2014 AHA/ACC Guideline for the Management of Patients With Non–ST-Elevation Acute Coronary Syndromes

Developed in Collaboration with the Society of Thoracic Surgeons and Society for Cardiovascular Angiography and Interventions

Endorsed by the American Association for Clinical Chemistry

Clinical Assessment and Initial Evaluation

Recommendations	COR	LOE
Patients with suspected ACS should be risk stratified based on the likelihood of ACS and adverse outcome(s) to decide on the need for hospitalization and assist in the selection of treatment options.	I	B
Patients with suspected ACS and high-risk features such as continuing chest pain, severe dyspnea, syncope/presyncope, or palpitations should be referred immediately to the ED and transported by emergency medical services when available.	I	C
Patients with less severe symptoms may be considered for referral to the ED, a chest pain unit, or a facility capable of performing adequate evaluation depending on clinical circumstances.	IIb	C

Prognosis: Early Risk Stratification

Recommendations	COR	LOE
In patients with chest pain or other symptoms suggestive of ACS, a 12-lead ECG should be performed and evaluated for ischemic changes within 10 minutes of the patient's arrival at an emergency facility.	I	C
If the initial ECG is not diagnostic but the patient remains symptomatic and there is a high clinical suspicion for ACS, serial ECGs (e.g., 15- to 30-minute intervals during the first hour) should be performed to detect ischemic changes.	I	C
Serial cardiac troponin I or T levels (when a contemporary assay is used) should be obtained at presentation and 3 to 6 hours after symptom onset (see Section 3.4, Class I, #3 recommendation if time of symptom onset is unclear) in all patients who present with symptoms consistent with ACS to identify a rising and/or falling pattern of values.	I	A

Prognosis: Early Risk Stratification (cont'd)

Recommendations	COR	LOE
Additional troponin levels should be obtained beyond 6 hours after symptom onset (see Section 3.4, Class I, #3 recommendation if time of symptom onset is unclear) in patients with normal troponin levels on serial examination when changes on ECG and/or clinical presentation confer an intermediate or high index of suspicion for ACS.	I	A
Risk scores should be used to assess prognosis in patients with NSTE-ACS.	I	A
Risk-stratification models can be useful in management.	IIa	B

WHAT ARE SOME OF THE SCORING METHODS CURRENTLY USED?

Risk Score	Year of Publication	Score Range	Score Predicts	C-Statistic Original Study
PURSUIT	2000	1-18	Risk of Death or death/MI at 30 days after admission	0.84 (death) and 0.67 (death/MI)
TIMI	2000	0-7	Risk of all cause mortality, MI, and severe recurrent ischemia requiring urgent revascularization within 14 days after admission	0.65
GRACE	2003	1-372	Risk of hospital death and post-discharge death at 6 months	0.83
FRISC	2004	0-7	Treatment effect of early invasive strategies in ACS	0.77 (death) and 0.7 (death/MI)
HEART	2008	0-10	Prediction of combined endpoint of MI, PCI, CABG or death within 6 weeks after presentation	0.90

WHAT IS THE APPLICABILITY OF EACH SCORE TO CLINICAL PRACTICE IN THE ED?

- **PURSUIT:** Does not include troponin assays as part of score and the majority of the score is dependent on patient age.
- **TIMI:** Simple to use, but has a poor predictive power (i.e. c-statistic 0.65)
- **GRACE:** Very complex to use and a large portion of the score is dependent on the patient age. Also patients not divided into different risk groups
- **FRISC:** Like TIMI, is simple to use but has poor predictive power (i.e. c-statistic 0.70)

All of the above scores are well validated, but none of them emphasizes patient history as part of the score, used in identification of ACS in the ED setting, and chest pain due to cause other than ACS were not evaluated in these trials. In truth, clinical judgment plays a huge role for physicians in the ED when evaluating chest pain patients so wouldn't it make sense to have a risk score that follows this?

Well that is exactly what the HEART score does!

The HEART Score for Chest Pain Patients in the ED

History	• Highly Suspicious • Moderately Suspicious • Slightly or Non-Suspicious	• 2 points • 1 point • 0 points
ECG	• Significant ST-Depression • Nonspecific Repolarization • Normal	• 2 points • 1 point • 0 points
Age	• ≥ 65 years • > 45 - < 65 years • ≤45 years	• 2 points • 1 point • 0 points
Risk Factors	• ≥ 3 Risk Factors or History of CAD • 1 or 2 Risk Factors • No Risk Factors	• 2 points • 1 point • 0 points
Troponin	• ≥ 3 x Normal Limit • > 1 - < 3 x Normal Limit • ≤ Normal Limit	• 2 points • 1 point • 0 points
Risk Factors:	DM, current or recent (<one month) smoker, HTN, HLP, family history of CAD & obesity	

Score 0 – 3: 2.5% MACE over next 6 weeks → Discharge Home
Score 4 – 6: 20.3% MACE over next 6 weeks → Admit for Clinical Observation
Score 7 – 10: 72.7% MACE over next 6 weeks → Early Invasive Strategies

IN THE JOURNALS

HEART Pathway effectively identifies patients with acute chest pain for early discharge

Mahler SA, et. Al. Circ Cardiovasc Qual Outcomes. 2015;doi:10.1161/CIRCOUTCOMES.114.001384
March 20, 2015

The H.E.A.R.T. score

For patients at the emergency room

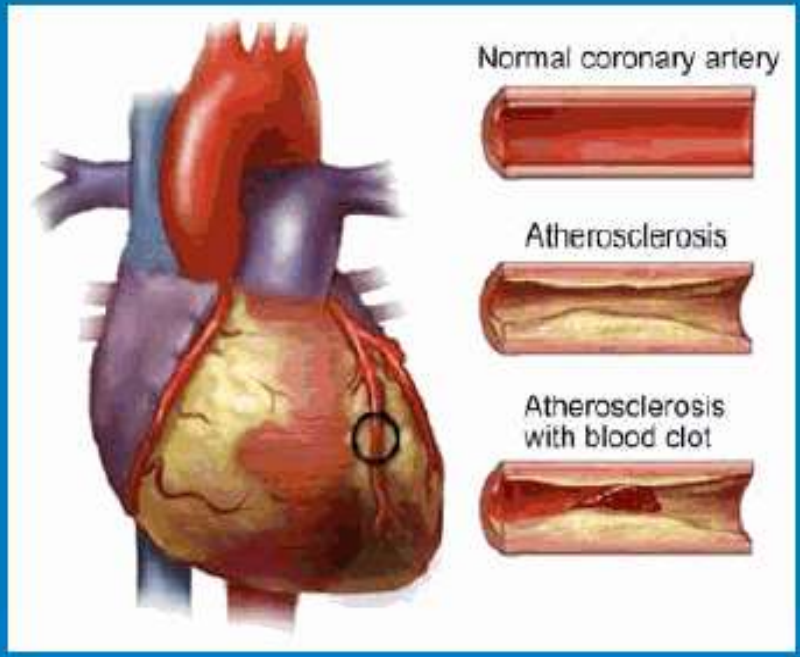
BE Backus, AJ Six, JH Kelder, TP Mast, F Van den Akker, PA Doevendans

ESC, Barcelona
31-08-2009

Background

Acute Coronary Syndromes

- Pathophysiology clear
- Clinical definition unclear
  - No absolute criteria
  - No uniformity
- Based on relative arguments
- Doubtful cases:
  - When treated as ACS: risk of side effects / bleeding
  - When not treated as ACS: lack of therapy / adverse outcome



Risk scores: PURSUIT, TIMI, GRACE

Developed to recognize high risk patients who benefit most from therapy

- Based on statistics of major studies
- Designed for use at the CCU
- Patient history ignored in all three
- Time consuming and complex
- European guidelines: routine use of GRACE
- Application in practice: not general

