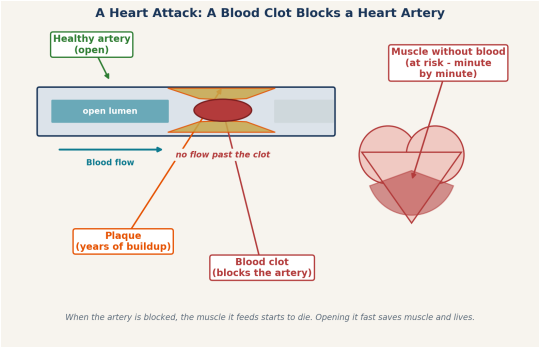
Heart Attack

STEMI, NSTEMI & Unstable Angina - the ACS spectrum

If it might be a heart attack, dial 911. Minutes save heart muscle.



Online: https://go.riasalimd.com/acs-guide

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Names & Terms You Will Hear

Term	Meaning
Heart attack (myocardial infarction, MI)	Heart muscle is injured because a heart artery loses its blood supply. The 'medical' name is myocardial infarction.
Acute coronary syndrome (ACS)	An umbrella name for a sudden, dangerous drop in blood flow to the heart. ACS includes unstable angina, NSTEMI, and STEMI.
STEMI	ST-elevation MI. The classic 'big' heart attack - the ECG shows a pattern that points to a fully blocked artery. Needs the artery opened right away.
NSTEMI	Non-ST-elevation MI. A heart attack where the ECG does not show the classic STEMI pattern, but blood tests show heart-muscle injury.
Unstable angina	Chest pain that is new, happens at rest, or is getting worse - and the blood tests do not yet show muscle injury. A warning sign that needs urgent care.
OMI (occlusive MI)	Newer thinking that asks whether the artery is fully blocked, even when the ECG does not show the classic STEMI pattern. If yes, the artery should be opened right away.
Troponin	A blood test that rises when heart muscle is injured. It is the main blood test used to diagnose a heart attack and is often repeated over hours.
Plaque rupture	A buildup in the artery wall, called plaque, breaks open. Blood clots form on top, blocking the artery. This is the most common cause of a heart attack.
Primary PCI	Percutaneous coronary intervention. A thin tube is threaded to the heart artery and a balloon and stent open the blockage. The first-choice treatment for STEMI.
Fibrinolysis (clot-busting medicine)	A medicine that dissolves the clot. Used when a cath lab cannot be reached quickly enough for primary PCI.

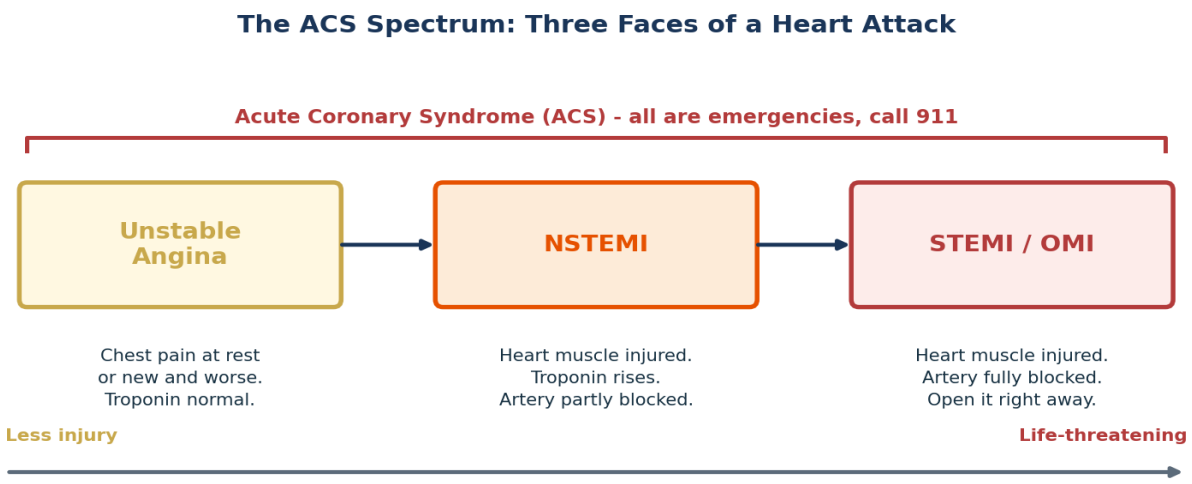
Term	Meaning
Stent	A small mesh tube placed in the artery to keep it open after the blockage is cleared. Most are drug-coated to help keep them open.
Cath lab (cardiac catheterization lab)	The hospital room where angiograms and stents are done. Most heart attacks are treated here.
DAPT (dual antiplatelet therapy)	Two blood-thinning pills - aspirin plus a second drug - used together after a stent or heart attack to keep new clots from forming.
Cardiac rehab	A supervised program of exercise, education, and counseling after a heart attack. It lowers the chance of another event.

