

Cardiac arrest in young people: Causes, prevention and treatments

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On June 12, 16,000 spectators at Copenhagen's Parken Stadium and millions of viewers around the world watched in shock as [Danish midfielder Christian Eriksen's heart stopped](#).

Late in the first half of Denmark's opening game of the Euro 2020 soccer tournament against Finland, the 29 year-old was running just after a throw-in and suddenly collapsed. It appears he suffered a [sudden cardiac arrest](#).

Fortunately, he was quickly attended to by a medical team with full resuscitation equipment, who administered CPR and successfully used a [defibrillator](#). Erikson survived and has been fitted with an [implantable cardiac defibrillator](#). This is a [small device](#) which is connected to the heart and fitted under the skin. If a dangerously abnormal rhythm is detected, it will deliver an electric shock to the heart to try to restore a normal rhythm.

So how often do cardiac arrests happen in [young people](#)? What are the risk factors, and can they be prevented?

Cardiac arrests during sport are extremely rare. If you're playing sport next weekend, you should go ahead in the knowledge it's almost certain not to happen. The benefits of exercise far outweigh the risks.

But because events like this do happen, albeit very rarely, we need public venues to have good emergency plans to improve survival, including the widespread availability of defibrillators.

There have been some recent improvements in this regard in Australia. For example, defibrillators are [now installed in all Coles and Woolworths stores nationally](#), and there are [several programs](#) to support rollout of defibrillators and [emergency action plans](#) to community sports clubs. But there's still room for improvement.

Am I at risk? How often does this happen?

Sudden death from [cardiac arrest](#) in a young person is a very rare but

tragic outcome. The baseline risk in Australia for people under 35 is 1.3 per 100,000 people per year, with [15% occurring either during or immediately after exercise](#).

Across all ages, there are 20,000 sudden cardiac arrests in Australia that occur out of hospital every year, and sadly [only 10% of people survive](#).

It's also worth remembering a cardiac [arrest](#) isn't exactly the same thing as a heart attack. A [heart attack](#) occurs when one of the coronary arteries is blocked, stopping blood supply to part of the heart. A cardiac arrest is when the heart stops pumping blood around the body, and can occur due to a heart attack or another cause.

The major causes of cardiac arrest depend on age. In people over 35, the vast majority are [caused by coronary artery disease](#), where arteries supplying blood to the heart are blocked or damaged.

In people aged under 35, there's no single major cause of cardiac arrest. Some of the conditions that can cause cardiac arrest in young people include:

- a condition where the [heart muscle becomes too thick](#), called hypertrophic cardiomyopathy
- other [conditions of the heart muscle](#) that make it harder for the heart to work properly (called cardiomyopathies)
- a condition called [Long QT syndrome](#) which can cause a dangerously erratic heartbeat
- [Brugada syndrome](#), which is a heart rhythm disorder.

However, 40% of sudden cardiac deaths in young people [remain unexplained](#) even after autopsy.

Is cardiac screening the answer?

Cardiac screening in young people looks for certain heart abnormalities that haven't yet been detected. It's [common for elite and professional athletes in Australia](#) and internationally, and is mandatory for young athletes in some countries, for example Italy and Israel.

This screening usually includes a "12-lead electrocardiogram" or ECG, which is a painless test that involves putting some sticky dots on the body and recording the electrical activity of the heart over a ten second period.

However, ECG screening [cannot detect all of the conditions](#) which can cause sudden cardiac arrests. This is because some conditions don't show ECG abnormalities before a cardiac arrest.

Eriksen's condition was likely in that category, because we know he had regular [heart screenings while at Tottenham](#) and these hadn't shown any problems.

Medicare in Australia funds [heart health checks](#) for people who are middle aged or older, but not in younger people. This is similar to most countries. Other than in [professional athletes](#) and those with a [family history](#), most professional bodies don't recommend [widespread screening of younger people](#) because the risk of cardiac arrests is so low overall.

How else can we prevent sudden cardiac death?

Defibrillators and data

The best strategy for preventing sudden cardiac death at any age is having defibrillators widely available. A [defibrillator](#) is a device that can analyse the heart's rhythm and deliver an electric shock if needed. This can shock the heart back into a normal rhythm.

While they obviously can't stop the cardiac arrest happening in the first place, they are crucial to survival once they do happen. Early access to a defibrillator can improve survival to [almost 90%](#).

However, access needs to be very quick, ideally within 2-5 minutes, as we know the [chances of survival drop by 10% for every minute of delay](#) before defibrillation.

We also need as many as people as possible to be regularly trained to provide CPR.

Fabrice Muamba, a former midfielder for the Bolton Wanderers soccer team in the UK, was lucky to survive after he collapsed and his heart stopped on the field during a 2012 FA cup quarter-final.

Muamba, who recovered after he received CPR and 26 defibrillator shocks, [last week](#) voiced his support for defibrillators to be a legal requirement in public places in the UK. Ideally, Australia could also introduce a similar requirement to have defibrillators in public venues, supported by widespread CPR training (including how to use a defibrillator) to improve survival rates from out of hospital cardiac arrests.

In addition to defibrillators and CPR training, venues such as schools and sporting stadiums need to have good cardiac emergency plans so they can respond efficiently and effectively if someone's [heart](#) stops.

Some of the conditions that are diagnosable prior to a cardiac arrest run in families, such as "Long QT syndrome." So, it's important to seek medical advice for anyone with a family member who has had cardiac arrest under the age of 40.

Importantly, anyone who has any worrying symptoms should seek

medical advice, especially fainting or collapse during exercise.

Finally, research projects such as the Australian [End Unexplained Cardiac Death \(EndUCD\) registry](#) are urgently needed to identify the underlying causes of cardiac death in young people so we can prevent deaths from [sudden cardiac arrest](#).

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