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# Protocol for certifying stadiums in Mexico as cardio-protected spaces in the 2026 Soccer World Cup

## *Protocolo para la certificación de estadios en México como espacios cardioprotegidos en el Mundial de Fútbol de 2026*

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**Keywords:** cardioprotection protocol, stadiums in Mexico, World Cup.

***Palabras clave:*** *protocolo de cardioprotección, estadios de México, Copa Mundial de Fútbol.*

**ABSTRACT**

Sudden cardiac death (SCD) events at sporting events have raised awareness due to their media impact, and soccer is no exception. The next International Federation of Association Football (FIFA, by its acronym in Spanish) World Cup to be held in Mexico in 2026 must have a structured program to deal with an SCD event expeditiously and efficiently. It is known that SCD events occur more frequently among the public and staff than among players in a stadium. Thus, in this article, the Asociación Nacional de Cardiólogos de México (ANCAM) proposes a cardioprotection protocol for the three Mexican stadiums that will host the 2026 FIFA World Cup.

***RESUMEN***

*La muerte súbita cardiaca (MSC) en eventos deportivos ha creado conciencia por su impacto mediático, y el fútbol no está exento de ello. La próxima copa del Mundo de la Federación Internacional de Fútbol Asociación (FIFA) a realizarse en México en 2026 debe contar con un programa estructurado para poder atender un evento de MSC de manera expedita y eficiente. Se sabe que los eventos de MSC se presentan con mayor frecuencia entre el público y personal del mismo en comparación con los jugadores en un estadio. Con base en ello, en este artículo la Asociación Nacional de Cardiólogos de México (ANCAM) propone un protocolo para la cardioprotección de los tres estadios mexicanos, sedes de la Copa del Mundo de la FIFA 2026.*

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### Abbreviations:

AED = Automated External Defibrillator
ANCAM = National Association of Cardiologists of Mexico (Asociación Nacional de Cardiólogos de México for its Spanish meaning)
CPR = Cardiopulmonary Resuscitation
EMS = Emergency Medical Systems
ILCOR = International Liaison Committee on Resuscitation
SCA = Sudden Cardiac Arrest
SCD = Sudden Cardiac Death

## INTRODUCTION

At the heart of every massive event beats the passion of thousands or even millions of people united by the same goal. The 2026 FIFA (by its acronym in Spanish, International Federation of Association Football) World Cup in Mexico promises to be more than a sporting spectacle: it will be a milestone for global connection and celebration. However, behind the euphoria, there is a vital challenge that we cannot ignore: the cardiovascular health of attendees, players, and staff involved. Although it does not happen frequently, Sudden Cardiac Arrest (SCA) during sporting events is an occurrence that can have fatal consequences for athletes and spectators who attend the stadiums and has a substantial impact on the players, teams, the community, the sport in general, and public health.[1,2]

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Several studies suggest that the incidence of SCA may be higher in athletes than in the general population, but spectators in the stadium are at a higher risk of Acute Coronary Syndrome (ACS) than those outside the stadium.[3,4]

International events of this magnitude present unique risk scenarios, where the high density of people gathered in a single setting, together with euphoria, emotional stress, and intense physical activity, can trigger cardiac emergencies among not only the competitors but also the spectators, merchants, and organizers.[5,6]

Cardioprotection, defined as implementing immediate response protocols for victims of Sudden Cardiac Death (SCD) that include high-quality cardiopulmonary resuscitation (CPR) and access to an Automated External Defibrillator (AED) in less than five minutes, has been established as a fundamental pillar to guarantee the safety and well-being of all, and it is a concept that must include massive sporting events.[7-10]

Strategic planning for adequate cardioprotection in the stadiums hosting the 2026 FIFA World Cup in Mexico can save lives and send a strong message: «Healthcare in sports must be prioritized as much as the sports events themselves».