Call 911 now if you have chest pressure, tightness, or pain that lasts more than a few minutes - or that goes away and comes back. Call right away if it comes with shortness of breath, a cold sweat, nausea, or pain spreading to the arm, jaw, neck, or back. **Do not drive yourself.** An ambulance can start treatment immediately and can restart the heart if it stops.

The heart can be the problem even without chest pain. Shortness of breath; discomfort in the jaw, neck, arm, or upper back; nausea; a cold sweat; or sudden, unusual tiredness can all be the only signs of a heart attack. These are more common in women, older adults, and people with diabetes. When in doubt, get checked.

Heart Attack?

- A heart attack means heart muscle is being injured because one of the heart's arteries has lost its blood flow.
- The most common cause is a buildup in the artery wall, called plaque, that breaks open. A clot forms on top and blocks the artery.
- Symptoms often include chest pressure, tightness, or pain, but they can also be shortness of breath, nausea, a cold sweat, or pain in the arm, jaw, neck, or back.
- Some heart attacks have no chest pain at all. Women, older adults, and people with diabetes more often have these less-typical signs.
- Doctors confirm a heart attack with an ECG and a blood test called troponin. Both are usually checked more than once.
- Treatment is aimed at opening the blocked artery as quickly as possible - usually with a stent in the cath lab.



Heart attacks sit on a spectrum. All three forms are emergencies - the differences guide how fast and which way the team acts.

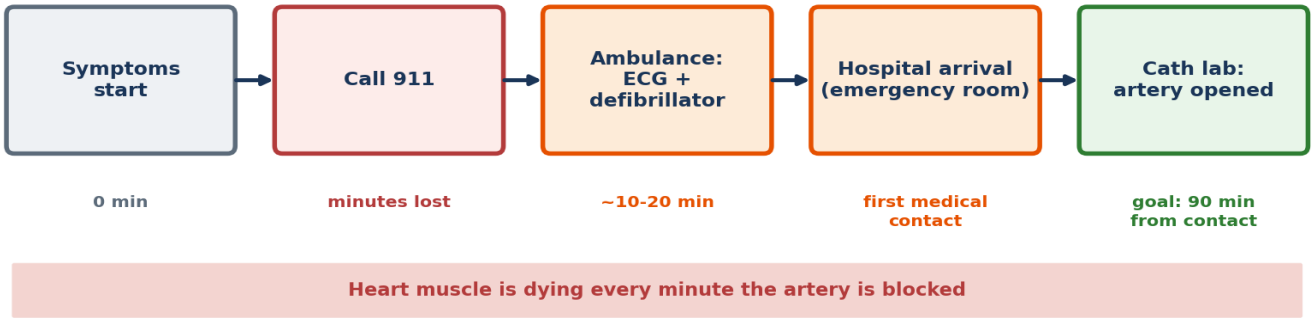
When Every Minute Counts - The First Hour After Symptoms

- The first hour after symptoms is when the most muscle can still be saved - and when cardiac arrest is most likely.
- Calling 911 starts the chain - paramedics begin treatment on the way and can use a defibrillator if the heart stops.
- If you can chew an aspirin (and you are not allergic), do so only if 911 or your clinician tells you to. Do not wait for them to call back.
- Sit or lie down somewhere safe and unlock the door so help can reach you.
- Do not drive yourself, even if the pain eases. A heart attack can suddenly become cardiac arrest.

Why It Matters

- Heart muscle starts to die within minutes of an artery being blocked. The longer the wait, the more muscle is lost.
- Most heart-attack deaths happen before the person reaches a hospital, often from a sudden dangerous heart rhythm called cardiac arrest.
- Calling 911 is safer than driving. The ambulance team can start treatment, do an ECG, and use a defibrillator if the heart stops.
- When a fully blocked artery is opened within the first 90 minutes of hospital contact, more heart muscle is saved and survival improves.
- After a heart attack, the right medicines and cardiac rehab lower the chance of another one. The recovery plan is as important as the rescue.

Time Is Muscle: From Symptoms to an Opened Artery



The clock starts when symptoms begin. Calling 911 starts the treatment chain. The goal: a STEMI artery opened within 90 minutes of hospital contact.

Why STEMI Goes Straight to the Cath Lab

- A STEMI means the ECG points to a fully blocked artery. Heart muscle dies fast.
- The fastest way to open the artery is in the cath lab - this is called primary PCI.
- The target is 90 minutes from first hospital contact to artery opening. Sooner is better.
- When a cath lab is far away, a clot-busting medicine (fibrinolysis) is given first, then transfer for cath.
- Some heart attacks that do not meet STEMI on the ECG still mean the artery is fully blocked - the OMI concept. The team uses ECG patterns plus your symptoms and trends.