HEART score

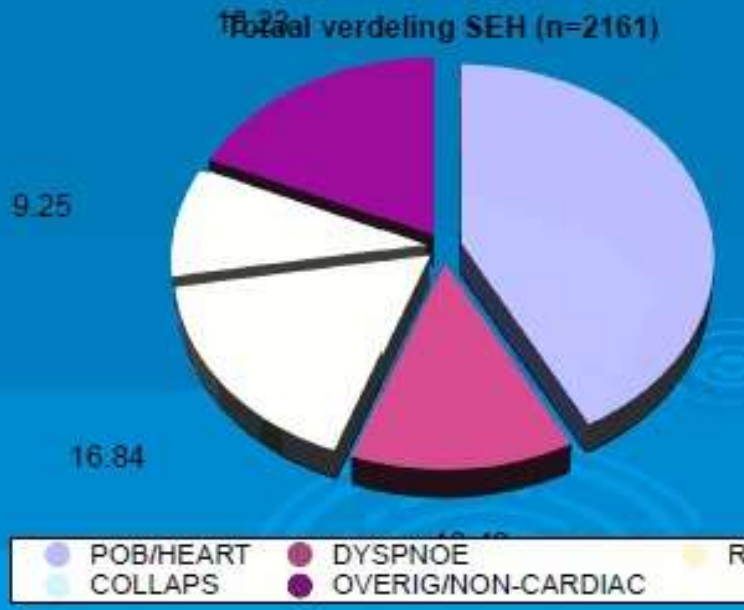
- Objective decision making tool
- Describes common clinical thinking
- Empirically developed
- Analogous with Apgar score for newborns:
  - Sum of 5 factors
  - Each 0, 1 or 2 points

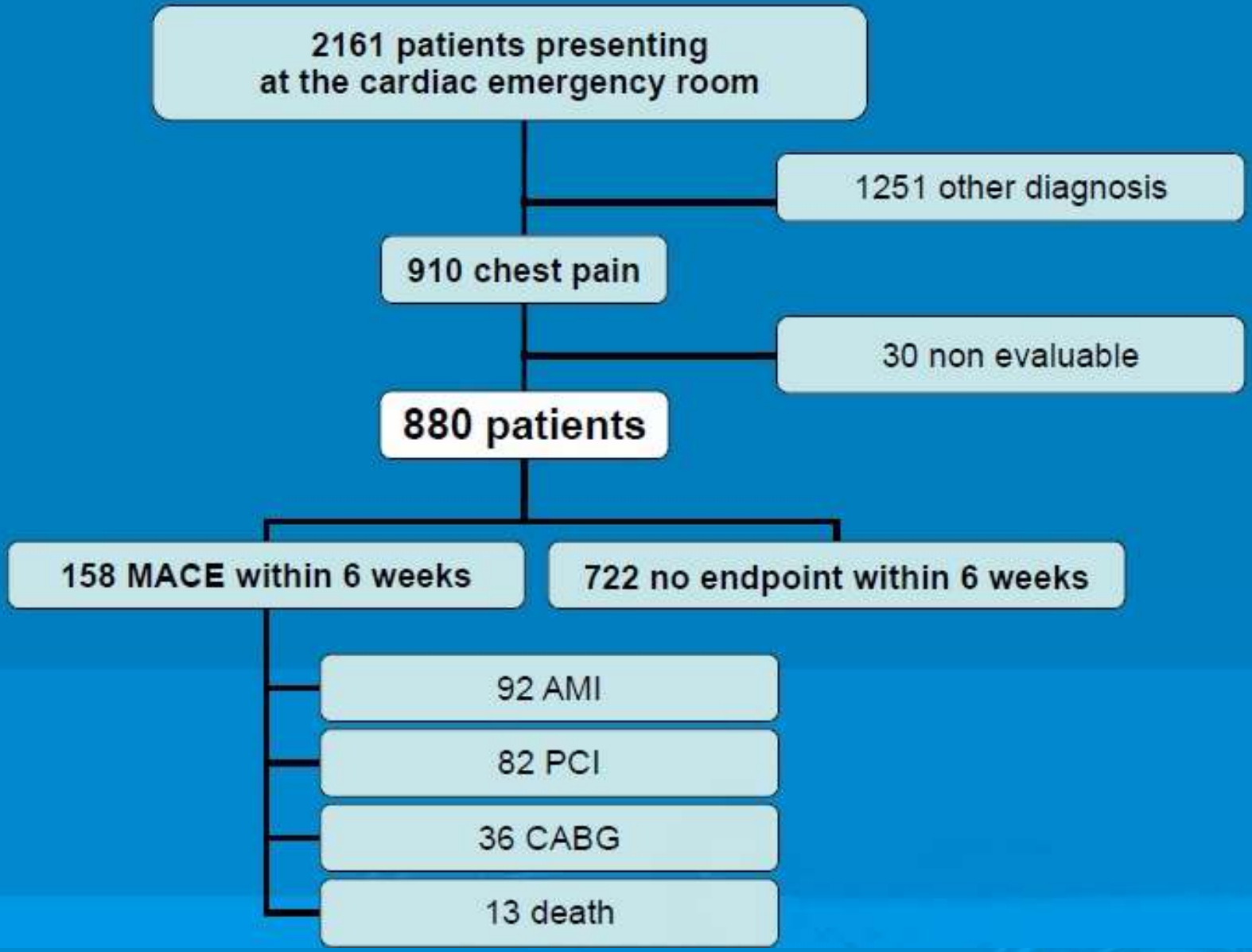
Validation program for HEART score

- 3 separate main studies
  - Single center retrospective
  - Multi center retrospective
  - Prospective multi center
- Various substudies
  - HEART in subgroups (elderly, diabetics, men/women)
  - HEART vs CT-scan
  - Interobserver variability

