MERCOLA
Take Control of Your Health

What Is the Difference Between a Heart Attack and Cardiac Arrest?

Analysis by Dr. Joseph Mercola | November 07, 2024

STORY AT-A-GLANCE

- Heart attacks and cardiac arrests are often referred to interchangeably, but they're two distinct cardiovascular events. A heart attack is a circulation problem, while cardiac arrest is an electrical issue in the heart
- Heart attacks occur when blood flow to the heart is blocked, usually due to plaque buildup. Cardiac arrest happens when the heart's electrical system malfunctions, causing it to stop beating
- Heart attack symptoms include chest pain, shortness of breath and nausea. Cardiac arrest typically occurs without warning, causing sudden collapse, unconsciousness and cessation of heartbeat
- If you encounter someone nearby experiencing a cardiovascular emergency, call your local emergency services immediately. It's important to act swiftly, as delayed response leads to severe complications and even death
- Additional strategies for protecting your heart health and reducing the risk of these cardiovascular events are included below

The terms "heart attack" and "cardiac arrest" are often used interchangeably, but they refer to two distinct cardiovascular events that have significantly different causes and outcomes. As the American Heart Association (AHA) explains, "A heart attack is a 'circulation' problem and sudden cardiac arrest is an 'electrical' problem."[1]

According to the U.S. Centers for Disease Control and Prevention (CDC), approximately 805,000 Americans experience a heart attack each year, with 605,000 being first-time incidents.[2] In comparison, more than 356,000 out-of-hospital cardiac arrests occur annually in the U.S.[3] While around 60% of heart attack patients survive, the survival rate drops dramatically to about 5% to 10% for those who experience cardiac arrest outside a hospital setting.[4]

Understanding the difference between these cardiovascular events is not about semantics — it's a matter of life and death. Recognizing which condition is happening allows you to take swift, appropriate action, increasing the chances of survival for a loved one or even a stranger in those crucial first minutes before medical help arrives.

What Is a Heart Attack and What Causes It?

The heart is a muscular organ that functions as a pump, circulating blood throughout the body and delivering essential oxygen and nutrients to all tissues. Like all muscles, it needs a steady supply of blood to function properly. It has its own electrical system that allows it to beat continuously, as long as it receives an adequate supply of oxygen.[5]

A key difference between a heart attack and cardiac arrest lies in their causes. A heart attack, or myocardial infarction, occurs when blood flow to the heart is blocked. In about 75% of patients,[6] this is typically caused by a buildup of plaque in the coronary arteries (atherosclerosis). This blockage prevents oxygen-rich blood from reaching a portion of the heart muscle, leading to damage or death of the heart tissue.

Atherosclerosis develops gradually and often goes unnoticed. Risk factors that contribute to this process include high blood pressure, poor dietary choices, diabetes, stress and genetic predispositions. It could also be caused by spasms in the coronary arteries that constrict blood flow, as well as chest trauma or other factors that disrupt blood supply to the heart muscle.[7]

Understanding Cardiac Arrest and Its Causes

On the other hand, cardiac arrest occurs when there's an electrical malfunction in the heart, causing an irregular heartbeat (arrhythmia) that disrupts its pumping function.[8] There are different arrhythmias or patterns of heart activity that lead to cardiac arrest:

- **Ventricular tachycardia —** This happens when the heart's lower chambers (ventricles) beat too fast, making it hard for the heart to pump blood effectively, eventually leading to cardiac arrest.[9]
- **Ventricular fibrillation —** This occurs when the ventricles quiver (fibrillate) instead of pumping blood, which causes the heart to stop completely.[10]
- **Pulseless electrical activity (PEA) —** This is characterized by the inability of the heart to pump enough blood despite having electrical activity, resulting in the absence of a detectable pulse.[11]
- **Asystole —** Often referred to as "flatline," asystole means there's no electrical activity in the heart at all.[12]

Ischemic heart disease, particularly heart attacks, is the leading cause of cardiac deaths in the U.S., accounting for 70% of all cases.[13] However, while heart attacks can lead to cardiac arrest, not every heart attack results in this outcome.

Conversely, cardiac arrests occur without a preceding heart attack, often due to pre-existing heart conditions or other factors affecting the heart's electrical system, including congenital heart disease, trauma, electrical shock and drug overdose.[14]

What Are the Telltale Signs of These Cardiovascular Events?