Risk Factors

Some patients are more likely to develop this condition. Knowing your risk helps your care team take extra precautions.

Risk Factor	Why It Increases Risk
High blood pressure	Years of high pressure damage the artery wall and speed up plaque buildup.
High cholesterol	Cholesterol drives plaque growth inside the artery wall. Higher levels for longer mean more buildup.
Smoking and vaping	Tobacco and nicotine injure artery linings, raise blood pressure, and make clots form more easily.
Diabetes	Diabetes speeds up artery disease and can dull warning pain, so an attack may feel mild or be silent.
Family history of early heart disease	A parent or sibling with heart disease before age 55 (men) or 65 (women) raises your own risk.
Obesity and inactivity	Both raise blood pressure, cholesterol, and blood sugar - all of which damage arteries.
Older age	Risk rises with age in both men and women. Symptoms in older adults are more often vague.
Cocaine or other stimulant use	Stimulants can trigger artery spasm or a heart attack, even in young people with otherwise healthy arteries.

STEMI vs NSTEMI vs Unstable Angina - How the Care Team Sorts Them

Type	ECG pattern	Troponin blood test	Usual first move
STEMI	Classic ST elevation - points to a fully blocked artery	Rises within hours	Cath lab right away - aim for under 90 minutes from arrival
NSTEMI	May look near-normal, or show changes other than ST elevation	Rises - confirms muscle injury	Cath lab usually within 24-72 hours - sooner if higher risk
Unstable angina	May look near-normal	Normal - no muscle injury yet	Watched in hospital, tests over hours; cath if higher risk
OMI - newer lens	May not meet STEMI criteria, but the artery is fully blocked	Often rises	Cath lab right away - treated like a STEMI

Risk Tiers After Arrival - How the Care Team Decides How Fast

Lower risk

- Symptoms mild and improving
- Troponin not rising; ECG near-normal
- Usually watched and tested before cath

Intermediate risk

- Troponin rises but patient is stable
- Usually goes to the cath lab within 24-72 hours
- Medicines start right away

Higher risk / STEMI

- STEMI on ECG, or ongoing chest pain at rest
- Goes straight to the cath lab
- Goal: artery opened within 90 minutes

Treatment Options

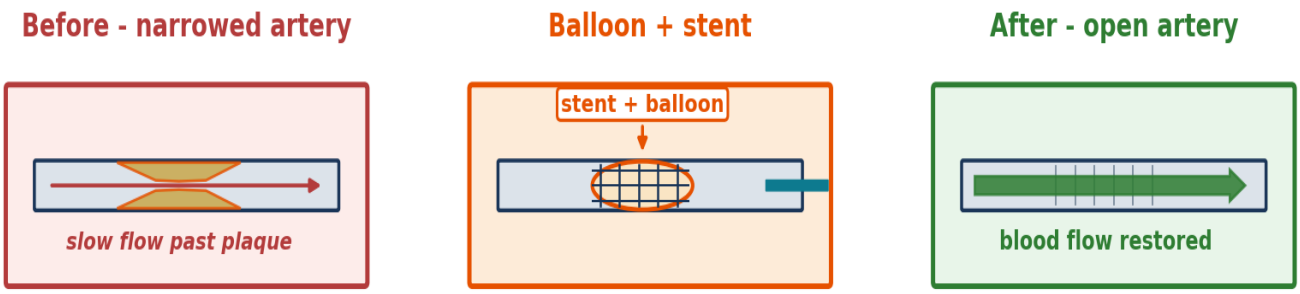
- Call 911 first. The ambulance team can start treatment on the way and use a defibrillator if the heart stops.
- In the emergency room, the team does an ECG within 10 minutes and checks a troponin blood test.
- For a STEMI, the goal is to open the blocked artery in the cath lab within 90 minutes of hospital contact. This is called primary PCI.
- When a cath lab is not nearby, a clot-busting medicine called fibrinolysis is given - the patient is then moved to a cath-lab hospital.
- For NSTEMI and unstable angina, most patients go to the cath lab within 24 to 72 hours - sooner if they are higher risk.
- After the artery is opened, two blood-thinning pills are given together for months. Other medicines protect the heart for the long run.
- Cardiac rehab starts in the weeks after going home. It is one of the most powerful treatments for the long run.