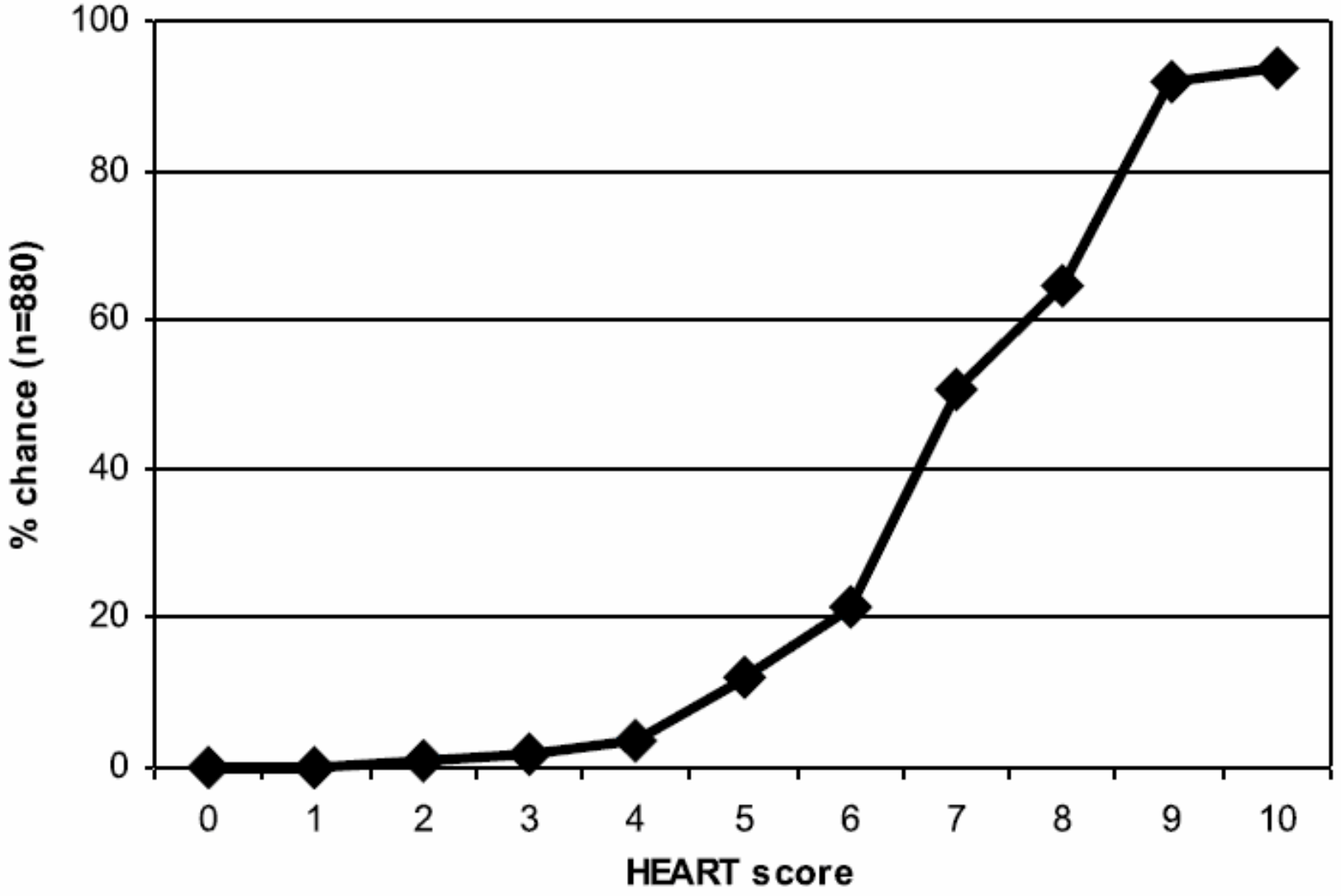
Multicenter retrospective study

- 4 centers
- Recruitment period 3 months (1st Q 2006)
- 2161 cardiology ER patients
- 42% (910) chest pain
- 43% female
- 18% endpoints (MACE)
- 30 patients lost to FU



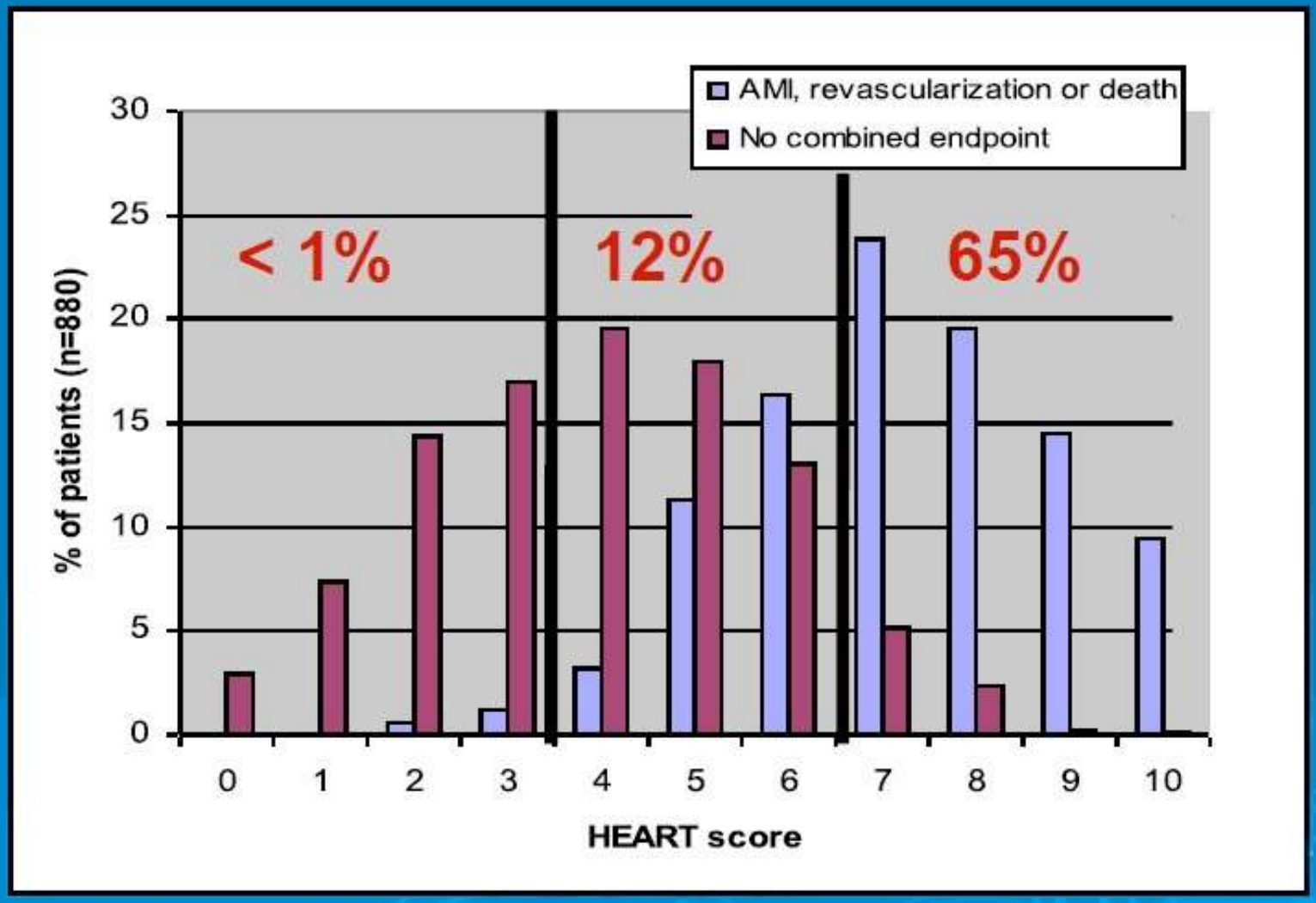

2161 patients presenting
at the cardiac emergency room
1251 other diagnosis
910 chest pain
30 non evaluable
880 patients
158 MACE within 6 weeks
722 no endpoint within 6 weeks
92 AMI
82 PCI
36 CABG
13 death

Discriminative power HEART score



HEART score		
Without endpoint	With endpoint	
3.8 +/- 1.9	7.2 +/- 1.7	p<0.0001

Percentage endpoints in each HEART group (n=880)



Clinical consequences of the HEART score

HEART	MACE	Risk	Policy ?
0-3	3/303	0.99%	Discharge
4-6	48/413	11.6%	X-ECG
7-10	107/164	65.2%	Admission

Elderly, diabetics and women

	C-statistics	P-value
> 80 years	> 0.87	< 0.001
Diabetics	> 0.90	< 0.001
Women	> 0.90	< 0.001

