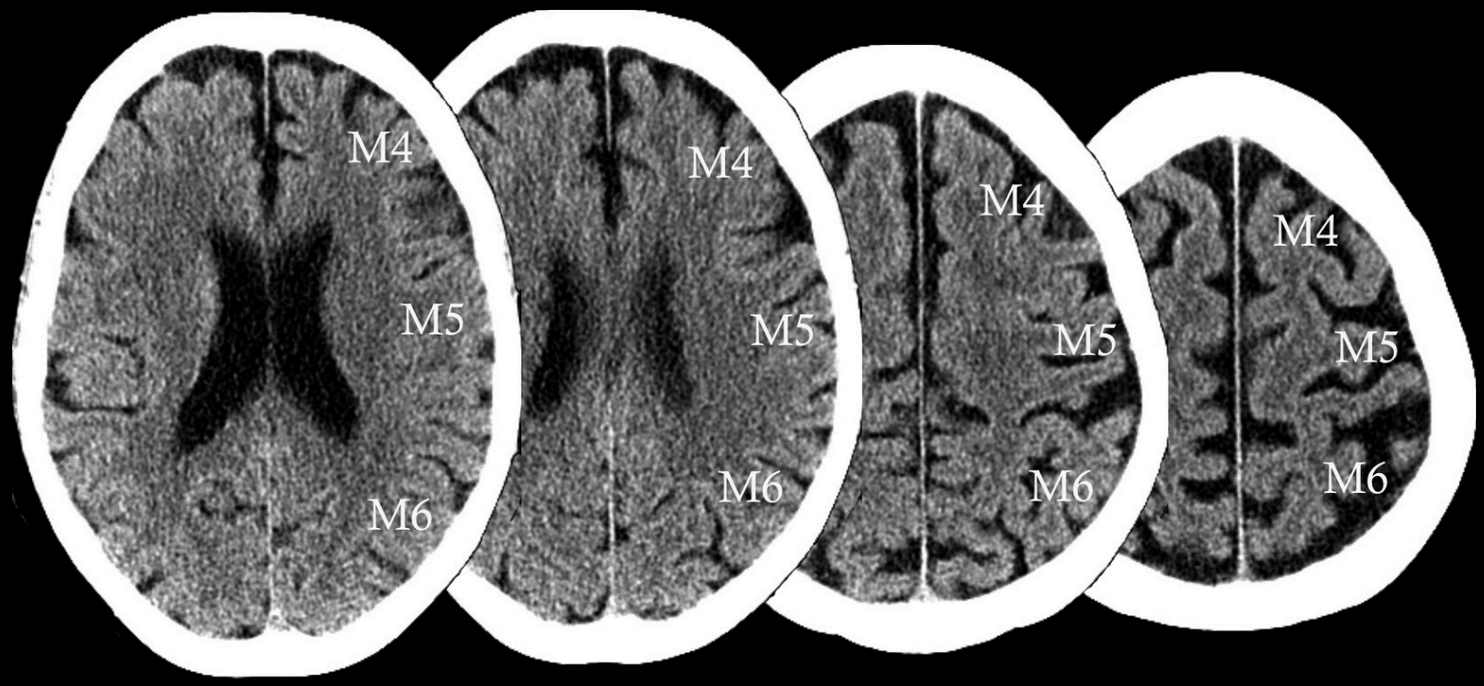


Endovascular	33%	44%	53%	60%	71%
Control	19%	28%	29%	36%	40%


Dead
Tissue
Penumbra

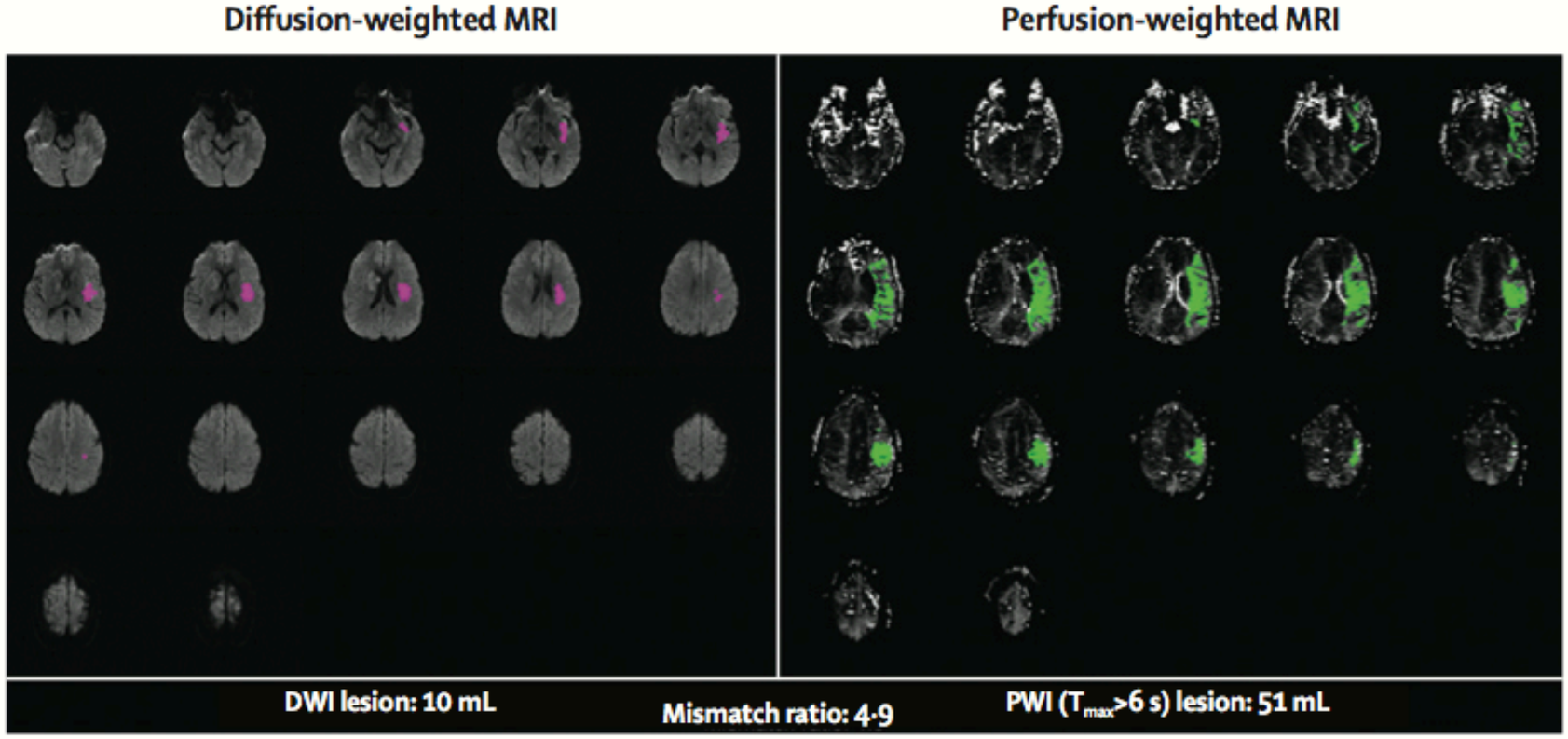
Ganglionic Level



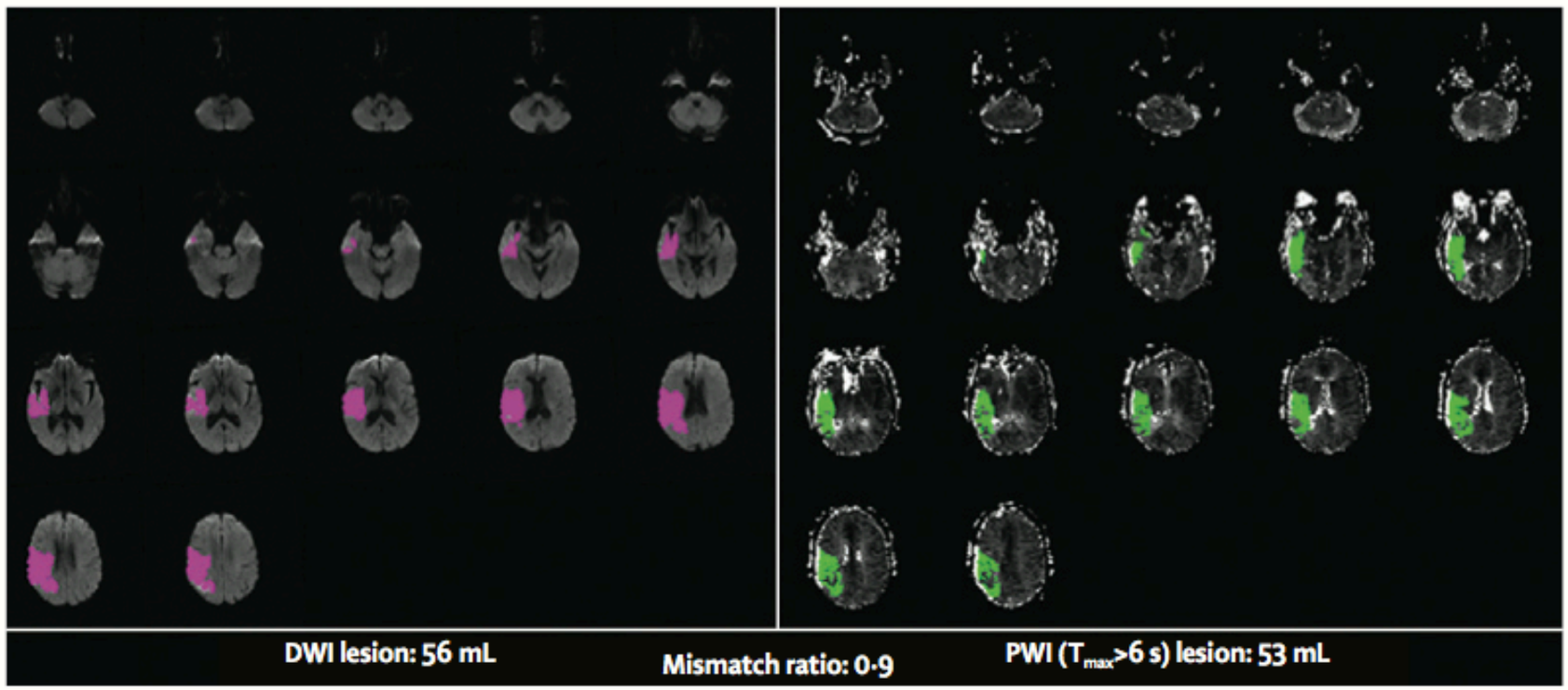


Supraganglionic Level

A


Diffusion-weighted MRI
Perfusion-weighted MRI
DWI lesion: 10 mL
Mismatch ratio: 4·9
PWI (T_{max}>6 s) lesion: 51 mL

B


DWI lesion: 56 mL
Mismatch ratio: 0·9
PWI (T_{max}>6 s) lesion: 53 mL

AHA/ASA Guideline

2015 AHA/ASA Focused Update of the 2013 Guidelines for the Early Management of Patients With Acute Ischemic Stroke Regarding Endovascular Treatment

