Figure 1. GRACE Prediction Score Card and Nomogram for All-Cause Mortality From Discharge to 6 Months

Risk Calculator for 6-Month Post-Discharge Mortality After Hospitalization for Acute Coronary Syndrome

Record the points for each variable at the bottom left and sum the points to calculate the total risk score. Find the total score on the x-axis of the nomogram plot. The corresponding probability on the y-axis is the estimated probability of all-cause mortality from hospital discharge to 6 months.

Medical History	Points
① Age in Years	
≤29	0
30-39	0
40-49	18
50-59	36
60-69	55
70-79	73
80-89	91
≥90	100
② History of Congestive Heart Failure	24
③ History of Myocardial Infarction	12

Findings at Initial Hospital Presentation	Points
④ Resting Heart Rate, beats/min	
≤49.9	0
50-69.9	3
70-89.9	9
90-109.9	14
110-149.9	23
150-199.9	35
≥200	43
⑤ Systolic Blood Pressure, mm HG	
≤79.9	24
80-99.9	22
100-119.9	18
120-139.9	14
140-159.9	10
160-199.9	4
≥200	0
⑥ ST-Segment Depression	11

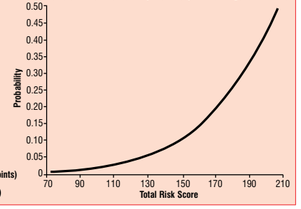
Findings During Hospitalization	Points
⑦ Initial Serum Creatinine, mg/dL	
0-0.39	1
0.4-0.79	3
0.8-1.19	5
1.2-1.59	7
1.6-1.99	9
2-3.99	15
≥4	20
⑧ Elevated Cardiac Enzymes	15
⑨ No In-Hospital Percutaneous Coronary Intervention	14

Points

① _____
② _____
③ _____
④ _____
⑤ _____
⑥ _____
⑦ _____
⑧ _____
⑨ _____

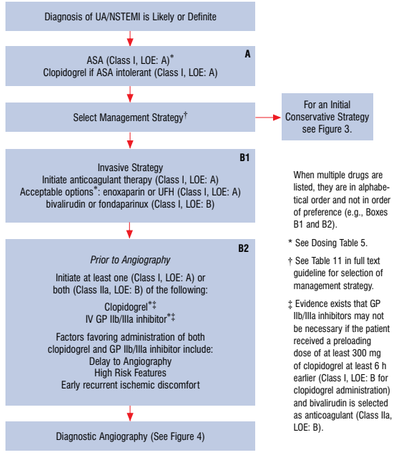
Total Risk Score _____ **(Sum of Points)**

Mortality Risk _____ **(From Plot)**



Eagle KA, Lim MJ, Dabbous OH, et al. A validated prediction model for all forms of acute coronary syndrome: estimating the risk of 6-month post-discharge death in an international registry. JAMA 2004; 291:2727-33.

Figure 2. Algorithm for Patients With UA/NSTEMI Managed by an Initial Invasive Strategy



When multiple drugs are listed, they are in alphabetical order and not in order of preference (e.g., Boxes B1 and B2).

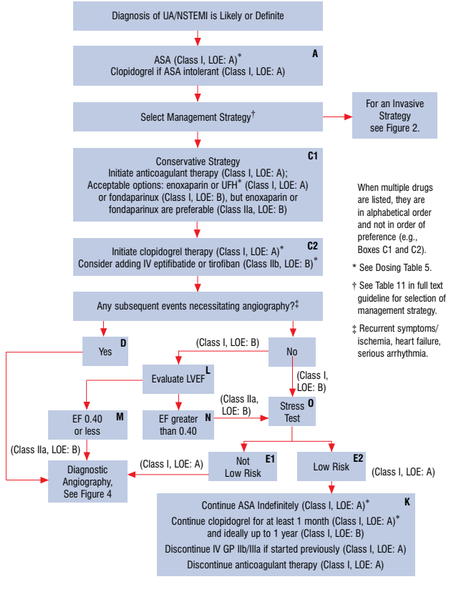
* See Dosing Table 5.

† See Table 11 in full text guideline for selection of management strategy.