The excellent discriminatory power of HEART is sustained in specific subgroups

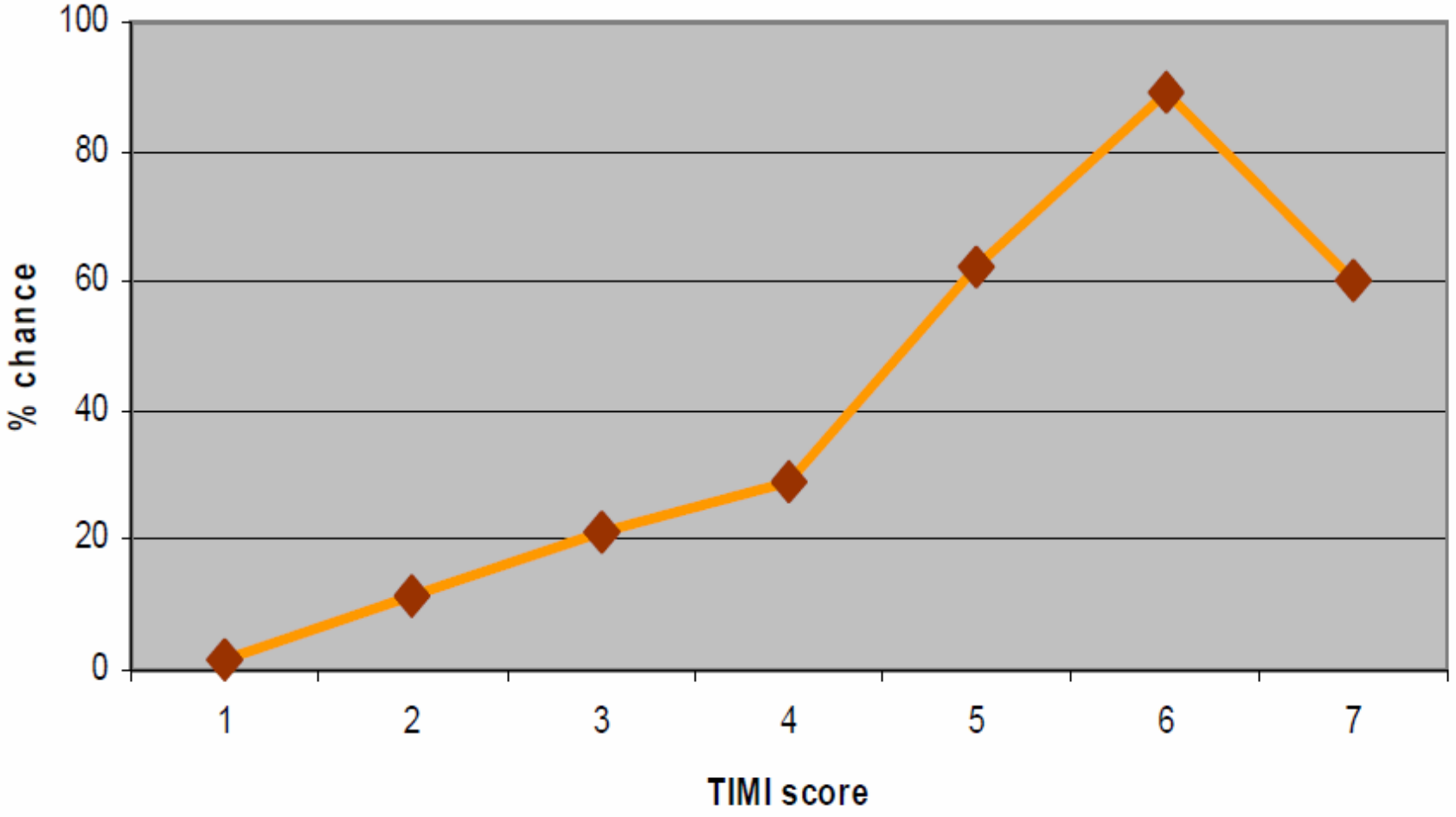
Conclusion

- HEART score is a strong discriminator of ACS and risk of MACE
- Easy to use
- Easy to recall
- Easy to communicate

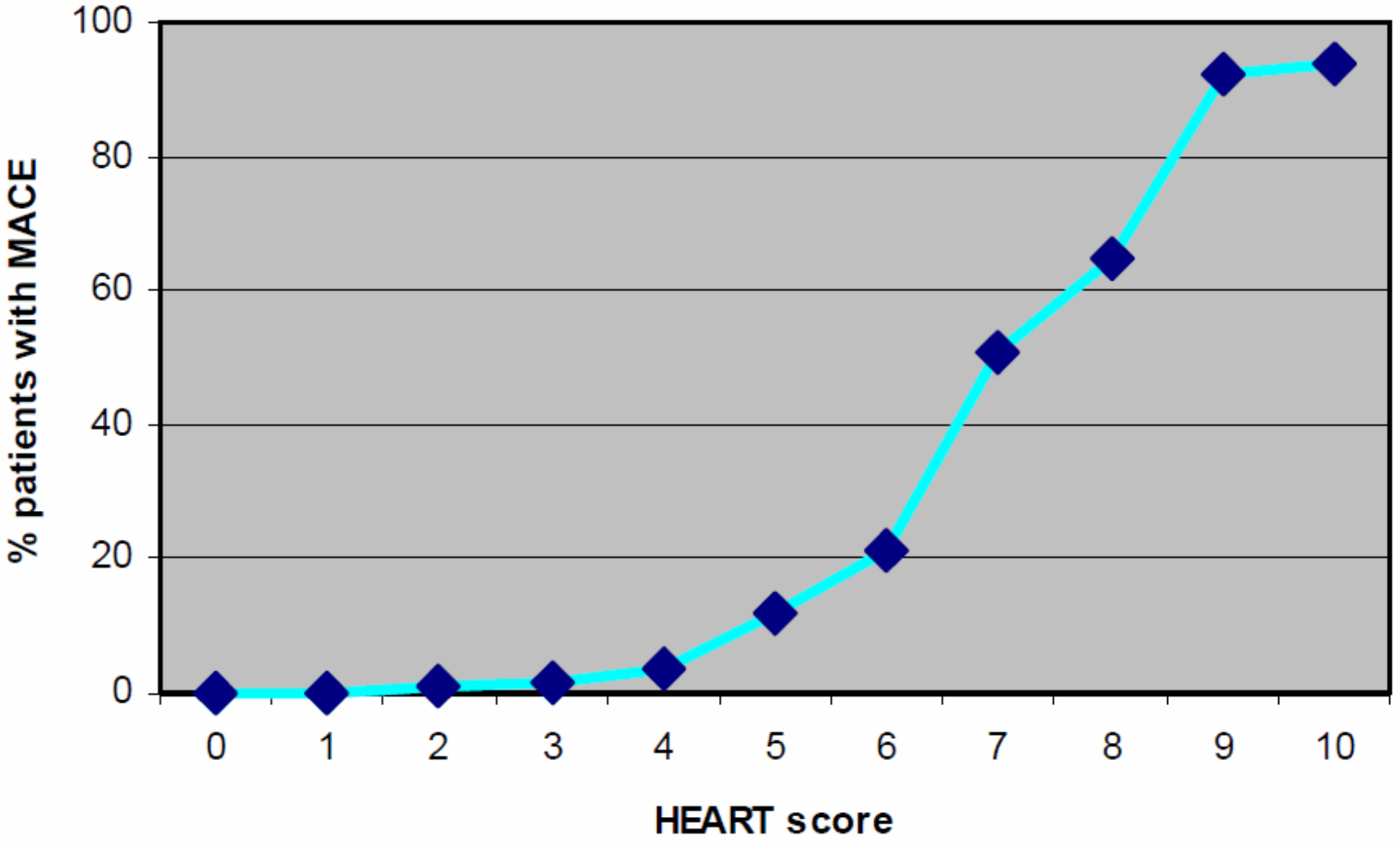
HEART score for chest pain patients

History	Highly suspicious	2
	Moderately suspicious	1
	Slightly suspicious	0
ECG	Significant ST-deviation	2
	Non specific rep disturbance / LBBB / PM	1
	Normal	0
Age	≥ 65 year	2
	45 – 65 year	1
	< 45 year	0
Risk factors	≥ 3 risk factors or treated atherosclerosis	2
	1 or 2 risk factors	1
	No risk factors known	0
Troponin	> 3x normal limit	2
	1-3x normal limit	1
	≤ normal limit	0
		Total

Does TIMI reliably predict end points?



Does HEART reliably predict end points?



