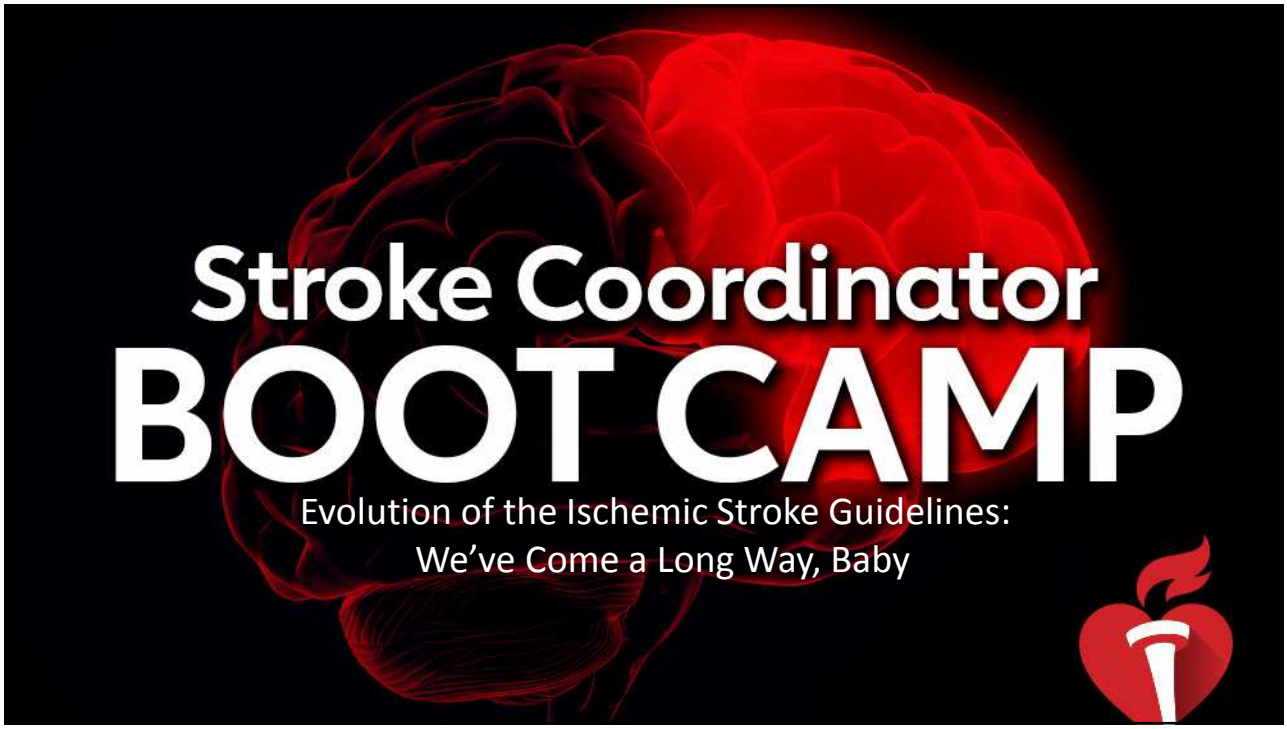

1

DISCLOSURES

MARTHA POWER – NONE

LYNN HUNDLEY – MEDTRONIC SPEAKER BUREAU & ARBOR PHARMACEUTICALS SPEAKER BUREAU

KARI MOORE – NONE

KATHY MORRISON – NONE

2

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2

WHEN WAS THE 1ST STROKE GUIDELINE PUBLISHED?

a.1984

b.2007

c.2013

d.1994

3

ISCHEMIC GUIDELINES

	1994	1996*	2003	2007	2013	2015**	2018
Number of Pages/References	13/179	11/54	19/402	37/378	50/1,006	11/42	48/421
Stroke Centers							
Stroke Units							
Prehospital Section							
Stroke Triaged as High Level							
Education for Comm, EMS, Health Care Professionals							
Switch from "Suddens" to FAST							
NIHSS Use							
Nurses as Guideline Authors							
Thrombolysis							
Mechanical Thrombectomy							

* Thrombolytic Guidelines ** Endovascular Updates

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WHAT'S UP WITH THE LEVELS OF EVIDENCE TABLE?

