Acute Coronary Syndromes

NDAFP 2026 Big Sky

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AAFP

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Learning Objectives

1. List the appropriate acute diagnostic strategies and risk stratification for patients presenting with chest pain and the recommended acute treatments.
2. Practice secondary prevention of acute coronary syndrome, including medication and lifestyle modification.
3. Deal with anxiety, return to function, and other post-MI issues related to acute coronary syndromes

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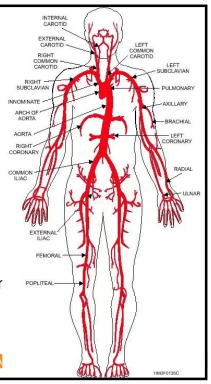
What is ASCVD?

- Atherosclerotic Cardiovascular Disease
- Atherosclerosis of:
  - Coronary (ACS)
  - Cerebrovascular (including carotid)
  - Aortic (AAA)
  - Iliofemoral (PAD)
- Arterial different than venous disease
  - Anticoagulants, platelet inhibitor selection differer



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ACS Definitions

- Myocardial ischemia
  - Stable angina
  - Unstable angina
  - Myocardial infarctions
    - STEMI (ST segment elevation myocardial infarction)
    - NSTEMI (Non ST-segment elevation myocardial infarction)

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ACS Epidemiology

- 805 000 AMIs occur annually of which 605 000 are first MI events and 200 000 are recurrent
  - 1/3 STEMI and 2/3 NSTEMI
- Every 34 seconds, one American has a coronary event
- CAD often leads to heart failure and stroke and is the single largest killer of men and women in the U.S~ **650,000 since 2017** (now tied with Cancer)*
- Hospitalization and Death from MI has **declined by 4-5% per year and has been leveling**
- Economic 84.9Billion including lost productivity and wages

Kochanek KD et al. Deaths, final cause for 2017. Natl Vital Stat Rep. 2019; 68(9):1-76
ACC 2025 ACS guideline

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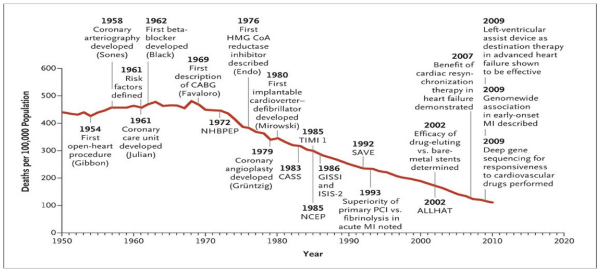
Medical Progress in MI Treatment



Nabel EG, Braunwald E. N Engl J Med 2012;366:54-63.

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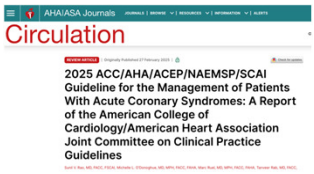
Standard-Setting Guidelines

- ACC AHA evidence/expert guideline panels
  - ACS 2025
    - Revascularization 2015, 2021
    - NSTEMI 2014
    - STEMI 2013
  - C/P 2021 (2022)
  - HTN 2017
  - PCI 2015
  - Dual antiplatelet therapy
    - (DAPT) 2013 and update 2016
  - Secondary prevention ASCVD 2011
  - ASCVD prevention in women 2011
- European Society (ESC) 2023



http://www.acc.org/guidelines#doctype=Guidelines accessed 4_26_18

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Lexicon

- ACS
  - Acute Coronary Syndromes
- STEMI
  - ST Elevation MI
- NSTEMI
  - Non ST Elevation MI
- MACE
  - Major Adverse Cardiac Events
- TIMI
  - Thrombolysis in Myocardial Infarction
- PPCI
  - Primary Percutaneous Coronary Intervention
- PCI:
  - Percutaneous Coronary Intervention
- DAPT
  - Dual Antiplatelet Therapy

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Primary Prevention

- Passive primary prevention
  - US diet regulation, food inspection
    - Trans-fatty acids, labeling, calorie restriction
- Active primary prevention
  - Promotion of healthy lifestyle
  - Identification of CAD precursors
    - HTN
    - HLP
    - T2DM
    - Smoking status

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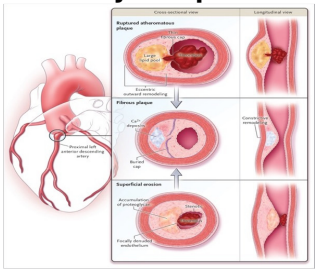
Coronary Plaque and Rupture



Ruptured thin fibrous plaque with thrombus

Stenotic fibrous plaque causing stable ischemic syndromes

Proteoglycan-rich plaque with superficial erosion and thrombus

Libby P. N Engl J Med 2013;368:2004-2013.