Sensitivity and Specificity

	Sensitivity	Specificity	Negative predicted value	Positive predicted value
History	91.8 %	41.0 %	95.8	25.4
ECG	91.8 %	58.6 %	32.7	97.0
Age	89.2 %	16.8 %	87.7	19.0
Risk Factors	92.4 %	14.8 %	89.9	19.2
Troponin	58.2 %	94.7 %	91.2	70.8
HEART score	98.1 %	41.6 %	99.0	26.9

TIMI Risk Score* for NSTE-ACS

TIMI Risk Score	All-Cause Mortality, New or Recurrent MI, or Severe Recurrent Ischemia Requiring Urgent Revascularization Through 14 d After Randomization, %
0–1	4.7
2	8.3
3	13.2
4	19.9
5	26.2
6–7	40.9

*The TIMI risk score is determined by the sum of the presence of 7 variables at admission; 1 point is given for each of the following variables: ≥65 y of age; ≥3 risk factors for CAD; prior coronary stenosis ≥50%; ST deviation on ECG; ≥2 anginal events in prior 24 h; use of aspirin in prior 7 d; and elevated cardiac biomarkers.

GRACE Risk Model Nomogram

1. Find Points for Each Predictive Factor:

Killip Class	Points	SBP, mm Hg	Points	Heart Rate, Beats/min	Points	Age, y	Points	Creatinine Level, mg/dL	Points
I	0	≤80	58	≤50	0	≤30	0	0-0.39	1
II	20	80-99	53	50-69	3	30-39	8	0.40-0.79	4
III	39	100-119	43	70-89	9	40-49	25	0.80-1.19	7
IV	59	120-139	34	90-109	15	50-59	41	1.20-1.59	10
		140-159	24	110-149	24	60-69	58	1.60-1.99	13
		160-199	10	150-199	38	70-79	75	2.00-3.99	21
		≥200	0	≥200	46	80-89	91	>4.0	28
						≥90	100		

Other Risk Factors	Points
Cardiac Arrest at Admission	39
ST-Segment Deviation	28
Elevated Cardiac Enzyme Levels	14

2. Sum Points for All Predictive Factors:

	Killip Class	+	SBP	+	Heart Rate	+	Age	+	Creatinine Level	+	Cardiac Arrest at Admission	+	ST-Segment Deviation	+	Elevated Cardiac Enzyme Levels	=	Total Points

3. Look Up Risk Corresponding to Total Points:

Total Points	≤60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	≥250
Probability of In-Hospital Death, %	≤0.2	0.3	0.4	0.6	0.8	1.1	1.6	2.1	2.9	3.9	5.4	7.3	9.8	13	18	23	29	36	44	≥52

For example, a patient has Killip class II, SBP of 100 mm Hg, heart rate of 100 beats/min, is 65 years of age, has serum creatinine level of 1 mg/dL, did not have a cardiac arrest at admission but did have ST-segment deviation and elevated enzyme levels.

His score would be: 20 + 53 + 15 + 53 + 7 + 0 + 28 + 14 = 190

This person would have about a 16% risk of having an in-hospital death.

Similarly, a patient with Killip class I, SBP of 80 mm Hg, heart rate of 60 beats/min, is 55 years of age, has serum creatinine level of 0.4, and no risk factors would have the following score:

0 + 58 + 3 + 41 + 1 = 103, which gives approximately a 0.9% risk of having an in-hospital death.

Immediate Management

Recommendations	COR	LOE
It is reasonable to observe patients with symptoms consistent with ACS without objective evidence of myocardial ischemia (nonischemic initial ECG and normal cardiac troponin) in a chest pain unit or telemetry unit with serial ECGs and cardiac troponin at 3- to 6-hour intervals.	IIa	B
It is reasonable for patients with possible ACS who have normal serial ECGs and cardiac troponins to have a treadmill ECG (*Level of Evidence: A)*, stress myocardial perfusion imaging, or stress echocardiography before discharge or within 72 hours after discharge. *(Level of Evidence: B)*	IIa	A B

Anti-Ischemic and Analgesic Medications: Analgesic Therapy

Recommendations	COR	LOE
In the absence of contraindications, it may be reasonable to administer morphine sulfate intravenously to patients with NSTE-ACS if there is continued ischemic chest pain despite treatment with maximally tolerated anti-ischemic medications.	IIb	B
Nonsteroidal anti-inflammatory drugs (NSAIDs) (except aspirin) should not be initiated and should be discontinued during hospitalization for NSTE-ACS because of the increased risk of MACE associated with their use.	III: Harm	B

Anti-Ischemic and Analgesic Medications: Beta-Adrenergic Blockers

Recommendations	COR	LOE
Oral beta-blocker therapy should be initiated within the first 24 hours in patients who do not have any of the following: 1) signs of HF, 2) evidence of low-output state, 3) increased risk for cardiogenic shock, or 4) other contraindications to beta blockade (e.g., PR interval >0.24 second, second- or third-degree heart block without a cardiac pacemaker, active asthma, or reactive airway disease).	I	A
In patients with concomitant NSTE-ACS, *stabilized* HF, and reduced systolic function, it is recommended to continue beta-blocker therapy with 1 of the 3 drugs proven to reduce mortality in patients with HF: sustained-release metoprolol succinate, carvedilol, or bisoprolol.	I	C

Anti-Ischemic and Analgesic Medications: Calcium Channel Blockers

Recommendations	COR	LOE
In patients with NSTE-ACS, continuing or frequently recurring ischemia, and a contraindication to beta blockers, a nondihydropyridine calcium channel blocker (CCB) (e.g., verapamil or diltiazem) should be given as initial therapy in the absence of clinically significant LV dysfunction, increased risk for cardiogenic shock, PR interval greater than 0.24 second, or second- or third-degree atrioventricular block without a cardiac pacemaker.	I	B
Oral nondihydropyridine calcium antagonists are recommended in patients with NSTE-ACS who have recurrent ischemia in the absence of contraindications, after appropriate use of beta blockers and nitrates.	I	C

Anti-Ischemic and Analgesic Medications: Calcium Channel Blockers (cont'd)

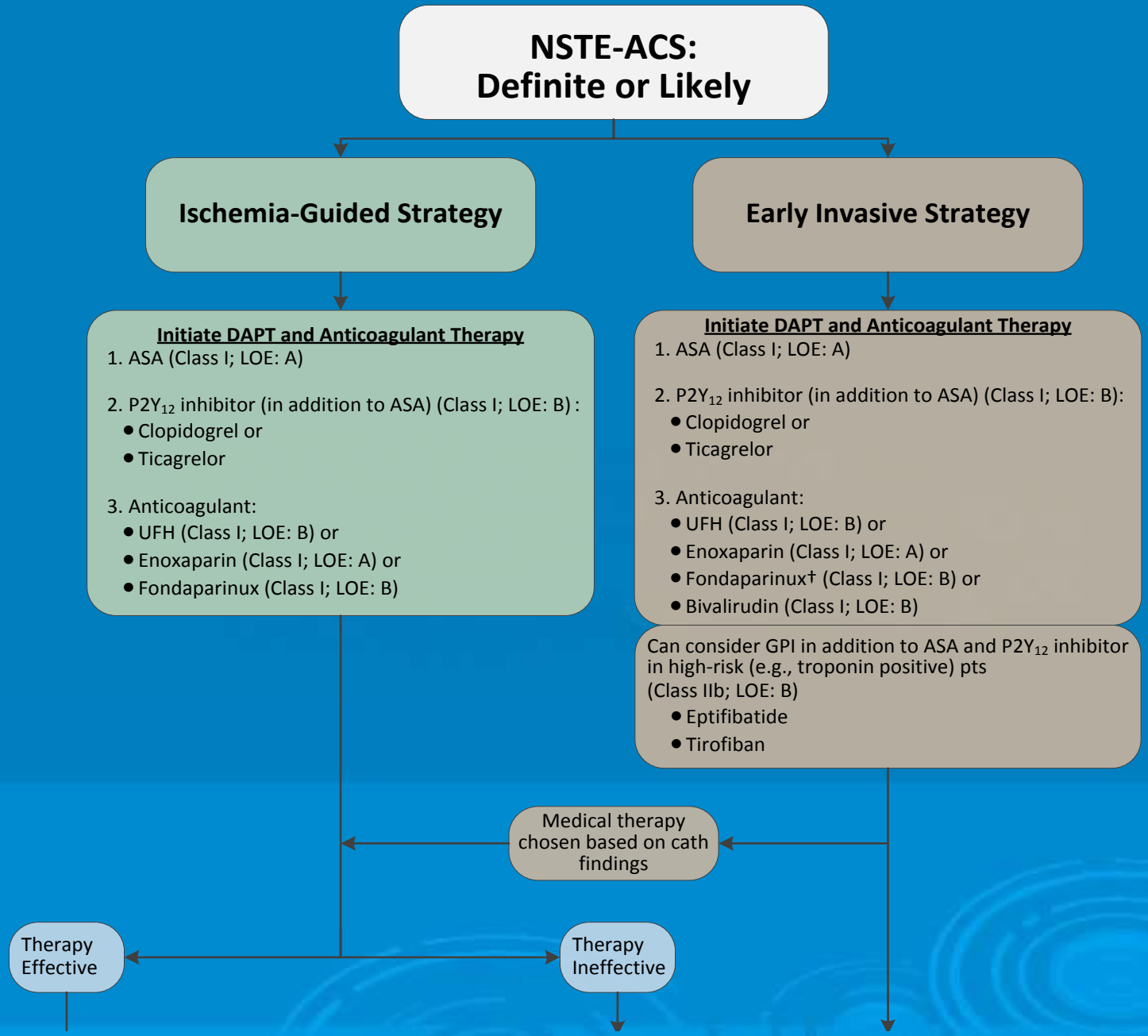
Recommendations	COR	LOE
CCBs† are recommended for ischemic symptoms when beta blockers are not successful, are contraindicated, or cause unacceptable side effects.	I	C
Long-acting CCBs and nitrates are recommended in patients with coronary artery spasm.	I	C
Immediate-release nifedipine should not be administered to patients with NSTE-ACS in the absence of beta-blocker therapy.	III: Harm	B