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WE WENT FROM THIS IN THE 1994 ACUTE ISCHEMIC STROKE GUIDELINE

TABLE 1. Levels of Evidence and Grading of Recommendations for Treatment of Patients With Acute Ischemic Stroke

Level of Evidence	
Level I	Data from randomized trials with low false-positive (alpha) and low false-negative (beta) errors
Level II	Data from randomized trials with high false-positive (alpha) or high false-negative (beta) errors
Level III	Data from nonrandomized concurrent cohort studies
Level IV	Data from nonrandomized cohort studies using historical controls
Level V	Data from anecdotal case series
Strength of Recommendation	
Grade A	Supported by Level I evidence
Grade B	Supported by Level II evidence
Grade C	Supported by Levels III, IV, or V evidence

Descriptions of evidence and recommendations are adapted from Cook et al.[5]

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TO THIS IN THE 2007 AIS GUIDELINE

"Size of Treatment Effect"

"Estimate of Certainty (Precision) of Treatment Effect"

	Class I *Benefit >>> Risk* Procedure/Treatment SHOULD be performed/administered	Class IIa *Benefit >> Risk* *Additional studies with focused objectives needed* IT IS REASONABLE to perform procedure/administer treatment	Class IIb *Benefit ≥ Risk* *Additional studies with broad objectives needed; Additional registry data would be helpful* Procedure/Treatment MAY BE CONSIDERED	Class III *Risk ≥ Benefit* *No additional studies needed* Procedure/Treatment should NOT be performed/administered SINCE IT IS NOT HELPFUL AND MAY BE HARMFUL
Level A *Multiple (3-5) population risk strata evaluated** *General consistency of direction and magnitude of effect*	• Recommendation that procedure or treatment is useful/effective • Sufficient evidence from multiple randomized trials or meta-analyses	• Recommendation in favor of treatment or procedure being useful/effective • Some conflicting evidence from multiple randomized trials or meta-analyses	• Recommendation's usefulness/efficacy less well established • Greater conflicting evidence from multiple randomized trials or meta-analyses	• Recommendation that procedure or treatment not useful/effective and may be harmful • Sufficient evidence from multiple randomized trials or meta-analyses
Level B *Limited (2-3) population risk strata evaluated**	• Recommendation that procedure or treatment is useful/effective • Limited evidence from single randomized trial or non-randomized studies	• Recommendation in favor of treatment or procedure being useful/ effective • Some conflicting evidence from single randomized trial or non-randomized studies	• Recommendation's usefulness/efficacy less well established • Greater conflicting evidence from single randomized trial or non-randomized studies	• Recommendation that procedure or treatment not useful/effective and may be harmful • Limited evidence from single randomized trial or non-randomized studies
Level C *Very limited (1-2) population risk strata evaluated**	• Recommendation that procedure or treatment is useful/effective • Only expert opinion, case studies, or standard-of-care	• Recommendation in favor of treatment or procedure being useful/ effective • Only diverging expert opinion, case studies, or standard-of-care	• Recommendation's usefulness/efficacy less well established • Only diverging expert opinion, case studies, or standard-of-care	• Recommendation that procedure or treatment not useful/effective and may be harmful • Only expert opinion, case studies, or standard-of-care
Suggested phrases for writing recommendations †	should is recommended is indicated is useful/effective/beneficial	is reasonable can be useful/effective/ beneficial is probably recommended or indicated	may/might be considered may/might be reasonable usefulness/effectiveness is unknown /unclear/uncertain or not well established	is not recommended is not indicated should not is not useful/effective/beneficial may be harmful

*Data available from clinical trials or registries about the usefulness/efficacy in different sub-populations, such as gender, age, history of diabetes, history of prior MI, history of heart failure, and prior aspirin use. A recommendation with Level of Evidence B or C does not imply that the recommendation is weak. Many important clinical questions addressed in the guidelines do not lend themselves to clinical trials. Even though randomized trials are not available, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

†In 2003, the ACC/AHA Task Force on Practice Guidelines developed a list of suggested phrases to use when writing recommendations. All recommendations in this guideline have been written in full sentences that express a complete thought, such that a recommendation, even if separated and presented apart from the rest of the document (including headings above sets of recommendations), would still convey the full intent of the recommendation. It is hoped that this will increase readers' comprehension of the guidelines and will allow queries at the individual recommendation level.

