

Thrombolytic Workgroup Update

RECOMMENDATIONS FOR
THROMBOLYTIC TREATMENT

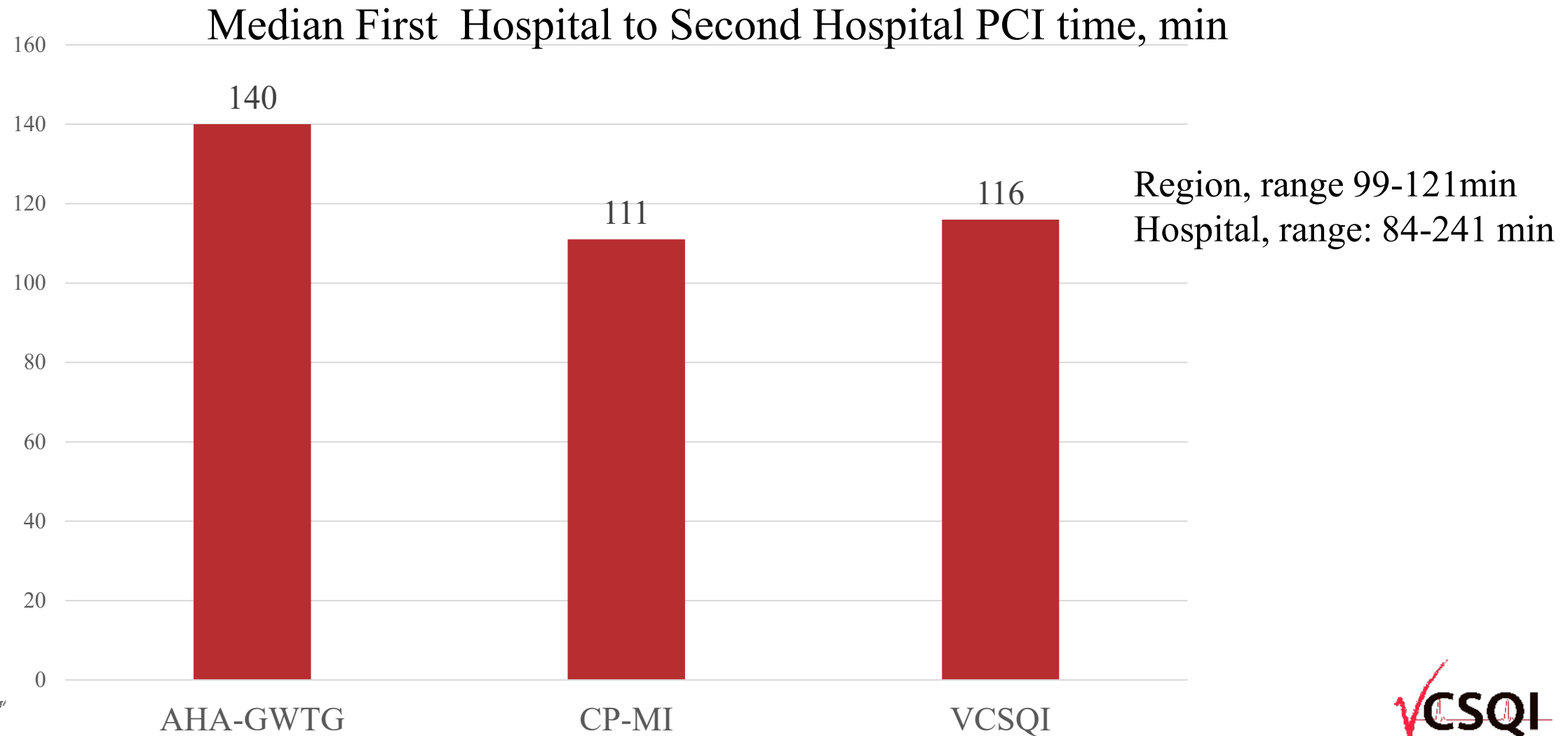
Proud partner of



Objectives

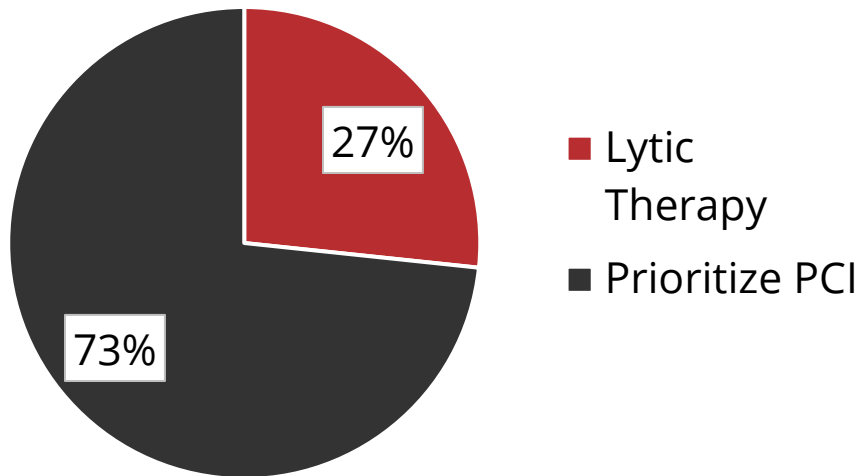
- Primary
 - Define who should receive fibrinolytic/thrombolytic treatment
 - Define TNK dosing
 - Define appropriate adjunctive treatments