This article is the result of a collective effort by cardiologists who are members of the National Association of Cardiologists of Mexico (ANCAM) and seeks to raise awareness about the urgency to integrate cardio-protective areas and cardiovascular care protocols in the soccer stadiums that will host the World Cup, highlighting the crucial role that authorities, organizers (including Mexican Soccer Federation), and health professionals will play in this global effort.

## SOCCER UNITES THE WORLD

The «Football Unites the World» strategy, launched by FIFA, is a global initiative that uses football as a tool for unity and development in an international context marked by divisions and crises. In collaboration with the World Health Organization (WHO), this strategy promotes values such as health, equality, inclusion, and sustainability.

Formal collaboration between FIFA and the WHO began in 2019 with the signing of a memorandum of understanding. Since then, the partnership has grown stronger, leveraging the global reach of soccer to improve public health and foster social integration.

This campaign covers physical activity, promoting mental health, ensuring equitable access to health services, and addressing social issues, including online discrimination and hate. During the 2022 FIFA World Cup in Qatar, specific measures were implemented to turn stadiums into platforms for promoting healthy lifestyles and general well-being.

Cardioprotection at mass events, such as the 2026 FIFA World Cup, can become a natural extension of this WHO-FIFA strategy. Setting robust cardioprotection standards reflects this commitment in action; incorporating cardiovascular prevention and response measures as part of events protects attendees' lives and symbolizes a powerful message: sport must be a catalyst for health care at all levels. Just as football unites nations, a global network of cardio-protected stadiums can join efforts to save lives and build a legacy of safety and awareness for future generations.

## RISK OF SCD IN STADIUMS

Most SCD events in athletes are caused by structural heart disease, presenting mainly with ventricular fibrillation or pulseless ventricular tachycardia.[5,11-15] The increased physical exertion of high-intensity activity can trigger an event of SCD, and this explains why these events occur mainly during training or within one hour after it.

The fact that not only athletes but also spectators are at high risk of suffering an SCD event in stadiums needs to be highlighted. The risk factors for this to happen include demographics, the stress of the moment, the emotional condition, the physical condition, substance and/or alcohol abuse, and weather conditions present in the game, such as high temperatures and humidity.

Crawford et al. report that 16.5% of victims of an SCA event at a football stadium in Glasgow, Scotland, were non-spectators, including staff.[5,6,16-20]

Another point to mention is that people who experience an acute coronary syndrome event in the stages are significantly more likely to be carriers of underlying heart disease compared to people who experience an SCD event outside the stages.[4,8,21]

The risk of an SCA event doubles in the areas around the stadium on game day, with an increase in the incidence of SCA in stadiums when the home team has an important match or against a good or famous rival team, possibly related to emotional stress and substance abuse before and during the game, as mentioned above.[22]

Therefore, compared to the general population, prevention of SCA events in the later stages requires special and different measures to ensure that this higher incidence will be successfully treated to prevent future complications.[8]

## ROLE OF THE AED ON THE OUTCOMES OF SUDDEN CARDIAC ARREST

The survival rate of a patient who suffers SCA decreases between 7 and 10% per minute until defibrillation is administered. Probably the most critical determinant of survival to SCA is the delay between collapse and AED use in subjects with arrhythmias treatable by cardioversion or defibrillation. The highest success rates are achieved when electrical therapy is administered between three and five minutes after the arrest.[23-25]

Although many efforts have been made in SCA risk screening programs to identify a person with a risk factor or underlying disease, the risk of SCA remains high in athletes. Despite the implementation of these measures for multiple reasons, false negatives and hidden heart disease, this is one more reason for the placement of AEDs in stadiums.[26,27]

AEDs and early Cardiopulmonary Resuscitation (CPR) are the treatment of choice for patients with SCA. Data on football players with SCA receiving CPR showed an increase in survival rates from 23 to 50% compared to the general population when they receive CPR on time, and these numbers improve when the use of an AED is added to CPR maneuvers.[28-30]