‡ Evidence exists that GP IIb/IIIa inhibitors may not be necessary if the patient received a preloading dose of at least 300 mg of clopidogrel at least 6 h earlier (Class I, LOE: B for clopidogrel administration) and bivalirudin is selected as anticoagulant (Class IIa, LOE: B).

ASA = aspirin; **GP** = glycoprotein; **IV** = intravenous; **LOE** = level of evidence; **UA/NSTEMI** = unstable angina/non–ST-elevation myocardial infarction; **UFH** = unfractionated heparin.

Figure 3. Algorithm for Patients With UA/NSTEMI Managed by an Initial Conservative Strategy



When multiple drugs are listed, they are in alphabetical order and not in order of preference (e.g., Boxes C1 and C2).

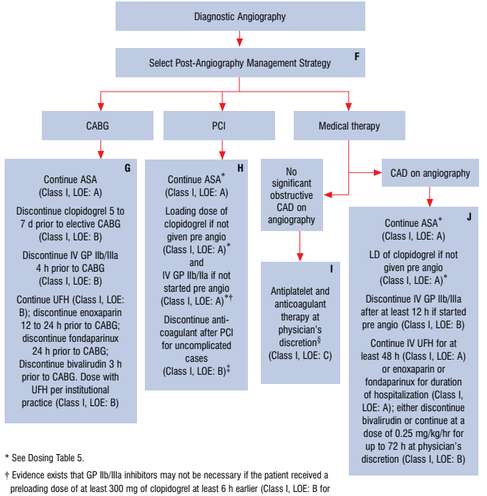
* See Dosing Table 5.

† See Table 11 in full text guideline for selection of management strategy.

‡ Recurrent symptoms/ischemia, heart failure, serious arrhythmia.

ASA = aspirin; **EF** = ejection fraction; **GP** = glycoprotein; **IV** = intravenous; **LOE** = level of evidence; **LVEF** = left ventricular ejection fraction; **UA/NSTEMI** = unstable angina/non–ST-elevation myocardial infarction; **UFH** = unfractionated heparin.

Figure 4. Management After Diagnostic Angiography in Patients With UA/NSTEMI



* See Dosing Table 5.

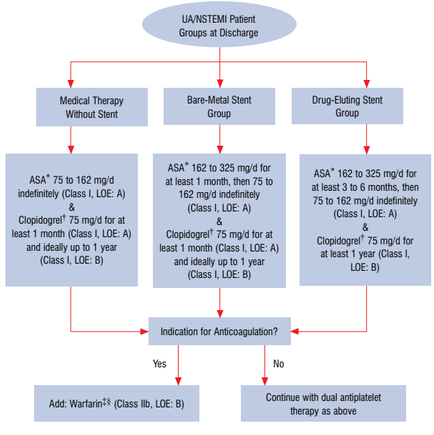
† Evidence exists that GP IIb/IIIa inhibitors may not be necessary if the patient received a preloading dose of at least 300 mg of clopidogrel at least 6 h earlier (Class I, LOE: B for clopidogrel administration) and bivalirudin is selected as antithrombin (Class IIa, LOE: B).

‡ Additional bolus of UFH is recommended if fondaparinux is selected as antithrombin (see Dosing Table 5).

§ For patients in whom the clinician believes coronary atherosclerosis is present, albeit without any significant, flow-limiting stenosis, long-term treatment with antiplatelet agents and other secondary prevention measures should be considered.

ASA = aspirin; **CABG** = coronary artery bypass graft; **CAD** = coronary artery disease; **GP** = glycoprotein; **IV** = intravenous; **LD** = loading dose; **PCI** = percutaneous coronary intervention; **pre angio** = before angiography; **UA/NSTEMI** = unstable angina/non–ST-elevation myocardial infarction; **UFH** = unfractionated heparin.

Figure 5. Long-Term Antithrombotic Therapy at Hospital Discharge After UA/NSTEMI



* For aspirin (ASA) allergic patients, use clopidogrel alone (indefinitely), or try aspirin desensitization.

† For clopidogrel allergic patients, use ticlopidine, 250 mg by mouth twice daily.

‡ Continue ASA indefinitely and warfarin longer term as indicated for specific conditions such as atrial fibrillation; LV thrombus, cerebral, venous or pulmonary emboli.

