MaineHealth TeleStroke Network

2024 TeleStroke Packet

1. Acute Stroke Need to Know
2. TeleStroke Code Stroke Process
3. TNK Contraindications
4. BE-FAST and FAST-ED Score
   o with tips & tricks for comatose and difficult to examine patients
5. Dual Antiplatelet Therapy in TIA and Acute Ischemic Stroke
6. MH Guidelines for the Administration of IV Thrombolysis for Stroke

Mission of TeleStroke:
To provide emergent access to Neurological consultation for acute stroke management with a focus on the appropriate and timely use of IV thrombolysis and identification of patients eligible for endovascular therapies (EVT) for stroke.

The information in this packet is intended to help facilitate appropriate and consistent care of patients presenting with symptoms of acute stroke.

These recommendations do not supersede physician judgment, nor do they reflect the individual needs of every patient.

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Medical Director of MaineHealth TeleStroke Network
Adult patient presents with potentially disabling acute onset focal neurological deficits concerning for stroke

Establish the following:
- Time LKW from primary source
- FSBG
- FAST-ED Score
- Current BP
- Review 3 lytic questions

Lytic candidate?
- Yes

If TeleStroke not already activated, call REMIS and ask for Neurology and NI for “Urgent Stroke with LVO”

BP Targets in Acute Ischemic Stroke
- No TNK < 220/110
- Pre-TNK < 185/110
- Post-TNK < 180/105

Preferred agents: labetalol, nicardipine, clevidipine
- Avoid hypotension & rapid drops in BP

Use STROKE Acute Treatment with Thrombolytic Order Set

Post-TNK Complications
- Concern for ICH

Use Post-thrombolysis Hemorrhage Order Set

Concern for orolingual edema

Use Post-thrombolysis Orolingual Edema Order Set

CONCLUSION

If patient is on an anticoagulant

Use appropriate reversal agent
Order sets are available for DOACs and warfarin
GOAL: Door-to-reversal agent given ≤ 45 min

Note: platelet transfusion is NOT recommended and may be harmful for patients with thrombocytopenia

LKW = last known well (the time pt last seen without current deficits)
CPP = cerebral perfusion pressure
LVO = large vessel occlusion
NI = neurointerventionalist
TeleStroke CODE STROKE Process

Arrival via ambulance

Prenotification FSBG

Time LKW FAST-ED Score

Acute assessment
BP, FSBG, FAST-ED, LKW

Patient assessed to be stable & presentation consistent with potentially disabling stroke

Obtain Clinical History & Ask the 3 Lytic Questions (see TNK Contraindications)

If LKW ≤ 4.0 hr & no lytic contraindications = Possible Lytic Candidate
→ Enter OneCall order & Call REMIS
Ask for “TeleStroke Consult”

If LVO detected on CTA & infarct not already completed on head CT = Possible EVT Candidate
→ Enter OneCall order & Call REMIS
Ask for “Urgent Stroke with LVO”

45 min Goals:
- TNK administered to lytic candidates
- Imaging reviewed by radiology

If pt determined to be a good candidate for EVT, transfer patient to MMC STAT

HOB at 0° unless concern for aspiration (then HOB at 30°) and IVF with NS to maintain euvolemia during transfer

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FSBG = fingerstick blood glucose
LKW = last know well
D2CT = direct-to-CT
CTA = CT angiogram
LVO = large vessel occlusion
DTA = door-to-activation
DTCT = door-to-CT
DTN = door-to-needle (TNK)
DIDO = door-in-door-out (for thrombectomy cases only)
**TNK Contraindications**

For patients with potentially disabling symptoms thought most likely to be secondary to ischemic stroke

- **TNK is contraindicated**
  - LKW > 4.5h
  - Symptoms of SAH

- **Lytic is not recommended/potentially harmful**
  - BP cannot be lowered to < 185/110
  - Sx concerning for infective endocarditis
  - Known or suspected aortic dissection
  - On anti-amyloid immunotherapy
    - Anti-amyloid immunotherapy (IV infusions): aducanumab (Aduhelm), lecanemab (Leqembi), donanemab (enrolled in the TRAILBLAZER Trial)

### Clinical presentation/medical history

- **Have you had any recent trauma, surgeries or procedures?**
  - Severe head trauma w/in 3 mo

- **Have you had any bleeding problems?**
  - H/o intracranial hemorrhage*
  - Structural GI malignancy or GIB w/in 21 days