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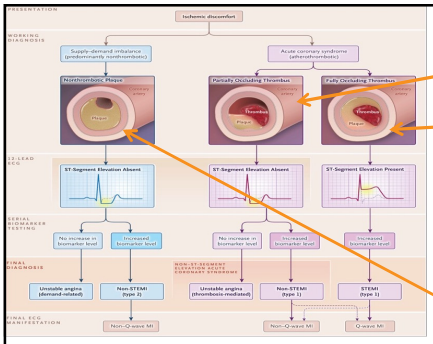

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Diagnostic Testing

- **History:** characteristics of chest discomfort
- Troponin: high sensitivity and tissue-specificity, cardiac **troponins** I [cTnI] and T [cTnT])
- **ECG**: waves & changes over time
- **Angiography:** cardiac catheterization of high-risk patients
- **Non-Invasive Testing:** CT Angiogram vs Stress Testing

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Pretest probability of obstructive CAD Pooled data from ~16,000 patients with ACS

	Typical		~~Atypical~~		Non-anginal		Dyspnea	
Age	Men	Women	Men	Women	Men	Women	Men	Women
30-39	3%	5%	4%	3%	1%	1%	0%	3%
40-49	22%	10%	10%	6%	3%	2%	12%	3%
50-59	32%	13%	17%	6%	11%	3%	20%	9%
60-69	44%	16%	26%	11%	22%	6%	27%	14%
70+	52%	27%	34%	19%	24%	10%	32%	12%

Adapted from 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes. European Heart Journal 2020 41, 407-477

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"Atypical Symptoms" are Unhelpful Outside of Broader risk Stratification

- Gender bias against females because atypical was dismissed as non cardiac
- Watch for dyspnea and nausea as possible cardiac symptom females and older patients (formerly "anginal equivalents")
- Watch for evolution of symptoms
- Awareness of possible racial Bias
- Use standardized risk estimator
- Shared Decision Making of Diagnostic Options

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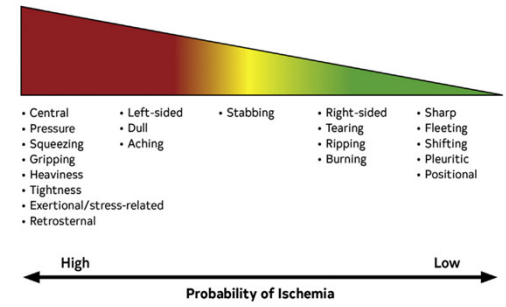

Adapted from Fig 2. Gulati et al 2021 Chest Pain Guideline ACC

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ACC guideline for Chest Pain (2021)

- 7 million ED visits annually (2022) 4.7% of all ED visits
- Rapidly identify the small number of ACS from large number noncardiac chest pain
- Accelerated protocols to reduce ED length of stay
- Not applicable to patients with hemodynamic instability or HF

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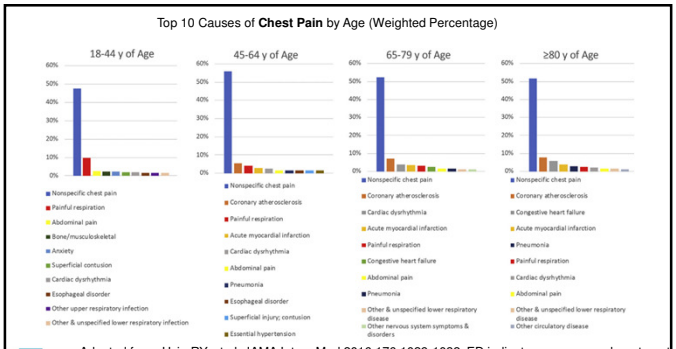

Adapted from Hsia RY, et al. JAMA Intern Med 2016;176:1029-1032. ED indicates emergency department

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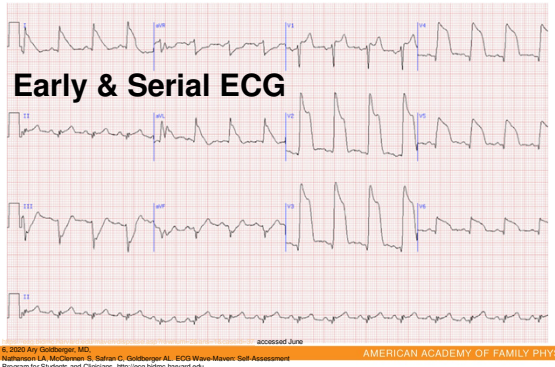
Early & Serial ECG



accessed June 6, 2020 Ary Goldberger, MD.
Nallapareddy KA, McGeorge C, Goldberger AL. ECG Wave-Maven: Self-Assessment Program for Students and Clinicians. http://ecg.bidmc.harvard.edu