§ When warfarin is added to aspirin plus clopidogrel, an INR of 2.0 to 2.5 is recommended.

INR=international normalized ratio; **LOE**=Level of Evidence; **LV**=left ventricular, **UA/NSTEMI**=unstable angina/non–ST-elevation myocardial infarction.

Table 5. Dosing Table for Antiplatelet and Anticoagulant Therapy in Patients With UA/NSTEMI

Drug*	Initial Medical Treatment	During PCI: Patient Received Initial Medical Treatment	During PCI: Patient Did Not Receive Initial Medical Treatment	After PCI	At Hospital Discharge
Oral antiplatelet therapy					
Aspirin	162 to 325 mg nonenteric formulation, orally or chewed	No additional treatment	162 to 325 mg nonenteric formulation orally or chewed	162 to 325 mg daily should be given† for at least 1 month after BMS implantation, 3 months after SES implantation, and 6 months after PES implantation, after which daily chronic aspirin should be continued indefinitely at a dose of 75 to 162 mg	162 to 325 mg daily should be given† for at least 1 month after BMS implantation, 3 months after SES implantation, and 6 months after PES implantation, after which daily chronic aspirin should be continued indefinitely at a dose of 75 to 162 mg
Clopidogrel	LD of 300 to 600 mg orally MD of 75 mg orally per day	A second LD of 300 mg orally may be given to supplement a prior LD of 300 mg	LD of 300 to 600 mg orally	For BMS: 75 mg daily for at least 1 month and ideally up to 1 year. For DES, 75 mg daily for at least 1 year (in patients who are not at high risk of bleeding) (See Figure 5)	For BMS: 75 mg daily for at least 1 month and ideally up to 1 year. For DES, 75 mg daily for at least 1 year (in patients who are not at high risk of bleeding) (See Figure 5)
Ticlopidine	LD of 500 mg orally MD of 250 mg orally twice daily	No additional treatment	LD of 500 mg orally	MD of 250 mg orally twice daily (duration same as clopidogrel)	MD of 250 mg orally twice daily (duration same as clopidogrel)
Anticoagulants					
Bivalirudin	0.1 mg per kg bolus, 0.25 mg per kg per h infusion	0.5 mg per kg bolus, increase infusion to 1.75 mg per kg per h	0.75 mg per kg bolus, 1.75 mg per kg per h infusion	No additional treatment or continue infusion for up to 4 hours	
Dalteparin	120 IU per kg SC every 12 h (maximum 10,000 IU twice daily)‡	IV GP IIb/IIIa planned: target ACT 200 s using UFH No IV GP IIb/IIIa planned: target ACT 250 to 300 s for HemoTec; 300 to 350 s for Hemochron using UFH	IV GP IIb/IIIa planned: 60 to 70 U per kg§ of UFH No IV GP IIb/IIIa planned: 100 to 140 U per kg of UFH	No additional treatment	
Enoxaparin	LD of 30 mg IV bolus may be given‖ MD=1 mg per kg SC every 12 h‖; extend dosing interval to 1 mg per kg every 24 h if estimated creatinine clearance less than 30 ml per min‖	Last SC dose less than 8 h: no additional treatment Last SC dose greater than 8 h: 0.3 mg per kg IV bolus	0.5 to 0.75 mg per kg IV bolus	No additional treatment	
Fondaparinux	2.5 mg SC once daily. Avoid for creatinine clearance less than 30 mL per min‖	50 to 60 U per kg IV bolus of UFH is recommended by the OASIS 5 Investigators¶	50 to 60 U per kg IV bolus of UFH is recommended by the OASIS 5 Investigators¶	No additional treatment	

continued next panel

Table 5. Dosing Table for Antiplatelet and Anticoagulant Therapy in Patients With UA/NSTEMI *continued from previous panel*