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TO OUR CURRENT 2018 ACUTE ISCHEMIC STROKE GUIDELINE

CLASS (STRENGTH) OF RECOMMENDATION

CLASS I (STRONG) — Benefit >>> Risk

Suggested phrases for writing recommendations:
- Is recommended
- Is indicated/useful/effective/beneficial
- Should be performed/administered/other
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is recommended/indicated in preference to treatment B
  - Treatment A should be chosen over treatment B

CLASS IIa (MODERATE) — Benefit >> Risk

Suggested phrases for writing recommendations:
- Is reasonable
- Can be useful/effective/beneficial
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is probably recommended/indicated in preference to treatment B
  - It is reasonable to choose treatment A over treatment B

CLASS IIb (WEAK) — Benefit ≥ Risk

Suggested phrases for writing recommendations:
- May/might be reasonable
- May/might be considered
- Usefulness/effectiveness is unknown/unclear/uncertain or not well established

CLASS III: No Benefit (MODERATE) — Benefit = Risk
(Generally, LOE A or B use only)

Suggested phrases for writing recommendations:
- Is not recommended
- Is not indicated/useful/effective/beneficial
- Should not be performed/administered/other

CLASS III: Harm (STRONG) — Risk > Benefit

Suggested phrases for writing recommendations:
- Potentially harmful
- Causes harm
- Associated with excess morbidity/mortality
- Should not be performed/administered/other

LEVEL (QUALITY) OF EVIDENCE‡

LEVEL A
- High-quality evidence‡ from more than 1 RCT
- Meta-analyses of high-quality RCTs
- One or more RCTs corroborated by high-quality registry studies

LEVEL B-R (Randomized)
- Moderate-quality evidence‡ from 1 or more RCTs
- Meta-analyses of moderate-quality RCTs

LEVEL B-NR (Nonrandomized)
- Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies
- Meta-analyses of such studies

LEVEL C-LD (Limited Data)
- Randomized or nonrandomized observational or registry studies with limitations of design or execution
- Meta-analyses of such studies
- Physiological or mechanistic studies in human subjects

LEVEL C-EO (Expert Opinion)

Consensus of expert opinion based on clinical experience

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative-effectiveness recommendations (COR I and IIa; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

‡ The method of assessing quality is evolving, including the application of standardized, widely used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.

COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.

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AL1

SO MANY COLLABORATORS TO CREATE THIS METHODOLOGY SO OUR GUIDELINES ARE EVIDENCED BASED AND NON-BIAS.

Practice Guideline: Methodology

ACCF/AHA Clinical Practice Guideline Methodology Summit Report

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines

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Circulation. 2013;127:268-310

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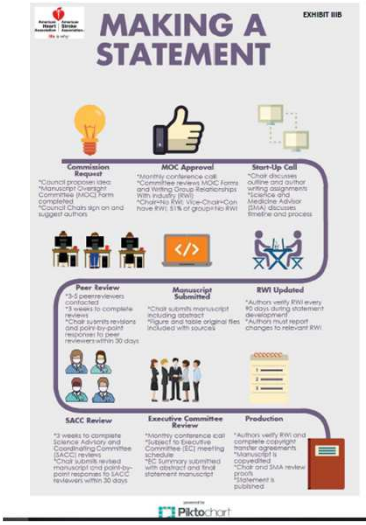
ONE GOAL IS TO BE MORE USER FRIENDLY.

- Word limits
- Page limits
- Using more graphs/pictograms, algorithms, or figures
- Reference limit suggestions

