

SUDDEN CARDIAC ARREST AND SUDDEN CARDIAC DEATH

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Sudden Cardiac Arrest And Sudden Cardiac Death

What are sudden cardiac arrest and sudden cardiac death?

Sudden cardiac death (SCD) is a sudden, unexpected death (sudden cardiac arrest.) One of the leading causes in the UAE and Gulf region causing thousands of deaths each year. In fact, half of all deaths due to heart disease are caused by SCD.

The condition affects two times more men than women and is rare in children — about 1 to 2 in every 100,000 children die from SCD each year.

How is sudden cardiac arrest different from a heart attack?

Sudden cardiac arrest is not a heart attack (myocardial infarction). Heart attacks occur when one or more of the coronary arteries becomes blocked and the heart is unable to get enough oxygen-rich blood. If the oxygen in the blood can't reach the heart muscle, the heart becomes damaged.

Sudden cardiac arrest happens when the heart's electrical system malfunctions and suddenly becomes very irregular. The heart beats dangerously fast. The ventricles (lower chambers) may flutter or quiver (ventricular fibrillation), and blood is not delivered to the body. In the first few minutes, the greatest concern is that blood flow to the brain will be reduced so drastically that a person will lose consciousness. Unless emergency treatment is given right away, the person will die.

Emergency treatment of sudden cardiac arrest includes cardiopulmonary resuscitation (CPR) and defibrillation. Administering CPR keeps enough oxygen in the lungs and gets it to the brain until the normal heart rhythm is restored with an electric shock to the chest (defibrillation). Portable defibrillators used by emergency personnel, or public access defibrillators (AEDs) may help save the person's life.

What are the symptoms of sudden cardiac arrest?



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Some people who have sudden cardiac arrest may experience a racing heartbeat or they may feel dizzy, alerting them that a potentially dangerous heart rhythm problem has started. However, more than half of all people who have sudden cardiac arrest have no warning symptoms.

What causes sudden cardiac death?

Most sudden cardiac deaths are caused by abnormal heart rhythms called arrhythmias. The most common life-threatening arrhythmia is ventricular fibrillation, which is an erratic, disorganized firing of impulses from the ventricles (the heart's lower chambers). When this occurs, the heart is unable to pump blood and death will occur within minutes, if left untreated.

What are the risk factors of sudden cardiac arrest?

There are many factors that can increase a person's risk of sudden cardiac arrest and SCD. The two leading risk factors include:

- Previous heart attack (75 percent of patients who have SCD have had a previous heart attack). A person's risk of SCD is higher during the first six months after a heart attack.
- Coronary artery disease (80 percent of SCD cases are linked with this disease). Risk factors for coronary artery disease include:
 1. Smoking
 2. Family history of cardiovascular disease
 3. High cholesterol
 4. Enlarged heart
- Ejection fraction of less than 40 percent, combined with ventricular tachycardia
- Prior episode of sudden cardiac arrest
- Family history of sudden cardiac arrest or SCD
- Personal or family history of certain abnormal heart rhythms, including long QT syndrome, Wolff-Parkinson-White syndrome, extremely low heart rates or heart block
- Ventricular tachycardia or ventricular fibrillation after a heart attack
- History of congenital heart defects or blood vessel abnormalities
- History of syncope (fainting episodes of unknown cause)
- Heart failure: a condition in which the heart's pumping power is weaker than normal. Patients with heart failure are 6 to 9 times more likely than the general population to experience ventricular arrhythmias that can lead to sudden cardiac arrest.
- Dilated cardiomyopathy (cause of SCD in about 10 percent of the cases): a decrease in the heart's ability to pump blood due to an enlarged (dilated) and weakened left ventricle
- Hypertrophic cardiomyopathy: a thickened heart muscle that especially affects the ventricles
- Significant changes in blood levels of potassium and magnesium (for example, from diuretic use), even if there is not organic heart disease
- Obesity
- Diabetes

- Recreational drug abuse
- Taking drugs that are "pro-arrhythmic" may increase the risk for life-threatening arrhythmias

Can sudden cardiac arrest be prevented?

If you have any of the risk factors listed above, it is important to speak with your doctor about how to reduce your risk.

Keeping regular follow-up appointments with your doctor, making certain lifestyle changes, taking medications as prescribed and having interventional procedures or surgery (as recommended) are ways you can reduce your risk.

Follow-up care with your doctor: Your doctor will tell you how often you need to have follow-up visits. To prevent future episodes of sudden cardiac arrest, your doctor will want to perform diagnostic tests to determine what caused the cardiac event. Tests may include electrocardiogram (ECG or EKG), ejection fraction, ambulatory monitoring, echocardiogram, cardiac catheterization and electrophysiology study.

Ejection fraction (EF): Ejection fraction is a measurement of the percentage of blood pumped out of the heart with each beat. Ejection fraction can be measured in your doctor's office during an echocardiogram (echo) or during other tests such as a multiple gated acquisition (MUGA) scan, cardiac catheterization, nuclear stress test or magnetic resonance imaging (MRI) scan of the heart.

The ejection fraction of a healthy heart ranges from 55 to 65 percent. Your ejection fraction can go up and down, based on your heart condition and how well your therapy works.

If you have heart disease, it is important to have your ejection fraction measured when you are first diagnosed and then, as needed, based on changes in your condition. Ask your doctor how often you should have your ejection fraction checked.