Survival rates in stadiums are better than elsewhere due to greater availability and faster response of AEDs and CPR, including Emergency Medical Systems (EMS). Bystander CPR and AED use have also improved survival, which may apply to stadiums.[31,32]

## ENOUGH AEDS IN NUMBER AND THEIR LOCATION

Despite evidence showing that the use of AEDs improves survival rates, many stadiums worldwide, including those in Mexico, do not have AEDs in their facilities. Borjesson et al. report that, across Europe, stadiums only have AEDs for matches and training, and 74% do not have personnel with advanced CPR training available.[33]

Malhotra et al. (2019) reported that all professional football stadiums in England had AEDs for their matches and training. Many of the stadiums that do not have AEDs may have local emergency action programs and protocols for community defibrillation when an SCD event occurs. However, as reported, this response takes more than 10 minutes in 33% of cases.[33,34]

To easily identify the location and number of available AEDs, the American Heart Association (AHA) recommends placing an AED within 1 to 1.5 minutes or approximately 160 m away from where an SCD event could potentially occur.[35]

The time required for a rescuer to grab the defibrillator, bring it to the scene, and place it on the patient should also be taken into account, giving a more accurate estimate of response time.

## AED SIGNALING

The International Liaison Committee on Resuscitation (ILCOR) designed international symbols to indicate the locations of AEDs *(Figure 1)*. However, these symbols are not easily recognized by the general public: on average, 39% of travelers from 42 different countries recognize the symbology (range 29.4 to 47.9%).[36,37] The UK Resuscitation Council considered these data and changed the signs, obtaining 83.5% of the public's approval.[38]

In the context of an SCA event at a stadium, the rapid response of spectators, staff, and the

facility's EMS personnel must be able to find and locate an AED for its use quickly. Explicit signaling of the site where it is located is thus a priority.

*Figure 2* shows the ANCAM's suggested signage to indicate the location of AEDs and their use.

**Figure 1:** International signal recognized by the ILCOR for the location of automatic external defibrillators.

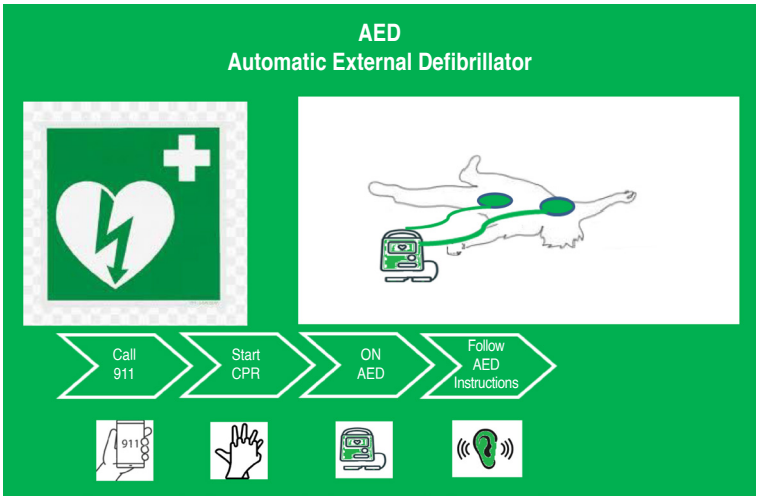


**Figure 2:** Signal for the AED in the stadium.
Modified from D Bassi M, Farina JM, Bombau J, Maurice MF, Bortman G, Nuñez E, et al. Sudden Cardiac Arrest in Basketball and Soccer stadiums, the role of Automated External Defibrillators: a review. For the BELTRAN Study (Basketball and Soccer stadiums: registry on Automatic external defibrillators). Arrhythmia & Electrophysiology Review 2023; 12: e03. doi: 10.15420/aer.2022.30.