THE DEVELOPMENT PROCESS CAN TAKE OVER A YEAR



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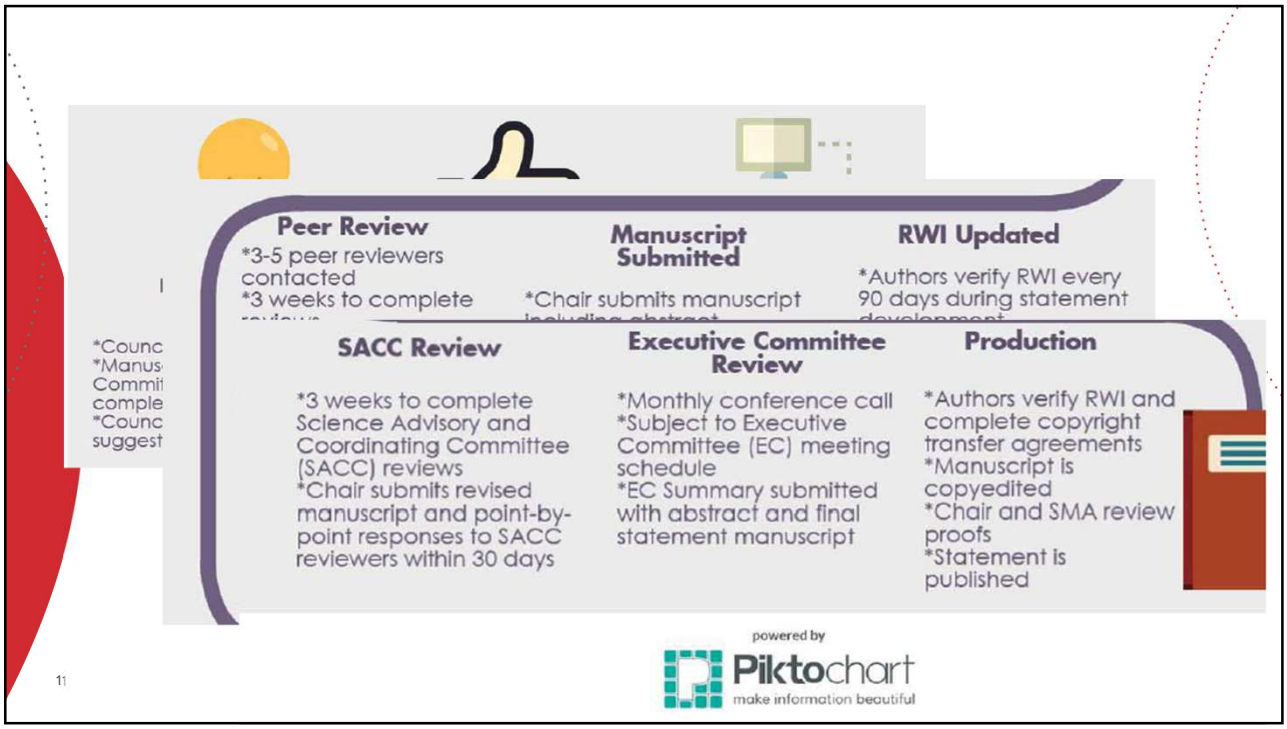
Slide 9

AL1 Martha, you might also mention the numberous peer reviewers we have for our GLs. on the ACC/AHA Joint GL side we might have up to 40 peer reviewers.
Anne Leonard, 3/6/2019



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WHEN WAS THE FIRST TIME THAT STROKE CENTERS AND STROKE UNITS WERE RECOMMENDED IN THE GUIDELINES?

a.2003

b.2007

c.2013

d.1994

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ISCHEMIC GUIDELINES

	1994	1996*	2003	2007	2013	2015**	2018
Number of Pages/References	13/179	11/54	19/402	37/378	50/1,006	11/42	48/421
Stroke Centers	X			X			
Stroke Units	X		X				
Prehospital Section							
Stroke Triaged as High Level							
Education for Comm, EMS, Health Care Professionals							
Switch from "Suddens" to FAST							
NIHSS Use							
Nurses as Guideline Authors							
Thrombolysis							
Mechanical Thrombectomy							

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1994

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WHEN WAS A PREHOSPITAL SECTION ADDED TO THE GUIDELINES?

a.2000

b.1996

c.2007

d.2013

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ISCHEMIC GUIDELINES

	1994	1996*	2003	2007	2013	2015**	2018
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Stroke Centers	X			X			
Stroke Units	X		X				
Prehospital Section				X			
Stroke Triaged as High Level				X			
Education for Comm, EMS, Health Care Professionals				X			
Switch from "Suddens" to FAST							
NIHSS Use							
Nurses as Guideline Authors							
Thrombolysis							
Mechanical Thrombectomy							

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PREHOSPITAL 2007

"Both BLS and ALS providers have been well-trained to rapidly transport patients with major injuries directly to trauma centers (6). However, stroke patients have not yet received the same priority and attention, either clinically or educationally. " NINDS, 1996

"Even with immediate recognition of stroke onset by family members and the availability of sophisticated stroke centers, a lack of responsiveness and aggressive action on the part of dispatchers or EMS responders can become the weak link that will compromise the time-dependent chances for reversing or ameliorating an acute stroke in evolution." NINDS, 1996