Drug*	Initial Medical Treatment	During PCI: Patient Received Initial Medical Treatment	During PCI: Patient Did Not Receive Initial Medical Treatment	After PCI	At Hospital Discharge
Anticoagulants cont'd					
Unfractionated heparin	LD of 60 U per kg (max 4,000 U) as IV bolus‖ MD of IV infusion of 12 U per kg per h (max 1000 U per h) to maintain aPTT at 1.5 to 2.0 times control (approximately 50 to 70 s)‖	IV GP IIb/IIIa planned: target ACT 200 s No IV GP IIb/IIIa planned: target ACT 250 to 300 s for HemoTec; 300 to 350 s for Hemochron	IV GP IIb/IIIa planned: 60 to 70 U per kg§ No IV GP IIb/IIIa planned: 100 to 140 U per kg	No additional treatment	
Intravenous antiplatelet therapy					
Abciximab	Not applicable	Not applicable	LD of 0.25 mg per kg IV bolus MD of 0.125 mcg per kg per min (max 10 mcg per min)	Continue MD infusion for 12 h	
Eptifibatide	LD of IV bolus of 180 mcg per kg MD of IV infusion of 2.0 mcg per kg per min; reduce infusion by 50% in patients with estimated creatinine clearance less than 50 mL per min	Continue infusion	LD of IV bolus of 180 mcg per kg followed 10 min later by second IV bolus of 180 mcg per kg MD of 2.0 mcg per kg per min; reduce infusion by 50% in patients with estimated creatinine clearance less than 50 mL per min	Continue MD infusion for 18 to 24 h	
Tirofiban	LD of IV infusion of 0.4 mcg per kg per min for 30 min MD of IV infusion of 0.1 mcg per kg per min; reduce rate of infusion by 50% in patients with estimated creatinine clearance less than 30 mL per min	Continue infusion	LD of IV infusion of 0.4 mcg per kg per min for 30 min MD of IV infusion of 0.1 mcg per kg per min; reduce rate of infusion by 50% in patients with estimated creatinine clearance less than 30 mL per min	Continue MD infusion for 18 to 24 h	

Additional considerations include the possibility that a conservatively managed patient may develop a need for PCI, in which case an intravenous bolus of 50 to 60 U per kg of UFH is recommended if fondaparinux was given for initial medical treatment; the safety of this drug combination is not well established. For conservatively managed patients in whom enoxaparin was the initial medical treatment, as noted in the table, additional intravenous enoxaparin is an acceptable option.

* This list is in alphabetical order and is not meant to indicate a particular therapy preference †In patients in whom the physician is concerned about the risk of bleeding, a lower initial ASA dose after PCI of 75 to 162 mg/d is reasonable (Class IIa, LOE: C) ‡Dalteparin was evaluated for management of patients with UA/NSTEMI in an era before the widespread use of important therapies such as stents, clopidogrel, and GP IIb/IIIa inhibitors. Its relative efficacy and safety in the contemporary management era is not well established. §Some operators use less than 60 U per kg of UFH with GP IIb/IIIa blockade, although no clinical trial data exist to demonstrate the efficacy of doses below 60 U per kg in this setting. ‖ For patients managed by an initial conservative strategy, agents such as enoxaparin and fondaparinux offer the convenience advantage of SC administration compared with an intravenous infusion of UFH. They are also less likely to provoke heparin-induced thrombocytopenia than UFH. Available data suggest fondaparinux is associated with less bleeding than enoxaparin in conservatively managed patients using the regimens listed. ¶ Personal communication, OASIS 5 Investigators, July 7, 2006. Note that this regimen has not been rigorously tested in prospective randomized trials.

ACT = activated clotting time; **BMS** = bare-metal stent; **GP** = glycoprotein; **IU** = international unit; **IV** = intravenous; **LD** = loading dose; **MD** = maintenance dose; **PCI** = percutaneous coronary intervention; **PES** = paclitaxel-eluting stent; **SC** = subcutaneous; **SES** = sirolimus-eluting stent; **U** = units; **UA/NSTEMI** = unstable angina/non–ST-elevation myocardial infarction; **UFH** = unfractionated heparin.

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The following material was adapted from the ACC/AHA 2007 Guidelines for the Management of Patients With Unstable Angina/Non–ST-Elevation Myocardial Infarction. For a copy of the executive summary (J Am Coll Cardiol 2007;50:652–726; Circulation 2007;116:803–877) and full report, visit our Web sites at *http://www.acc.org* or *http://www.americanheart.org* or call the ACC Resource Center at 1-800-253-4636, ext. 5603.

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