Inside the Cath Lab: How a Blocked Artery Is Opened

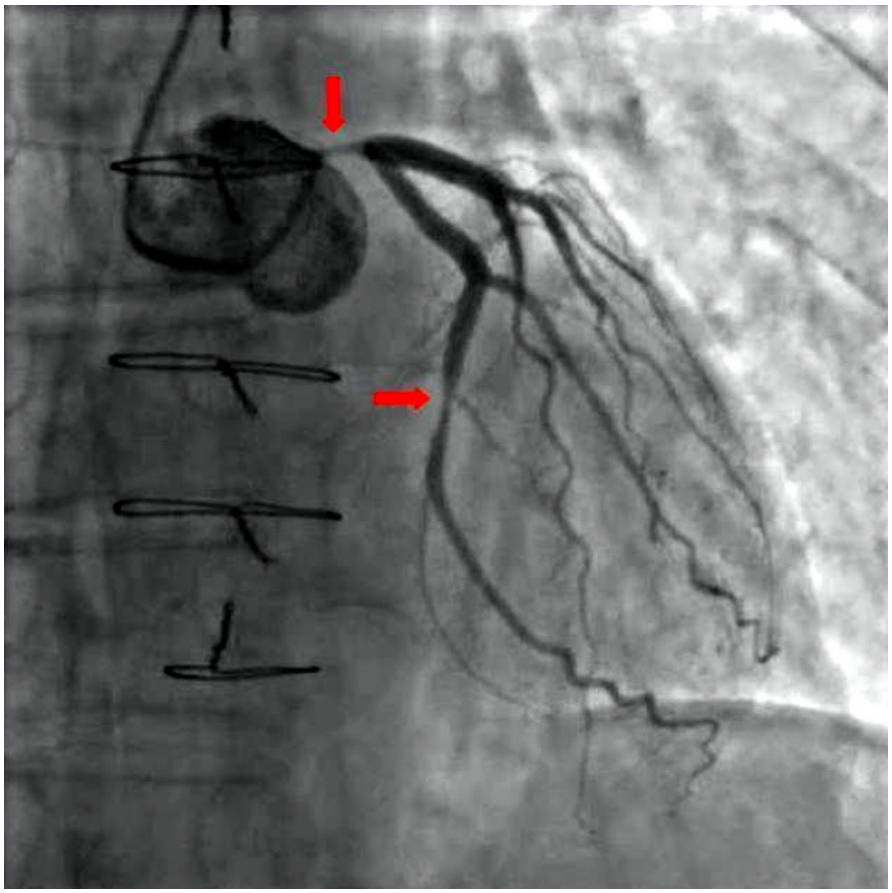
Most patients are awake. The whole procedure usually takes 30 to 90 minutes.

Most heart attacks are treated in the cath lab. Most patients are awake. Local numbing means the wrist or groin entry is not painful.

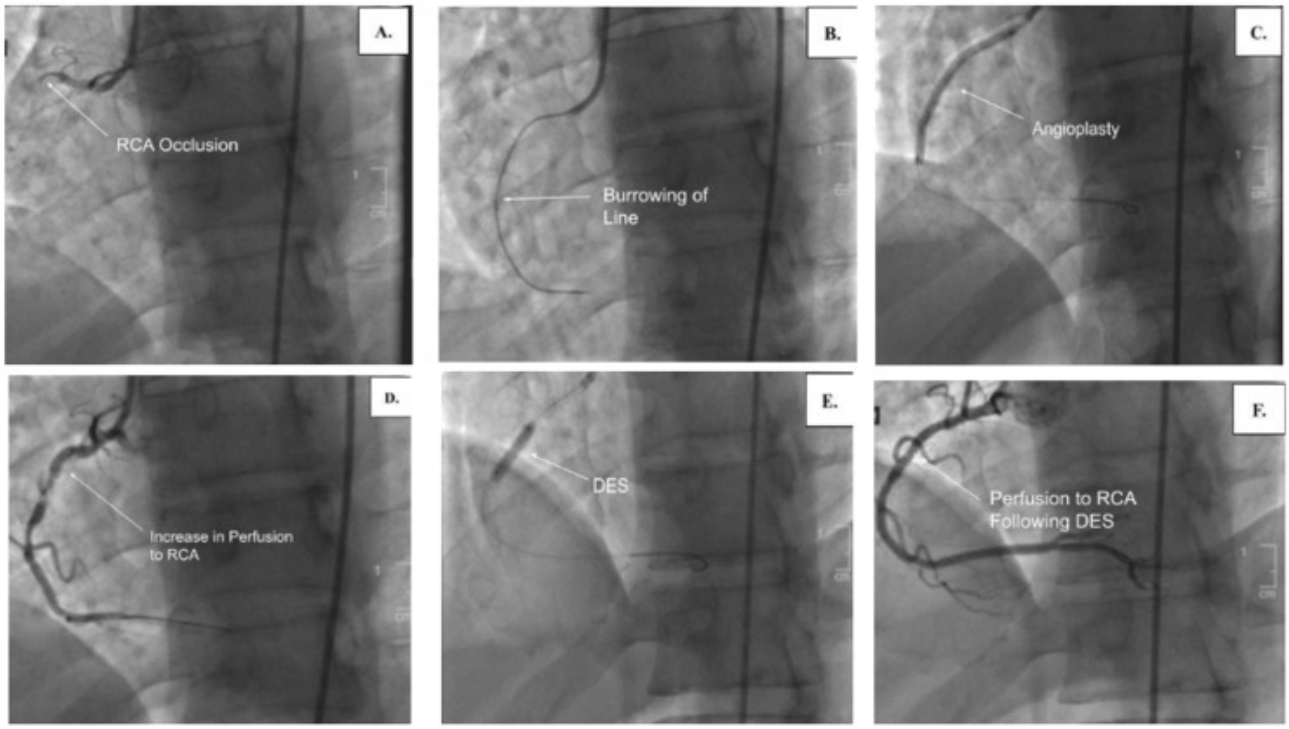
How a Stent Opens a Blocked Heart Artery



