

Toward More AEDs in Public Places: An Ambitious National Plan in the Kingdom of Saudi Arabia

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Keywords

Out-of-hospital cardiac arrest · Automated external defibrillators · First responders · Kingdom of Saudi Arabia

Abstract

Background: In light of out-of-hospital cardiac arrest, the early use of automated external defibrillators (AEDs) by first responders, when combined with high-quality cardiopulmonary resuscitation, was associated with favorable outcomes. Various health systems must collaborate to overcome the limited availability of AEDs in public places. **Summary:** This review describes the strategy of the Kingdom of Saudi Arabia as part of Vision 2030 of installing more AEDs in public places and reinforcing the concept of preserving more lives. **Key Messages:** The national initiative of installing more AEDs in public places includes (1) an evaluation of current status, (2) the development of a central platform, (3) the provision of training courses and community awareness, (4) the role of e-application, and (5) community engagement.

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Introduction

Over the years, the early use of automated external defibrillators (AED) by first responders when combined with high-quality cardiopulmonary resuscitation (CPR) has been associated with favorable outcomes [1–7]. Strategic planning and intervention programs should target first responders who witness an event early at a scene [8]. Because rapid and effective access to AEDs remains out of reach, expanding these devices to homes, public places, and workplaces is recommended [7, 9–12]. Although inaccessibility, lack of awareness, and negative perceptions are obstacles to AED use, the use of AEDs in public places should be encouraged to reduce the cost to the health-care system by saving more lives during the prehospital phase and minimizing in-hospital and posttreatment care [13–15]. In the Kingdom of Saudi Arabia (KSA), improving access to healthcare and emergency services as part of the Health Sector Transformation Program strategic goals and Vision 2030 influenced a national trigger and a structured implemented plan for installing more AEDs in public places [16]. With a population of more than 35

million and a prehospital median response time to OHCA of 13 min (IQR 9), only 8% of patients have a return of spontaneous circulation. Collaboration between the Ministry of Health (MoH) and the Saudi Red Crescent Authority (SRCA) was necessary to improve OHCA survival rates in the KSA and to outline the strategy of this national initiative [17–20]. In this review, the strategic vision of the KSA of installing more AEDs in public places and reinforcing the concept of preserving more lives is discussed.

Discussion

The national strategic plan of installing more AEDs in public places in the KSA involved many concerned authorities to achieve the following: (1) evaluation of current status, (2) development of a central platform, (3) provision of training courses and community awareness, (4) role of e-application, and (5) community engagement.

First Strategy: Evaluation of Current Status

The total number of AEDs in KSA is unknown, and the knowledge of and attitudes toward AEDs and basic life support skills among first responders in public places are insufficient [21–27]. Nevertheless, many initiatives in the country have taken place to redirect the path and increase the number of AEDs in public places. In July 2020, Jubail Industrial City was labeled the first Saudi heart-safe city through its provision of AEDs in workplaces and public places to increase the chances of survival from cardiac arrest [28]. Worth mentioning is that these devices are linked to the SRCA 997 emergency medical dispatch center, enabling the rapid deployment of suitable resources to incident locations.

The Saudi Food and Drug Authority has elaborated on AEDs and their safety for public use as part of its role in community awareness and encouragement of the wide distribution of devices across the country [29]. By early 2021, 14 Saudi airports across the KSA were provided with 78 AEDs to enhance traveler safety and save lives [30]. During the same year, the project was extended to the two holy mosques in Makkah and Madinah cities, which receive millions of pilgrims every year from different continents; more than 50 AED devices were installed during the initial phase, and more AEDs are to follow [31].

The project was successful after on-scene volunteers witnessed an OHCA within the holy mosque in Makkah city. They responded immediately by retrieving an AED in the mosque after initial resuscitative efforts; after CPR and a shock from the AED, the patient regained a pulse [32]. Recently, more encouraging events have been observed in KSA as the Saudi Society of Emergency Medicine (SASEM) organized a race to raise public awareness about the importance of AEDs in public places [33].

A national plan for AEDs should ensure that the language programmed into the AED is that most broadly spoken in the country. AEDs should be placed in all public buildings, such as at secured entrances, to ensure they are prominently displayed and secured from theft or mischief, to alert individuals within or near the building about the exact locations of AEDs, and to ensure their availability in desired locations by calling the security desk and perhaps engaging security guards in the resuscitation process and in notifying EMS services.

Second Strategy: Development of a Central Platform

A central national AED registry is of utmost importance to ensure an effective response to OHCA cases in public places with AEDs. This registry will receive live data on AEDs' locations across the country, display AEDs' status (e.g., alarm trigger, battery life), deploy proper EMS services to the scene through their links to central SRCA operations, and trigger an EMS response as soon as the AED cabinet is opened. Developing a process that supports the mandatory registration of all AEDs in the country will allow for strategic planning that covers areas in need, ensures device efficiency, and minimizes EMS response times for OHCA cases.

Third Strategy: Provision of Training Courses and Community Awareness

The provision of specialized training courses is a major domain in any plan to install more AEDs in public places. These training courses should have a clear vision, learning objectives, and educational strategies. These could include the basic principles of the first-responder survival chain and the general steps of AED use.

Training should emphasize the different types of AEDs, critical instructions when giving a shock, and training on CPR to fulfill the chain of survival. The key elements in AED training should include onsite and un-

der-stress oral instructions provided to these devices when turned on appropriately. The targeted population for these training courses includes public servants and the general population.

Knowing that many individuals are not specialists in the healthcare field, training activities should use a simple language and target only basic resuscitation concepts. A more advanced course could be an option for talented candidates with a certain amount of knowledge, skills, and aptitude who could play an active role as instructors and further train members of the community.

Community awareness has many channels that can support this national plan by providing direct messages on the importance of AEDs and key steps for their use. Traditional channels (e.g., interviews, videos, images, leaflets), social media platforms, or even awareness campaigns send messages to various sectors in the community on a large scale. Marketing for a universal AED sign and providing basic instructions on the survival chain and key steps to retrieve and use nearby AEDs will improve public awareness at all times.

Fourth Strategy: Role of e-Application

e-Apps play a fundamental role in the national AED plan because they can be used to facilitate the location of AEDs for the public, provide awareness messages, call for help, and deploy nearby trained first responders to the location before the arrival of EMS teams [34]. Committing to these services at the national level is crucial for the success of this project. The “responder” e-application has been implemented in KSA to deploy nearby trained responders to the incidence location in multiple stages and targets healthcare providers (as first responders) and the public.

Fifth Strategy: Community Engagement

Without community support, the objectives of this project will be challenging to achieve. The community can support funding the initiative, accelerate public awareness, and enroll more individuals as first responders who are ready to save more lives in the community. In the KSA, volunteering programs for healthcare systems are maturing, and their role and impact are becoming evident every day, which can be used favorably toward this national initiative [35].

Conclusion

A national AED initiative in public places is necessary in the KSA. Such an initiative could be achieved through a national strategic plan and the vital role and collaboration of both the MoH and the SRCA in installing more AEDs in public places, such as sports stadiums, airports, mass gatherings, and others. This plan should include evaluating the current status, developing a central platform, providing training courses and community awareness, identifying the role of e-applications, and ensuring community engagement.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

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