

Ht. _____ cm	Allergies:
Wt. _____ kg	
Diagnosis: Acute Coronary Syndrome	

Date (yyyy-Mon-dd)	Time	Physician Orders	CP	CE	R	MP	MR	Sign
<ul style="list-style-type: none"> <li>• TIMI score _____ GRACE Score (risk) _____</li> </ul>								
<ul style="list-style-type: none"> <li>• Monitor</li> <li>• Admit to _____ or transfer to _____</li> </ul>								
<ul style="list-style-type: none"> <li>• Oxygen per nasal cannula at 4 L/min or adjust to keep SpO<sub>2</sub> greater than 92%</li> <li>• Start a large bore IV – 250 mL NS TKVO (40 mL/h); saline lock IV when stable</li> </ul>								
<ul style="list-style-type: none"> <li>• Do bilateral manual BP and notify physician if more than 20 mmHg difference between the 2 sides</li> <li>• VS q1h until stable then q4h x 12 h, then TID &amp; prn</li> <li>• Neuro VS pre and 15 min post thrombolysis, then q1h x 4, q4h x 12 h, TID and prn</li> </ul>								
<ul style="list-style-type: none"> <li>• CBC, PT, PTT, ALT, creatinine, electrolytes, glucose, magnesium, Tnl and urea (if not already done in ED) <b>Order urgent</b></li> <li>• Repeat CBC, creatinine, electrolytes, glucose on Day 2 (Presentation to ED is Day 0)</li> <li>• Cancel all pending requests for Tnl ordered at time of initial presentation to ED</li> <li><input type="checkbox"/> Tnl at 6 – 8 h      <input type="checkbox"/> Tnl at 18 – 24 h</li> <li>• Fasting glucose and fasting lipid profile (do within 24 h after a 10 – 12 h fast)</li> <li><input type="checkbox"/> HbA1C (if diabetic)</li> <li>Other _____</li> </ul>								
<ul style="list-style-type: none"> <li>• ECG stat repeat at 45 min, 60 min, 90 min: then daily x 3 (and prn <b>with chest pain and/or significant arrhythmias</b>)</li> <li>• CXR – as soon as possible</li> </ul>								
<ul style="list-style-type: none"> <li>• <b>ASA</b> – 162 mg chew now (if not already given) Given at _____ h Then EC ASA 81 mg daily.</li> </ul>								
<input type="checkbox"/> <b>Alteplase BOLUS</b> dose 15 mg/15 mL IV bolus over 2 min Given at _____ h By: _____			<input type="checkbox"/> <b>Alteplase FIRST</b> infusion 0.75 mg/kg from Table A _____ mg infusion over 30 min Given at _____ h By: _____			<input type="checkbox"/> <b>Alteplase SECOND</b> infusion 0.5 mg/kg from Table A _____ mg infusion over 60 min Given at _____ h By: _____		
<input type="checkbox"/> <b>Enoxaparin</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Less than 75 years and eGFR at least 30 mL/min</b> <ul style="list-style-type: none"> <li>• <b>30 mg IV bolus</b> immediately prior to administration of alteplase</li> <li>• <b>Within 30 minutes of initiating alteplase infusion</b> and then q12h, give Enoxaparin <b>1 mg/kg</b> deep subcutaneous (<b>Max. 100 mg/dose</b> for first 2 doses; <b>not including IV dose</b>)</li> </ul> </li> <li><input type="checkbox"/> <b>75 years and older and eGFR at least 30 mL/min:</b> <ul style="list-style-type: none"> <li>• <b>No bolus</b> dose</li> <li>• <b>0.75 mg/kg</b> deep subcutaneous <b>within 30 minutes of initiating alteplase infusion</b> and then q12h (<b>Max. 75 mg/dose</b> for first 2 doses)</li> </ul> </li> <li><input type="checkbox"/> <b>eGFR 10 – 29 mL/min, regardless of age use unfractionated heparin</b></li> <li>• Clarification for 3<sup>rd</sup> and 4<sup>th</sup> dose _____</li> <li>• Reassess at 48 h re: Continuation of therapy _____ If eGFR 30 - 60 mL/min (See reverse) _____</li> </ul>			30 mg IV bolus Given at _____ h By: _____  1 <sup>st</sup> dose = _____ mg Given at _____ h By: _____					
<b>OR</b> <input type="checkbox"/> <b>IV heparin</b> as per section B of Heparin Protocol (for severe renal failure with eGFR less than 30 mL/min, or if cardiac catheterization is imminent or high bleeding risk)								
Physician Signature								<b>Page 1 of 3</b>

