2018 Guidelines for the Early Management of Patients with Acute Ischemic Stroke

Tonya Deen MSN,RN
Stroke Program Supervisor Parkview Health

Luann Vachon RN
Stroke Program Coordinator Lutheran Hospital
Tonya Deen
- No disclosures

Luann Vachon
- No disclosures
BACKGROUND AND PURPOSE

- Provide up-to-date guidelines and recommendations for clinicians caring for AIS patients
- Intended audience: prehospital providers, physicians, allied health professionals and healthcare administrators
- New guidelines supersede the 2013 guidelines and other subsequent updates
- Members of the guidelines writing group were appointed by the American Heart Association Stroke Council’s Scientific Statements Oversight Committee
## ACC/AHA Class of Recommendation and Level of Evidence

### CLASS (STRENGTH) OF RECOMMENDATION

<table>
<thead>
<tr>
<th>CLASS</th>
<th>STRENGTH</th>
<th>Benefit</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLASS I (STRONG)</strong></td>
<td>Benefit &gt;&gt; Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suggested phrases for writing recommendations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Is recommended</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Is indicated/useful/effective/beneficial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Should be performed/administered/other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Comparative Effectiveness Phrases:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatment/strategy A is recommended/indicated in preference to treatment B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatment A should be chosen over treatment B</td>
<td></td>
</tr>
<tr>
<td><strong>CLASS IIa (MODERATE)</strong></td>
<td>Benefit &gt;&gt; Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suggested phrases for writing recommendations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Is reasonable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Can be useful/effective/beneficial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Comparative Effectiveness Phrases:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatment/strategy A is probably recommended/indicated in preference to treatment B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>It is reasonable to choose treatment A over treatment B</td>
<td></td>
</tr>
<tr>
<td><strong>CLASS IIb (WEAK)</strong></td>
<td>Benefit &gt;&gt; Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suggested phrases for writing recommendations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- May/might be reasonable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- May/might be considered</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Usefulness/effectiveness is unknown/unclear/uncertain or not well established</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CLASS III: No Benefit (MODERATE)</strong></td>
<td>Benefit &gt;&gt; Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Generally, LOE A or B use only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suggested phrases for writing recommendations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Is not recommended</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Is not indicated/useful/effective/beneficial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Should not be performed/administered/other</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CLASS III: Harm (STRONG)</strong></td>
<td>Risk &gt;&gt; Benefit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suggested phrases for writing recommendations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Potentially harmful</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Causes harm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Associated with excess morbidity/mortality</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Should not be performed/administered/other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### LEVEL (QUALITY) OF EVIDENCE†

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-quality evidence from more than 1 RCT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meta-analyses of high quality RCTs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One or more RCTs corroborated by high-quality registry studies</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL B-R</strong></td>
<td>(Randomized)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate-quality evidence from 1 or more RCTs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meta-analyses of moderate quality RCTs</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL B NR</strong></td>
<td>(Nonrandomized)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate-quality evidence from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meta-analyses of such studies</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL C-LD</strong></td>
<td>(Limited Data)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Randomized or nonrandomized observational or registry studies with limitations of design or execution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meta-analyses of such studies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physiological or mechanistic studies in human subjects</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL C-EO</strong></td>
<td>(Expert Opinion)</td>
<td></td>
</tr>
<tr>
<td>Consensus of expert opinion based on clinical experience</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
HIGHLIGHTS FROM THE 2018 GUIDELINES

- Systems of Care
- Telestroke/Teleradiology
- Brain Imaging
- Alteplase
- Mechanical Thrombectomy
- Revascularization
- Antiplatelet and Anticoagulation Therapy
- Blood Pressure Management
- Other
Develop regional systems of care with facilities that can:

- Provide initial emergency care, specifically administering IV Alteplase
- Provide and perform more advanced care such as endovascular treatment
- Facilitate rapid transport to advanced centers when appropriate
- Participate in a stroke data repository
  - Get With The Guidelines-GWTG®
  - Improve adherence to treatment guidelines
  - Continuous quality improvement and patient outcomes
StrokeCareNow Network is a telestroke provider
Provides a 24/7 resource for hospitals without Neurologists on site
Allows for earlier determination of Alteplase eligibility
Identifies patients with AIS that may be eligible for interfacility transfer in order to be evaluated for mechanical thrombectomy
Rapid imaging interpretation