Endorsed by AANS, CNS, ASN, SVIN

Stroke 2015;46(10):3020-35

Original Investigation

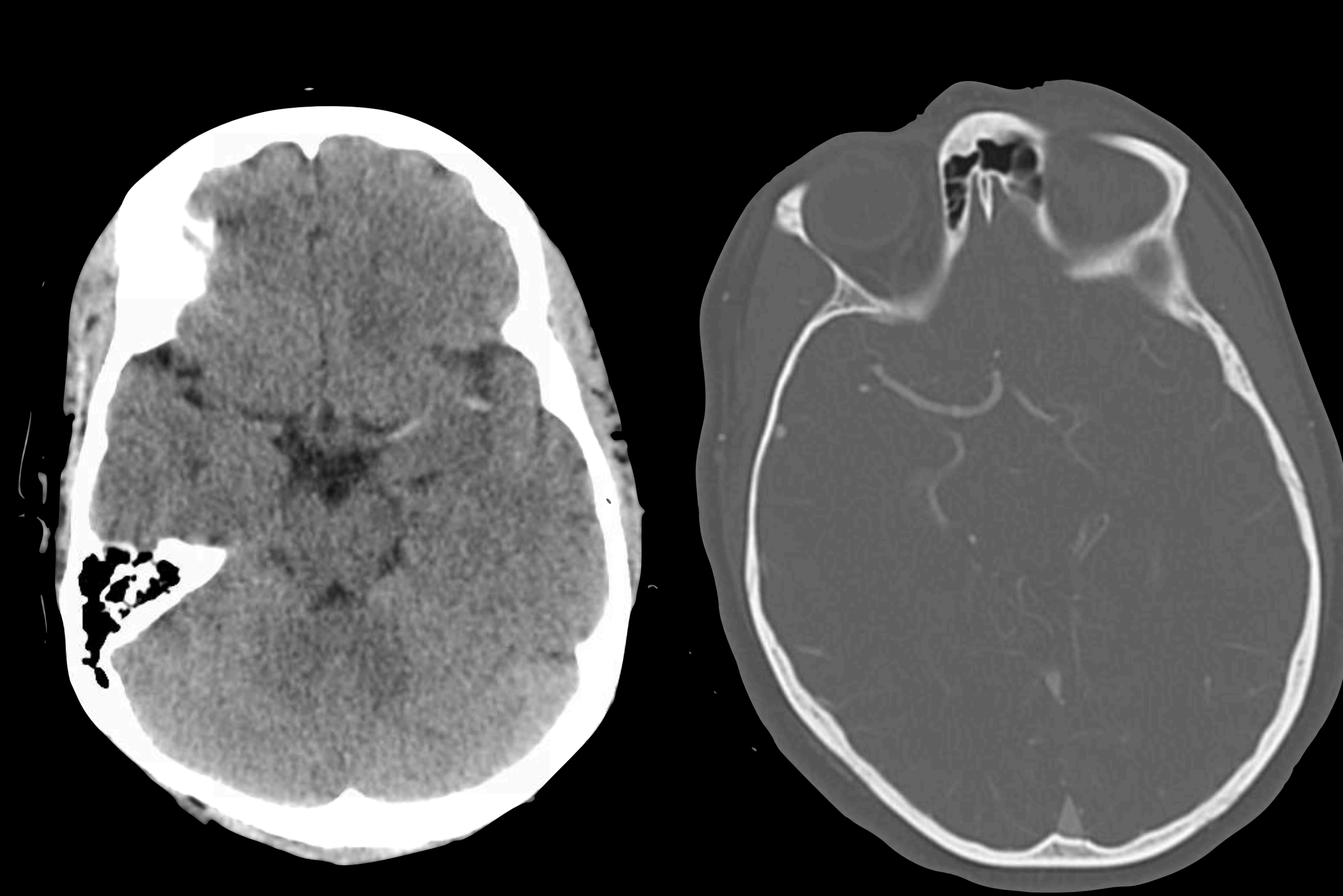
Door-to-Needle Times for Tissue Plasminogen Activator Administration and Clinical Outcomes in Acute Ischemic Stroke Before and After a Quality Improvement Initiative