CP - Careplan; CE – Computer Entry; R – Requisition; MP – Medication Profile; MR – Medication Record

**Enoxaparin** – Beyond 48h, may consider reducing dose;  
 If CrCl 40 - 60 mL/min, consider 0.75 mg/kg q12h;  
 If CrCl 10 - 39 mL/min, consider 1 mg/kg q24h or 0.5 mg/kg q12h. If  
 treatment continues beyond 5 - 7 days, further adjustment may be  
 considered in patients with CrCl less than 80 mL/min.  
 (Br J Clin Pharmacol 2004;59:281-90.)

Administer using a # 27 needle, do not flush air out  
 of needle, and inject over more than 30 seconds.  
 Use antero / lateral abdomen (not muscle),  
 maximum 1 mL per injection site

**Indications for Thrombolysis**

- Ischemic chest pain (more than 20 min; less than 6 - 12 h) not relieved by 2 nitroglycerin sprays over 5 min in the ED  Yes  No
- **ST elevation** of 1 mm or greater in at least
  - 2 contiguous precordial leads  Yes  No
  - 2 adjacent limb leads  Yes  No **OR**
  - New or presumed new LBBB  Yes  No **OR**
  - Findings consistent with true posterior MI  Yes  No
  - Assess patients individually with continuous symptoms of 12 - 24 h duration and appropriate ECG criteria  Yes  No

**Note:** For patients in severe heart failure or cardiogenic shock, emergency PCI is recommended.  
 Target time for PCI is 60 min (*door to PCI time 90 min*), **except in shock.**

**Contraindications**

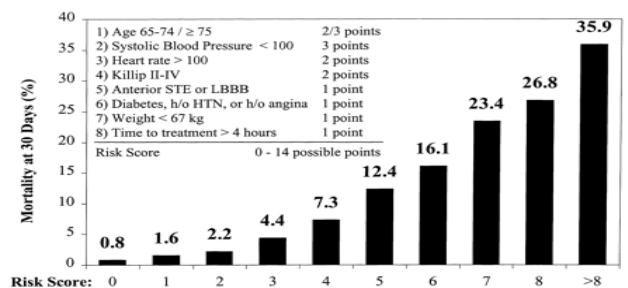
- **Absolute**
  - Any prior ICH (intracranial hemorrhage)  Yes  No
  - Known structural cerebral vascular lesions (e.g. AVM)  Yes  No
  - Known primary or secondary CNS neoplasm  Yes  No
  - Ischemic stroke in last 3 - 6 months (except acute ischemia stroke within 3 h)  Yes  No
  - Aortic dissection (Right versus Left arm systolic BP greater than 15 mm Hg difference)  Yes  No
  - Active bleeding or bleeding diathesis (excluding menses)  Yes  No
  - Significant closed head or facial trauma within 3 months  Yes  No
  - Acute pericarditis  Yes  No
- **Relative**
  - Severe uncontrolled HTN (systolic greater than 180, diastolic greater than 110)  Yes  No
  - Traumatic or prolonged CPR (greater than or equal to 10 min)  Yes  No
  - Recent (within 2 - 6 weeks) major trauma, surgery (including laser eye surgery), GI/GU bleed  Yes  No
  - Pregnancy or postpartum state  Yes  No
  - Prior stroke greater than 3 months old, dementia, or other intracranial pathology  Yes  No
  - Non compressible vascular puncture  Yes  No
  - Bleeding or clotting problems, on anticoagulants  Yes  No

TIMI Risk Score for STEMI	
Historical	Points
Age	
75 or older	3
65 - 74	2
DM or HTN or angina	1
<b>Exam</b>	
SBP less than 100 mmHg	3
HR greater than 100 bpm	2
Killip II-IV	2
Weight less than 67 kg (150 lb)	1
<b>Presentation</b>	
Anterior STE or LBBB	1
Time to Rx more than 4 h	1
<b>Risk Score = Total points (0 - 14)</b>	

