



Time Goals	
15 min.	Door to Stroke Alert Activation
10 min.	Door to Stroke Team Arrival
25 min.	Door to CT start
45 min.	Door to CT resulted
60 min.	Door to Thrombolytic Given
90 min.	Door to Transfer out of ASRH

St. Luke's Call: 218-249-4444
 Fax packet / records: **218-249-2330**
 Call nursing report to: **218-249-4444**

St. Mary's – Essentia Call: 1-877-786-4944
 Fax packet / records: **218-786-7396**
 Call nursing report & updated ETA: **1-877-786-4944**

Choose
Thrombolytic

Tenecteplase

"Give and Go"

- 0.25 mg/kg (max dose 25mg)
- FLUSH LINE with 3-10 ml Normal Saline BEFORE & AFTER
 - **Not compatible with D5W solutions
- IV bolus over 5 seconds
- V/S + Neuro checks per flow sheet
- Maintain B/P less than 180/105
- If neuro status decline, repeat Head CT
- Bleeding Risk - monitor and assess frequently.
- Angioedema – if present in tongue/oropharynx. See Medication Considerations.
- Utilize Medical Control physician during transport as needed.

Please Document Times

1. _____ Time Last Known Well (TLKW)
2. _____ Arrival ASRH
3. _____ **Tenecteplase** Bolus Given
4. _____ Departure from ASRH

Alteplase

"Drip & Ship"

- 0.9 mg/kg (max dose 90mg)
- 10% total dose as bolus over one minute
- Remainder over 60 minutes
- V/S + Neuro checks per flow sheet
- Maintain B/P less than 180/105
- If neuro status decline, STOP alteplase infusion and repeat Head CT
- Bleeding Risk - monitor and assess frequently.
- Angioedema – if present in tongue/oropharynx, STOP **alteplase** infusion. See Medication Considerations.
- Utilize Medical Control physician during transport as needed.

Please Document Times

1. _____ Time Last Known Well (TLKW)
2. _____ Arrival ASRH
3. _____ **Alteplase** Bolus Given
4. _____ **Alteplase** Infusion Started
5. _____ Departure from ASRH
6. _____ **Alteplase** Infusion Completed
7. _____ Normal Saline Line Clear Started
8. _____ Normal Saline Line Clear Completed

Inclusion and Exclusion Criteria for IV Thrombolytic Treatment of Ischemic Stroke

FOR CONSIDERATION OF ELIGIBILITY WITHIN 0-4.5 HOURS OF TIME LAST KNOWN WELL

INCLUSION CRITERIA: Patients who should receive IV thrombolytic

- Symptoms suggestive of ischemic stroke that are deemed to be disabling, regardless of improvement. *Refer to the list at the end of this document for **considered** disabling symptoms.*
- Able to initiate treatment within 4.5 hours of Time Last Known Well (document clock time)
- Age 18 years or older

EXCLUSION CRITERIA: If patient has any of these, do NOT initiate IV thrombolytic

- CT scan demonstrating intracranial hemorrhage
- CT exhibits extensive regions (>1/3 MCA Territory on CT) of clear hypoattenuation
- Unable to maintain BP <185/110 despite aggressive antihypertensive treatment
- Severe head trauma within last 3 months
- Active internal bleeding
- Arterial puncture at non-compressible site within last 7 days
- Infective endocarditis
- Gastrointestinal or genitourinary bleeding within last 21 days or structural GI malignancy
- Intracranial or spinal surgery within last 3 months

Laboratory:

- Blood glucose <50 mg/dL; however, should treat if stroke symptoms persist after glucose normalized. *Results not required before treatment unless patient is on anticoagulant therapy or there is another reason to suspect an abnormality*
- INR >1.7
- Platelet count <100,000, PT >15 sec, aPTT >40 sec

Medications:

- Full dose low molecular weight heparin (LMWH) within last 24 hours (patients on prophylactic dose of LMWH should NOT be excluded)
- Received novel oral anticoagulant (DOAC) within last 48 hours (assuming normal renal metabolizing function)
- Commonly prescribed DOACs: apixaban (Eliquis), dabigatran (Pradaxa), rivaroxaban (Xarelto), edoxaban (Savaysa)

CONSIDERATION FOR EXCLUSION: Seek neurology consultation from a stroke expert

- Mild stroke with **non-disabling** symptoms
- Pregnancy
- Major surgery or major trauma within 14 days
- Seizure at onset and postictal impairment without evidence of stroke
- Myocardial infarction within last 3 months
- Acute pericarditis
- Lumbar puncture within 7 days
- Ischemic stroke within last 3 months
- Any other condition or history of bleeding diathesis which would pose significant bleeding risk to patient
- History of intracranial hemorrhage
- Presence of known intracranial conditions that may increase risk of bleeding (arteriovenous malformation, aneurysms >10mm, intracranial neoplasm)
- High likelihood of left heart thrombus (e.g., mitral stenosis with atrial fibrillation)
- Blood glucose >400 mg/dL (however should treat with IV alteplase if stroke symptoms persist after glucose normalized)
- For wake up strokes and unknown time of onset seek neurology consultation for advanced imaging recommendations to establish eligibility for acute reperfusion therapies. Protocols may be personalized to hospitals individually to include these presentations in their process.

CONSIDERED DISABLING SYMPTOMS: Should be considered for IV alteplase treatment

1. Symptoms are considered potentially disabling in the view of the patient and the treating practitioner? i.e., do presenting symptoms interfere with lifestyle (work, hobbies, and entertainment)? Clinical judgement is required.
2. Complete hemianopsia (≥ 2 on NIHSS question 3) or **severe aphasia** (≥ 2 on NIHSS question 9) or
3. **Visual or sensory extinction** (≥ 1 on NIHSS question 11) or
4. **Any weakness limiting sustained effort against gravity** (≥ 2 on NIHSS question 6 or 7) or
5. **Any deficits that lead to a total NIHSS score >5**
 - a. Note: this is an example based on current best practices for hospitals to implement and operationalize. Specific criteria may vary by hospital.

Reference: 2019 Update to the 2018 Guidelines for Management of Acute Ischemic Stroke. A Guideline for Healthcare Professionals from the American Heart/American Stroke Association. *Stroke, Vol. 49*

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For questions, please contact MDH Stroke Program at health.stroke@state.mn.us

Tenecteplase Bolus time: _____	Alteplase Bolus time: _____ Infusion start: _____ NS line clear start: _____ (50ml normal saline same rate)
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	Pupil reaction		Movement	Smile	Tongue Deviation
A - Alert	B - Brisk	I - Irregular	N - Normal	S - Symmetrical	M - Midline
V - Verbal	S - Sluggish	L - IOL	W - Weak	R - Right droop	R - Right
P - Pain	F - Fixed	C - cataract	C - Can't overcome gravity	L - Left droop	L - Left
U - Unresponsive	H - Hippus	U - Unable to assess	S - Slight movement only P - Complete paralysis	U - Unable to assess	U - Unable to assess

B/P Goal: Less than 180/105. If greater treat w/in 5 min

Date:	Pre Alteplase	Q 15min x 2hrs						Q30 min x 6hrs					
Time:													
LOC													
HR													
BP													
RR													
Pupil size R mm													
Pupil size L mm													
Pupil reaction R													
Pupil reaction L													
R arm movement													
L arm movement													
R leg movement													
L leg movement													
Smile													
Tongue Deviation													
Angioedema													
RN Initials													
		Q 30 min x 6hrs						Q 1hr x 16hrs (continue on back)					
Time:													
LOC													
HR													
BP													
RR													
Pupil size R mm													
Pupil size L mm													
Pupil reaction R													
Pupil reaction L													
R arm movement													
L arm movement													
R leg movement													
L leg movement													
Smile													
Tongue Deviation													
Angioedema													
RN Initials													