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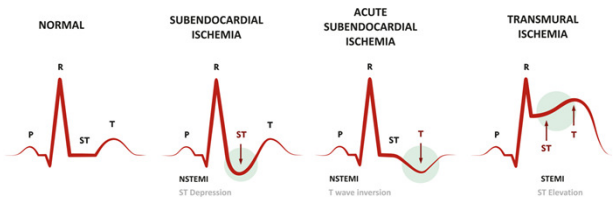
ST Segments



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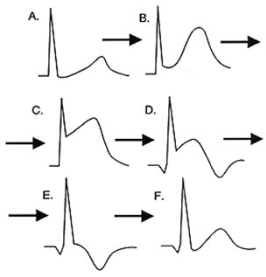
ECG Evolution

- Normal in Acute MI
- ST Elevation
- ST Depression
- Q Waves



Evolution of Acute MI

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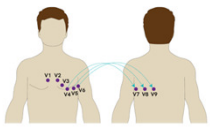
Special Situations

- Electrical evidence of injury (ST elevation) appears as ST Depression on a lead reflecting other side of heart
- Ie. Multi-lead ST depression & AVR ST elevation in Anterior or Inferior MI
- Also Posterior MI may be invisible
- Use V7,v8, v9



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High Sensitivity Troponin

- Fifth Generation is new standard of care with faster “rule-out”
  - 1-3 or 2-4 hours
- Allows more refined ranges
- Highly sensitive Troponin within 1-2 hours but many ”false positives”
  - Myocarditis, CRF, Respiratory Failure, Intracranial Hemorrhage, Stroke, septic shock, structural heart disease. , and respiratory failure; stroke or intracranial hemorrhage; septic shock; and chronic structural heart
- Rising or falling pattern and at least one value above 99%ile
- CKMB and Myoglobin no longer recommended by ACC
  - American College of Pathology recommend against these in “Choosing Wisely”

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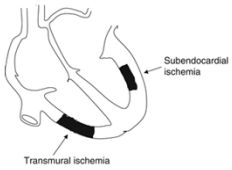
Phase 1 First 2 hours



1. Within seconds of thrombosis extensive myocardial ischemia
2. 20-40 minutes reversible myocardial injury appears in subendocardium
3. After 30 minutes of blood flow interruption, irreversible myocardial necrosis (infarction) in subendocardium as injury spreads out to epicardium
4. After 1 hour necrosis spread over 1/3 of myocardium

Wesley, K, Huszar's ECG and 12-Lead Interpretation. Elsevier St. Louis 2017

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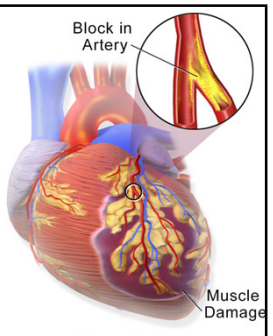
Phase 2: 2 to 24 hours

- 3 hours 2/3 of myocardium necrotic
- 6 hours only a small percentage of cells viable (transmural)
- By 24 hours progress to epicardium is usually complete

Phase 3: 24-72 hours

- All cells either died or recovered
- Acute inflammation and edema



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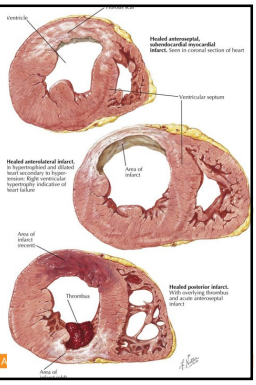
Phase 4: Second week

- Inflammation
- Proliferation of connective tissue
- Replacement of necrotic tissue with fibrous connective tissue complete by seventh week.
- Q wave in 50%



https://clinicalgate.com/6-acquired-heart-disease/ accessed 5_21_2021

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ECG Changes & Infarct Location

Location	ST elevation	Reciprocal ST depression	Coronary artery
Anterior MI	V1-6	none	LAD
Septal MI	V1-4, disappearance of septum Q in Leads V5-6	none	LAD-septal branches
Lateral MI	I, aVL, V5, V6	II, III, aVF	LCX or MO
Inferior MI	II, III, aVF	1, AVL	RCA (80%) or RCX (20%)
Posterior MI	V7, V8, V9	High R in V2-V3 with ST depression V1-V3 > 2mm (mirror view)	RCX
Right Ventricle MI	V1, V4R	I, aVL	RCA
Atrial MI	Pta in I, V5, V6	Pta in I, II, or III	RCA

https://en.ecgpedia.org/wiki/Myocardial_Infarction#:~:text=In%20a%20myocardial%20infarction%20transmural,finally%20pathologic%20Q%20waves%20develop. Accessed 6_8_2020

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Further Diagnostic Tests for C/P

- Exercise ECG, "stress test": 70% sens/spec
  - But 95% negative predictive value
- Nuclear stress test: Slightly improved sensitivity
  - "chemical exercise" and radionucliotide
  - Quantify ischemic area, more radiation & cost
  - For those with physical limitations, LBBB
- CCTA: Improved sensitivity and specificity
  - Reduced MACE Less radiation exposure
- Stress echocardiography: Availability
- Coronary angiography: Invasive, Definitive