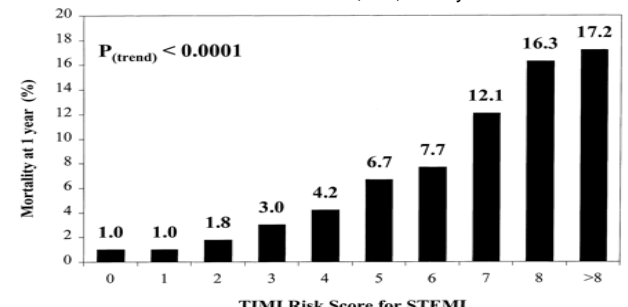
GRACE ACS Risk Model  
[http://www.outcomes-umassmed.org/GRACE/acs\\_risk.cfm](http://www.outcomes-umassmed.org/GRACE/acs_risk.cfm)  
 Use "Web Version" to do calculation

Killip Class:

- 1 = no signs of heart failure
- 2 = basal crackles (mild pulmonary congestion) S3, ↑ JVP
- 3 = extensive crackles
- 4 = cardiogenic shock (systolic BP less than 90 mm Hg, hypoperfusion)



TIMI risk score for STEMI for predicting 30-day mortality. STE indicates ST elevation; h/o, history of.



TIMI risk score for STEMI for predicting 1-year mortality (30-day survivors)

Ht. _____ cm	Allergies:
Wt. _____ kg	
Diagnosis: Acute Coronary Syndrome	

Date (yyyy-Mon-dd)	Time	Physician Orders	C P	C E	R	M P	M R	Sign
<ul style="list-style-type: none"> <li>No unnecessary arterial or venous punctures x 24 h</li> <li>No IM injections x 24 h</li> <li>Apply pressure dressing to potential source of bleeding, including old venous or arterial punctures</li> <li>Alert physician if signs of bleeding, dysrhythmias, or abnormal vital signs or has persistent pain for 30 min or longer</li> </ul>								
<b>Medications</b> <input type="checkbox"/> Clopidogrel ( <i>up to age 75</i> ) 300 mg PO <b>now</b> and then 75 mg PO daily <input type="checkbox"/> Clopidogrel ( <i>age 75 and older</i> ) 75 mg PO now and then 75 mg PO daily <input type="checkbox"/> ACE Inhibitor / ARB _____ <input type="checkbox"/> B-Blocker _____ <input type="checkbox"/> Statin _____ <input type="checkbox"/> Vasopressor _____ <input type="checkbox"/> Nitroglycerin IV (50 mg in 250 mL D5W) at 10 mcg/min; increase by 5 - 10 mcg/min q5 - 10 min for pain control ( <i>maximum 200 mcg/min</i> ); maintain systolic BP greater than 90 mm 3Hg <b>OR</b> <input type="checkbox"/> Nitroglycerin Patch _____ mg/h ( <i>on 12 h, off 12 h</i> ) <input type="checkbox"/> Nicotine Replacement _____ <input type="checkbox"/> Ranitidine 150 mg PO BID <input type="checkbox"/> Pantoprazole 40 mg PO daily								
<input type="checkbox"/> Insulin _____ for QID capillary blood glucose (CBG) values _____ units SC for CBG _____ _____ units SC for CBG _____ _____ units SC for CBG _____ _____ units SC for CBG _____ _____ units SC for CBG _____								
<b>Other Medications /Orders</b> • _____ • _____ • _____ • _____ • _____ • _____ • _____ • _____ • _____								
Physician Signature			<b>Page 2 of 3</b>					