The earlier the treatment within the time window, the greater the benefit to patients.
### REVISED GUIDELINES
- All suspected acute stroke patients should receive brain imaging
  - Most cases noncontrast CT (NCCT) is sufficient
- The extent/severity of acute hypoattenuation/early ischemic changes should not be used as criterion to withhold therapy for patients who qualify
- Reasonable to incorporate collateral flow status into decision making to determine eligibility for mechanical thrombectomy

### NEW RECOMMENDATIONS
- Imaging performed within 20 minutes of arrival in at least 50% of patients (old guideline-25 minutes)
- Hyperdense MCA no longer used as criterion to withhold IV Alteplase
- Reasonable to proceed with CTA for suspected LVO before obtaining Cr. Levels in patients without a history of renal impairment
- For LVO, brain imaging (CTP, DW-MRI, or MRI perfusion) for patients between 6-24 hours of LKW can aid in selection of mechanical thrombectomy patients
ALTEPLASE

- Recommended for selected patients who may be treated within 3 hours of ischemic stroke symptom onset or patient LKW or at baseline state.
- For otherwise eligible patients with mild stroke presenting in the 3-4.5 hour window, treatment with IV alteplase may be reasonable.
- Benefit of IV alteplase has been well established for adult patients with disabling stroke symptoms regardless of age and stroke severity.
- Can be given in combination with mechanical thrombectomy.
- Tenecteplase may be considered as an alternative to alteplase in patients with minor neurological impairment and no major intracranial occlusion.
- Close monitoring needed when using thrombolytic agents.
- Door to needle time is 60 minutes – **TIME IS BRAIN**
<table>
<thead>
<tr>
<th>REVISED GUIDELINES</th>
<th>NEW GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Patients eligible for IV Alteplase should receive it even if being considered for EVT</td>
<td>▪ Eligible patients within 6-16 hours of LKW with LVO in anterior circulation and meet DAWN or DEFUSE 3 criteria, EVT is recommended</td>
</tr>
<tr>
<td>▪ Patients under consideration for EVT, observation after IV Alteplase to assess for clinical response should not be performed.</td>
<td>▪ Eligible patients within 6-24 hours of LKW with LVO in anterior circulation and meet other DAWN criteria, EVT is recommended</td>
</tr>
</tbody>
</table>
Perform noninvasive imaging of the cervical vessels within 24 hours of admission

Carotid revascularization
- in patients with minor, nondisabling stroke (mRS score 0-2)
- reasonable to perform between 48 hours and 7 days of the event

The risk of recurrent stroke resulting from symptomatic carotid stenosis is highest in the first few days after the initial event
Administration of ASA is recommended in patients with AIS within 24-48 hours after onset

<table>
<thead>
<tr>
<th>For AIS patients who</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were treated with IV Alteplase</td>
<td>Aspirin is generally withheld for 24 hours</td>
</tr>
<tr>
<td>Are otherwise eligible for IV Alteplase or EVT</td>
<td>Do not use ASA as a substitute</td>
</tr>
<tr>
<td>Have mild stroke symptoms and were not treated with IV Alteplase</td>
<td>Dual antiplatelet therapy with aspirin and clopidogrel started within 24 hours and continued for 21 days may prevent secondary stroke</td>
</tr>
<tr>
<td>Have atrial fibrillation</td>
<td>Reasonable to start oral anticoagulants within 4-14 days of the AIS event.</td>
</tr>
<tr>
<td>Are immobile</td>
<td>Intermittent pneumatic compression devices should be used*</td>
</tr>
</tbody>
</table>

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

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

## Stroke Units

Use of a comprehensive stroke care unit is recommended
Use of standardized stroke care order sets is recommended to improve general care

## Supplemental oxygen

Should be provided to maintain O2 Sats >94%

## Rehabilitation

Early rehabilitation should be provided in environments with organized, interprofessional stroke care and at an intensity that weighs benefit with tolerance

## Temperature

Sources of hyperthermia (>38 °C) should be identified and treated with antipyretics

## Glucose

Hypoglycemia (blood glucose <60mg/dL) should be treated

## Nutrition

Enteral diets should be started within 7 days of admission

## DVT prophylaxis

Intermittent pneumatic compression in addition to routine care (ASA and hydration is recommended

## Depression screenings

Screening for depression with a structured tool is recommended
Patients diagnosed with poststroke depression should be treated with antidepressants and closely monitored
QUESTIONS