Taylor AJ, Improving the Odds in the Evaluation of Chest Pain. JACC 60(21) 2012

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Evaluating Testing Options/

Method	Sensitivity %	Specificity%	PPV	NPV
Exercise treadmill	45-50	85-90	75	91
Stress Echo	79-85	80-88	40	90
Single photon emission CT	76-91	70-90	67	68
Cardiac MRI	79-91	80-92	77	91
Coronary CT angiogram	78-91	31-68	44-64	95-100
Ct derived flow reserve	84-93	65-83	52-82	84-100

Brenna CTA, Afgani FJ, Hanneman K, Levitan D, Udell JA, Sacha Bhatia R, Harvey PJ, Nguyen ET. Chest pain investigation in patients at low or intermediate risk: What is the best first-line test to rule out coronary artery disease? Can Fam Physician. 2022 Jan;68(1):24-30. PMCID: PMC8751124
Credit to Dr. Justin Bailey

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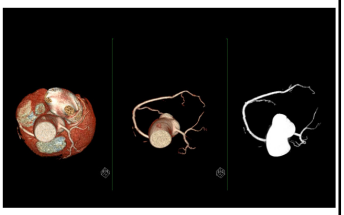
Coronary CT Angiography

- 1/3 cost of Nuclear testing
- Stress testing may delay time to diagnosis compared to CCTA
- Allows visualization of severity of non-obstructed and obstructive coronary artery disease, atherosclerotic plaque composition.
- Lower risk of CAD events at 19 months (HR 0.62 compared to usual care)
- Increase Cardiac Cath rate vs Nuclear Testing
- Comparable long-term outcomea to Nuclear Testing
- Choosing Wisely: "**Do not use** coronary computed tomography angiography in high-risk emergency department patients presenting with acute chest pain"



AdobeStock_license # 708824620

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Coronary Calcium

- Inexpensive, low radiation test for asymptomatic patients
- Quantifies atherosclerotic burden into 4 categories
- Great if it can rule-out ASCVD
- CCTA can give a Calcium Score
- (CCTA can also do "triple rule-out" PE, ASCVD and PNA)

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Standards of ACS Care

- Prehospital care including defibrillator
  - AED
  - ICD
- 90-min door to balloon time
- Thrombolysis and transport if access to PCI not immediate for STEMI
- Angiogram/PCI within 24 hours at another center
- Treatment of coronary thrombosis after 72 hrs or stable CAD, less clear

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Hospital Care

- M Morphine (pain control, reduce anxiety and CO and preload reduction) caution to mask ongoing angina
- O Oxygen (reserved for sat < 90)
- N Nitrate (vasodilation and preload reduction) Caution for PDE4 and R Ventricle infarct and Hypotension)
- A Aspirin 325 not enteric coated
- Clopidogrel, prasugrel, ticagrelor loading now in question
- B-blocker held if going for nuclear stress test or Hypotension or acute HF
- IV access in case of cardiac arrest
- Cardiac monitoring for dysrhythmia

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In-Hospital Anticoagulation

- Unfractionated heparin preferred
- Low-molecular-weight heparin enoxaparin alternative or fondaparinux (only if non-invasive strategy)
- Direct Thrombin Inhibitors: Argatroban and bivalirudin are alternative to to Heparin
- GPI: (Glycoprotein Inhibitor) IIB/IIIA inhibitors now only recommended to those with large thrombus burden, slow flow or low flow due to bleeding
- Intravenous Platelet Inhibition with Cangrelor in cath lab if not already loaded
- Caution with P2Y12 inhibitors if anticipating CABG

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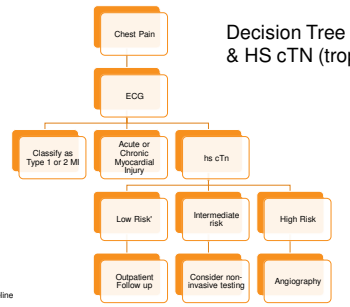
Decision Tree Using ECG & HS cTN (troponin)



Adapted from Fig 1
2022 ACC C/P Evaluation Guideline

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Thrombolysis in MI (TIMI) UA/NSTEMI

- Initial medical evaluation of patients with UA/NSTEMI can be used to construct a simple classification system that is predictive of risk for death and cardiac ischemic events.