## IS A WORLD CUP POSSIBLE WITH CARDIO-PROTECTED STADIUMS?

The proposal for an immediate response protocol for an SCD seeks to be a comprehensive and multifaceted solution to achieve the goal of rescuing a victim in the event of an incident occurring at any of the 2026 FIFA World Cup football matches and not only on the field but in all facilities, both inside and outside the stadiums.

The protocol applies in general to the three World Cup Mexican stadiums: Azteca Banorte Stadium in Mexico City (CDMX), Akron Stadium in Zapopan, Jalisco, and the BBVA Bancomer Stadium in Monterrey, but it will have to be adapted to the peculiarities of each stadium according to its capacity, structure, map, and access.

### The Azteca-Banorte Stadium

The Azteca Stadium, now called «Azteca Banorte», is an iconic venue, renowned for its rich history and capacity to accommodate over 87,000 spectators, serving as a prime example for implementing the cardioprotection protocol in locations hosting the 2026 FIFA World Cup.

This venue has demonstrated its commitment to the safety and well-being of attendees by adopting prevention and emergency response measures. Among the reasons that support her role as a model are:

1. Medical infrastructure: The Azteca Banorte Stadium has several nearby medical units strategically distributed, which guarantee rapid intervention in case of emergencies.
2. Established agreements with nearby hospitals with a Cardiovascular Intensive Care Unit and a hemodynamics room available, both with certified personnel, during the event (from one hour before and up to two hours after the event).
3. Integrated emergency protocols: This venue has implemented efficient communication systems that coordinate medical, security, and logistics personnel to optimize care at mass events, minimizing response times.

4. Staff training and public awareness: Through periodic training programs, the stadium team and volunteers receive training in medical emergencies, promoting attendees' awareness of the importance of acting in an emergency.
5. Operational tests: The Azteca Banorte Stadium has demonstrated its ability to respond effectively to high-demand massive events, such as international matches and concerts, making it a real laboratory for validating protocols.

Taking a similar approach at the stadiums hosting the 2026 FIFA World Cup will standardize safety measures and boost public confidence in the organizers' preparations. Cardioprotection must be a priority at events of this magnitude, and the Azteca Banorte Stadium shows us that it is possible to integrate health, technology, and logistics to save lives and protect those who make football the most exciting sport in the world.

## Chivas Akron Stadium and Monterrey BBVA Stadium

The Chivas Akron Stadium has a capacity of 49,850, and the Monterrey BBVA Stadium has 53,500 spectators, respectively.

The maps of the three World Cup Mexican stadiums are represented in *Figures 3-5*.

The suggested locations for placing AEDs and their signage in each of the three stadiums are shown in *Figures 6 to 8*, respectively.

## Implementation

This protocol seeks to ensure a rapid, coordinated, and effective response to any cardiovascular emergency, maximizing the chances of survival. To ensure that all personnel are fully prepared, the following must be taken into account:

1. Start of training (six months before the event):

    a) Begin training key staff (security, ushers, volunteers, and medical teams) in high-quality basic CPR and AED use.
    b) Conduct progressive training to ensure all rotating staff are covered.

2. Review and drills (three months before the event):

    a) Organize comprehensive drills at the stadium to measure response times. It helps fine-tune weak points in the protocol.
    b) Refresh training for staff who require it.
    c) Inform the public of the cardioprotection protocol that will be in effect during each match of the 2026 FIFA World Cup.

3. Final training (two weeks before the event):

    a) Refresher session with all personnel involved.
    b) Conduct a general drill under conditions similar to the event day (with attendees, real times, and specific roles assigned).

## Protocol operation

The protocol must be fully operational seven days before the event, following the checklist:

- All medical equipment, AEDs, signage, and technology must be installed, tested, and ready to use.
- The command center and mobile emergency teams must communicate 72 hours before the event.

A checklist is suggested to ensure it is properly implemented:

- All medical equipment, AEDs, signaling, and technology must be installed, tested, and ready for use.
- The command center and mobile emergency teams must be in communication.