TABLE 2. Stroke Chain of Survival

Detection	Recognition of stroke signs and symptoms
Dispatch	Call 9-1-1 and priority EMS dispatch
Delivery	Prompt transport and prehospital notification to hospital
Door	Immediate ED triage
Data	ED evaluation, prompt laboratory studies, and CT imaging
Decision	Diagnosis and decision about appropriate therapy
Drug	Administration of appropriate drugs or other interventions

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PREHOSPITAL 2007

Dispatchers should make stroke a priority dispatch

Prehospital stroke assessment tools:
Los Angeles Prehospital Stroke Screen
Cincinnati Prehospital Stroke Scale

Stroke triaged by EMS same level as MI or trauma

Educational programs for EMS recommended

Pre-arrival notification

Patients should be transported rapidly to closest institution that provides stroke care

TABLE 3. Guidelines for EMS Management of Patients With Suspected Stroke

Recommended	Not Recommended
Manage ABCs	Dextrose-containing fluids in nonhypoglycemic patients
Cardiac monitoring	Hypotension/excessive blood pressure reduction
Intravenous access	Excessive intravenous fluids
Oxygen (as required O_2 saturation <92%)	
Assess for hypoglycemia	
Nil per os (NPO)	
Alert receiving ED	
Rapid transport to closest appropriate facility capable of treating acute stroke	

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2013

"When the receiving medical staff do not display a sense of urgency regarding stroke patients, EMS personnel are less apt to be as reactive as perhaps they should be in their routines." NINDS 1996

Table 5. ED-Based Care

Action	Time
Door to physician	≤10 minutes
Door to stroke team	≤15 minutes
Door to CT initiation	≤25 minutes
Door to CT interpretation	≤45 minutes
Door to drug (≥80% compliance)	≤60 minutes
Door to stroke unit admission	≤3 hours

CT indicates computed tomography; and ED, emergency department.
Source: Bock.[96]

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WHAT STROKE SCREENING TOOL IS USED IN YOUR AREA?

a. The 'Suddens'

b. F.A.S.T.

c. B.E. F.A.S.T.

d. Mend

e. NIHSS

f. Other

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ISCHEMIC GUIDELINES

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Stroke Centers	X			X			
Stroke Units	X		X				
Prehospital Section				X			
Stroke Triaged as High Level				X			
Education for Comm, EMS, Health Care Professionals				X			
Switch from "Suddens" to FAST					X		
NIHSS Use							
Nurses as Guideline Authors							
Thrombolysis							
Mechanical Thrombectomy							

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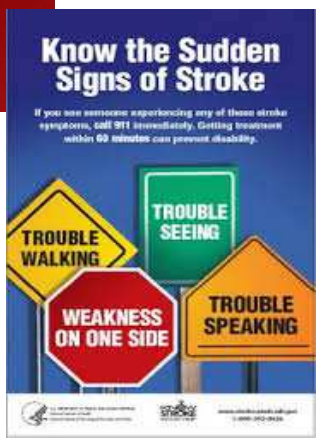
2013 "SUDDENS" F.A.S.T.



The F.A.S.T. was developed in the UK in 1998 by a group of stroke physicians, ambulance personnel, and an emergency department physician and was designed to be an integral part of a training package for ambulance staff.

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ISCHEMIC GUIDELINES

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Switch from "Suddens" to FAST					X		
NIHSS Use			X				
Nurses as Guideline Authors							
Thrombolysis							
Mechanical Thrombectomy							

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WHEN WAS A NURSE ADDED TO THE WRITING GROUP FOR ISCHEMIC STROKE TREATMENT GUIDELINES?

a.2000

b.1996

c.2013

d.1994

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2013 & 2018 NURSES AS GUIDELINES AUTHORS

First nurse on the Ischemic Stroke Guidelines

Debbi[illegible]mers

Lead author on the 2009 *Comprehensive Overview of Nursing and Interdisciplinary Care of the Acute Ischemic Stroke Patient*

2013 – appointed nursing areas – dysphagia, VTE, mobility, nutrition, skin care

- Had physician counterpart to review her work for accuracy

2018 – assigned various areas, not specifically nursing areas

- Was co-author with a physician; they reviewed each other's work
- Started in Sept 2016 → full day meeting in Dallas
- Conference calls every Thursday 4-6pm til release of guidelines in 2018