The most immediately recognizable difference between a heart attack and cardiac arrest is that a heart attack victim remains conscious with a beating heart, while someone experiencing sudden cardiac arrest will be unconscious and have no detectable heartbeat.[15,16] Heart attacks also present a range of other symptoms, including:[17,18]

Chest pain or discomfort	Shortness of breath	Nausea

Lightheadedness	General sense of anxiety	Dizziness
Heart palpitations	Trouble breathing	Chest tightness
Pressure or pain in the chest or abdomen	Sweating	Discomfort or pain in one or both arms spreading to your upper back, neck or jaw

It's important to note that not all heart attacks present the "textbook" symptoms of chest pain or shortness of breath. **Women, in particular, are more likely to experience atypical symptoms** such as fatigue and nausea, while men often exhibit the more classic signs, including chest pain.[19]

Additionally, some individuals notice subtle symptoms in the days or weeks leading up to a heart attack, with some even beginning a year in advance. Known as prodromal symptoms, these are more prevalent in females than males and include:[20]

- Feeling tired or unusually fatigued
- Sleep disturbance
- Anxiety
- Shortness of breath
- Arm, back or chest pain

Unlike heart attacks, cardiac arrests typically occur without warning. A person experiencing cardiac arrest will collapse and become unresponsive within seconds. Without immediate treatment, death occurs within minutes. However, some individuals experience the following symptoms prior to the event:[21]

Fatigue	Dizziness

Shortness of breath	Nausea
Chest pain	Heart palpitations (fast or pounding heartbeat)
Loss of consciousness	

What to Do if Someone's Having a Heart Attack or Cardiac Arrest

By taking quick and decisive action, you can save a life in case you encounter someone having a heart attack or cardiac arrest. The first step is to call your local emergency medical services (EMS) immediately (dial 911 in the U.S.) and follow any instructions given by the dispatcher while waiting for help to arrive. Don't wait or hesitate — time is crucial during a cardiac emergency, as delayed response leads to severe complications or even death.

In case of a heart attack, if the individual is conscious, encourage them to sit down, rest and remain calm until paramedics arrive. Giving them aspirin also helps, as it thins the blood, prevents blood clots and improves blood flow to the heart. However, make sure they're not allergic to aspirin or on any medications that would make taking it dangerous.[22,23]

In cases of cardiac arrest, immediate action is even more important. If the person is unresponsive and not breathing, look for the nearest automated external defibrillator (AED), which is used to deliver an electrical shock to the heart and restore its normal heart rhythm. These devices are required by law in many public spaces, including schools, athletic facilities, casinos and public golf courses, depending on state regulations across the U.S.

How to Perform CPR for Cardiac Arrest

If you don't have access to an AED, start cardiopulmonary resuscitation (CPR) or chest compressions immediately. For those trained in healthcare or familiar with CPR, the AHA recommends traditional CPR with the 30-to-2 ratio, meaning 30 chest compressions followed by two rescue breaths, repeating this sequence.

For the general public, the AHA recommends hands-only CPR, also known as compression-only CPR, which focuses on chest compressions alone. The key is to push hard and fast in the center of the chest at a rate of 100 to 120 compressions per minute — about the same pace as the song "Stayin' Alive," which has 100 beats per minute.[24]

It's natural to hesitate out of fear of causing more harm to the patient, but remember that at this point the person is clinically dead and can't get any worse. Bystander CPR and the use of an AED significantly improve their chances of survival. Additionally, Good Samaritan laws offer legal protection for those who provide aid in good faith, ensuring that your efforts are safeguarded.

Every minute that CPR is delayed decreases the person's chances of survival by about 10%.[25] Therefore, taking action, even if it's not perfect, is better than doing nothing at all. Here are the steps for performing hands-only CPR:[26]

- Perform chest compressions at a rate of 100 to 120 per minute, pushing hard and fast.
- Press down with enough force to compress the chest about 2 inches deep for an average adult.
- Do not stop; minimize any interruptions to keep blood flow continuous.
- Avoid leaning on the chest between compressions to allow it to fully recoil.

Keep Methylene Blue and Melatonin on Hand in Case of Heart Attack

Methylene blue and melatonin are two important compounds that are beneficial in case of a heart attack. Methylene blue, a precursor to hydroxychloroquine and chloroquine,

helps mitigate reperfusion injury in heart attack survivors. This is the damage that occurs to the tissues and organs when blood flow is restored after a period of oxygen deprivation.

Methylene blue administration helps mitigate tissue damage; however, proper dosage is important to avoid overdose. Use a microspoon for precise measurement, as discussed in my **interview with Francisco Gonzalez-Lima, Ph.D.**, an expert on methylene blue.

For long-term, nonacute treatments like dementia prevention, post-stroke care, cognitive enhancement and overall health optimization, a dosage of 0.5 to 1 mg per kilogram of body weight is recommended.

I also recommend keeping melatonin available in a 10 mg sublingual form. This powerful antioxidant helps reduce reperfusion injury if taken immediately after a heart attack or stroke. Similarly, methylene blue needs to be administered within minutes of the cardiac event to meet the critical time threshold, highlighting the necessity of having these items in your emergency medical kit.[27]

Adopt These Strategies to Protect Your Heart Health

Since heart attacks and cardiac arrests often sneak up on you and manifest in their most severe stages, it's important to implement lifestyle and dietary changes that not only build a healthy heart but also keep it that way. Here are some tips to reduce your risk of cardiovascular problems:

Avoid seed oils and processed foods — Seed oils are a primary source of **linoleic acid**, a type of omega-6 polyunsaturated fat (PUFA). Excessive LA intake is associated with almost all chronic diseases, including high blood pressure, obesity, insulin resistance and diabetes.