- Secondary
 - Define timing of coronary angiography
 - Identify other treatment/monitoring opportunities

Reperfusion Times for Transfer STEMI Patients Are Long

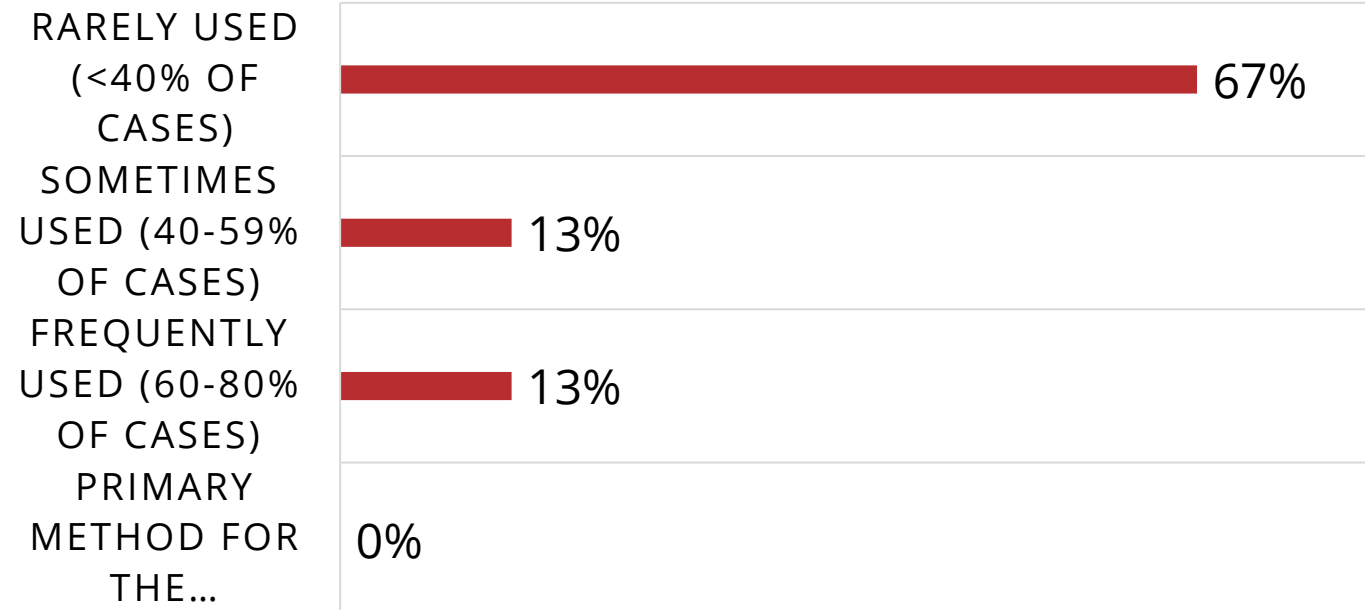


Survey Results (18 responses)

What is your primary method for treating transferred STEMI patients?



