What are Clinical Practice Guidelines

• “Clinical guidelines are statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options”
  -Institute of Medicine, 2011

• “Guidelines are a convenient way of packaging evidence and presenting recommendations to healthcare decision makers”
  -Treweek S, Oxman AD, Alderson P et al

Speaker Disclosure

• This speaker does not have a conflict of interest nor is there a commercial bias
• This speaker does not have any relevant financial relationships to disclose
• High-quality, evidence-informed CPG’s offer a way of bridging the gap between
  • Policy
  • Best practice
  • Local contexts
  • Patient choice
• Clinical Guidelines have been upheld as an essential part of quality medical practice for several decades

• Guidelines have a range of purposes,
  • Intended to improve effectiveness and quality of care
  • To decrease variations in clinical practice
  • Decrease costly and preventable mistakes and adverse reactions.
• Generally include:
  • statements of expected practice
  • Provide benchmarks or standards against which individuals can audit
  • Compare and potentially improve their practices
• Quality improvement initiatives are linked with CPGs

Introduction to AIS Guidelines

• Acute Ischemic Stroke (AIS)
  • Time critical, unplanned illness
  • Early management is key to optimizing outcomes
  • New evidence has produced major changes in treatment
• The 2018 Guideline is a comprehensive guide to AIS management from symptom onset in the prehospital setting through 2 weeks post-stroke.
EMS dispatched to residence for possible stroke 06:28
Upon arrival at 06:34 following assessment at 06:35
56 y/o male
Conscious/alert/oriented
Normal mentation
GCS 15
Lying supine on bathroom floor with no possible stroke
PFA
Patient completely flaccid on right with right facial droop and slurred speech
Symptoms started at 06:10 and subsided @ 30 seconds before EMS arrival
Patient's symptoms of slight slurred speech resolved within 1-2 minutes after EMS arrival
As patient moved for transport:
- Slurred speech
- Left-sided facial droop
- Left side flaccidity
Telemetry, IV established, BG (195) obtained
Transport to hospital as Class I Stroke with notification to receiving facility
Left scene at 06:47
EMS initiated suspected Stroke Protocol

Prehospital Stroke Management and Systems of Care
Increase utilization of acute stroke therapies and improve outcomes via:
- Increased awareness of stroke signs and symptoms
- Maximize utilization of EMS via 9-1-1
- Optimize prehospital management & triage
- Establish and continually improve quality of care at stroke centers
- Ensure rapid transport across hospitals when necessary

New Recommendations – Systems of Care
- Regional systems of care should be developed, consisting of:
  - Healthcare facilities that provide initial emergency care including IV alteplase
  - Centers capable of performing endovascular treatment and periprocedural care to which rapid transport can be arranged (COR 1; LOE A)
- Patients with positive stroke screen and/or strong suspicion of stroke should be transported rapidly to the closest facility that can capably administer IV alteplase (COR 1; LOE B-NR)
Hospital Stroke Teams

Stroke Centers should have:
• Organized protocol for emergent evaluation of suspected stroke
• Designated acute stroke team
• Among patients receiving IV alteplase:
  • Primary goal: door to needle time of 60 minutes or less in ≥50% of cases
  • Secondary goal door to needle time of 45 minutes or less in ≥50% of cases may be reasonable
Additional Case Info

Emergency Evaluation

- Standardized severity scales quantify neurologic deficit
  - Facilitates communication
  - Identify patients for acute treatment
  - Monitor for improvement or worsening
- NIHSS is preferred severity scale
  - Rapid
  - Accurate
  - Reliable
  - Can be performed by broad spectrum of providers

Emergency Evaluation

Urgent brain imaging is required in suspected stroke

- All should be imaged ≤ 20 min of ED arrival
  - The benefit of IV alteplase and thrombectomy are time dependent
  - Reducing time from arrival to imaging can improve door to needle time
- Non-contrast CT is adequate in most cases
  - Primary goal is to exclude ICH
  - Routine MRI is not cost-effective
    - MRI will only change management in minority of cases
    - Inadequate data to establish who requires MRI
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Brain Imaging

- Should not withhold alteplase based on presence of a hyperdense MCA sign
- Advanced imaging
  - Vascular and perfusion imaging should not delay alteplase treatment
  - Use of imaging to select AIS cases for alteplase treatment with uncertain symptoms duration is not recommended
  - For patients patients who meet endovascular treatment, it is reasonable to proceed with CTA
    - Clinical prediction of LVO is imprecise
    - NIHSS is best instrument, but even cut-point of >6 will miss cases of LVO

- Advanced imaging can select patients for thrombectomy 6-24 hours from last normal
  - DAWN trial
  - DEFUSE 3 trial
Alteplase

ALL patients eligible for alteplase should receive; even patients being considered for mechanical thrombectomy

Inclusion and exclusion criteria for alteplase has evolved over the years
Review the updated criteria
The goal for IV alteplase remains unchanged
treat as soon as possible up to 4.5 hours after symptom onset

Sickle Cell

Mechanical Thrombectomy

• Updated Guideline recommends that AIS patients should receive mechanical thrombectomy if they
  • Have a prestroke mRS score of 0-1
  • Hae causative occlusion of the internal carotid artery or middle cerebral artery segment 1 (M1)
  • 18 years or older
  • NIHSS stroke scale of 6 or greater
  • Aspects score of 6 or greater
  • Can receive treatment (groin puncture) with in 6 hours of symptom onset

• In addition a Mechanical thrombectomy is recommended for select patients
  • Within 6-24 hours of symptom onset
  • Have large-vessel occlusion in the anterior circulation
  • Meet either Dawn or DEFUSE 3 eligibility criteria