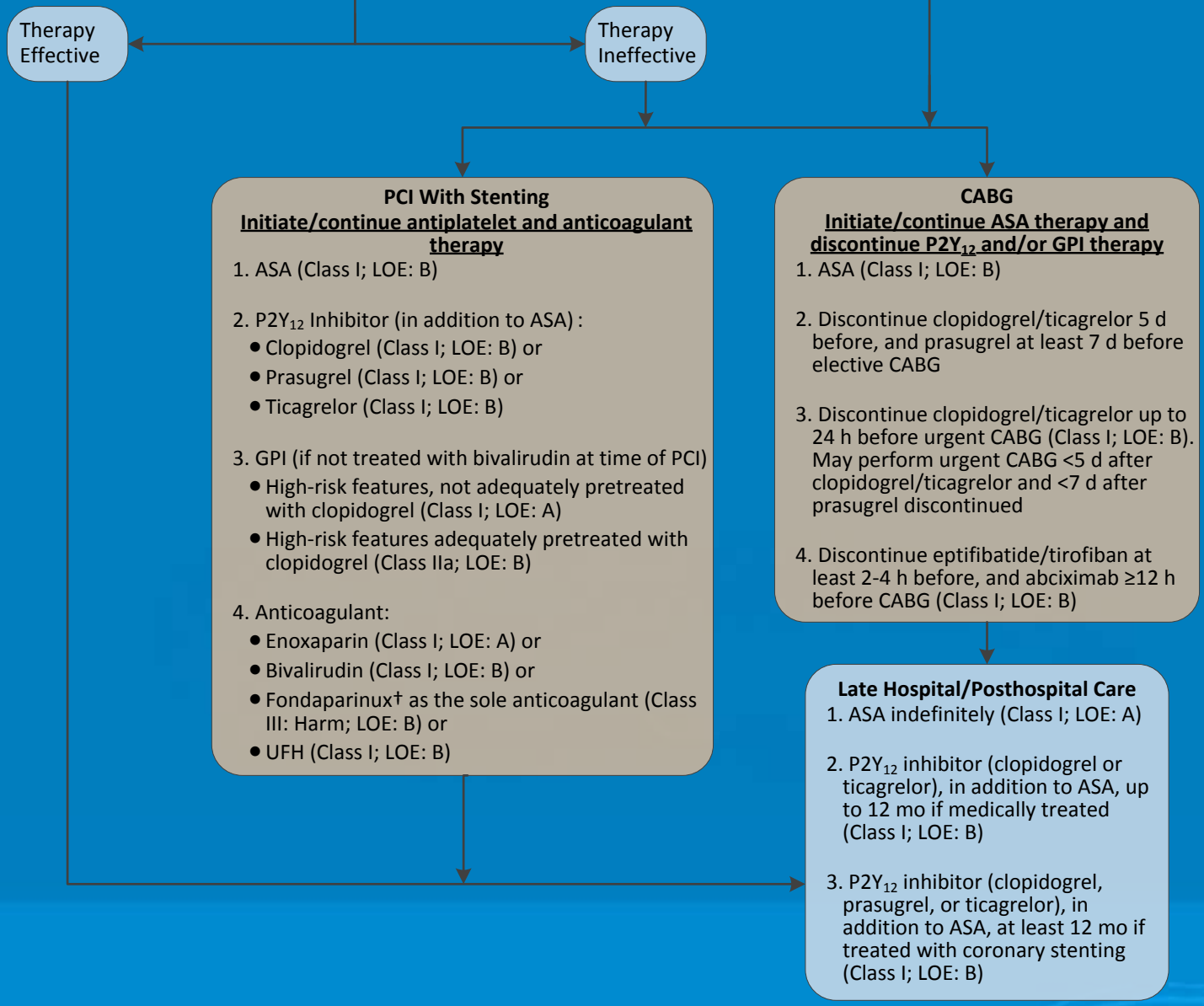
†Short-acting dihydropyridine calcium channel antagonists should be avoided.

Anti-Ischemic and Analgesic Medications: Cholesterol Management

Recommendations	COR	LOE
High-intensity statin therapy should be initiated or continued in all patients with NSTE-ACS and no contraindications to its use.	I	A
It is reasonable to obtain a fasting lipid profile in patients with NSTE-ACS, preferably within 24 hours of presentation.	IIa	C

Algorithm for Management of Patients With Definite or Likely NSTE-ACS





†In patients who have been treated with fondaparinux (as upfront therapy) who are undergoing PCI, an additional anticoagulant with anti-IIa activity should be administered at the time of PCI because of the risk of catheter thrombosis.

Early Invasive and Ischemia: Guided Strategies (cont'd)

Recommendations	COR	LOE
It is reasonable to choose an early invasive strategy (within 24 hours of admission) over a delayed invasive strategy (within 25 to 72 hours) for initially stabilized high-risk patients with NSTE-ACS. For those not at high/intermediate risk, a delayed invasive approach is reasonable.	IIa	B
In initially stabilized patients, an ischemia-guided strategy may be considered for patients with NSTE-ACS (without serious comorbidities or contraindications to this approach) who have an elevated risk for clinical events.	IIb	B
The decision to implement an ischemia-guided strategy in initially stabilized patients (without serious comorbidities or contraindications to this approach) may be reasonable after considering clinician and patient preference.	IIb	C

Early Invasive and Ischemia: Guided Strategies (cont'd)

Recommendations	COR	LOE
An early invasive strategy (i.e., diagnostic angiography with intent to perform revascularization) is not recommended in patients with: a. Extensive comorbidities (e.g., hepatic, renal, pulmonary failure, cancer), in whom the risks of revascularization and comorbid conditions are likely to outweigh the benefits of revascularization. *(Level of Evidence: C)*	III: No Benefit	C
b. Acute chest pain and a low likelihood of ACS *(Level of Evidence: C)* who are troponin-negative, especially women. (*Level of Evidence: B)*		C
		B

