

UK National Screening Committee

Screening to reduce Sudden Cardiac Death in people aged 12-39 years

18 June 2015

Aim

1. This document provides information on further work undertaken on screening to reduce sudden cardiac death in people aged 12 – 39 years following the last UKNSC meeting. The document is for information only.

Current policy

2. Screening to reduce sudden cardiac death was considered at the March 2015 UKNSC meeting. An evidence review was received along with the comments submitted during the three month consultation. On the basis of this it was agreed that a screening programme to reduce sudden cardiac death should not be recommended.

The UKNSC review reported that a number of testing modalities had been proposed for use as screening tools. These included; ECG, personal / family history, physical examination and combinations of these approaches. However the literature search only identified one study which attempted to estimate the accuracy of the test¹. This estimate was based on three papers reporting on screening in Italy using ECG. The paper applied the estimates for sensitivity and specificity to an estimated CVD prevalence of 2.3% in young athletes. This prevalence figure was derived from the three Italian papers.

The key outcomes reported in this study were:

Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
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88.7% (95% CI: 86.6% to 90.5%)	92.7% (95% CI: 92.4% to 92.9%)	22.5% (95% CI: 21.2% to 23.8%)	99.7% (95% CI: 99.6% to 99.8%)
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Since the last meeting, and during the period of political sensitivity, a systematic review of test accuracy based on a larger body of evidence has been publishedⁱⁱ. Because of the controversial nature of this issue, the reviewer was asked to critically appraise the systematic review. The resulting document is attached.

Outcomes of the systematic review

- The systematic review sought to evaluate the accuracy of ECG, personal / family history, physical examination in identifying a range of cardiovascular risks for sudden cardiac death. The study concluded that ECG was the most effective screening strategy.

In terms of key outcomes for ECG, the systematic review suggests comparable performance characteristics to those reported in the UKNSC review. However a background CVD prevalence of 0.3% was estimated and, as such, generally lower positive predictive values were reported across the included papers. The results of the evaluation of ECG are tabulated below:

Sensitivity	Specificity	Reported range of Positive Predictive Values	Reported range of Negative Predictive Value
94% (95% CI: 79%–98%)	93% (95% CI: 90%–96%)	1.2% - 22.5%	NPV not reported

Screening strategies based on personal / family history and physical examination were found to be less accurate than ECG.

Conclusion

The critical appraisal highlights some of the limitations of the systematic review which raise concerns about the reliability of the results. In addition the reported test values are comparable to those reported in the UKNSC review. It is unlikely that including this systematic review in the analysis would alter the substance of the UKNSC review.

Action

The UKNSC is asked to

- Note this additional information and to confirm the recommendation made at the March meeting.

ⁱ Elston, J and Stein, K, Public health implications of establishing a national programme to screen young athletes in the UK, 2011 Jun;45(7):576-82

ⁱⁱ Harmon A, Zigman M, Drezner J., The effectiveness of screening history, physical exam, and ECG to detect potentially lethal cardiac disorders in athletes: a systematic review/meta-analysis. J. Electrocardiology 48(2015) 329-338