Date (yyyy-Mon-dd)	Time	Physician Orders	C P	C E	R	M P	M R	Sign	
<b>Medications</b> <ul style="list-style-type: none"> <li>• Docusate Sodium 100 mg PO bid</li> <li>• Acetaminophen 325 - 650 mg PO q4h prn</li> <li>• Antacid 30 mL PO prn</li> <li>• Dimenhydrinate (Gravol®) 50 mg PO, PR or IV q4h prn <b>and/or</b> Metoclopramide (Maxeran®) 10 mg IV q6h prn</li> <li>• Lorazepam 0.5 – 1 mg sublingual tid and hs prn</li> <li>• Sennosides 8.6 mg; 2 tabs PO qhs prn</li> <li>• Nitroglycerin spray 0.4 mg sublingual q5 minutes x 3 prn</li> <li>• Zopiclone 7.5 mg PO qhs prn</li> <li>• Morphine 2 - 5 mg IV prn if no relief with nitroglycerin spray (<i>maximum 20 mg/h</i>)</li> </ul> <b>If allergic to morphine give</b> <ul style="list-style-type: none"> <li>• Fentanyl 25 - 50 mcg IV prn (<i>maximum 300 mcg/h</i>)</li> <li>• _____</li> <li>• _____</li> </ul>									
Diet: <input type="checkbox"/> Cardiac <input type="checkbox"/> Diabetic - No Added Sugar <input type="checkbox"/> Renal • Cardiac teaching • Referrals <input type="checkbox"/> Pharmacist re: _____ <input type="checkbox"/> Dietitian <input type="checkbox"/> Cardiac Rehab <input type="checkbox"/> Other: _____									
<input type="checkbox"/> Capillary blood glucose QID									
<input type="checkbox"/> Echocardiogram _____ <input type="checkbox"/> Cardiac Catheterization _____									
<ul style="list-style-type: none"> <li>• _____</li> <li>• _____</li> <li>• _____</li> <li>• _____</li> </ul>									
<b>Activity</b> <ul style="list-style-type: none"> <li>• Start at activity level A and advance daily</li> <li>• If experiencing chest discomfort or new arrhythmias, hold at current level and alert physician of new symptoms</li> <li>• Keep a copy of activity levels at bedside</li> </ul>	<b>Levels:</b> Each level is one day <b>A:</b> Bedrest; commode chair <b>B:</b> Chair - progress from 15 - 30 min; wash at bedside; commode chair <b>C:</b> Walk in room and bathroom; wash at bedside or washroom <b>D:</b> Walk outside room for 1- 2 min periods. Progress to 5 min 2 - 3 times/day; rest for period in a.m. and p.m.; shower after consulting with physician/nurse								
<b>Physician Signature</b>			<b>Page 3 of 3</b>						

**Table A. Alteplase (Activase®) 1 mg/mL Dosage and Electronic Infusion Device Settings**

- Using the diluent provided, reconstitute one alteplase 100 mg or two alteplase 50 mg vials to create a final concentration of **alteplase 1 mg/mL**. Dissolve (DO NOT SHAKE vigorously) - turn vial over and allow to mix

Patient Weight (kg)	Administration Option: Place volume of first plus second infusion into buretrol, glass vial or empty PVC bag (mL) for administration after initial bolus	Specific Dosages Administered as a 15 mg bolus dose followed by a 30 minute infusion then a 60 minute infusion	Infusion Rate Setting (mL/hr)	Volume to be infused (mL)	Total Dose (mg) (Bolus + Maintenance) 1 mg=1 mL
41-42	52	1. Bolus: 15 mg (15 mL) IV over 2 minutes			67
		2. First Infusion: 31 mg (31 mL) IV over 30 minutes	62	31	
		3. Second Infusion: 21 mg (21 mL) IV over 60 minutes	21	21	
43-44	54	1. Bolus: 15 mg (15 mL) IV over 2 minutes			69
		2. First infusion: 32 mg (32 mL) IV over 30 minutes	64	32	
		3. Second Infusion: 22 mg (22 mL) IV over 60 minutes	22	22	
45-47	57	1. Bolus: 15 mg (15 mL) IV over 2 minutes			72
		2. First infusion: 34 mg (34 mL) IV over 30 minutes	68	34	
		3. Second Infusion: 23 mg (23 mL) IV over 60 minutes	23	23	
48-49	60	1. Bolus: 15 mg (15 mL) IV over 2 minutes			75
		2. First infusion: 36 mg (36 mL) IV over 30 minutes	72	36	
		3. Second infusion: 24 mg (24 mL) IV over 60 minutes	24	24	
50-51	63	1. Bolus: 15 mg (15 mL) IV over 2 minutes			78
		2. First infusion: 38 mg (38 mL) IV over 30 minutes	75	38	
		3. Second infusion: 25 mg (25 mL) IV over 60 minutes	25	25	
52-54	65	1. Bolus: 15 mg (15 mL) IV over 2 minutes			80
		2. First infusion: 39 mg (39 mL) IV over 30 minutes	78	39	
		3. Second infusion: 26 mg (26 mL) IV over 60 minutes	26	26	
55-56	68	1. Bolus: 15 mg (15 mL) IV over 2 minutes			83
		2. First infusion: 41 mg (39 mL) IV over 30 minutes	82	41	
		3. Second infusion: 27 mg (26 mL) IV over 60 minutes	27	27	
57-58	71	1. Bolus: 15 mg (15 mL) IV over 2 minutes			86
		2. First infusion: 43 mg (43 mL) IV over 30 minutes	86	43	
		3. Second infusion: 28 mg (28 mL) IV over 60 minutes	28	28	
59-60	73	1. Bolus: 15 mg (15 mL) IV over 2 minutes			88
		2. First infusion: 44 mg (44 mL) IV over 30 minutes	88	44	
		3. Second infusion: 29 mg (29 mL) IV over 60 minutes	29	29	
61-63	76	1. Bolus: 15 mg (15 mL) IV over 2 minutes			91
		2. First infusion: 46 mg (46 mL) IV over 30 minutes	92	46	
		3. Second infusion: 30 mg (30 mL) IV over 60 minutes	30	30	
64-65	80	1. Bolus: 15 mg (15 mL) IV over 2 minutes			95
		2. First infusion: 48 mg (48 mL) IV over 30 minutes	96	48	
		3. Second infusion: 32 mg (32 mL) IV over 60 minutes	32	32	
66-67	83	1. Bolus: 15 mg (15 mL) IV over 2 minutes			98
		2. First infusion: 50 mg (50 mL) IV over 30 minutes	100	50	
		3. Second infusion: 33 mg (33 mL) IV over 60 minutes	33	33	
Over 67	85	1. Bolus: 15 mg (15 mL) IV over 2 minutes			100
		2. First infusion: 50 mg (50 mL) IV over 30 minutes	100	50	
		3. Second infusion: 35 mg (35 mL) IV over 60 minutes	35	35	