*Not all ICH are absolute contraindications to lytics – discuss with neurology

- **Are you taking any blood thinners?**
  - Warfarin with INR > 1.7
  - Heparin with an elevated aPPT
  - Therapeutic dose LMWH within 24 hrs
  - DOAC taken within 48 hrs

DOACs: Dabigatran (Pradaxa), Rivaroxaban (Xarelto), Apixaban (Eliquis), Edoxaban (Savaysa)

FAST-ED with TIPS and TRICKS

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Comatose</th>
<th>Difficult to examine or confused patient</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Facial palsy</td>
<td>Normal</td>
<td>Unilateral droop</td>
<td>N/A</td>
<td>Score: 1</td>
<td>If confused and nonverbal, use noxious stimulation to elicit grimace and score if asymmetric</td>
</tr>
<tr>
<td>A</td>
<td>Arm weakness</td>
<td>No drift x 10 sec</td>
<td>Partial drift to bed</td>
<td>Drifts to the bed or no movement</td>
<td>Score: 2</td>
<td>If unable to follow directions, use observation of spontaneous arm movements and hold up arms and note any effort against gravity or asymmetry of drop</td>
</tr>
<tr>
<td>S</td>
<td>Speech changes</td>
<td>Normal</td>
<td>Impaired</td>
<td>Incomprehensible</td>
<td>Score: 2</td>
<td>Choose score based on ability for the examiner to understand any attempts at communication and whether or not patient is following any commands</td>
</tr>
<tr>
<td>T</td>
<td>Time LKW (not scored)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>E</td>
<td>Eye deviation</td>
<td>Normal</td>
<td>Gaze preference</td>
<td>Forced gaze deviation</td>
<td>Use Doll's eye maneuver</td>
<td>Make eye contact and move your face from side to side and note if the patient tracks you or use Doll's eye maneuver</td>
</tr>
<tr>
<td>D</td>
<td>Denial/Neglect</td>
<td>Normal</td>
<td>+ Extinction</td>
<td>No anosognosia</td>
<td>+ Extinction</td>
<td>+ Anosognosia</td>
</tr>
</tbody>
</table>

**TOTAL SCORE**

Comatose = patient is not alert or interactive despite verbal or noxious stimuli

Doll's eye maneuver = Hold eyes open and turn head side-to-side – Normal = eyes move all the way to the right and left; 1 = eyes only move to one direction; 2 = eyes are deviated to one direction and do not cross midline when head is turned in the opposite direction

DSS = double-simultaneous stimulation: With eyes closed, touch the patient on both arms at the same time and ask if they feel both sides; + Extinction = Unable to feel one side when both sides are touched at the same time

Anosognosia: Show the patient the hand on the side of their weakness and ask them “Whose hand is this?” + Anosognosia = Pt does not recognize their hand as their own

**BE-FAST**

Triage Nurse screens Walk-In Patients for symptoms of stroke

Symptoms due to stroke are usually **sudden** in onset and otherwise **unexplained** (i.e. by trauma, intoxication, pre-existing condition)

<table>
<thead>
<tr>
<th>B</th>
<th>E</th>
<th>F</th>
<th>A</th>
<th>S</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
<td>Eyes</td>
<td>Face</td>
<td>Arm</td>
<td>Speech</td>
<td>Time</td>
</tr>
<tr>
<td>Sudden unexplained loss of balance, dizziness or vertigo</td>
<td>Loss of vision in one eye or one side of vision or Double vision</td>
<td>Smile is asymmetric</td>
<td>Arm/hand (or leg) weakness</td>
<td>Slurred speech or trouble speaking or understanding speech</td>
<td>Time to activate a Code Stroke*</td>
</tr>
</tbody>
</table>

*Any of these findings should prompt urgent evaluation by an ED physician or LIP, who would then make the decision whether or not to activate a Code Stroke

**BE-FAST** was developed by Intermountain Healthcare, as an adaptation of the FAST model implemented by the American Stroke Association. Reproduced with permission from Intermountain Healthcare. Copyright 2011, Intermountain Healthcare.
### ABCD2 Score (risk stratification for TIA)

- **Age** greater than 60: 1 point
- **BP** greater than or equal to 140/90: 1 point
- **Clinical features:**
  - Unilateral weakness w/ or w/o speech impairment: 2 points
  - Speech impairment w/o unilateral weakness: 1 point
  - Neither motor nor speech impairment: 0 points
- **Duration**
  - Greater than or equal to 60 min: 2 points
  - 10-59 min: 1 point
  - Less than 10 min: 0 points
- **Diabetes:** 1 point