### On the day of the event

First thing in the morning:

1. Mobile medical teams, security personnel, and volunteers are already in their assigned positions.
2. Confirm that all critical points (AED, communication, mobile application) are functional.

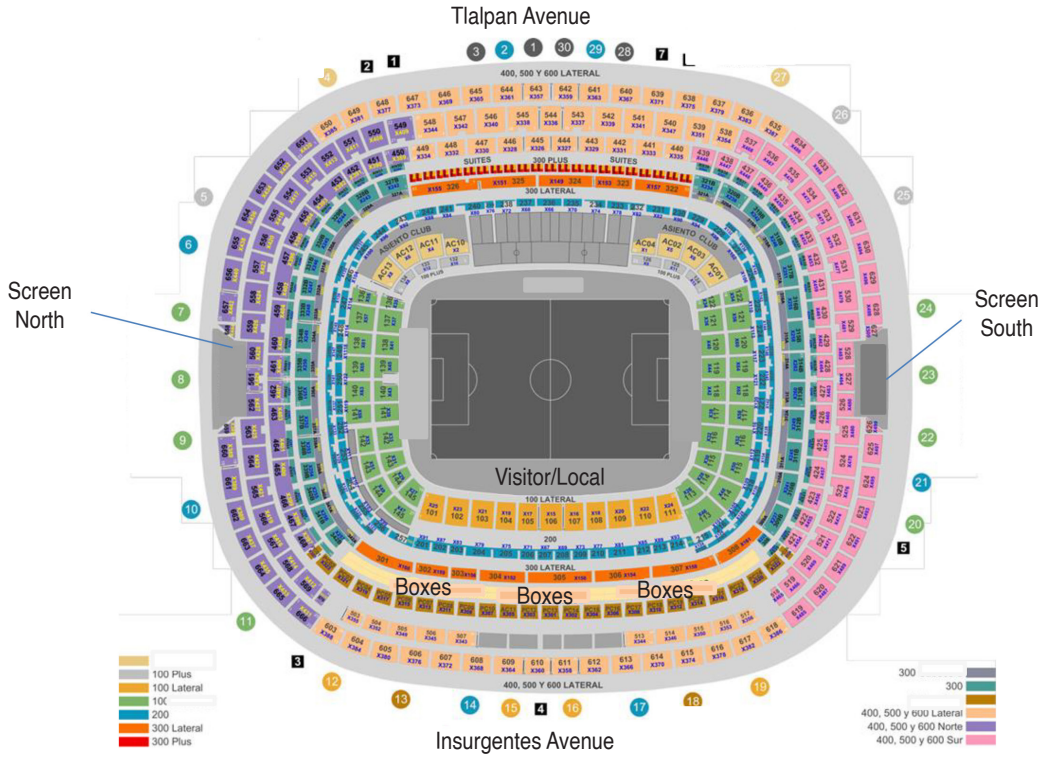


**Figure 3:**

Map of the Azteca Banorte Stadium in Mexico City, Mexico.