Select the option that best describes their usage frequency of thrombolytics for treating transferred STEMI patients.



Reperfusion at Non-PCI-Capable Hospitals

2024 ACC/AHA ACS Guidelines

Recommendations for Reperfusion at Non-PCI-Capable Hospitals		
COR	LOE	Recommendations
1	A	1. In patients with STEMI and an estimated time from FMC to device activation of ≤ 120 minutes or those with a contraindication to fibrinolytic therapy, transfer to a PCI-capable hospital for PPCI is recommended to reduce MACE.
1	A	2. In patients with STEMI and symptom onset of < 12 hours and anticipated delay to PPCI > 120 minutes from FMC, fibrinolytic therapy should be administered in patients without contraindication to reduce MACE.

Reperfusion at Non-PCI-Capable Hospitals

2024 ACC/AHA ACS Guidelines

2a	B-NR	3. In patients with STEMI and symptom onset of 12 to 24 hours, transfer to a PCI-capable hospital for PPCI is reasonable to reduce infarct size and MACE.
3:Harm	B-R	4. In patients with only ST-segment depression, except when true posterior STEMI is suspected, fibrinolytic therapy should not be administered due to risk of hemorrhagic stroke and major noncerebral bleeding.

Coronary Angiography and PCI After Fibrinolytic Therapy

2024 ACC/AHA ACS Guidelines

Recommendations for Coronary Angiography and PCI After Fibrinolytic Therapy		
COR	LOE	Recommendations
1	A	1. In patients with STEMI, transfer to a PCI-capable center immediately after fibrinolytic therapy is recommended.
1	B-R	2. In patients with STEMI with suspected failed reperfusion after fibrinolytic therapy, immediate angiography with rescue PCI is recommended to reduce the risk of death or recurrent MI.*
1	B-R	3. In patients with STEMI treated with fibrinolytic therapy, early angiography between 2 and 24 hours with the intent to perform PCI is recommended to reduce the rates of death or MI.*

Thrombolytic Absolute Contraindications

- Any prior ICH
- Known structural cerebral vascular lesion (eg, arteriovenous malformation)
- Known malignant intracranial neoplasm (primary or metastatic)
- Ischemic stroke within 3 mo except acute ischemic stroke
- Suspected aortic dissection
- Active bleeding or bleeding diathesis (excluding menses)
- Significant closed-head or facial trauma within 3 mo
- Intracranial or intraspinal surgery within 2 mo (**Stroke is 3 months**)
- Severe uncontrolled hypertension (unresponsive to therapy) (SBP >180 mm Hg or DBP >110 mm Hg) (**Stroke is 185/110 mmHg**)