### Symptomatic Atherosclerotic Vascular Disease

- w/o disabling stroke
  - (SAMMPRIS, CASSISS, THALES)

### TIA or nondisabling stroke due to high-grade intracranial artery stenosis

- OR
  - TIA secondary to > 50% intracranial or extracranial atherosclerotic vascular disease

**Non-disabling Acute Ischemic Stroke** *(ARAMIS)*

- Clopidogrel 300 mg load, then 75 mg qd x 12-21 days
- Plus aspirin 81 mg qd*

**Minor stroke or high-risk TIA** *(CHANCE, POINT, THALES)*

- Clopidogrel 300 mg load, then 75 mg qd x 21d (CHANCE/POINT)
- OR ticagrelor 180 mg load, 90 mg bid x 30d (THALES)
- Plus aspirin 81 mg qd*

**NIHSS ≤ 5, including LOCA0 and ≤ 1 point on single-item scores**

**ABCD2 Score ≥ 4 or NIHSS < 4 (CHANCE/POINT)**

**NIHSS < 5 (THALES)**

**Started within 4.5 hours LKW**

- Start ASAP, but DAPT is effective at reducing recurrent stroke risk in patient presenting up to 72 hours after onset of stroke symptoms

MaineHealth Clinical Practice Guidelines for the Administration of IV Thrombolysis for Treatment of Suspected Acute Ischemic Stroke

1. MaineHealth recognizes that IV thrombolysis is the standard of care for the treatment of patients presenting with symptoms of acute stroke in whom the benefits are felt to outweigh the risk by the treating physician.

2. In March 2021 the use of tenecteplase (TNK) became an acceptable alternative to alteplase (tPA) for acute stroke treatment at Maine Medical Center after which use began to spread to other hospitals throughout MaineHealth. The use of “tPA” below is considered to be acceptably substituted with “TNK”.

3. MaineHealth does not require written consent for the use of thrombolysis to treat patients with presumed acute ischemic stroke within the FDA approved guidelines or within the scope of guidelines published by the American Heart Association/American Stroke Association. However, an informed discussion with the patient and/or patient representative regarding risks and benefits of thrombolysis use for stroke is highly recommended, and written consent should be obtained where feasible. Where written consent is not feasible, documentation of this discussion in the patient’s medical record is highly recommended.

4. Patients presenting with aphasia or other cognitive impairments that do not allow for an informed discussion regarding the risks and benefits of thrombolysis should not be denied this treatment if, to the best of the treating physician’s ability, the patient is determined to be a good candidate for thrombolysis.

   - AHA/ASA Recommendation: “In an emergency, when the patient is not competent and there is no immediately available legally authorized representative to provide proxy consent, it is recommended to proceed with IV tPA in an otherwise eligible patient with acute ischemic stroke.”

4. There are many clinical situations where a patient presents with symptoms consistent with a stroke, but ultimately are found to have another explanation for the deficits. We call these “stroke mimics.” Differentiating stroke from another cause can be difficult, especially given the urgency of the initial work up and goal of rapid thrombolytic administration.

   - AHA/ASA Recommendation: “The risk of symptomatic intracranial hemorrhage in the stroke mimic population is quite low; thus, starting intravenous tPA is probably recommended in preference over delaying treatment to pursue additional diagnostic studies.”

5. Time-Specific Number Needed to Treat Estimates for Tissue Plasminogen Activator Therapy in Acute Stroke

<table>
<thead>
<tr>
<th>Lansberg MG et al. Stroke. 2009;40:2079-2084</th>
<th>Plain language explanation for patients</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Time-Specific Number Needed to Treat Estimates for Tissue Plasminogen Activator Therapy in Acute Stroke" /></td>
<td>0-90 min: “For every 100 patients with acute stroke treated with thrombolysis within 1 ½ hours of onset of symptoms, 29 will benefit and 1-2 will be harmed”</td>
</tr>
<tr>
<td></td>
<td>91-180 min: “For every 100 patients with acute stroke treated with thrombolysis within 1 ½ to 3 hours of onset of symptoms, 23 will benefit and 2-3 will be harmed”</td>
</tr>
<tr>
<td></td>
<td>181-270 min: “For every 100 patients with acute stroke treated with thrombolysis within 3-4.5 hours of onset, 17 will benefit and 3-4 will be harmed”</td>
</tr>
</tbody>
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