Risk Factor	Weight
Age >65	+1
>3 RF: DM, HTN, Angina, smoke	+1
Known CAD (stenosis >50%)	+1
ASA use in the past 7 days	+1
Severe angina (>2 episodes in 24 h)	
EKG ST changes > 0./5mm	+1
Positive Cardiac Marker	+1

https://www.mdcalc.com/timi-risk-score-stemi accessed 5/15/19

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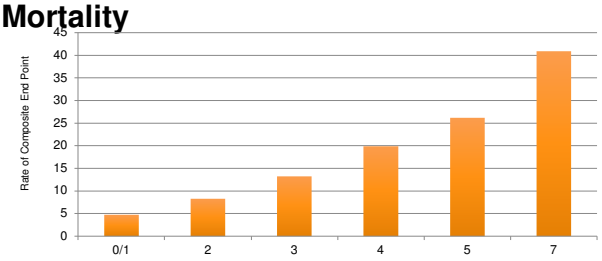
TIMI Risk Score & Risk of all Cause Mortality



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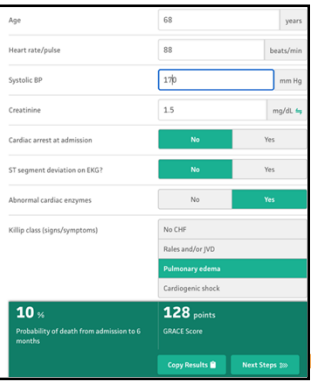
Grace Score

- Cardiac arrest at admission?
- Abnormal cardiac enzymes
- ST segment deviation on EKG
- Abnormal cardiac enzymes
- Killip Class
  - No CHF
  - Rales and or JVD
  - Pulmonary Edema
  - Cardiogenic Shock
  - 10% probability of death within 6n



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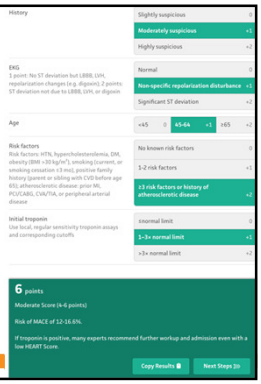
HEART SCORE

- Moderately or Highly suspicious history
- Non-specific ST T change or ST deviation
- Age high if over 65
- More than 3 ASCVD RF
- Troponin 1-3 x normal or > 3 x normal

https://www.mdcalc.com/calc/1752/heart-score-major-cardiac-events



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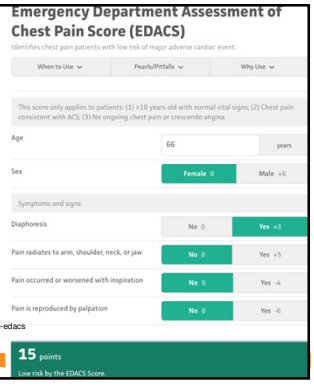
(EDACS)

EDACS = Emergency Department Assessment of Chest Pain Score

- 66 years old
- Female
- Diaphoresis +3
- Arm, Jaw or shoulder pain +5
- Pleuritic -4
- Reproducible by palpation -6

https://www.mdcalc.com/calc/1858/emergency-department-assessment-chest-pain-score-edacs



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Hospital Care Revascularization

- 1970s Peripheral thrombolysis
- 1980s Coronary thrombolysis
- 1990s Bare metal stent
- 2000s Drug-eluting stent
- 2010s Second-generation DES
- Balance between
  - Post-stent stenosis (fibroblast)
  - Post-stent thrombosis (platelet aggregation)
- 2020s Third-generation Bioresorbable Polymer Coated Stent

STENTS

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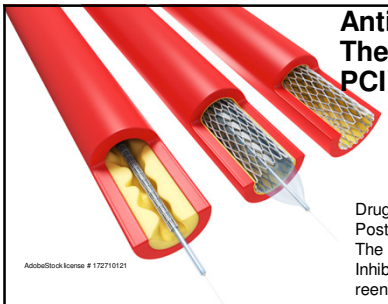

Antiplatelet Therapy after PCI

Bare metal stents risked
Post-stent fibrosis

Drug-eluting stents (DES) risk:
Post-stent thrombosis
The metal frame elutes a fibroblast Inhibitor that also prevents reendothelialization.

Second-generation stents have less risk of thrombosis so duration of antiplatelet therapy potentially shorter.

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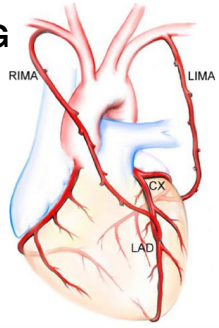
Revascularization: CABG



- **Triple-vessel disease**
- Severe **left main stem** artery stenosis
- **Left main equivalent disease** (ie, 70 percent or greater stenosis of left anterior descending and proximal left circumflex artery)—particularly if left ventricular function is impaired
- DMII selected cases
- Hold P2Y12 platelet inhibitors for 5d

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Other Issues for revascularization

- Within 90 minutes at facility with Cath Lab
- Within 120 minutes for transferred patients
- >120 minutes then **Thrombolysis** to reduce MACE
- PCI for Non-culprit Lesions under study
- If MI > 24 hours ago and no sx do not revascularize

