



STEMI

ST-Elevation MI · Recognize → Reperfuse → Protect the myocardium

TIME IS MUSCLE
every minute counts

DIAGNOSE *the ECG decides — never wait for troponin*

ST-ELEVATION CRITERIA

New STE at the J point in **≥ 2 contiguous leads. ≥ 1 mm** in all leads except V2–V3, where it is **≥ 2 mm** (men ≥ 40 y), **≥ 2.5 mm** (men < 40 y), **≥ 1.5 mm** (women).

EQUIVALENTS — DO NOT MISS

Posterior: depression V1–V3 → get V7–V9. **New LBBB** + ischemic symptoms (apply Sgarbossa). **de Winter T** waves. **aVR elevation** + diffuse depression = left main.

TERRITORY → VESSEL

II, III, aVF inferior (RCA) — **always add V3R/V4R**. **V1–V4** anterior (LAD). **I, aVL, V5–V6** lateral (LCx). **V1–V3 depression** posterior.

REPERFUSE *the one decision that saves myocardium*

- 1 **Activate the cath lab now.** Primary PCI is preferred. Target **first-medical-contact-to-device ≤ 90 min** at a PCI center, **≤ 120 min** if transferring. **Radial access preferred over femoral** — less bleeding, fewer vascular complications, lower mortality.
- 2 **PCI not achievable within 120 min?** Give a fibrinolytic **within 30 min of arrival**, then transfer for angiography regardless of response. Fibrinolysis has **no role in NSTEMI-ACS**.
- 3 **Multivessel disease:** revascularize significant non-culprit lesions, favoring **a single procedure** over staged in the stable patient.
- 4 **Comatose after arrest with ROSC + STEMI** → EMS routes directly to a primary-PCI center.

FIBRINOLYSIS — ABSOLUTE CONTRAINDICATIONS

Any prior **intracranial hemorrhage** · ischemic stroke < 3 months · known intracranial neoplasm or AVM · suspected **aortic dissection** · active bleeding or bleeding diathesis · significant closed head/facial trauma < 3 months. *Tenecteplase single weight-based bolus is the usual agent. Reperfusion suggested by ≥ 50% ST resolution at 60–90 min.*

ANTITHROMBOTICS *load early · DAPT for 12 months by default*

Agent	Dose	Why / caution
Aspirin	162–325 mg chewed	Then 81 mg daily indefinitely. Chewed for faster absorption.
Ticagrelor	180 mg load, 90 mg BID	Preferred over clopidogrel. Dyspnea via adenosine (ENT1 inhibition). Avoid with prior ICH.
Prasugrel	60 mg load, 10 mg daily	Also preferred over clopidogrel. Contraindicated with prior stroke/TIA ; avoid if ≥ 75 y or < 60 kg.
Clopidogrel	600 mg load, 75 mg daily	Reserve for high bleeding risk, need for anticoagulation, or after fibrinolysis.
Heparin	60 U/kg bolus (max 4000)	12 U/kg/h infusion; titrate to ACT in the lab. Bivalirudin an alternative.

DAPT DURATION

Aspirin + P2Y12 for **at least 12 months** is the default when bleeding risk is not high. If high bleeding risk, shorten or de-escalate to **P2Y12 monotherapy after 1–3 months**. Never stop DAPT early after a drug-eluting stent without discussing with cardiology — stent thrombosis is often fatal.

IN-HOSPITAL MEDICAL THERAPY *start before discharge — this is where mortality is won*

Drug class	When to start	Why / when to hold
Beta-blocker metoprolol tartrate 12.5–25 mg PO	Oral within 24 h , low dose, escalate slowly	Reduces ventricular arrhythmias and reinfarction. Hold or stop if cardiogenic shock, new or worsening HF , bradycardia, or heart block. Avoid IV in unstable patients.
High-intensity statin atorvastatin 80 mg	Before discharge, in everyone	Plaque stabilization and event reduction independent of baseline LDL. Do not wait for a lipid panel.
ACE inhibitor / ARB lisinopril 2.5–5 mg	First 24 h once BP tolerates	Indicated if LVEF ≤ 40%, hypertension, diabetes, or anterior STEMI ; reasonable in everyone else. Watch Cr and K ⁺ .
MRA eplerenone 25 mg	Post-MI, after ACEi/BB established	Add if LVEF ≤ 40% with HF or diabetes . Contraindicated if K ⁺ > 5.0 or significant renal impairment.
Nitrates / morphine	Symptom control only	No mortality benefit. Nitrates contraindicated in RV infarct and with recent PDE5 inhibitor. Morphine blunts P2Y12 absorption — refractory pain only.
Oxygen	Only if SpO ₂ < 90%	Routine oxygen in the normoxic patient may increase infarct size.

CARDIOGENIC SHOCK *7–10% of ACS*

Emergency revascularization of the culprit vessel is the intervention that changes survival — do not delay it. **Do not routinely PCI non-culprit vessels** in shock. A **microaxial flow pump** is reasonable in selected patients to reduce mortality, accepting more bleeding, limb ischemia, and renal failure. **Stop beta-blockers**. Norepinephrine is the usual first-line pressor.

COMPLICATIONS *think days 2–7*

Mechanical (rarer with timely reperfusion): **VSR** — new harsh murmur + thrill, O₂ step-up RA→RV. **Papillary muscle rupture** — acute severe MR and flash edema, usually inferior MI. **Free wall rupture** — tamponade, PEA arrest. All need **emergency surgery**. **RV infarct:** hypotension + clear lungs + raised JVP → **fluids**, avoid nitrates and diuretics.

BEFORE DISCHARGE *secondary prevention is where the next 5 years are decided*

MEDICATIONS

DAPT **12 months** · high-intensity statin (**LDL < 70**, add ezetimibe ± PCSK9i if not met) · beta-blocker · ACEi/ARB · MRA if **EF ≤ 40%** with HF or DM.

REASSESS THE EF

Repeat echo. If **EF ≤ 35% at ≥ 40 days** post-MI (or ≥ 90 days post-revascularization) on optimal therapy → **refer for primary-prevention ICD**.

CARDIAC REHAB

Refer **every** patient. Reduces cardiovascular mortality and readmission. One of the most under-prescribed interventions in cardiology.

RISK FACTORS

Smoking cessation is the single highest-yield action. Control BP and diabetes, consider an **SGLT2 inhibitor** if diabetic or EF reduced.

PEARLS & PITFALLS

- **Do not delay the cath lab to "stabilize"** — reperfusion is the stabilization.
- A normal first troponin never excludes STEMI. The ECG is the decision tool.
- Isolated ST depression V1–V3 is posterior STEMI until posterior leads say otherwise.
- **Nitrates in RV infarct cause profound hypotension** — the RV is preload-dependent. Give fluids.
- Beta-blockers early are good; beta-blockers in shock are harmful. Assess perfusion first.
- Every patient leaves on **DAPT + statin + beta-blocker + ACEi**, plus cardiac rehab referral.