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2009 COMPREHENSIVE OVERVIEW OF NURSING AND INTERDISCIPLINARY CARE OF THE ACUTE ISCHEMIC STROKE PATIENT RECOMMENDATIONS

- Patient's head should be positioned in neutral alignment, and HOB should be elevated 25-30 degrees
- ED patients should be kept NPO until ability to swallow is assessed
- IV access – 2 sites if patient is IV tPA candidate
- Temperature > 99.6 F should be managed aggressively
- Early bowel and bladder care should be instituted
- Fall precautions should be initiated
- Frequent turning for bedridden patients
- Use of Braden Scale is recommended
- Range of motion exercises should start early
- Swallow screen should be done, preferably by SLP
  - Nurses should be familiar with the process and perform a screen if SLP cannot do so within 24 hours

Table 13. Nursing Alert: Recognizing Increased ICP

Signs and symptoms of increasing ICP–a medical emergency
Early signs: decreased level of consciousness, deterioration in motor function, headache, visual disturbances, changes in blood pressure or heart rate, changes in respiratory pattern
Late signs: pupillary abnormalities, more persistent changes in vital signs, changes in respiratory pattern with changes in arterial blood gases
Intervention: thorough neurological assessment, notify physician immediately, emergency brain imaging, maintain ABCs
General measures to prevent elevation of ICP
HOB up 30° or as physician specifies; reverse Trendelenburg position may be used if blood pressure is stable. Head position may be one of the single most important nursing modalities for controlling increased ICP
Good head and body alignment: prevents increased intrathoracic pressure and allows venous drainage.
Pain management: provide good pain control on a consistent basis
Keep patient normothermic

HOB indicates head of bed.

Tables

- Recommendations for secondary stroke prevention
- Stroke educational programs by AHA/ASA, NINDS, and NSA
- Effective nursing strategies for successful discharge planning
- Roles for nursing in Joint Commission PSC certification

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Summers,D., et al. (2009). Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient. *Stroke*; 40; 2911-2944.

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ISCHEMIC GUIDELINES

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Stroke Units	X		X				
Prehospital Section				X			
Stroke Triaged as High Level				X			
Education for Comm, EMS, Health Care Professionals				X			
Switch from "Suddens" to FAST					X		
NIHSS Use			X				
Nurses as Guideline Authors					X		X
Thrombolysis		IV	IA				
Mechanical Thrombectomy					X		

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THROMBOLYTIC & THROMBECTOMY RECOMMENDATIONS

	1994	1996*	2003	2007	2013	2015**	2018
Schedule for vs/neuro checks			X				
60 Minute DTN Goal					X		
45 Min DTN Goal							X
Exclusion/Inclusion Criteria		X					
Treat mild/rapidly improving					X		
Don't Wait for PTT/PT/INR			X				
Only Need BS prior to Treat					X		
CTA/MRA for candidacy						X	
Stent Retriever over MERCI						X	
20 Min Door-to CT in 50% of pts							X
Thrombectomy 6-24 hrs							X
CTA w/o Creat in Suspected LVO							X

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2013 ISC - THROMBECTOMY STUDY RESULTS

3 Randomized Controlled Trials (RCT) were carried out between 2004-2012

SYNTHESIS – Intra-arterial Versus Systemic Thrombolysis for Acute Ischemic Stroke
- IV tPA vs Endovascular (IA tPA, clot disruption or retrieval)
  - 86% clot disruption, 14% clot retrieval
- No difference in outcomes

IMS III – Interventional Management of Stroke Trial III
- Major ischemic strokes (NIHSS ≥ 10) who got IV tpA vs IV tPA plus endovascular
  - 98.5% clot disruption, 1.5% clot retrieval
- Stopped early for futility; no difference in outcomes

MR RESCUE – MR and Recanalization of Stroke Clots Using Embolectomy
- Large-artery occlusion and anterior circulation ischemic stroke within 8 hrs who are ineligible for IV tPA or had persistent occlusion after IV tPA
  - Standard medical care vs endovascular therapy (MERCI or Penumbra)
- No difference in outcomes

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2015 UPDATE REGARDING ENDOVASCULAR TREATMENT

5 Randomized Controlled Trials (RCT) were published between December 2014 and April 2015

MR CLEAN – Multicenter Randomized Clinical Trial of Endovascular Treatment for Acute Ischemic Stroke in the Netherlands
- Standard Management with IAT (Intra-Arterial Thrombectomy) vs without IAT
- 33% good outcome (mRS 0-2) with IAT; 19% without IAT