The three steps of opening a blocked artery: a narrowed segment with slow flow; a balloon and stent expanded inside the lesion; the artery now open with the stent holding the wall in place.



A real coronary angiogram showing a high-grade narrowing in a heart artery - the same kind of lesion the cath-lab team treats during a heart attack. Image credit: Pantaleo et al. via Wikimedia Commons (CC BY 2.0).



A real six-panel angiogram sequence from an actual procedure: (A) the blocked artery, (B) the wire crossing the blockage, (C) the balloon opening it, (D) blood flow returning, (E) the drug-eluting stent (DES) being placed, and (F) full blood flow restored after the stent is in. Image: Celebi TB et al., Cureus 2025 (CC BY 4.0).

Medicines Most People Take After a Heart Attack

Medicine	What it does	Why we use it
Aspirin (low dose)	Makes blood platelets less sticky	Lowers the chance of a new clot - taken for life
Second blood-thinning pill (P2Y12 inhibitor)	Adds a second brake on platelets	Combined with aspirin for 6-12 months to keep the stent open
High-intensity statin	Lowers LDL cholesterol and calms artery inflammation	Lowers the chance of another heart attack and death
Beta-blocker	Slows the heart and lowers blood pressure	Protects the healing heart muscle, especially when it has been weakened
ACE inhibitor or ARB	Lowers blood pressure and protects the heart's pumping	Most helpful when the heart has been weakened by the attack
Nitroglycerin (as needed)	Relaxes heart arteries to ease chest discomfort	For occasional angina-like symptoms after the attack

What Happens in the Cath Lab

- Most heart attacks are treated in the cath lab. Most patients are awake.
- Local numbing means the entry at the wrist (preferred) or groin is not painful.
- A thin tube is threaded up to the heart artery. Dye injected into the artery shows the blockage on x-ray.
- A balloon presses the plaque against the wall, and a small mesh tube called a stent holds it open.
- Most stents today are drug-coated, which lowers the chance of the artery narrowing again.
- If there are several blockages, the team often opens the most dangerous one first and plans to fix the others later.

After the Heart Attack - Medicines + Cardiac Rehab

- The medicines are not optional - each one cuts the risk of another heart attack in a different way.
- Two blood-thinning pills (aspirin plus a second drug) are taken together for 6 to 12 months after a stent.
- A high-intensity statin lowers LDL cholesterol and calms artery inflammation - planned for the long run.
- A beta-blocker protects the healing heart, especially when the muscle has been weakened.
- Cardiac rehab is a 12-week supervised program - exercise, education, mood support, and medicine tuning - that lowers the chance of another event.
- Tell us about any new chest pain, shortness of breath, bleeding, or trouble paying for the medicines. All can be solved when we know.

Special Groups - Heart Attacks That Look Different

- Women more often have nausea, shortness of breath, or back and jaw discomfort. A torn artery, called SCAD, is an important cause in younger women.
- Older adults often have vague symptoms - confusion, weakness, or breathlessness rather than chest pain.
- People with diabetes may feel little pain, so a heart attack can be mild or 'silent.'
- Cocaine, methamphetamine, and other stimulants can trigger artery spasm or a heart attack in young, otherwise healthy people.
- A strong family history of early heart disease is a reason to take new symptoms seriously and be checked sooner.