Factors Associated With Appropriate Selection of Early Invasive Strategy or Ischemia-Guided Strategy in Patients With NSTE-ACS

Immediate invasive (within 2 h)	Refractory angina
	Signs or symptoms of HF or new or worsening mitral regurgitation
	Hemodynamic instability
	Recurrent angina or ischemia at rest or with low-level activities despite intensive medical therapy
	Sustained VT or VF
Ischemia-guided strategy	Low-risk score (e.g., TIMI [0 or 1], GRACE [<109])
	Low-risk Tn-negative female patients
	Patient or clinician preference in the absence of high-risk features
Early invasive (within 24 h)	None of the above, but GRACE risk score >140
	Temporal change in Tn (Section 3.4)
	New or presumably new ST depression
Delayed invasive (within 25–72 h)	None of the above but diabetes mellitus
	Renal insufficiency (GFR <60 mL/min/1.73 m^2)
	Reduced LV systolic function (EF <0.40)
	Early postinfarction angina
	PCI within 6 mo
	Prior CABG
	GRACE risk score 109–140; TIMI score ≥2

Risk Stratification Before Discharge for Patients With an Ischemia-Guided Strategy of NSTE-ACS

Recommendations	COR	LOE
Noninvasive stress testing is recommended in low- and intermediate-risk patients who have been free of ischemia at rest or with low-level activity for a minimum of 12 to 24 hours.	I	B
Treadmill exercise testing is useful in patients able to exercise in whom the ECG is free of resting ST changes that may interfere with interpretation.	I	C
Stress testing with an imaging modality should be used in patients who are able to exercise but have ST changes on resting ECG that may interfere with interpretation. In patients undergoing a low-level exercise test, an imaging modality can add prognostic information.	I	B

Risk Stratification Before Discharge for Patients With an Ischemia-Guided Strategy of NSTE-ACS (cont'd)

Recommendations	COR	LOE
Pharmacological stress testing with imaging is recommended when physical limitations preclude adequate exercise stress.	I	C
A noninvasive imaging test is recommended to evaluate LV function in patients with definite ACS.	I	C

General Considerations

Recommendation	COR	LOE
A strategy of multivessel PCI, in contrast to culprit lesion–only PCI, may be reasonable in patients undergoing coronary revascularization as part of treatment for NSTE-ACS.	IIb	B

Antiplatelet and Anticoagulant Therapy: Oral and Antiplatelet Agents

Recommendations	COR	LOE
Patients already taking daily aspirin before PCI should take 81 mg to 325 mg non–enteric-coated aspirin before PCI.	I	B
Patients not on aspirin therapy should be given non–enteric-coated aspirin 325 mg as soon as possible before PCI.	I	B
After PCI, aspirin should be continued indefinitely at a dose of 81 mg to 325 mg daily.	I	B

Antiplatelet and Anticoagulant Therapy: Oral and Antiplatelet Agents (cont'd)

Recommendations	COR	LOE
A loading dose of a $P2Y_{12}$ receptor inhibitor should be given before the procedure in patients undergoing PCI with stenting. *(Level of Evidence: A)* Options include:	I	A
a. Clopidogrel: 600 mg *(Level of Evidence: B)* or		B
b. Prasugrel[#]: 60 mg *(Level of Evidence: B)* or		B
c. Ticagrelor[‖]: 180 mg *(Level of Evidence: B)*		B

[#]Patients should receive a loading dose of prasugrel, provided that they were not pretreated with another P2Y12 receptor inhibitor.

[‖]The recommended maintenance dose of aspirin to be used with ticagrelor is 81 mg daily.

Antiplatelet and Anticoagulant Therapy: Oral and Antiplatelet Agents (cont'd)

Recommendations	COR	LOE
In patients with NSTE-ACS and high-risk features (e.g., elevated troponin) not adequately pretreated with clopidogrel or ticagrelor, it is useful to administer a GP IIb/IIIa inhibitor (abciximab, double-bolus eptifibatide, or high-dose bolus tirofiban) at the time of PCI.	I	A

Antiplatelet and Anticoagulant Therapy: Oral and Antiplatelet Agents (cont'd)

Recommendations	COR	LOE
It is reasonable to choose ticagrelor over clopidogrel for $P2Y_{12}$ inhibition treatment in patients with NSTE-ACS treated with an early invasive strategy and/or coronary stenting.	IIa	B
It is reasonable to choose prasugrel over clopidogrel for $P2Y_{12}$ treatment in patients with NSTE-ACS who undergo PCI who are not at high risk of bleeding complications.	IIa	B
In patients with NSTE-ACS and high-risk features (e.g., elevated troponin) treated with UFH and adequately pretreated with clopidogrel, it is reasonable to administer a GP IIb/IIIa inhibitor (abciximab, double-bolus eptifibatide, or high-bolus dose tirofiban) at the time of PCI.	IIa	B

Antiplatelet and Anticoagulant Therapy: GP IIb/IIIa Inhibitors

Recommendations	COR	LOE
In patients with NSTE-ACS and high-risk features (e.g., elevated troponin) and not adequately pretreated with clopidogrel or ticagrelor, it is useful to administer a GP IIb/IIIa inhibitor (abciximab, double-bolus eptifibatide, or high-dose bolus tirofiban) at the time of PCI.	I	A
In patients with NSTE-ACS and high-risk features (e.g., elevated troponin) treated with UFH and adequately pretreated with clopidogrel, it is reasonable to administer a GP IIb/IIIa inhibitor (abciximab, double-bolus eptifibatide, or high-dose bolus tirofiban) at the time of PCI.	IIa	B

Antiplatelet and Anticoagulant Therapy: Anticoagulant Therapy in Patients Undergoing PCI

Recommendations	COR	LOE
An anticoagulant should be administered to patients with NSTE-ACS undergoing PCI to reduce the risk of intracoronary and catheter thrombus formation.	I	C
Intravenous UFH is useful in patients with NSTE-ACS undergoing PCI.	I	C
Bivalirudin is useful as an anticoagulant with or without prior treatment with UFH in patients with NSTE-ACS undergoing PCI.	I	B

Timing of Urgent CABG in Patients With NSTE-ACS in Relation to Use of Antiplatelet Agents

Recommendations	COR	LOE
Non–enteric-coated aspirin (81 mg to 325 mg daily) should be administered preoperatively to patients undergoing CABG.	I	B
In patients referred for elective CABG, clopidogrel and ticagrelor should be discontinued for at least 5 days before surgery *(Level of Evidence: B*) and prasugrel for at least 7 days before surgery. *(Level of Evidence: C)*	I	B C
In patients referred for urgent CABG, clopidogrel and ticagrelor should be discontinued for at least 24 hours to reduce major bleeding.	I	B

Timing of Urgent CABG in Patients With NSTE-ACS in Relation to Use of Antiplatelet Agents (cont'd)

Recommendations	COR	LOE
In patients referred for CABG, short-acting intravenous GP IIb/IIIa inhibitors (eptifibatide or tirofiban) should be discontinued for at least 2 to 4 hours before surgery (418, 419) and abciximab for at least 12 hours before to limit blood loss and transfusion.	I	B
In patients referred for urgent CABG, it may be reasonable to perform surgery less than 5 days after clopidogrel or ticagrelor has been discontinued and less than 7 days after prasugrel has been discontinued.	IIb	C

Combined Oral Anticoagulant Therapy and Antiplatelet Therapy in Patients With NSTE-ACS