EXTEND IA– Extending the Time for Thrombolysis in Emergency Neurological Deficits – Intra-Arterial
- IV tPA alone vs IV tpA with IAT (stent retriever)
- 71% good outcome with IAT; 40% with tPA alone

SWIFT PRIME – Solitaire With the Intention for Thrombectomy Treatment
- IV tPA alone vs IV tpA with IAT (stent retriever)
- 60% good outcome with IAT; 36% with tPA alone
- Terminated early after MR CLEAN results

ESCAPE – Endovascular Treatment for Small Core and Anterior Circulation Proximal Occlusion with Emphasis on Minimizing CT to Recanalization Times
- Standard Therapy with IAT vs without IAT
- 53% good outcome with IAT; 29% without IAT
- Terminated early after MR CLEAN results

REVASCAT– Randomized Trial of Revascularization With the Solitaire FR Device in the Treatment of Acute Stroke Due to Anterior Circulation Large Vessel Occlusion
- Standard Management with IAT vs without IAT
- 44% good outcome with IAT; 28% with tPA alone
- Terminated early after MR CLEAN results

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2015 New Recommendations

- Stent Retrievers are indicated in preference to MERCI device
  - other devices might be reasonable in some circumstances
- Careful selection of patients with large artery occlusion and initiation within 6 hours is reasonable
- Endovascular therapy with stent retrievers may be reasonable for some patients < 18 yrs
- Observing patients after IV tPA prior to Endovascular therapy is not recommended
- Technical goal should be TICI grade 2b/3
- Conscious sedation when possible in preference to general anesthesia
- If endovascular therapy is considered, non-invasive vascular imaging should be done, but not before initiation of IV tPA

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WHAT IS YOUR TREATMENT WINDOW FOR INTERVENTION?

a. 6 HOURS

b. 8 HOURS

c. 12 HOURS

d. 24 HOURS

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2018

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

Key Recommendations

- Evaluate up to 4.5 hours
- Utilize telestroke conferencing when neurologist not on-site
- Faster door-to-needle times for IV Alteplase
  - 60 min in 50% of pts
  - Ideally, aim for 45 min
- Increased timeframe for thrombectomy from 6 hours to 24 hours

New Recommendations

- Develop regional systems of care to:
  - Provide IV alteplase
  - Perform endovascular treatments with comprehensive periprocedural care
  - Facilitate rapid transport to advanced centers
  - Participate in stroke data repository
- Door to CT < 20 min in 50% of cases eligible for IV alteplase or mechanical thrombectomy
- Noninvasive imaging of cervical vessels within 24 hours to eval for carotid intervention
  - Revascularization procedure 48h – 7 days
- Early Decompressive Hemicraniectomy age ≲ 60

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2018

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

BP Management

For AIS Patients Only	Recommendation
Have Comorid 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 BP is < 220/120 mm Hg, treatment of HTN within the first 48 to 72 hours after AIS is of no benefit • If BP is 220/120 mm Hg or higher, the benefit of lowering BP is unknown, but lowering by 15% in the first 48 to 72 hours after AIS is reasonable
Receive IV Alteplase	BP should be maintained below 180/105 mm Hg and for 24 hours after administration
Are undergoing mechanical thrombectomy	It is reasonable to maintain BP below 180/105 mm Hg during and for 24 hours after the procedure

Antiplatelet Therapy

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 with IV alteplase	Dual antiplatelet therapy with aspirin and clopidrogrel started within 24 hours and continued for 21 days may prevent secondary stroke

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STANDARDIZATION OF MULTIDISCIPLINARY CARE REQUIRING ADDITIONAL RESEARCH

1. Vital Sign Frequency in non alteplase and EVT patients
2. Frequency of NIHSS
3. Assessment of glucose – Guidelines recommend "monitoring closely"
4. Early Mobilization
5. Dysphagia Screening tool
6. Timing of Depression Screening