Heart Attack Is Part of a Bigger Picture - Where to Read Next

- A heart attack happens when something has been going wrong in the heart's arteries for a while. We have separate guides for each piece.
- How chest pain is sorted out: see the Chest Pain guide.
- Blocked-artery disease itself: see the Coronary Artery Disease guide.
- Chest pain that comes with effort but is not a heart attack yet: see the Stable Angina guide.
- What a stent is and what to expect: see the Angioplasty and Stents guide.
- Artery spasm as a less common cause: see the Coronary Vasospasm guide.
- A torn artery (more often in younger women): see the SCAD guide.
- When the heart suddenly stops: see the Sudden Cardiac Arrest guide.
- Fast or chaotic rhythms from the lower heart: see the Ventricular Tachycardia and Fibrillation guide.
- If a top-chamber rhythm came with the attack: see the Atrial Fibrillation guide.
- A clot in the lung that can mimic a heart attack: see the Pulmonary Embolism guide.
- Chest pain from the heart's lining (not a heart attack): see the Pericarditis guide.

The stent is the rescue. The recovery is the rest. Taking the medicines every day and finishing cardiac rehab are the parts that keep the next heart attack from happening. People who do both have the best long-term results.

Risks, Benefits, and Alternatives

Every choice has trade-offs. Use this table to start the shared decision conversation.

Option	Risks	Benefits	Alternatives
Calling 911 instead of driving yourself	An ambulance trip has a cost. You may be checked and sent home if it is not a heart attack.	If it is a heart attack, treatment starts on the way. A defibrillator can restart the heart if it suddenly stops. The cath lab is alerted before you arrive.	Driving yourself, or having someone drive you, is unsafe when the heart might stop.
Primary PCI (stent in the cath lab) for STEMI	Small risks from the procedure: bleeding from the wrist or groin, a dye reaction, vessel injury, and rarely stroke or kidney strain.	Opens a fully blocked artery quickly. Saves more heart muscle and improves survival when done within 90 minutes of hospital contact.	Clot-busting medicine (fibrinolysis) when a cath lab cannot be reached quickly. Then transfer to a cath-lab hospital.
Early-invasive strategy (angiogram, often with a stent) for higher-risk NSTEMI	Procedure risks as above. Some patients are stable enough to wait and be tested first.	Finds and opens the responsible artery early. Lowers death and complications in higher-risk patients.	Ischemia-guided strategy: medicines first, with cath only if symptoms or tests show the heart is still at risk.
Dual antiplatelet therapy (DAPT) for 6 to 12 months after a stent	Higher bleeding risk - gum bleeding, bruising, and, more rarely, serious bleeding in the stomach or brain.	Keeps the stent open and lowers the chance of another heart attack in the months after a stent.	A shorter course in patients at higher bleeding risk, or single-agent therapy after the first months.

Option	Risks	Benefits	Alternatives
Cardiac rehab after a heart attack	Takes time - usually 12 weeks of sessions. Some patients feel nervous about exercising at first.	Lower risk of another heart attack and death. Patients feel stronger, sleep better, and are more confident returning to normal life.	A home program with our team, if formal rehab is not available - less effective but better than no rehab.

Common Misconceptions

Myth	Reality
A heart attack always means crushing chest pain.	Many heart attacks are mild, slow to build, or cause no chest pain at all. Shortness of breath, sweating, nausea, or jaw and arm pain can be the only signs.
Young, fit, or thin people do not have heart attacks.	They can. Family history, cholesterol problems, smoking, vaping, stimulant use, and a torn artery (called SCAD) all cause heart attacks in younger patients.
If the pain stops, I can wait and watch.	The pain can stop on its own and the artery can still be in trouble. New or severe symptoms that come and go still need 911.
I should drive myself, or have someone drive me, to the ER.	Call 911. The ambulance can begin treatment on the way and can restart the heart with a defibrillator if it stops.
If my ECG looks normal, my heart is fine.	One normal ECG does not rule out a heart attack. The team often needs blood tests and repeat ECGs over a few hours - and an NSTEMI can have a near-normal ECG.
Women have the same heart-attack signs as men.	Women more often have nausea, shortness of breath, unusual tiredness, and back or jaw discomfort. Heart attacks in women are more often missed at first.
Cardiac rehab is just exercise I can do on my own.	Rehab adds supervised exercise, blood-pressure checks, medication tuning, education, and counseling. It lowers death and rehospital admissions - on-your-own exercise does not match that.
Once the stent is in, I am done.	The stent is the rescue. The recovery is the medicines, rehab, and lifestyle that keep the next attack from happening.

Possible Complications

Knowing what can go wrong helps you spot problems early. Most complications are uncommon, especially with treatment.