Revascularization

• Performing nin-invasive imaging of the cervical vessels within 24 hours of admission for patients who have milde or nondisabling AIS in the carotid territory
• Are candidates for CEA or stenting

• This prevents subsequent stroke
• If no contra-indications
  • Reasonable to perform the revascularization procedure between 48 hours and 7 days of the index event
Other Diagnostic Tests

Other diagnostic testing should be individualized
- Critical not to delay initiation of IV alteplase
  - Only assessment of glucose must precede IV alteplase
  - Baseline ECG and troponins recommended, but should not delay treatment
  - Utility of chest radiographs is uncertain
    - Cohort study comparing AIS patients with and without CXR showed longer DTN times with no difference in cardiopulmonary events

Slides with more case study f/u

ACUTE CARE PHASE
Nursing Care in the Critical Care and Stroke Units
General Supportive Care and Emergency Treatment

<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 blood pressure is less than 220/120 mm Hg, treatment of hypertension within the first 48 to 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 blood pressure is 220/12 mm Hg or higher, the benefit of lowering blood pressure is unknown, but lowering by 15% in the first 48 hours after an AIS is reasonable</td>
</tr>
<tr>
<td>Receive IV alteplase</td>
<td>Blood pressure 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 blood pressure below 180/105 mm Hg during and for 24 hours after the procedure</td>
</tr>
</tbody>
</table>

• Most patients don’t qualify for t-PA, even less will qualify for mechanical thrombectomy
• Dedicated stroke teams and coordinated care during the acute care phase improves clinical outcomes.
• Up to 30% of all stroke patients will deteriorate in the 1st 24 hours
• Order sets provide concise organized stroke care
• Nursing focus is on continued stabilization
• Nurses’ role is to coordinate activities of the multidisciplinary team

It’s All About the Nursing Care

• Temperature
  • Fever is associated with increased morbidity and mortality
  • Peak temperature in first 24 hours <37°C and >39°C associated with increased risk of in hospital death compared to normothermia
    • Sources should be identified and treated
    • Antipyretic medications should be administered to lower temperature in hyperthermic patients with stroke (COR C; LOE C-EO)
• Cardiac Monitoring
  • Multiple arrhythmias associated with AIS
• Education for patient and family
• All AIS patients are at risk for hemorrhagic transformation
• Use of NIHSS
  • At arrival, at discharge, with any change in level of care or change in neurologic status
  • BID
• Stroke Neuro Checks
  • Abbreviated neuro check that provides consistency and gives physician key information
  • Q4 hours

**Frequent Neuro Assessments**

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**Cerebral Edema**

- Common complication in large strokes
- Usually peaks 3-5 days after infarction
- Higher risk in younger people
- Early sign: Change in LOC
- Late sign: Pupillary change

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**So Many Tests!**

Goal of testing is to establish the cause of the stroke and prevent another:
- CT angiography or CT perfusion
- MRI/MRA
- Carotid Ultrasound
- Cerebral Angiography:
  - TEE
Infections

• Pneumonia
  • Suspect if fever or change in LOC
  • Serious complication after stroke, often in first 24-72 hours
  • Accounts for 15-25% of stroke deaths
  • Increases length of stay, mortality and hospital costs
  • Most common cause: Aspiration due to dysphagia
• UTI
  • Occurs in 15-40% of stroke patients
  • Independently predicts poor outcome
  • AVOID indwelling catheters unless absolutely necessary

Other Basics

• Mobility-Rehab Evaluation
  • Early mobilization reduces risk of anasthesia, pneumonia, DVT and PE
  • Immobility complications accounts for up to 51% of deaths in first 30 days
• DVT and PE’s
  • All stroke patients are at high risk for DVT, especially with immobility
  • DVT prophylaxis started by end of hospital Day 2
  • Start safe ambulation as soon as possible
• Antithrombotics
  • To begin by end of day 1
  • Discharge on antithrombotics

Still More Basics

• Falls
  • Serious risk
  • Hip fractures most common, usually on paretic side
  • Right hemispheric stroke with neglect at highest fall risk
  • Position patient, call buttons, items within reach
• Skin Breakdown
  • Poor sensation, circulation, paralysis
  • Reposition frequently, keep clean and dry
• Dysphagia/Aspiration
  • Preformed prior to ANY oral intake
  • Aspiration Risk Assessment
  • NPO until bedside swallow screen
  • Over 50% of all aspirations are “silent” and go undetected until there is a pulmonary manifestation
And Finally—Still More Basics

- **Nutrition**
  - Malnutrition leads to poor outcomes
- **Statins**
  - Discharge on Statin Medication
  - Intensive Statins
- **Anticoagulation**
  - Patients with A-fib
- **Education**
  - Initial and ongoing
  - Must be in written form

Discharge Planning

- Remember that it takes the entire team to do it all—you are the conductor
- Stroke survivor data:
  - 30% will recover almost completely
  - 40% will require subacute care
  - 10% will require skilled nursing
  - 15% will die soon after stroke onset
- Communication is essential. Include team members, patient and family. LISTEN!
- Order sets include rehab evaluation. Early rehab intervention can impact length of stay and outcomes

Our Patient’s Outcome

- Patient transferred to floor on Day 3
- Patient discharged to home on Day 6
- Left side hemiplegia
  - Requires max assist to sitting position and standing
  - NIHSS 11
  - Puree Diet
  - Discharge Meds:
    - Keppra
    - Metoprolol
- 2 months post discharge
  - Increased strength to right side
  - Able to ambulate short distances with walker
  - Home with continued OP therapies