Thrombolytic Relative Contraindications

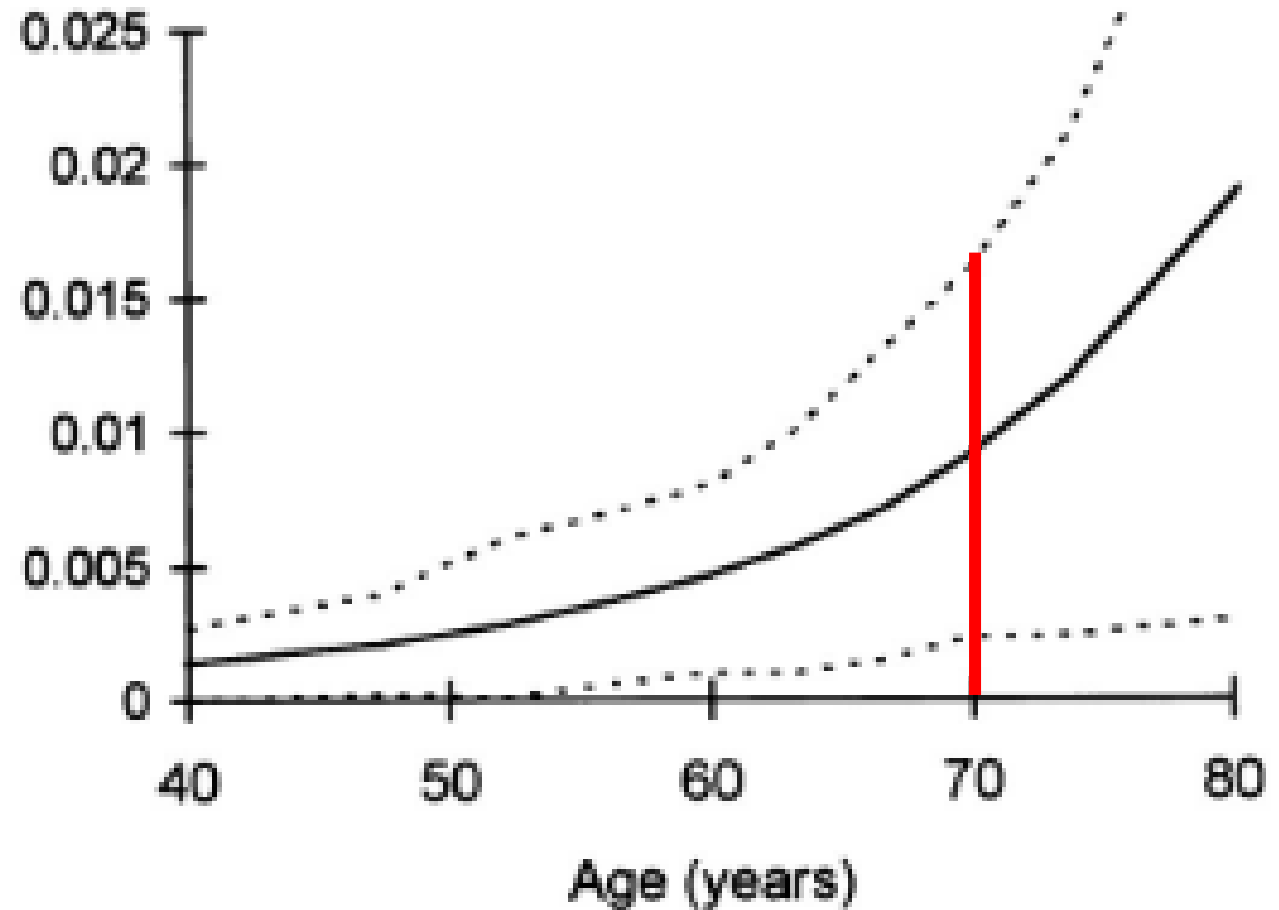
- Platelets < 100k
- History of chronic, severe, poorly controlled hypertension
- Significant hypertension on presentation (SBP >180 mm Hg or DBP >110 mm Hg)
- **(Stroke is 185/110 mmHg)**
- History of prior ischemic stroke >3 mo
- Dementia
- Known intracranial pathology not covered in absolute contraindications
- Traumatic or prolonged (>10 min) CPR
- Major surgery (<3 wk) **(Stroke is 2 weeks)**
- Recent (within 2 to 4 wk) internal bleeding **(Stroke is 3 weeks)**
- Noncompressible vascular punctures **(Stroke is absolute contraindication)**
- Pregnancy
- Active peptic ulcer
- Oral anticoagulant therapy **(Stroke is absolute if if INR elevated if taking Warfarin or PTT or PT elevated)**

TNK Dosing

- TNK is given as weight based bolus
- Half dose TNK should strongly be considered for patients >70–75 yo
 - Data based on STREAM study
 - Substantial decreases the rate of ICB in older patients with similar efficacy

Intracranial hemorrhage and fibrinolytics

- Risk Factors:
 - Older Age
 - Low weight
 - Prior stroke
 - Increased BP
- STREAM Trial--Facilitated vs primary PCI
- Rate of ICB in pt >75
 - Full dose: 3 of 37 (8%)
 - Half dose: 0 of 97 (0%)



Gore J et al Circulation. 1995;92:2811-2818

Adjunctive Therapy

- Aspirin:
 - 324 mg
- Clopidogrel:
 - 300 mg for patients < 75
 - 75 mg for those 75 and over
- Unfractionated heparin:
 - Bolus 60 units/kg, max 4000 units
 - Infusion 12 units/kg/hour, maximum 1000 units

What community hospitals does your program receive transferred STEMI patients?