Legend: 1 mg = 1 mL

Your existing STEMI order set containing tenecteplase (TNK) is the “backbone” document for using alteplase as the thrombolytic during the TNK backorder situation. An alteplase protocol was developed and has had input from pharmacy, nursing and physician stakeholders.

The alteplase protocol will result in some changes that front line staff needs to be aware of.

**EXAMPLE** DTHR – using Form 08912 ACS STEMI Thrombolysis Orders, there are eleven changes to note:

Change	New	Replaces	√
1. Title of Order Set (header)	INTERIM ACS STEMI Alteplase Thrombolysis Orders	ACS STEMI Thrombolysis Orders	
2. Title of Order Set (footer)	INTERIM ACS STEMI Alteplase Thrombolysis Orders	ACS STEMI Thrombolysis Orders	
3. Alteplase BOLUS dose	Alteplase BOLUS dose 15 mg/15 mL IV bolus over 2 minutes Given at ___h By: _____	Tenecteplase bolus instructions (left box)	
4. Alteplase FIRST infusion	Alteplase FIRST infusion 0.75 mg/kg from Table A ___mg infusion over 30 min Given at ___h By: _____	Tenecteplase dosing information (middle box)	
5. Alteplase SECOND infusion	Alteplase SECOND infusion 0.5 mg/kg from Table A ___mg infusion over 60 min Given at ___h By: _____	Tenecteplase dosing information (right box)	
6. Enoxaparin dosing for less than 75 years and eGFR at least 30 mL/min – bolus dose	Enoxaparin dosing for less than 75 years and eGFR at least 30 mL/min – 30 mg IV bolus immediately prior to administration of alteplase	Enoxaparin dosing for less than 75 years and eGFR at least 30 mL/min – 30 mg IV bolus immediately after TNK	
7. Enoxaparin dosing for less than 75 years and eGFR at least 30 mL/min – follow-up doses	Enoxaparin dosing for less than 75 years and eGFR at least 30 mL/min – (subcutaneous dosing) within 30 minutes of initiating alteplase infusion	Enoxaparin dosing for less than 75 years and eGFR at least 30 mL/min – (subcutaneous dosing) 15 minutes after [TNK] bolus and then q12h	
8. Enoxaparin dosing for 75 years and older and eGFR at least 30 mL/min	0.75 mg/kg deep subcutaneous within 30 minutes of initiating alteplase infusion and then q12h	0.75 mg/kg deep subcutaneous immediately after TNK and then q12h	
9. eGFR 10-29 mL/min	Regardless of age use unfractionated heparin	Regardless of age, immediately after TNK 1 mg/kg deep subcutaneous and q24h (Max 100 mg/dose for first 2 doses)	
10. IV heparin	For severe renal failure with eGFR less than 30 mL/min	For severe renal failure with eGFR less than 10 mL/min	
11. Table A	Table A – provides weight based dosing of bolus, FIRST infusion and SECOND infusion and rates as well as optional buretrol volume information	Was not in the old form	

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