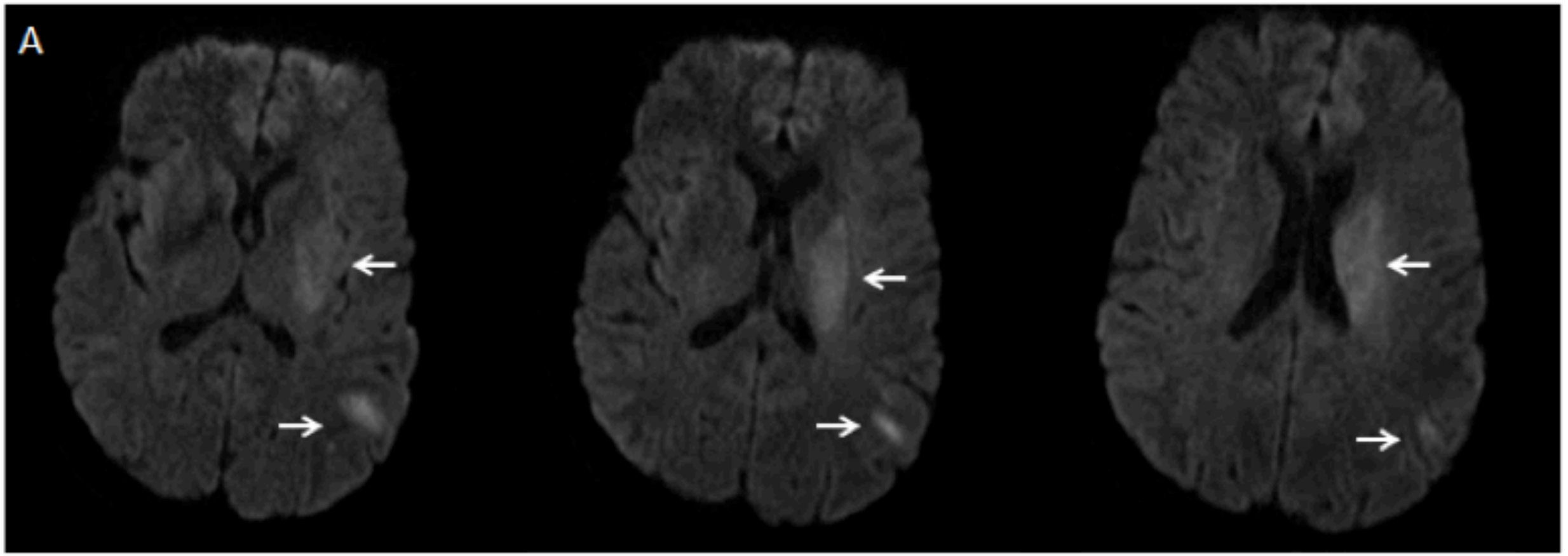
Gregg C. Fonarow, MD; Xin Zhao, MS; Eric E. Smith, MD, MPH; Jeffrey L. Saver, MD; Mathew J. Reeves, PhD; Deepak L. Bhatt, MD, MPH; Ying Xian, MD, PhD; Adrian F. Hernandez, MD, MHS; Eric D. Peterson, MD, MPH; Lee H. Schwamm, MD