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2018 GUIDELINES
ALTEPLASE INCLUSION/EXCLUSION CRITERIA

- Provide additional recommendations regarding administration for specific co-morbidities:
  - ESRD
  - Clarification LMWH for prophylaxis vs. full anticoagulation treatment
  - Cortical Microbleeds, Sickle Cell Disease, Infective Endocarditis, Aortic Arch Dissection
  - Intracranial/Extracranial arterial Dissections, vascular malformations, and Unruptured Aneurysms
  - Acute MI – STEMI vs. Non STEMI
- Up for Debate-conflicting statements based on evidence
  - Absolute vs. relative exclusion criteria in the 3-4.5 hour window
- Potential New Thrombolytic Agent for AIS treatment
  - Utilization of IV tenecteplase for acute thrombolytic therapy instead of alteplase

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2018

Correction to: 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

Section 1.3 EMS Systems Recommendation 4
Section 1.4 Hospital Stroke Capabilities Recommendation 1
Section 1.6 Telemedicine Recommendation 3
Section 2.2 Brain Imaging Recommendation 11
Section 3.2 Blood Pressure Recommendation 3
Section 4.3 Blood Pressure Recommendation 2
Section 4.6 Dysphagia Recommendation 1
Section 6.0 All subsections (11)

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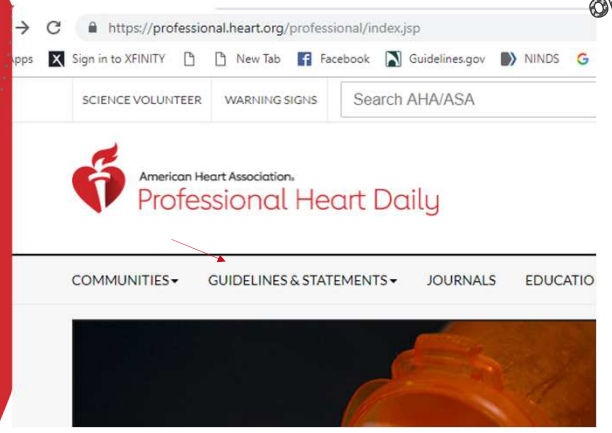
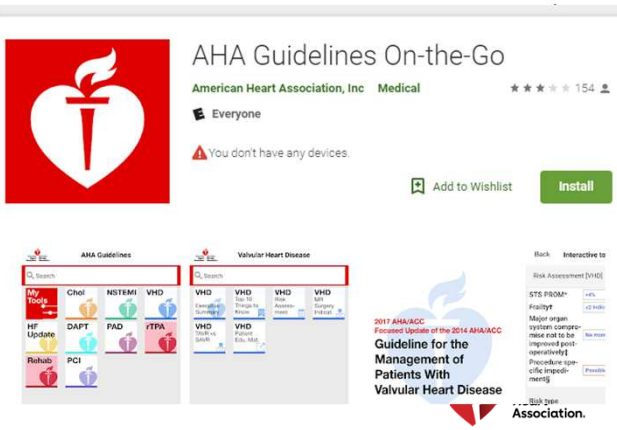
HOW TO ACCESS THE GUIDELINES

SEARCH GUIDELINES AT PROFESSIONALHEART.ORG



Or

DOWNLOAD THE AHA GUIDELINES APP



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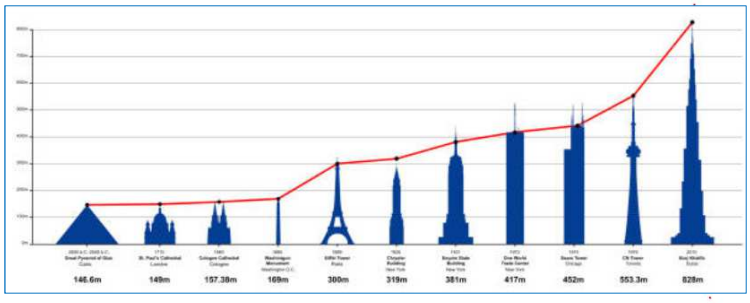
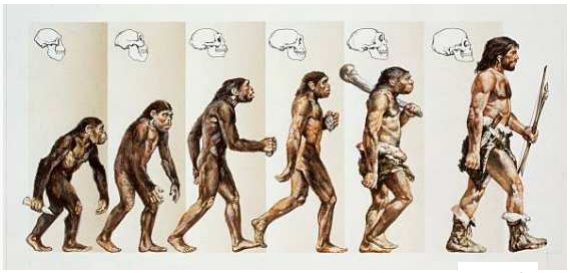
Summary

We've come a long way, baby





1994 2003 2007 2013 2018 2020?

... and we've got a long way to go

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