Almost 40 different sites

Alleghany Medical Center
Bon Secours Colonial Heights
Bon Secours Southampton Medical Center
Bon Secours Southern Virginia Medical Center
Carilion Roanoke
Centra Bedford
Centra Gretna
Centra Southside (Farmville)
Chester Freestanding ED
Colonial Heights, Freestanding ED
Community memorial Hospital (South Hill)
Culpeper
Duke
Freestanding Emergency Center
Giles Medical Center
INOVA Healthplexes
King George
Langley AFB Hampton VA
New Kent Freestanding ER
Pulaski Medical Center

PW Hospital
Rappahannock General
Rappahannock Regional Medical Center
Richmond Community Hospital
Riverside Doctor's Hospital
Riverside Walter Reed
Sentara Halifax Regional
Sentara Port Warwick
Sentara Williamsburg
Short Pump Freestanding ED
Southampton Medical Center
Southern Virginia Medical Center
Southside Community in Halifax
Sovah Danville
Sovah Health Martinsville
Stafford Hospital Westmorland
Tappahannock hospital
West Chester Freestanding ED
Wytheville hospital

Treatment Recommendations

- Standard order set should include:
 - Checklist for contraindications
 - TNK dosing
 - Adjunctive medications
 - Labs
 - CXR, O2, etc
 - Nursing orders
- Can be standing orders or built as order set (e.g., Epic)

Thrombolytic Orders (Recommendations)

Adjunctive Medications:

Aspirin 324 mg po

Clopidogrel 300 mg po. For patients >75 yo give only 75 mg

Heparin bolus (60U/kg, but not to exceed 4000U).

Heparin infusion (12U/kg/hr, but not to exceed 1000U/hr).

TNK per protocol. For patients age>75 yo please give ½ dose TNK

*Calculations for Tenecteplase ** Different dosing compared to Acute Ischemic Stroke ***

Age <75 years

<60 kg: 30 mg (6 mL)

≥60 to <70 kg: 35 mg (7 mL)

≥70 to <80 kg: 40 mg (8 mL)

≥80 to <90 kg: 45 mg (9 mL)

≥90 kg: 50 mg (10 mL)

Age ≥ 75 years

<60 kg: 15 mg (3 mL)

≥60 to <70 kg: 17.5 mg (3.5 mL)

≥70 to <80 kg: 20 mg (4 mL)

≥80 to <90 kg: 22.5 mg (4.5 mL)

≥90 kg: 25 mg (5 mL)

Initial Assessment:

1. Obtain 12 lead ECG
2. Confirm Acute MI:
 - Chest pain at rest greater than or equal to 20 minutes
 - ST Elevation of at least 0.1mV in:
 - ☐ At least 2 of 3 inferior leads (II, III, aVF) or
 - ☐ At least 2 adjacent of the 6 precordial leads (V1-V6) or
 - ☐ Leads I and a VL
3. Repeat ECG 60 minutes after TNK given