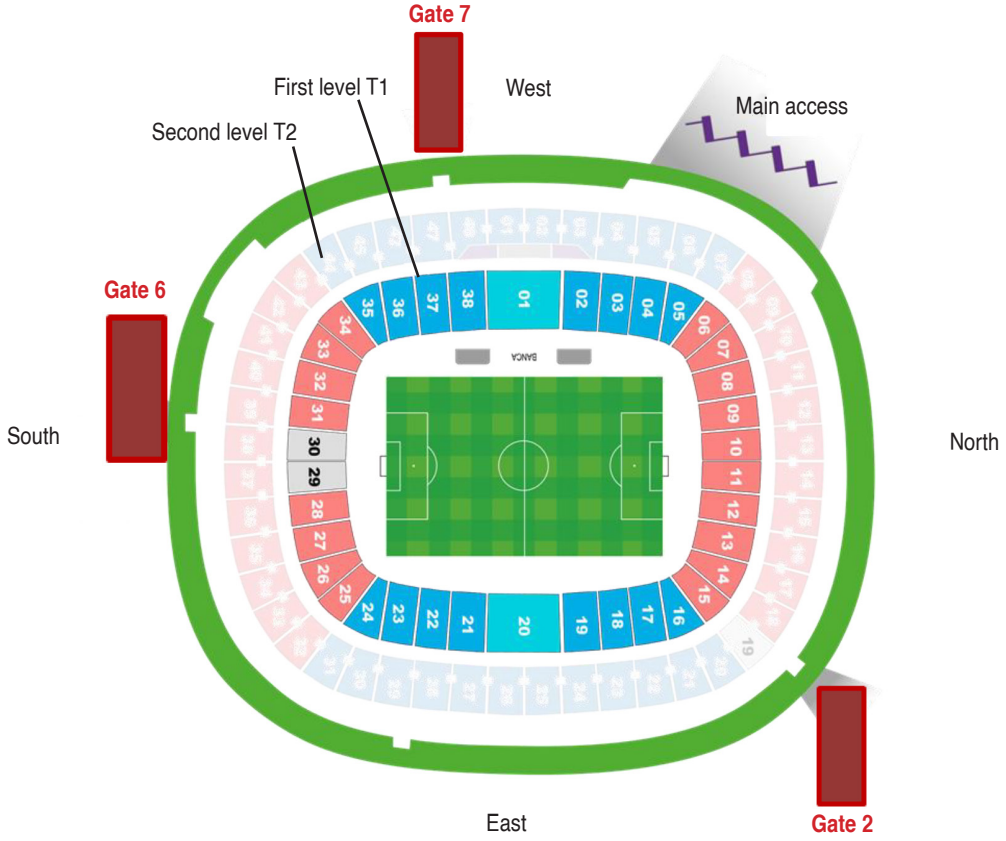


**Figure 4:**

Map of the Chivas Akron Stadium in Zapopan, Jalisco, Mexico.


**Figure 5:**

Map of the Monterrey BBVA Stadium in Monterrey, Nuevo León, Mexico.

3. Verify the ambulances' evacuation routes, which have the easiest and fastest access to the reference hospital with real-time updates. Assure cooperation with police authorities to help expedite ambulance mobilization.
4. Confirm with the hospitals that they agree on their availability for an SCA event that day.
5. It is suggested that event attendees receive free training in basic CPR and AED use, which ANCAM can provide.

**On the day of the event, early in the morning:**

- Keep staff on active alert from at least six hours before, throughout the match, and until the last person has left the stadium facilities, concourses, and parking lots.
- Conduct a dissemination campaign using visual advertisements to explain the cardioprotection protocol. When and how is it activated? What application should they have installed on their smartphones?
- Mobile medical teams, security personnel, and volunteers are already in their assigned positions.
- Confirm that all critical points (AED, communication, mobile application) are functional.
- Free training in basic CPR and AED use is suggested for event attendees.

**During the Event:**

- Keep staff on active alert from at least six hours before, throughout the match, and until the last person has left the stadium facilities, esplanades, and parking lots.
- Conduct a campaign to disseminate the cardioprotection protocol through visual advertisements, explaining what it entails. When and how is it activated? Which application should they install on their smartphones?

**Closing of the event (debriefing):**

- An executive report of the protocol must be made, as well as the incidents and/or medical care events that occurred during it.
- Improvement proposals based on the areas of opportunity and the threats detected during