LA gets embedded in your cell membranes, causing oxidative stress, and remains there for up to seven years. The oxidative linoleic acid metabolites (OXLAMs) are responsible for significant cellular damage, particularly to endothelial cells. This

damage contributes to vascular dysfunction, which is a key factor in the onset of cardiac arrest and heart attacks.

To protect your cardiovascular health, radically reduce your LA intake by eliminating seed oils from your cooking. Avoid processed foods, which are often loaded with seed oils, as well as restaurant meals, since most are prepared using these unhealthy oils.

Spend time under the sun — Sun exposure stimulates the production of nitric oxide (NO), which dilates your blood vessels and lowers your blood pressure. NO also protects your endothelium and increases mitochondrial melatonin to improve cellular energy production. However, it's important to approach sun exposure with care, especially if your diet is high in seed oils.

These oils migrate to your skin and oxidize when exposed to sunlight, causing inflammation and DNA damage, which makes you more prone to sunburn. If you're on a high-LA diet, I recommend avoiding intense sun exposure until you've reduced your seed oil intake for four to six months. As you reduce your LA intake, slowly increase your time outdoors. You'll eventually be able to enjoy an hour or more during peak sunlight hours.

Lower your insulin and blood sugar levels — Simple strategies to accomplish this include avoiding ultraprocessed foods and artificial sweeteners, significantly restricting your LA intake and getting regular exercise.

Address chronic stress — This raises both blood sugar and blood pressure, promotes blood clotting and impairs your repair systems. Cortisol, a key stress hormone, reduces endothelial cell production.

Optimize your gut health — Poor gut health leads to systemic inflammation, increasing your risk of heart disease. Certain gut bacteria, particularly Oscillibacter, have also been associated with lower cholesterol levels and reduced heart disease risk.[28] These bacteria break down cholesterol into smaller molecules that don't raise heart disease risk.

Maintaining a diverse and balanced gut microbiome, especially fostering oxygen-intolerant bacteria like Akkermansia, strengthens intestinal defenses and overall health. The importance of gut health in heart disease prevention also extends beyond cholesterol management. Oxygen-intolerant bacteria produce beneficial short-chain fats that support intestinal health.

However, modern lifestyle factors like seed oil consumption and exposure to toxins like **endocrine-disrupting chemicals** in plastics disrupt this delicate balance, leading to increased endotoxin production and systemic inflammation. To bring your gut microbiome back on track and reduce inflammation, incorporate fermented foods, such as grass fed yogurt, sauerkraut, kimchi or kefir, into your diet and consider taking a high-quality probiotic.

Take coenzyme Q10 — CoQ10 is a powerful antioxidant essential for cellular energy production, making it particularly beneficial for the cardiac muscles, which have about 5,000 mitochondria per cell.[29]

A study published in the journal Antioxidants (Basel)[30] says that CoQ10 helps reduce oxidative stress, lowers the risk of death from cardiovascular causes and improves outcomes in patients undergoing coronary artery bypass surgery.

It also helps prevent the buildup of oxidized low-density lipoprotein (oxLDL) in arteries, reduces vascular stiffness and high blood pressure, improves endothelial function by cutting down on reactive oxygen species (ROS) and boosts NO levels.

Increase your magnesium levels — This mineral plays a role in transporting calcium and potassium across your cell membranes, which is important for "nerve impulse conduction, muscle contraction, vasomotor tone and normal heart rhythm."[31] Check out my article, "**Magnesium 101 — A Comprehensive Guide to Its Health Benefits**" to learn more.

Sources and References

- [1] AHA, Heart Attack and Sudden Cardiac Arrest Differences

- [2] CDC, Heart Disease Facts
- [3] Cleveland Clinic, Cardiac Arrest
- [4] Heart Foundation, June 15, 2023
- [5] Cleveland Clinic, Blood Flow Through the Heart
- [6] StatPearls [Internet], Atherosclerosis
- [7, 14] The Conversation, September 9, 2024
- [8, 13] StatPearls [Internet], Cardiac Arrest
- [9] Johns Hopkins Medicine, Ventricular Tachycardia
- [10] Mayo Clinic, Ventricular Fibrillation
- [11] Cleveland Clinic, Pulseless Electrical Activity
- [12] Cleveland Clinic, Asystole
- [15] MSD Manual, “What’s the Difference Between a Heart Attack and Cardiac Arrest?”
- [16] AHA, “Heart Attack and Sudden Cardiac Arrest Differences”
- [17, 23] Mayo Clinic, Heart Attack
- [18] AHA, Warning Signs of a Heart Attack
- [19, 20] Cureus. 2023 Apr; 15(4): e37522
- [21] Johns Hopkins Medicine, Health, Cardiac Arrest
- [22] Mount Sinai, Heart Attack First Aid
- [24, 25] AHA, Hands-Only CPR
- [26] AHA, What Is CPR?
- [27] Rumble, Children’s Health Defense, Good Morning CHD, Episode 82 July 22, 2022, 4:58
- [28] NIH, April 16, 2024
- [29] PeerJ. 2018; 6: e4790
- [30] Antioxidants (Basel). 2021 May; 10(5): 755
- [31] Asian Journal of Complementary and Alternative Medicine, 2023, Volume 11 Issue 02