Reducing your risk factors: If you have coronary artery disease (and even if you do not), it is important to reduce your cholesterol levels, decrease your blood pressure and control your diabetes and weight. Reducing these risk factors by making lifestyle changes can reduce your risk of sudden cardiac arrest.

These lifestyle changes include:

- Quitting smoking
- Losing weight, if overweight
- Exercising regularly
- Following a low-fat diet
- Managing diabetes as instructed
- Managing other health conditions

If you have questions or are unsure how to make these changes, talk to your doctor.

Patients and families should know the signs and symptoms of coronary artery disease and the steps to take if symptoms occur.

Medications: To help reduce the risk of sudden cardiac arrest, doctors may prescribe medications to patients who have had heart attacks, or who have heart failure or arrhythmias. These medications may include angiotensin-converting enzyme (ACE) inhibitors, beta blockers, calcium channel blockers and other antiarrhythmics. Patients with high cholesterol and coronary artery disease may need to take statin medications (cholesterol-lowering medications).

If you are prescribed medication, your doctor will give you more specific instructions.

Implantable cardioverter-defibrillator (ICD): Patients who have a great risk for SCD may need an implantable cardioverter-defibrillator (ICD) as a preventive treatment. An ICD is a small machine similar to a pacemaker that corrects arrhythmias. It detects and then corrects a fast heart rate.

The ICD constantly monitors the heart's rhythm. When it detects a very fast, abnormal heart rhythm, it delivers energy (a small, but powerful shock) to the heart muscle to return the heart to a normal rhythm. The ICD also records the data of each episode, and your doctor can look at the information using a third part of the system that is kept at the hospital.

The ICD may be used in patients who have survived sudden cardiac arrest and need their heart rhythms constantly monitored. It may also be combined with a pacemaker to treat other underlying irregular heart rhythms.

Interventional procedures or surgery: Patients with coronary artery disease may need an interventional procedure such as angioplasty (blood vessel repair) or bypass surgery to improve blood flow to the heart muscle and reduce the risk of SCD. Patients with other conditions, such as hypertrophic cardiomyopathy or congenital heart defects, may need an interventional procedure or surgery to correct the problem. Other procedures may be used to treat abnormal heart rhythms, including electrical cardioversion and catheter ablation.

When a heart attack occurs in the left ventricle (left lower pumping chamber of the heart), a scar forms. The scarred tissue may increase the risk of ventricular tachycardia. The electrophysiologist (doctor specializing in electrical disorders of the heart) can determine the exact area causing the arrhythmia. The electrophysiologist, working with your surgeon, may combine ablation (the use of high-energy electrical energy to "disconnect" abnormal electrical pathways within the heart) with left ventricular reconstruction surgery (surgical removal of the infarcted or dead area of heart tissue).

Educate your family members: If you have a risk of SCD, talk to your family members so they understand your condition and the importance of seeking immediate care in the event of an emergency. Family members and friends of those at risk of SCD should know how to perform CPR.

Sudden Cardiac Death And Athletes

Sudden cardiac death (SCD) rarely occurs in athletes, but when it does happen, it is often reported in the media, which makes it seem more common.

Most cases of SCD are related to undetected cardiovascular disease.

Younger Athletes

Sudden cardiac death affects about 1 in 100,000 to 300,000 young athletes, mostly males. Most cases involve team sports, and many times these young athletes have congenital heart defects (present at birth) that haven't been discovered.

Older Athletes

Older athletes, aged 35 and older, are more likely than younger athletes to experience SCD. This happens most often while jogging. About 1 in 15,000 joggers and 1 in 50,000 marathon runners have SCD. In this population, SCD is usually related to coronary artery disease.

Cardiovascular screening for high school and collegiate athletes is recommended. The screening should include a complete and careful evaluation of the athlete's personal and family history and a physical exam.

Screening should be repeated every 2 years, and a history should be obtained every year.

Men aged 40 years and older and women aged 50 years and older should also have an exercise stress test and receive education about cardiac risk factors and symptoms.

If the screening shows that an athlete has or may have heart problems, he or she should be referred to a cardiologist for further evaluation and treatment guidelines before participating in sports.

What is the treatment for sudden cardiac arrest?

Sudden cardiac arrest can be treated and reversed, but **emergency treatment must be given immediately**. Survival can be as high as 90 percent if treatment is started within the first minutes after sudden cardiac arrest. The rate decreases by about 10 percent each minute longer. Those who survive have a good long-term outlook.

If you see someone experiencing sudden cardiac arrest, immediately dial 999 or call your local emergency personnel and initiate CPR. If done properly, CPR can save a person's life, as the procedure keeps blood and oxygen circulating through the body until help arrives.

An AED (Ambulatory External Defibrillator) offers the best chance of rescuing the patient. The shorter the time until defibrillation, the greater the chance the patient will survive. **It is CPR plus defibrillation that rescues the patient.**

Once emergency personnel arrive, defibrillation can be used to restart the heart. This is done through an electric shock delivered to the heart

through paddles placed on the chest.

After successful defibrillation, most patients require hospital care to treat and prevent future cardiac problems.

For More Information

Sudden Arrhythmia Death Syndromes Foundation

www.sads.org

A nonprofit organization, established to help prevent sudden and unexpected cardiac death in children and young adults.

Heart Rhythm Society

www.HRSONline.org

CPR

For more information about CPR training in the UAE, please contact...

+971 2 596 8600 www.nationalambulance.ae

+971 4 343 3799 www.firstaid.ae

+971 4 456 0455 www.sstworldwide.com

or ask your doctor for more information.

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