

The FIFA[®] 11 Steps to prevent sudden cardiac death during football games

A young football player collapsing and dying is a tragedy to be avoided. The FIFA 11 Steps set a standard and promote consistent football field emergency care.

Introduction

Football is the most popular sport in the world,¹ and sudden cardiac arrest (SCA) remains the sport's leading cause of sudden death. This tragic event can, to a large extent, be prevented and effectively treated, by immediate cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) use.^{2–5}

The FIFA Medical Assessment and Research Centre (F-MARC) has developed the 'FIFA 11 Steps to prevent sudden cardiac death (SCD)', which summarizes screening, emergency planning, and management protocols for SCA (Table 1). Together with the FIFA Medical Emergency Bag (FMEB) with AED and the written, multi-language guide entitled 'Prevention and Management of Sudden Cardiac Arrest in Football', FIFA is committed to preventing and responding to SCA on the field-of-play. These efforts follow the decision of the FIFA Congress 2012 (Budapest) to provide each of the 209 Member Associations with an AED as an indication of the importance that FIFA places on the prevention of SCD.

The FMEB with AED was developed by a group of football-experienced medical specialists from Brazil, England, South Africa, Switzerland, and USA.



FMEB



FMEB contents

It is intended for use by all FIFA member associations globally, for training⁶ and competition, as the recommended emergency medical bag and equipment for football team physicians, field-of-play medical teams, and other medical professionals on duty during football events. The FMEB with AED provides a benchmark of optimal football emergency care for all, at a level that all member associations should strive to achieve training and competition, irrespective of location globally.

Prevention and management of sudden cardiac arrest

As the leading fatality in sport, SCA warrants specific considerations in the implementation of a comprehensive programme to respond to life-threatening medical emergencies on the field of play.

Prevention

Pre-participation screening is promoted to identify footballers with pre-existing conditions at risk of SCA. The Pre-Competition Medical Assessment (PCMA) as recommended by FIFA^{7–9} involves a player-focused medical history, family medical history, cardiac-specific physical medical examination, and an annual resting 12-lead electrocardiogram (ECG) on all players.^{10,11} Echocardiography should be undertaken by an experienced cardiologist when abnormal results are found and should be considered at least once in a player's early career¹¹ to detect better structural disorders not routinely identified by ECG. A screening Exercise Test should be considered in athletes older than 35 years of age.

Planning and protocol

Annual CPR and AED training should be undertaken for all team staff and referees to ensure that these life-saving skills are current.^{12,13} The FMEB with AED should be available at all practices and competitions as part of an approved emergency medical plan (EMP).¹⁴ All on-duty medical personnel must be familiar with and have checked the contents of the FMEB, with particular reference to the function and method of use of the AED, before play commences. An approved football team and football stadium EMP should be established that defines what steps are taken, by which football staff, using which equipment, during a medical emergency. The EMP should be part of initial training and revised/practised annually. Prior to each game, roles and responsibilities for each aspect of the EMP should be allotted to medical team members.¹⁵

The official on-duty field-side medical team should consist of members who are adequately trained, experienced, and have appropriate qualifications in football emergency medicine. An attending ambulance must be on location within the football stadium at a designated time and location, staffed with an appropriately trained crew and comprehensive medical equipment. Preferably, the ambulance should be located in a position that enables it to enter the field, if required.

Play the game and pre-game timeout

Before commencement of all training sessions and games, an FMEB with an AED must be in position at the field-side. In addition, before commencement of games, an on-duty medical team and ambulance must be positioned at the field-side.

Performance of the emergency medical plan

Immediate recognition of any collapsed player is the responsibility of the field-of-play medical team. Any football player that collapses and is unresponsive, particularly if it occurs without contact with another player, should be regarded as SCA until proved otherwise.¹⁶ Brief

Table 1 The FIFA 11 steps to prevent sudden cardiac death in football

Prevention

1. PCMA: Player medical history, family history, and physical exam
2. ECG: 12-lead, resting, supine; initially and annually
3. Echocardiography: where necessary and at least once early in the career; Exercise Test: where necessary and in athletes >35 years old

Planning and protocol

4. Training and equipment
 - (a) CPR and AED training yearly for team staff and referees
 - (b) FMEB and AED available and checked
 - (c) EMP: roles and responsibilities allotted; on-field response practiced and rehearsed
 - (d) Field-side medical team qualifications and logistics confirmed
 - (e) Ambulance location and logistics confirmed

Play the game and pre-game timeout

5. FMEB and AED in position and checked
6. Field-side medical team in position (games)
7. Ambulance, fully functional, in position (games)

Performance of the emergency medical plan

8. Immediate recognition of collapsed player
 - (a) Assume SCA if collapsed and unresponsive
 - (b) Seizure activity and/or agonal respirations = SCA
9. Activation of EMP
10. Early CPR and AED application
 - (a) Start chest compressions
 - (b) Retrieve, apply, and use AED as soon as possible
11. Early planned transition to advanced life support

seizure-like activity and/or agonal respirations after collapse are also signs of SCA.¹³ For any suspected SCA, the EMP must be activated immediately, followed by prompt CPR and retrieval, application, and use of an AED as soon as possible. Chest compressions should be started immediately and continued until the AED has been brought to the collapsed player and applied to analyse the cardiac rhythm [16]. After adequate chest compressions and AED use, the player should be transferred to the ambulance for advanced life support, preferably by summoning the ambulance on to the field, to the player's side. If this cannot be done, the player must be safely and quickly transferred to the ambulance with continuous chest compressions. Effective chest compressions and repeat AED use must also be maintained during ambulance transportation.^{17,18}

Conclusion

The presented *FIFA 11 Steps* are part of a comprehensive preventative programme to prevent SCD.^{19,20} Education of the medical and

paramedical staff, coaches, physiotherapists, referees, and fitness trainers is an essential adjunct to this process. The FMEB with AED is the proposed standard for medical equipment at all football practices and games.

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