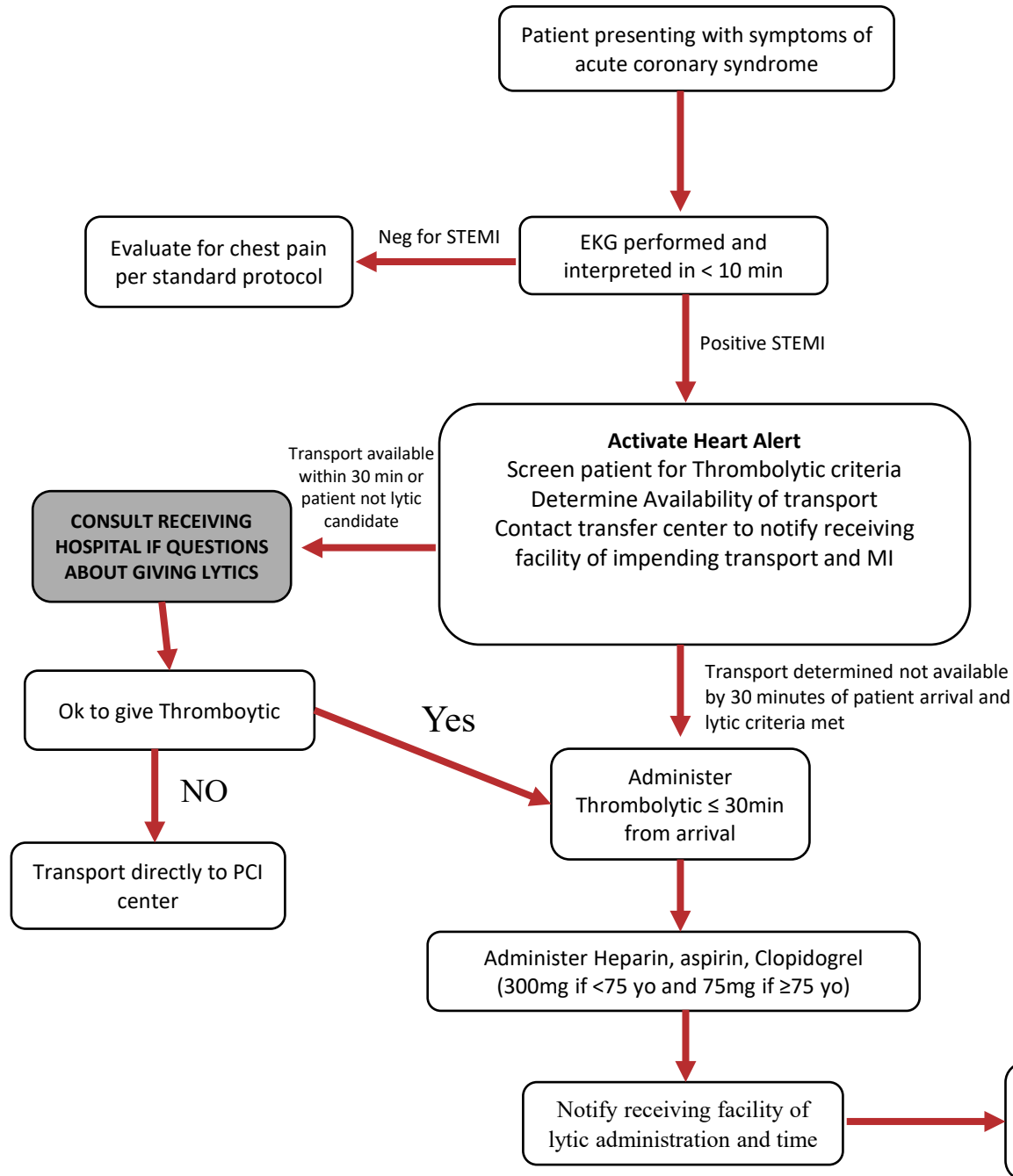
Nursing:

1. Bedrest
2. Vital Signs:
 - a. Q 5 min X1 hour
 - b. Q15 min X1 hour
 - c. Q30 min X 1hour
 - d. Q1 hour x 24 hours
3. Neurochecks:
 - a. Q1 hour X 12 hours
4. Take Blood Pressure in both Arms

Labs:

Stat: CBC, PT, PTT, Platelet Count, BMP, Troponin, Sample to Blood Bank

Lytic Algorithm



Absolute Contraindications

- Active internal bleeding
- Recent stroke (3 hrs to 3 months)
- Intracranial or intraspinal surgery or trauma within 2 months
- Intracranial neoplasm, arteriovenous malformation, or aneurysm
- Known bleeding diathesis
- Severe uncontrolled hypertension (SBP > 180 mmHg and/or DBP > 110 mmHg)

Relative Contraindications

- Recent major surgery (CABG, OB delivery, organ biopsy, previous puncture of noncompressible vessels)
- Any other condition in which bleeding is a significant hazard or difficult to manage because of its location
- Recent trauma
- Currently receiving oral anticoagulants
- Recent gastrointestinal or genitourinary bleeding
- Subacute bacterial endocarditis
- Cerebrovascular disease
- Pregnancy

Upcoming Goals

- Identify barriers to Thrombolytic use in centers with long FMC to PCI times
 - Determine transport times and adjust treatments as necessary
 - Empower ED MDs to make treatment decisions without consultation
 - Standardized order sets to reduce treatment confusion
- EMS delivered thrombolytic delivery
 - Consideration for very prolonged transport times
 - Empower EMS after appropriate education

Thank you!

For questions, please contact us at:

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