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Thrombolysis
(recombinant plasminogen activators)

- **Tenecteplase**: (TNK-tPA) I single IV weight-based bolus and has less intracerebral bleed risk
- **Reteplase**: two 10-unit IV boluses 30 min apart
- **Alteplase**: 90-minute weight-based infusiopn
- (Streptokinase retired due to immunogenicity and no longer available)
- Adjunctive **antiplatelet and/or anticoagulant** therapies are indicated, regardless of the choice of fibrinolytic agent
  - Continue anticoagulation up to 8 days or until revascularization (**Enoxaparin** preferred over UFH)
  - If not anticipated to have invasive revascularization **Enoxaparin** (or Fondaparinux though superior evidence for Enoxaparin)

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Absolute Contraindications to Thrombolysis

- 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
- Severe uncontrolled hypertension (unresponsive to therapy) (SBP >180 mm Hg or DBP >110 mm Hg)

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Relative Contraindications to Thrombolysis

- History of chronic, severe, poorly controlled hypertension
- Significant hypertension on presentation (SBP >180 mm Hg or DBP >110 mm Hg)
- 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)
- Recent (within 2 to 4 wk) internal bleeding
- Noncompressible vascular punctures
- Pregnancy
- Active peptic ulcer
- Oral anticoagulant therapy

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Medication Choice post ACS discharge
GDMT **(guideline directed medical therapy)**

a) B Blockers
b) ACE Inhibitors / ARB
c) Vaccination for Influenza and Pneumococcal disease
d) Antiplatelets
e) Statin Therapy
f) Smoking Cessation

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Beta Blockers

- Begin within 24 hours to reduce risk of reinfarction and ventricular arrhythmias
  - Use in all pts with reduced EF if tolerated starting at low dose and titrating upward
  - Unclear long term use in HFpEF
- Contraindicated acutely if HF (Killip II-IV) Shock, PR>.24, 1 or 2 Heart Block severe bradycardia or Bronchospasm
- CCB alternative if Beta-blockers not tolerated
  - Non-dihydropyridine: verapamil and diltiazem

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RAAS Blockade
(Renin Angiotensin Aldosterone System)

- ACE/ARB & MRA
  - in all high-risk ACS, (EF<40, HTN, DM, anterior MI) to reduce MACE
  - (MRA) (Mineralocorticoid Receptor Antagonist)
- ACE/ARB & MRA also reasonable in lower risk ACS patients
- ARNI (Angiotensin Neprolysin Inhibitor) if reduced EF

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Vaccination against Influenza, Pneumococcal Disease and …..

- Excess Mortality from AMI during influenza syndrome and those with current infections
- Inflammatory and other factors
  - Pneumococcal Disease & COVID increase MI risk
  - RCT evidence for Pneumococcal Vaccination and Covid Vaccination pending
  - SARS CoV-2 vaccine in elderly and chronic disease including post MI
  - No recommendation for RSV vaccination

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Lipid Lowering Therapy: Statin +

- High Intensity Statin (lest than ½ US patients get this!)
- **Identify** and treated in the **initial hospital stay**
- **High Intensity Statin** Therapy:
  - Atorvastatin (40–80 mg) or Rosuvastatin (20–40 mg).
  - Moderate-intensity statin Atorvastatin (10–20 mg), rosuvastatin (5–10 mg), simvastatin (20–40 mg), pravastatin (40–80 mg)
  - Indefinitely (over age 80?)
- CMS
  - Statin Therapy for the Prevention and Treatment of Cardiovascular Disease
  - Statin Use in Persons with Diabetes
  - Statin Adherence Measures

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Statin Classification
by Expected LDL-C Reduction

High Intensity	Moderate Intensity	Low Intensity
LDL reduction > 50	LDL reduction 30-49	LDL reduction <30%
Atorvastatin 40-80	Atorvastatin 10-20 mg	Simvastatin 10 mg
Rosuvastatin 20-40	Rosuvastatin 5-10 mg	Pravastatin 10-20 mg
	Simvastatin 20-40 mg	Lovastatin 20 mg
	Pravastatin 40-80 mg	Fluvastatin 20-40 mg
	Lovastatin 40 mg	
	Fluvastatin XL 80 mg	
	Fluvastatin 40 mg BID	
	Pitavastatin 1-4 mg	

Adapted from Table 12 ACC 2025 guideline ACS

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How Low Can You Go?