Where / What	What Can Happen
Sudden cardiac arrest	A heart attack can trigger a chaotic rhythm that stops the heart from pumping. It is the main cause of death before reaching a hospital - and the reason to call 911 right away. The timing windows below explain how risk changes over hours and days.
Peri-infarct ventricular tachycardia or fibrillation (VT/VF)	Very fast or chaotic rhythms come from heart muscle that has just been injured. The team treats them in the hospital with a shock from a defibrillator and medicines, and watches the rhythm closely.
Acute heart failure and pulmonary edema	When a large area of muscle is injured, the heart cannot keep up. Fluid backs up into the lungs and causes severe shortness of breath. This is treated in the hospital with oxygen, water pills, and medicines that help the heart pump.
Chronic heart failure (HFrEF) after the attack	Permanent muscle loss can leave the heart weaker for the long run. Medicines, devices, and cardiac rehab help most patients live well with it.
Mechanical complications (valve, septum, wall)	Rarely, a heart attack damages the heart's structure - a valve, the wall between chambers, or the outer wall. These are emergencies. See the mechanical-complications table below.
A blood clot inside the heart	When a large area of muscle is hurt, blood can pool and form a clot. The clot can travel to the brain and cause a stroke - blood thinners protect against this.
Depression and anxiety after the attack	Mood changes after a heart attack are common and treatable. They are part of the recovery, not a sign of weakness.

Mechanical Complications of a Heart Attack - Rare but Time-Critical

Complication	Typical timing	What happens	What is done
Acute mitral regurgitation (valve leak)	Hours to first week	A small muscle that holds the mitral valve loses blood supply and tears, causing the valve to leak suddenly	Urgent surgery or repair; support with medicines and short-term devices
Post-infarct ventricular septal defect (hole between chambers)	Days 2-7	A hole forms between the heart's two pumping chambers, mixing blood and dropping pressure	Urgent surgery; sometimes catheter-based closure
Free wall rupture / pseudoaneurysm	Days 1-7	The outer wall of the heart tears and blood leaks into the sac around the heart	Life-threatening; emergency surgery
Left ventricular aneurysm	Weeks to months	A scarred segment of muscle bulges outward and pumps poorly	Medicines; blood thinners; rarely surgery to remove the aneurysm

Sudden Cardiac Arrest - Why the Time Window Matters

- Cardiac arrest means the heart stops pumping. Without a shock or CPR, the brain runs out of oxygen in minutes.
- Most deaths from a heart attack happen before reaching the hospital. The first hour is the highest-risk window.
- **Pre-hospital window (before reaching the ER):** the most dangerous. Calling 911 brings an ambulance with a defibrillator. Bystander CPR and a public AED can keep the brain alive until help arrives.
- **In-hospital window (during care):** the heart is monitored every second. If a dangerous rhythm starts, the team can shock the heart back to normal in seconds.
- **Before-discharge window (the first days in the hospital):** risk drops as the heart heals. Some patients need a wearable defibrillator or a small implanted device (ICD) before going home if the heart pumping is very weak.
- **After-discharge window (weeks to months later):** risk is much lower with the right medicines and cardiac rehab. Tell us right away about any fainting, near-fainting, or sudden racing-heart episodes.

Ventricular Tachycardia and Fibrillation - Why the Hospital Watches the Rhythm

- Ventricular tachycardia (VT) and ventricular fibrillation (VF) are fast or chaotic rhythms that come from the heart's lower pumping chambers.
- During or right after a heart attack, the injured muscle can fire abnormal signals - this is where most peri-infarct VT and VF starts.
- VT is fast and unsteady - the heart may still pump a little, but blood pressure can crash. VF is fully chaotic - the heart cannot pump at all, and this is cardiac arrest.
- The hospital team treats both with electricity (a defibrillator) and medicines that calm the rhythm. Quick treatment usually restores a normal beat.
- A small number of patients need a permanent implanted defibrillator (ICD) before going home if the heart pumping stays very weak or the rhythm comes back.
- For the full story on these rhythms, see the dedicated Ventricular Tachycardia and Fibrillation guide.

Points to Know

If you remember nothing else, remember these key points.

- Chest pressure, tightness, or pain that lasts more than a few minutes - call 911. Do not drive.
- Heart attacks can feel like shortness of breath, nausea, a cold sweat, or pain in the arm, jaw, neck, or back. These count too.
- Women, older adults, and people with diabetes more often have these less-typical signs.
- Chew an aspirin only if 911 or your clinician tells you to.
- The team aims to open a blocked STEMI artery within 90 minutes of hospital contact. Minutes save muscle.
- After a heart attack, take your medicines every day and start cardiac rehab. Both lower the chance of another event.
- Tell us right away about any new or returning chest pain, shortness of breath, or a feeling that 'something is wrong.'

When to Call Us - and When to Call 911

If you are not sure, call. We would rather hear from you twice than miss a real problem.