Advance hospital notification by EMS
Rapid triage protocol and stroke notification
Single call activation system
Stroke tools

Rapid acquisition/interpretation of imaging
Rapid lab testing
Mix tPA ahead of time
Rapid access to IV tPA
Team-based approach
Prompt data feedback

JAMA 2014;311(16):1632-40




A
B

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

IV Alteplase in MR-Selected Patients With Stroke of Unknown Onset is Safe and Feasible:

Results of the Multicenter MR WITNESS Trial (NCT01282242)

Lee H. Schwamm, MD
Stroke Service, Massachusetts General Hospital, Harvard Medical School

Presenting on behalf of my Co-PIs Drs. Wu, Warach, Latour, Song and all the MR WITNESS Trial Investigators

WAKE-UP

ECASS-4

EXTEND

I WITNESS

DAWN

POSITIVE

“DAWN”

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

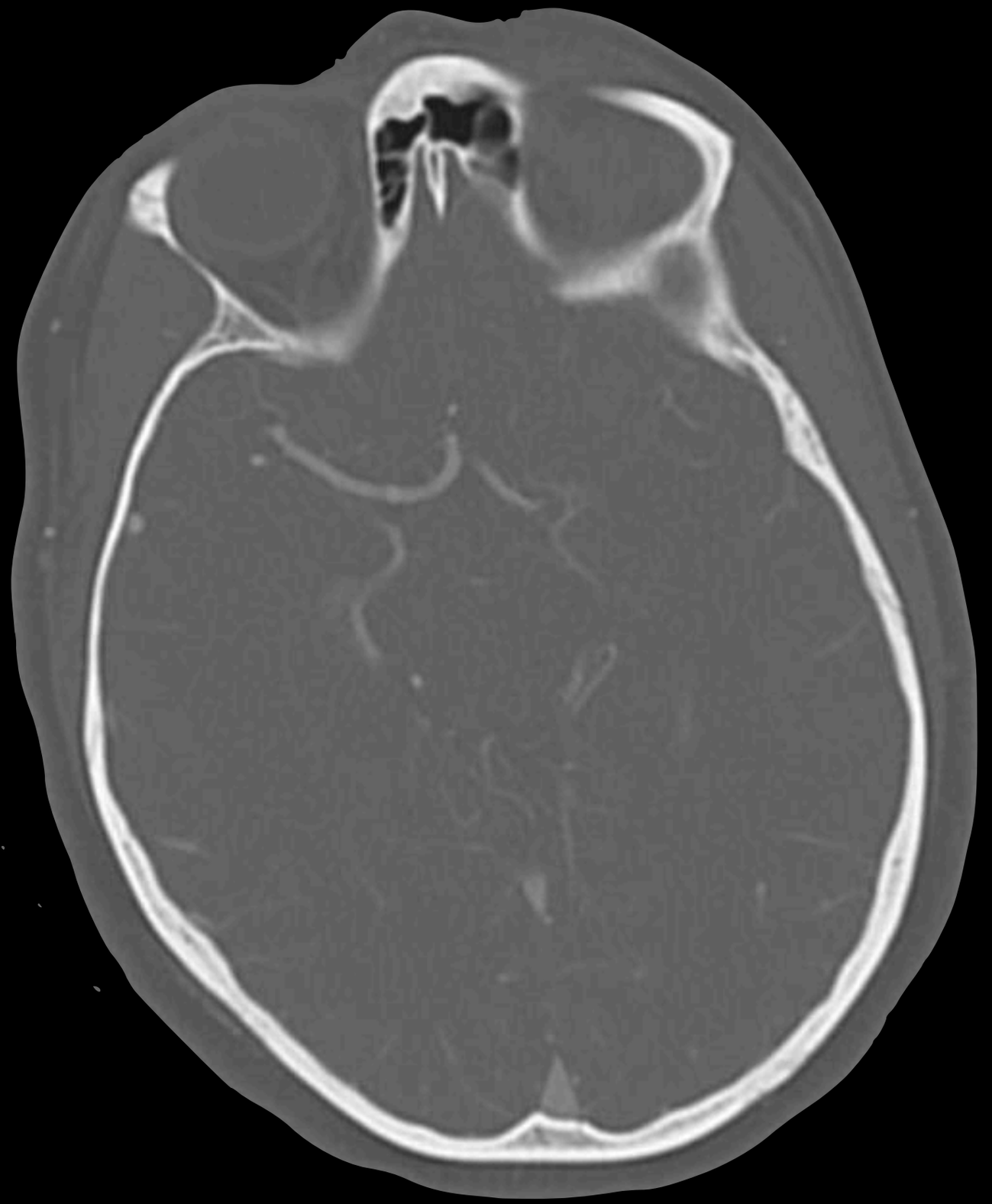
Thrombectomy 6 to 24 Hours after Stroke with a Mismatch between Deficit and Infarct

