

## **Sudden Cardiac Death**

**What is sudden cardiac death (SCD)?** Sudden cardiac death (SCD), or **cardiac arrest**, is the sudden, abrupt loss of heart function in a person who may or may not have diagnosed heart disease. The time and mode of death are unexpected. It occurs instantly or shortly after symptoms appear. The most common reason for patients to die suddenly is cardiovascular disease, in particular, coronary heart disease. About half of all deaths from coronary heart disease are sudden and unexpected, regardless of the underlying disease. Thus, half of all deaths due to atherosclerosis (arteries lined with fatty deposits) are sudden. So are half of deaths due to degeneration of the heart muscle, or to cardiac enlargement in patients with high blood pressure.

Sudden cardiac death is a major health problem, causing about 330,000 deaths each year among U.S. adults either before reaching a hospital or emergency room. The few publications on the subject of sudden and unexpected death (SUD) in Nigerians reported SCD to account for about 25% of such deaths.<sup>i, ii</sup>

**What causes sudden cardiac death?** SCD, or cardiac arrest, may be caused by almost all known heart diseases. Most cardiac arrests occur when the diseased heart begins to exhibit rapid and/or chaotic activity — ventricular tachycardia or fibrillation. Some are due to extreme slowing of the heart. All these events are called life-threatening arrhythmias.

**Heart disease:** Underlying heart disease is nearly always found in victims of sudden cardiac death

**Ischaemic heart disease (atherosclerosis):** Typically in adults this takes the form of atherosclerosis. Two or more major coronary arteries are narrowed in 90 percent of cases; scarring from a prior heart attack is found in two-thirds of victims. Therefore, the risk factors for sudden cardiac death include similar risk factors for atherosclerosis, such as smoking, obesity and high blood pressure. A heart that's scarred or enlarged from any cause is prone to develop life-threatening ventricular arrhythmias. The first six months after a heart attack is a particularly high-risk period for sudden cardiac death in patients with atherosclerotic heart disease. A thickened heart muscle from any cause (typically high blood pressure or valvular heart disease) — especially when there's congestive heart failure too — is an important predisposing factor for sudden cardiac death.

**Hypertension:** In Nigerians, as with most Africans, hypertension (high blood pressure) on its own is the commonest cause of enlargement of the heart and hence SCD. However, with increasing westernisation of the society, there is an increase in SCD due to atherosclerosis as in the western world.

**Hypertrophic cardiomyopathy:** When sudden cardiac death occurs in young adults, atherosclerotic heart disease usually isn't the cause. More often these young victims have a thickened heart muscle (hypertrophic cardiomyopathy) without having high blood pressure.

**Electrical abnormalities:** Certain electrical abnormalities within the heart also may cause sudden cardiac death in the young. These include a short circuit between the upper and lower chambers (Wolff-Parkinson-White syndrome). This sometimes can allow dangerously rapid rates to develop in the lower chamber when there's a rapid rhythm disturbance in the upper chamber and a congenitally prolonged electrical recovery after each heartbeat (long-QT syndrome). These may set the stage for fatal ventricular arrhythmias.

**Blood vessel abnormalities:** Less often, inborn blood vessel abnormalities, particularly in the coronary arteries and aorta, may be present in young sudden death victims. Adrenaline released during intense physical or athletic activity often acts as a trigger for sudden cardiac death when these predisposing conditions are present.

**Recreational drug abuse:** In people without organic heart disease, recreational drug abuse is an important cause of sudden cardiac death.

**What should do?** Anybody older than 40 years with unexplained chest pain (not due to trauma) should seek medical help as soon as possible. Also anyone with a diagnosis of hypertension should take their medications and regularly check their blood pressure.

Parents, siblings and children of anyone who dies suddenly before their 40<sup>th</sup> birthday from 'sudden cardiac death' or an inherited heart problem should see a physician with expertise in the heart and have a detailed medical history taken. They should be thoroughly examined as investigated, the minimum being a tracing of the electrical activity in the heart called ECG and ultrasound of the heart (echocardiography).

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<sup>i</sup> Odesanmi WO. Forensic Pathology in Nigeria: The Ife Experience. Med. Sci. Law. 1982, 22: 269-272

<sup>ii</sup> Rotimi O, Ajayi AA, Odesanmi WO. Sudden unexpected death from cardiac causes in Nigerians: a review of 50 autopsied cases. Int J Cardiol 1998;63(2);111-115.