Europe's top football venues are not prepared for treating spectators who suffer heart attacks

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Too many major sports arenas in Europe do not have adequate equipment and procedures in place to save the lives of spectators who suffer heart attacks while watching a sporting event, according to new research published online today in the *European Heart Journal*.

In a study of 187 top sports arenas in ten European countries, used by 190 elite soccer clubs, more than a quarter did not have automated external defibrillators on site and even more did not have medical action plans or basic or advanced cardiopulmonary resuscitation (CPR) training programmes. During the period that was studied, the 2005-6 season, no players or officials suffered a heart attack, but there were 77 heart attacks among the spectators (an estimated incidence of about one in 589,000 spectators).

The authors of the study have called for urgent action to address this problem. Mats Borjesson, associate professor of cardiology at Sahlgrenska Academy (Goteburg, Sweden) and chairman of the sports cardiology section of the European Association of Cardiovascular Prevention and Rehabilitation (EACPR), said: "Our study shows that many of these sports arenas are not adequately prepared to deal effectively with heart attacks among the spectators. We believe that formal recommendations are needed urgently to improve safety for spectators and players. At the highest levels of sport, recommendations should be mandatory.

"When you consider that our study was looking at what was probably the best-case scenarios - top clubs, with good resources - it would appear that the inadequate arrangements are due to a lack of attention being paid to safety procedures, rather than because of financial constraints. At present, there are no formal recommendations about cardiovascular safety procedures at sports arenas in Europe and there still appears to be a lack of knowledge in the non-medical part of the sport. Both education and recommendations in this regard are needed."

Prof Borjesson works as a club doctor at elite level for both the Swedish premier division football team GAIS and the Swedish national women's football team, and other authors of the study are also club doctors (Luis Serratosa for Real Madrid, Antonio Pelliccia for the Italian Olympic team, Klaus-Peter Mellwig for the German national handball team).

Prof Borjesson said: "The idea for this study came from our clinical experiences working as club doctors where it appeared to us that the level of cardiovascular care available at sports arenas was varying, unknown and had not been studied specifically in Europe."

The researchers distributed a 12-question survey via members of the EACPR sports cardiology section who were from the ten countries participating in the study. (The EACPR is part of the European Society of Cardiology).

The survey asked about the average numbers of spectators in the clubs' arenas during one full season, the existence of written medical action plans, the number of emergency personnel present, the availability of automated external defibrillators (AEDs) in the arena, the average distance in time and kilometres to the nearest hospital, the level of training of emergency staff and training programmes offered to them, and the number of heart attacks registered during the season.

The study included 190 clubs from 10 countries: England (37), France (29), Holland (25), Spain (24), Sweden (21), Greece (16), Norway (14), Serbia (9), Austria (8) and Italy (5). Three clubs used the same arena and another two clubs also shared an arena, bringing the total number of arenas to 187. The researchers received replies from 135 teams in the top leagues and 55 in the second or lower leagues.

Of the 190 clubs, 137 (72%) had AEDs, 122 clubs (64%) had a written medical action plan for a sports event; 123 clubs (65%) had a basic CPR training programme and 48 (26%) had an advanced training programme. Of the clubs that were further than five minutes away from the nearest hospital, a quarter did not have AEDs. From the survey information, the researchers estimated that there was a total of at least 45 million spectators during the study season and they estimated the incidence of sudden cardiac arrests as one in 589,000 spectators.

Prof Borjesson said: "The lack of AEDs at the clubs that were more than five minutes away from a hospital was particularly important, since the goal of defibrillation within five minutes would then not be possible to achieve." However, he also said there was no point having AEDs if staff were not trained how to use them and so the lack of CPR training and medical action plans was worrying.

"It is known that viewing and being emotionally engaged in a soccer game increases the likelihood of people suffering a heart attack, particularly amongst the middle-aged and elderly who are more at risk of heart disease. Our study confirms that spectators, in addition to the athletes, need adequate emergency medical procedures in place and, indeed, they could represent the primary target for cardiovascular safety programmes in sports arenas, because they outnumber the players.

"As football is the biggest and best resourced sport in Europe, the situation may be even worse at venues for other types of sports.

However, we have only studied soccer arenas here."

More information: "Time for action regarding cardiovascular emergency care at sports arenas: a lesson from the arena study." European Heart Journal. doi:10.1093/eurheartj/ehq006

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