DEFUSE 3

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Thrombectomy for Stroke at 6 to 16 Hours with Selection by Perfusion Imaging



MAINE

POPULATED PLACES

25,000 – 99,999 • Portland
24,999 and less • Millinocket
State capital ★ Augusta

TRANSPORTATION

Interstate; limited access highway 95
Other principal highway
Railroad
Ferry

PHYSICAL FEATURES

Streams
Lakes
Highest elevation in state (feet) +5267

The lowest elevation in Maine is sea level (Atlantic Ocean).

CANADA
QUÉBEC
VERMONT
NEW HAMPSHIRE
NEW BRUNSWICK
NOVA SCOTIA
ATLANTIC OCEAN
Bay of Fundy
Gulf of Maine
St Lawrence River
St John River
Allagash River
Kennebec River
Penobscot River
Penobscot Bay
APPALACHIAN MTNS
Chamberlain Lake
Chesuncook Lake
Mt Katahdin + 5267
Moosehead Lake
Flagstaff Lake
Sebago Lake
Mt Desert Island
Fort Kent
Van Buren
Caribou
Fort Fairfield
Ashland
Presque Isle
Mars Hill
Houlton
Millinocket
Macwahoc
Jackman
Greenville
Dover-Foxcroft
Lincoln
Vanceboro
Topsfield
Calais
Eastport
Machias
Dexter
Newport
Skowhegan
Farmington
Waterville
Augusta
Belfast
Camden
Rockland
Bangor
Ellsworth
Bar Harbor
Lewiston
Brunswick
Portland
Westbrook
Sanford
Saco
Biddeford
95

0 20 40 60 80 100 120 km
0 20 40 60 80 mi

Interhospital Transfer Prior to Thrombectomy is Associated with Delayed Treatment and Worse Outcome in the STRATIS Registry