Pt. Name: _____
 DOB: ____/____/____

A - Alert	B - Brisk	I - Irregular	N - Normal	S - Symmetrical	M - Midline
V - Verbal	S - Sluggish	L - IOL	W - Weak	R - Right droop	R - Right
P - Pain	F - Fixed	C - cataract	C - Can't overcome gravity	L - Left droop	L - Left
U - Unresponsive	H - Hippus	U - Unable to assess	S - Slight movement only	U - Unable to assess	U - Unable to assess
			P - Complete paralysis		

	Q1hr x 16hrs (Further vitals and neuro checks per physician order)										
Time:											
LOC											
HR											
BP											
RR											
Pupil size R mm											
Pupil size L mm											
Pupil reaction R											
Pupil reaction L											
R arm movement											
L arm movement											
R leg movement											
L leg movement											
Smile											
Tongue Deviation											
Angioedema											
RN Initials											

_____/_____
RN/EMT-P Signature Initials

_____/_____
RN/EMT-P Signature Initials

_____/_____
RN/EMT-P Signature Initials

_____/_____
RN/EMT-P Signature Initials

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RN/EMT-P Signature Initials

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RN/EMT-P Signature Initials

_____/_____
RN/EMT-P Signature Initials

_____/_____
RN/EMT-P Signature Initials

Pt. Name: _____
 DOB: ____/____/____

Acute Ischemic Stroke Medication Considerations

Blood Pressure - avoid hypotension

1. **BEFORE** Alteplase or Tenecteplase or other acute reperfusion therapy BP > 185/110 mmHg
 - a. Systolic > 185 mmHg or Diastolic > 110 mmHg
 - i. Labetalol 10 – 20 mg IV over 1-2 minutes, may repeat x1
OR
 - ii. Nicardipine infusion 5 mg/hr, titrate by 2.5 mg/hr every 5-15 min, maximum dose 15 mg/hr. When desired BP attained, adjust to maintain proper BP limits.
OR
 - iii. Other agents (hydralazine, enalaprilat, etc.) may be considered

****If BP is not maintained at or below 185/110 mmHg, do not administer alteplase**

2. **DURING and AFTER** Alteplase or Tenecteplase or other acute reperfusion therapy BP > 180/105 mmHg
 - a. Maintain BP at or below 180/105 for at least the first 24 hours post alteplase
 - b. Monitor BP and Neuros q 15 min x 2 hrs, q 30 min x 6 hrs and q 1 hr x 16 hrs
 - c. Systolic > 180 - 230 or Diastolic > 105-120
 - i. Labetalol 10 mg IV followed by continuous IV infusion 2-8 mg/min
OR
 - ii. Nicardipine infusion 5mg/hr, titrate by 2.5 mg/hr every 5-15 min. Max. dose 15 mg/hr
 - iii. If BP not controlled or diastolic BP > 140 mmHg, consider IV sodium nitroprusside
3. **Non-Thrombolytic/reperfusion patients**
 - a. Most patients with ischemic stroke do not require treatment for hypertension; however, it is generally agreed that patients with markedly elevated BP may have their BP lowered. A reasonable goal would be to lower BP by ~15% during the first 24 hours after onset of stroke. The level of BP that would mandate such a treatment is not known, but consensus exists that medications should be withheld **unless systolic BP is > 220 mmHg or the diastolic is > 120 mmHg.**

Angioedema - Alteplase or Tenecteplase

1. **If facial, tongue and/or pharyngeal angioedema is present**
 - a. STOP the alteplase infusion and contact stroke center Medical Control
 - b. Treatment considerations
 - i. Diphenhydramine 50 mg IV
 - ii. Ranitidine 50 mg IV or famotidine 20 mg IV
 - iii. Methylprednisolone 125 mg IV
 - iv. If there is further increase in angioedema, cautious administration of epinephrine (0.1%) at 0.3ml subcutaneous or by nebulizer 0.5 mL may be considered; be aware of possible hypertension.