- "*Those with very low LDL-C concentrations are at lowest risk of MACE without any clear safety concern*"
- After maximally tolerated statin **adding a non-statin lipid-lowering** agent is recommended to further reduce the risk of MACE if **LDL >70** (Level 1A)
- Level 2A evidence for **55 to 69** mg/dL
- Rates of neurocognitive and muscle events, including hemorrhagic stroke, were not increased among patients who achieved very low LDL-C levels with PCSK9 inhibition
- Add Ezetimibe to Statin during hospitalization to reduce MACE (Level 2B)

Wiviott SD et al J Am Coll Cardiol 2005;46:1411-1416
Giugliano RP et al. Safety of low LDL Lancet 2017:390:1962-1971

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Non-Statin Treatment Options for LDL

Drug	Mechanism	LDL Lowering %	ACS Outcome Studies	Side Effects
Ezetemibe	Blocks NPC1L1 cholesterol absorption	15-20%	Yes (<10 d post ACS)	LFT
Evolocumab	Monoclonal antibody to PCSK9	60%	Established ASCVD (>1 mo post ACS)	Injection Site
Alirocumab	Monoclonal antibody to PCSK9	60%	1-12 m post ACS	Injection Site
Inclisiran	Inhibitor of PCSK9 synthesis (RNA)	50%	Trials ongoing	Injection Site
Bempedoic acid	ATP-citrate lyase inhibitor	20%	High Risk for CVD (>90 d post ACS)	Gout; gallstones; LFT

Adapted from table 11 2025 ACC guideline ACS

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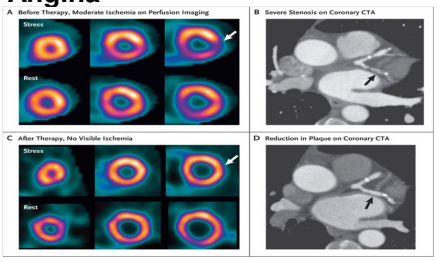
Medical Management for Chronic Stable Angina



Abhishek Keraliya, M.D., and Ron Blankstein, M.D. Regression of Coronary Atherosclerosis with Medical Therapy. N Engl J Med 2017; 376:1370

BEFORE
4 mo intermittent exertional c/p severe stenosis in circumflex artery

AFTER
Chronic stable angina treated with **high-intensity statin, ezetimibe,** B blocker, ASA, lifestyle changes incl physical activity

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ICD-10 Coding for Statin Exception

- G72.0 Drug-induced myopathy
- G72.2 Myopathy due to other toxic agents
- G72.9 Myopathy, unspecified
- M60.9 Myositis, unspecified
- M62.82 Rhabdomyolysis
- M79.1 Myalgia
- M79.10 Myalgia, unspecified site
- M79.18 Myalgia, other site

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Dual Anti Platelet Therapy (DAPT)

- 2013 DAPT guideline replaced by 2025 ACS guideline
- Still recommended 12 m post NSTEMI/ STEMI especially if PCI (1A) in patients at low risk of bleeding
- Prasugrel or Ticagrelor 12 months
- De-escalation to
  - Ticagrelor-only after 1 month (1A)
  - De escalate to Clopidogrel after 1 month (2B)
  - Either ASA or P2Y12 after 1 month if high bleeding risk (2B)
- PPI for patients at high risk of GI bleeding on DAPT or anticoagulation
- Genotyping assays that identify polymorphisms in genes involved in clopidogrel metabolism not routinely in use

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DAPT Strategies in the First 12 Months Postdischarge

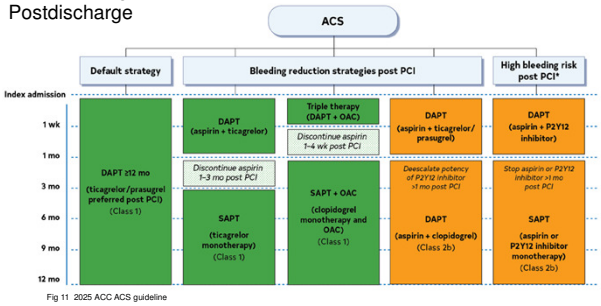

Fig 11 2025 ACC ACS guideline

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What If Patients Have PCI and Atrial Fibrillation?

- 10% of people with PCI have concomitant A. fib
- Risk of fatal and nonfatal bleeding is 4x as high as warfarin alone
- Risk of intracranial hemorrhage is 2x the risk of DAPT
- ACS who require oral
- Anticoagulant therapy, **aspirin should be d/c after 1 to 4 weeks** of triple antithrombotic therapy
- Continued use of a P2Y12 inhibitor (preferably clopidogrel) and an
- oral anticoagulant to reduce bleeding risk

Kumbhani DJ ACC A fib or VTE undergoing PCI JACC 2021

Piccine JP Jones WS, Triple Therapy for Atrial Fibrillation after PCI N Engl J Med 2017 377:16

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Anemia in ACS

- Reduced myocardial oxygen delivery
- Increased cardiac output
- Potential avoidance of beneficial antithrombotic drugs or procedures
- Targeting HB 10 rather than 7 in ACS patients
- Significant change from CABG evidence for HB = 8