Bypass analysis:
tPA delay 12 minutes, ET 91 minutes sooner

Circulation Sep. 2017

11. Exam: **Look for Obvious Asymmetry**

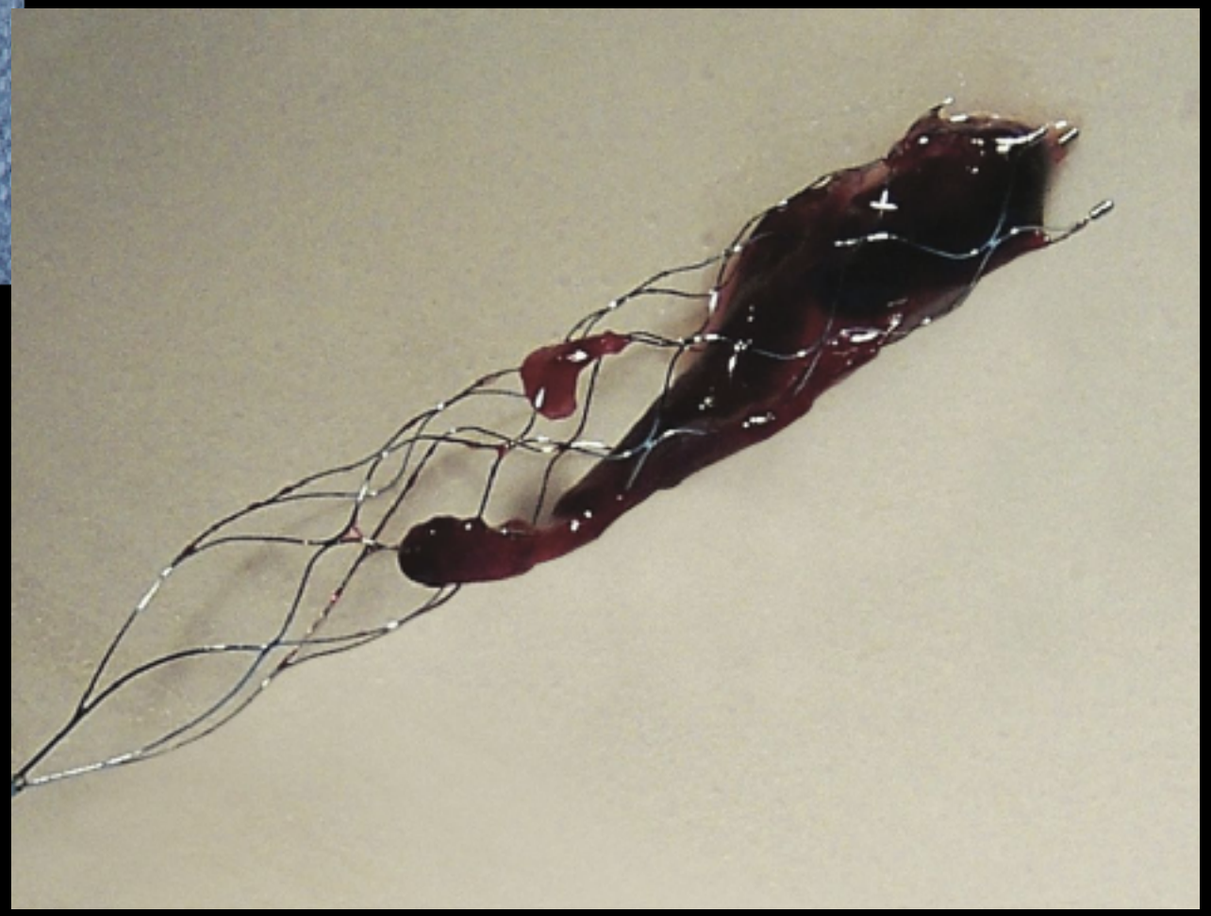
	Normal	**Right**	**Left**
Facial Smile/Grimace:	☐	☐ Droop	☐ Droop
Grip:	☐	☐ Weak	☐ Weak
Arm Strength:	☐	☐ Drifts Down	☐ Drifts Down
Speech:	☐	☐ Abnormal	

Based on exam, patient has only unilateral (not both sides) weakness:

Los Angeles Motor Scale - 8 components

South Carolina R.A.C.E. Stroke Scale - 17 components


NDC 50242-085-25
ACTIVASE®
ALTEPLASE
100 mg
(58 million IU)
a tissue plasminogen activator
Genentech, Inc.
A Member of the Roche Group
South San Francisco, CA 94080-4990



Original Contributions

Improved door-to-needle times and neurologic outcomes when intravenous tissue plasminogen activator is administered by emergency physicians with advanced neuroscience training☆,☆☆

Karen Greenberg, DO*, Christina R. Maxwell, PhD, Keisha D. Moore, MS, Michael D'Ambrosio, DO, Kenneth Liebman, MD, Erol Veznedaroglu, MD, Geri Sanfillippo, MSN, Cynthia Diaz, MHA, Mandy J. Binning, MD

Neuro ED

DTN 35 from 83

Discharge NIHSS lower

More patients go home

Integrated approach improves outcomes

Watch the data for wake up strokes

Watch the data for transfer strategies

Yale University
School of Medicine

Thank you!

evie.marcolini@yale.edu