Preventive Screening of Sudden Cardiac Death in Young Athletes in Australia

Sudden cardiac death in the young is a critical public health issue. A young life cut short represents a devastating event for families, sporting clubs and communities; and is associated with many lost productive years. As part of BakerIDI’s mission to reduce death and disability from cardiovascular disease, diabetes and other related disorders; the Institute’s health professionals and researchers are working to understand more about the incidence, mechanism and opportunities for prevention.

When these sudden deaths do occur, it is often during physical activity, such as participating in a sporting event. It is important to note that it is not sport per se that is the cause for greater incidence of sudden cardiac death. Rather, the combination of intensive physical exercise in athletes with underlying cardiovascular diseases can trigger life-threatening arrhythmias leading to cardiac arrest.

Position Statement

Baker IDI encourages individuals to engage in regular exercise, in line with Australia’s Physical Activity and Sedentary Behaviour Guidelines.1 These guidelines are supported by a rigorous evidence base, which includes research by Baker IDI scientists that has considered the relationship between physical activity and health outcome indicators, including the risk of chronic disease and obesity.

However, young athletes with abnormal hearts are a high risk group for sudden cardiac death. The most common conditions that increase the risk of sudden cardiac death in young athletes include Hypertrophic Cardiomyopathy (HCM, an inherited abnormal thickening of heart muscle); Dilated Cardiomyopathy (an enlarged and weak heart); impaired delivery of blood to heart muscle due to abnormal coronary arteries, and disturbances to the heart’s electrical circuit.

The Institute supports cardiac screening using 12-lead electrocardiography in sporting groups as a means of identifying people at high risk of sudden cardiac death where practical and affordable, although it is acknowledged that there are some limitations with ECGs. The ECG is a static picture and may not reflect severe underlying heart problems at a time when the person is not having symptoms. Other limitations include ‘false positives’, which could be as high as 10-per cent.ii

The testing of young athletes by Baker IDI aims to raise awareness of the issue of sudden cardiac death in young athletes in Australia, and to encourage further investigation into the role of cardiac screening as a preventative measure in this group of young people.

Globally, there is a lack of consensus about the role of preventive screening in young athletes. Most countries do not advocate mandatory screening of athletes, with the exception of countries like Italy. A study of young Italian male athletes has shown that sudden cardiac death among young athletes was more than 5 times as high compared to non-athletes per year per 100,000 peopleiii.

Preventive measures, specifically pre-participation screening, have been advocated by the European Society of Cardiology (ESC)iv and have subsequently been implemented in some sporting
communities. The International Olympic Committee, for example, recommends cardiac screening with an ECG as part of a pre-participation examination to screen for conditions such as HCM which may place an athlete at risk for safe participation⁷.

However, this approach is not supported by the American Heart Association. Instead, it recommends an ECG be used as a follow-up if initial screening raises suspicions about the presence of cardiovascular disease⁸.

The rate of sudden cardiac death in young athletes in the Australian population is unknown, and it is acknowledged that much of the scientific work around pre-participation cardiac evaluation has been performed in overseas populations that are ethnically and socially different to those in Australasia.

Local health professionals and researchers, including those at Baker IDI, are keen to understand if screening of young athletes might prevent such deaths in the Australian setting. Bodies such as the Australasian College of Sports Physicians have called for the establishment of an Australian Registry of Sudden Cardiac Death in Young Athletes to ascertain the magnitude of sudden cardiac death in the Australasian populations and its causes.⁹ As a scientific research institute, Baker IDI is committed to building a strong evidence base to advance the diagnosis, prevention and treatment of sudden cardiac death in young athletes in Australia.

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