Carson JL et al. Restrictive or liberal transfusion strategy in MD and anemia. N Engl J Med. 2023;389:2446-2456

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GLP1 or SGLT2i

- Dapagliflozin, and empagliflozin should be stopped ≥3 days and ertugliflozin ≥4 days prior to scheduled surgery, including CABG
- Dapagliflozin and Empagliflozin did not reduce death in patients with MI and reduced EF
- Empagliflozin did reduce admissions post MI
- SGLT-2 inhibitor does not need to be deferred in patients with an indication for its use at hospital discharge

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Colchicine

- Colchicine reduces neutrophil adhesion & HS CRP and pl low-attenuation plaque volume in patients already on aspirin and statin therapy
- Lower risk of MI in patients with gout, as well as in patients with CAD, including those with prior MI
- GI side effects much lower 0.5 or 0.6 mg once daily
- COLCOT (Colchicine Cardiovascular Outcomes Trial)
- COPS (Colchicine in Patients With ACS) study randomized patients during their index hospitalization of ACS to colchicine versus placebo

Tardif JC et al. Efficacy and safety of low-dose colchicine N Engl J Med. 2019;381: 2497-2505
Tong DC et al. Colchicine in ACS. Circulation 2020; 142:1890-1900

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Post-hospital Care

- Cardiac rehab
- Behavioral health screening
- Statin
- BP control
- Exercise prescription
- Smoking Cessation
- Diet
- Immunization
- Sexuality

Switaj, TL et al Acute Coronary Syndrome: Current Treatment. Am Fam Physician. 2017 Feb 15;95(4):232-240.

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Cardiac Rehabilitation

- Curiously, cardiologists often forget to refer
- We should ensure that patients are enrolled for this covered service
- Reinforcement of disease education and medication adherence
- Supervised exercise builds confidence and creates new habits
- Coaching on diet/smoking cessation, etc.

AdobeStock license # 1649493

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Exercise

- Adults should engage in aerobic physical activity to reduce LDL-C and non-HDL-C and to lower blood pressure
- 3-4 sessions per week lasting an average of 40 minutes per session
- Moderate-to-vigorous intensity physical activity
- Monitoring /motivational systems
  - Step counter
  - Fitbit
- Ask every patient about activity

https://www.aafp.org/patient-care/browse/all-recommendations-topic.html - Accessed April 12, 2018

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AES Question

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Question 4
How many psychiatrists does it take to change a light bulb?

A. 0
B. 1
C. 2
D. 5
E. 10

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Answer: B (One)

- People don't change until they are ready
- You are able to help them choose to change
  - By reviewing this major life event
  - By presenting the potential for longer, healthier life
  - By providing them with programs and support
  - By co-opting family

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Diet

- Low fat diet?
- Low CHO diet?
- Reduction in total calories?
- Special considerations for DM, CRF, uric acid, gluten…….. it gets complicated
- Goal: Weight reduction, lipid lowering
- DASH diet shown to lower BP 2-5 mm Hg
- Eliminate one dietary problem per month

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Smoking

- Passive primary prevention: Tobacco tax, age restriction, labeling, public smoking prohibition
- Secondary prevention:
  - Smoking cessation counseling—Family Physicians are good at this!

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PREVENT Score

The American Heart Association PREVENT™ Online Calculator

Welcome to the American Heart Association **Predicting Risk of cardiovascular disease EVENTs** (PREVENT™). This app should be used for primary prevention patients (those without atherosclerotic cardiovascular disease or heart failure) only.

- Update to the AHA/ACC Pooled Cohort Equations previously published in 2013. It now includes BMI, has expanded the age for which scores can be calculated
- Includes optional variables that better define the effect of cardiovascular-kidney-metabolic (CKM) condition (uACR)
- Diabetes, **smoking**, using statins…

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5 As

- **A**sk (“Do you smoke”?)
- **A**dvise (“Smoking will reduce your quality and length of life”)
- **A**ssess (readiness to change)
- **A**ssist (offer prescription assistance)
  - Nicotine replacement, bupropion, varenicline
- **A**rrange (follow up)

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Depression Screening

- PHQ 2
- PHQ 9
- 65% of post-MI patients with depression
- CBT, activity, rehab program
- Antidepressants: ~~TCA~~, SSRI, SNRI
- 2025 ACC ACS guideline states psychosocial discussion about depression & anxiety

AAFP Commission of Health of Public and Science, subcommittee on Clinical Practice Guidelines 2019

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Post Hospital Practice Recommendations

- **High-intensity statin** therapy is recommended for all patients younger than 75 years with stable CAD, unless contraindicated (A)
- **Beta blockers should be continued for up to three years** after myocardial infarction in patients with abnormal left ventricular function (B)
- Select patients with uncontrolled symptoms of stable CAD despite optimal medical management may benefit from coronary revascularization with **percutaneous coronary intervention or coronary artery bypass grafting**

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