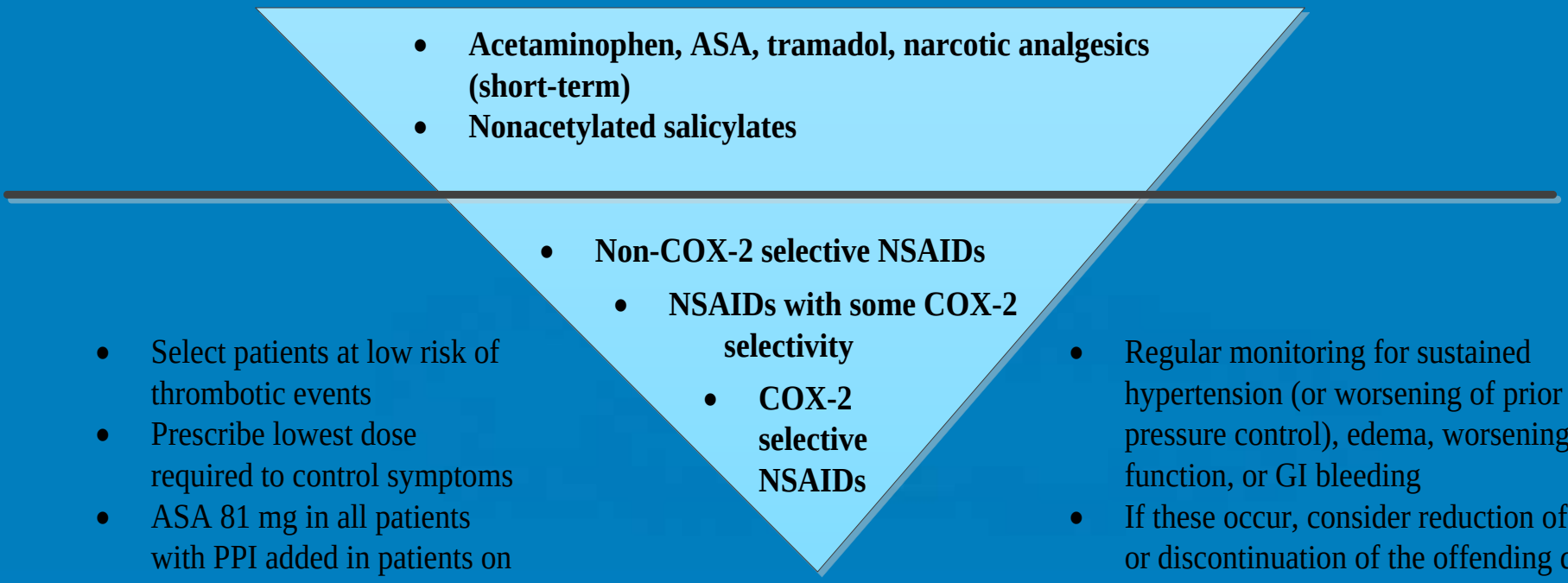
Combined Oral Anticoagulant Therapy and Antiplatelet Therapy in Patients With NSTE-ACS

Recommendations	COR	LOE
The duration of triple antithrombotic therapy with a vitamin K antagonist, aspirin, and a $P2Y_{12}$ receptor inhibitor in patients with NSTE-ACS should be minimized to the extent possible to limit the risk of bleeding.	I	C
Proton pump inhibitors should be prescribed in patients with NSTE-ACS with a history of gastrointestinal bleeding who require triple antithrombotic therapy with a vitamin K antagonist, aspirin, and a $P2Y_{12}$ receptor inhibitor.	I	C

Combined Oral Anticoagulant Therapy and Antiplatelet Therapy in Patients With NSTE-ACS (cont'd)

Recommendations	COR	LOE
Proton pump inhibitor use is reasonable in patients with NSTE-ACS *without* a known history of gastrointestinal bleeding who require triple antithrombotic therapy with a vitamin K antagonist, aspirin, and a $P2Y_{12}$ receptor inhibitor.	IIa	C
Targeting oral anticoagulant therapy to a lower international normalized ratio (e.g., 2.0 to 2.5) may be reasonable in patients with NSTE-ACS managed with aspirin and a $P2Y_{12}$ inhibitor.	IIb	C

Stepped-Care Approach to Pharmacological Therapy for Musculoskeletal Symptoms in Patients With Known Cardiovascular Disease or Risk Factors for Ischemic Heart Disease



- Select patients at low risk of thrombotic events
- Prescribe lowest dose required to control symptoms
- ASA 81 mg in all patients with PPI added in patients on ASA and NSAIDs to decrease risk of upper GI bleeding

- Regular monitoring for sustained hypertension (or worsening of prior blood pressure control), edema, worsening renal function, or GI bleeding
- If these occur, consider reduction of dose or discontinuation of the offending drug, a different drug, or alternative therapeutic modalities, as dictated by clinical circumstances

NSTE-ACS in Older Patients

Recommendations	COR	LOE
Older patients** with NSTE-ACS should be treated with GDMT, an early invasive strategy, and revascularization as appropriate.	I	A
Pharmacotherapy in older patients with NSTE-ACS should be individualized and dose adjusted by weight and/or CrCl to reduce adverse events caused by age-related changes in pharmacokinetics/dynamics, volume of distribution, comorbidities, drug interactions, and increased drug sensitivity.	I	A
Management decisions for older patients with NSTE-ACS should be patient centered, considering patient preferences/goals, comorbidities, functional and cognitive status, and life expectancy.	I	B

**Those ≥75 years of age.

NSTE-ACS in Older Patients (cont'd)

Recommendations	COR	LOE
Bivalirudin, rather than a GP IIb/IIIa inhibitor plus UFH, is reasonable in older patients with NSTE-ACS, both initially and at PCI, given similar efficacy but less bleeding risk.	IIa	B
It is reasonable to choose CABG over PCI in older patients** with NSTE-ACS who are appropriate candidates, particularly those with diabetes mellitus or complex 3-vessel CAD (e.g., SYNTAX score >22), with or without involvement of the proximal left anterior descending artery, to reduce cardiovascular disease events and readmission and to improve survival.	IIa	B

Heart Failure and Cardiogenic Shock

Recommendations	COR	LOE
Patients with a history of HF and NSTE-ACS should be treated according to the same risk stratification guidelines and recommendations for patients without HF.	I	B
Selection of a specific revascularization strategy should be based on the degree, severity, and extent of CAD; associated cardiac lesions; the extent of LV dysfunction; and the history of prior revascularization procedures.	I	B
Early revascularization is recommended in suitable patients with cardiogenic shock due to cardiac pump failure after NSTE-ACS.	I	B

Diabetes Mellitus

Recommendation	COR	LOE
Medical treatment in the acute phase of NSTE-ACS and decisions to perform stress testing, angiography, and revascularization should be similar in patients with and without diabetes mellitus.	I	A

Post-CABG

Recommendation	COR	LOE
Patients with prior CABG and NSTE-ACS should receive antiplatelet and anticoagulant therapy according to GDMT and should be strongly considered for early invasive strategy because of their increased risk.	I	B

Women

Recommendations	COR	LOE
Women with NSTE-ACS should be managed with the same pharmacological therapy as that for men for acute care and for secondary prevention, with attention to weight and/or renally-calculated doses of antiplatelet and anticoagulant agents to reduce bleeding risk.	I	B
Women with NSTE-ACS and high-risk features (e.g., troponin positive) should undergo an early invasive strategy.	I	A
Myocardial revascularization is reasonable in pregnant women with NSTE-ACS if an ischemia-guided strategy is ineffective for management of life-threatening complications.	IIa	C
Women with NSTE-ACS and low-risk features (see Section 3.3.1 in the full-text CPG) should not undergo early invasive treatment because of the lack of benefit and the possibility of harm.	III: No Benefit	B

Anemia, Bleeding, and Transfusion

Recommendations	COR	LOE
All patients with NSTE-ACS should be evaluated for the risk of bleeding.	I	C
Anticoagulant and antiplatelet therapy should be weight-based where appropriate and should be adjusted when necessary for CKD to decrease the risk of bleeding in patients with NSTE-ACS.	I	B
A strategy of routine blood transfusion in hemodynamically stable patients with NSTE-ACS and hemoglobin levels greater than 8 g/dL is not recommended.	III: No Benefit	B