- Chest pressure, tightness, or pain that lasts more than a few minutes, or that goes away and comes back - call 911.
- Chest discomfort with shortness of breath, sweating, nausea, or pain spreading to the arm, jaw, neck, or back - call 911.
- Sudden, severe shortness of breath, fainting, or a fast or irregular heartbeat with chest discomfort - call 911.
- After a heart attack: new chest pain, shortness of breath at rest, leg swelling, or unusual fatigue - call 911 or come in the same day.
- Bleeding that will not stop, black or bloody stools, or coughing up blood while on blood thinners - call us right away.
- Missed doses of your heart-attack medicines, or trouble paying for them - call our office so we can adjust the plan.
- Questions about cardiac rehab, return to work, sex, or exercise - call us; these are normal and important.

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Trusted Resources

The links below are the trusted resources Dr. Ali used to write this guide and that he recommends you visit for more information. Each is a clickable link in the digital version and a Short.io tracked URL on the printed version.

- American Heart Association - Heart Attack Symptoms - Plain-language list of heart-attack warning signs, including the less-typical ones.
- Cleveland Clinic - Heart Attack - Patient-friendly overview of what a heart attack is, how it is treated, and what recovery looks like.
- Mayo Clinic - Heart Attack - Symptom-focused overview, risk factors, and lifestyle measures after a heart attack.
- NHLBI - What Is a Heart Attack? - US National Heart, Lung, and Blood Institute overview of heart-attack causes, diagnosis, and treatment.
- MedlinePlus - Heart Attack - US National Library of Medicine overview of heart-attack symptoms and what to do next.
- AHA - Cardiac Rehabilitation - Why cardiac rehab matters and what to expect from a 12-week program.

Sources Used to Build This Guide

Every recommendation in this guide is grounded in one or more of the studies, guidelines, or trusted resources below. Short links are tracked so Dr. Ali can see which references patients are reading; nothing personally identifying is captured.

- 2025 ACC/AHA/ACEP/NAEMSP/SCAI Guideline for the Management of Patients With Acute Coronary Syndromes (Rao et al., Circulation 2025; PMID 40014670) *[Guideline]*
  Primary framework for the 2025 unified ACS guideline - STEMI primary PCI within 90 minutes of first medical contact, NSTEMI early-invasive timing, DAPT duration, and lipid-management targets.
- 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization (Lawton et al., Circulation 2022; PMID 34882435) *[Guideline]*
  Revascularization choices in ACS: primary PCI vs fibrinolysis, radial vs femoral access, and complete vs culprit-only revascularization in STEMI.
- Fourth Universal Definition of Myocardial Infarction (Thygesen et al., Circulation 2018; PMID 30571511) *[Guideline]*
  How heart attack is defined - troponin rise/fall plus clinical evidence of ischemia - and the type 1 vs type 2 MI distinction.
- OMI Manifesto / Occlusion MI paradigm (Meyers HP, Smith SW; the OMI Manifesto) *[Clinical Concept]*
  The newer OMI vs NOMI lens - some non-STEMI ECGs still represent an occluded artery that benefits from emergent reperfusion. Frames the 'newer thinking' synonyms entry.
- American Heart Association - Heart Attack Symptoms *[Patient Education]*
  Plain-language list of heart-attack warning signs, including atypical patterns in women, older adults, and people with diabetes.
- Cleveland Clinic - Heart Attack (Myocardial Infarction) *[Patient Education]*
  Patient-voice framing of MI causes, symptoms, treatment, and cardiac rehab. Re-verified statistics against PubMed sources.
- Mayo Clinic - Heart Attack *[Patient Education]*
  Patient-voice explanation of heart-attack types, risk factors, and the 'time is muscle' urgency message.
- NHLBI - What Is a Heart Attack? *[Patient Education]*
  Federally-sourced overview of heart attack diagnosis, treatment, and recovery, with cardiac-rehab framing.
- MedlinePlus - Heart Attack *[Patient Education]*
  US National Library of Medicine consumer overview of heart-attack symptoms and emergency response.
- Effect of Door-to-Balloon Time on Mortality in Patients With ST-Segment Elevation Myocardial Infarction (Rathore et al., BMJ 2009; PMID 19454739) *[Clinical Study]*
  Evidence base for the door-to-balloon target and the 'minutes matter' message in primary PCI for STEMI.
- Cardiac Rehabilitation and Survival in Older Coronary Patients (Suaya et al., JACC 2009; PMID 19463511) *[Clinical Study]*
  Evidence that cardiac rehab participation after MI reduces mortality - supports the post-MI rehab recommendation.

About This Guide

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Reviewer note: Reviewed against the AHA heart-attack page, the Cleveland Clinic Heart Attack page, and Mayo Clinic's heart-attack overview. Ours adds: a plain-language map of the STEMI / NSTEMI / unstable-angina spectrum, the time-is-muscle timeline, an inside-the-cath-lab flow, a clear risk-tier card set, an RBA table for primary PCI vs fibrinolysis and for early-invasive vs ischemia-guided NSTEMI care, and a separate after-the-attack section that names the medications and cardiac rehab as part of the same plan.

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