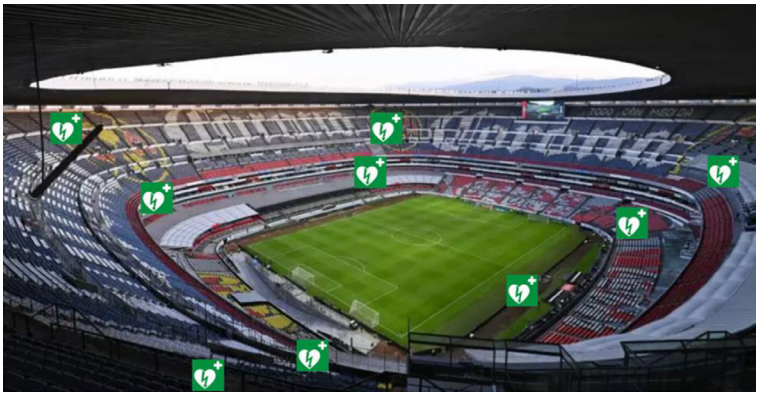

**Figure 6:** Automatic external defibrillator location at Azteca Banorte Stadium in CDMX, Mexico.

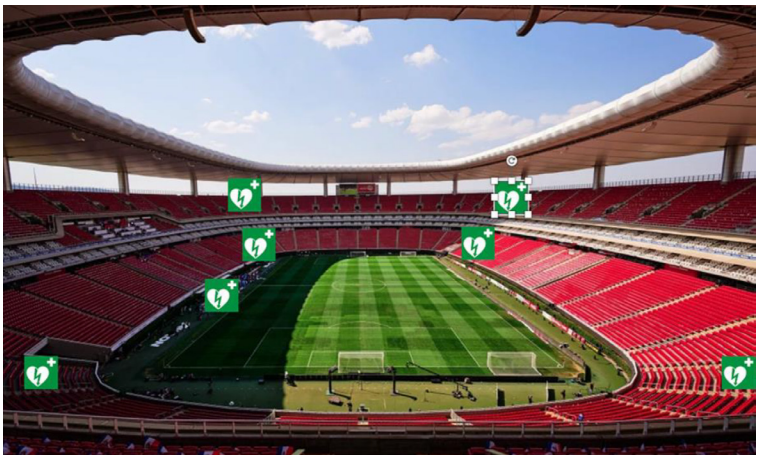

**Figure 7:** Automatic external defibrillator location at Chivas Akron Stadium in Zapopan, Jalisco, Mexico.

**Figure 8:** Automatic external defibrillator location at BBVA Stadium in Monterrey Nuevo León, Mexico.

the application of the cardioprotection protocol at the end of the meeting.

– In the case of an SCA event, verify the care times, log records, follow up on the case with the reference hospital, and do not close the follow-up of this until the recovery and/or discharge from the hospital of the victim.

## Transfer of the victim

Based on the family's decision, the victim will be transferred to the third-level hospital of their choice, having previously consulted the availability of cardiovascular equipment at the site where the victim will be transferred. An initial route by land ambulance must be drawn between the stadium and each hospital where the patient could be moved. In turn, an alternate route must be available in case of any unforeseen event, such as a car collision, closed streets, and demonstrations.

The hospitals closest to each of the three stadiums that have a 24/7 cath lab available are listed below:

### Hospitals closest to Azteca Banorte Stadium in CDMX

1. National Institute of Cardiology «Ignacio Chávez». Distance: approximately 8.3 km. (20-30 minutes driving). Location: Juan Badiano No. 1, Col. Section XVI, Tlalpan, Mexico City.

2. National Institute of Medical Sciences and Nutrition «Salvador Zubirán». Distance: approximately 8.5 km. (25-35 minutes driving). Location: Vasco de Quiroga 15, Col. Belisario Domínguez Section XVI, Tlalpan, Mexico City.

3. Ángeles del Pedregal Hospital. Distance: approximately 8.3 km. (20-30 minutes driving). Location: Camino Sta. Teresa 1055-S, Heroes de Padierna, Héroes de Padierna, La Magdalena Contreras, 10700 Mexico City.

4. Ángeles Acoxpa Hospital. Distance: approximately 2.3 km (20 minutes

driving). Location: Calz Acoxpa 430, Coapa, Exhacienda Coapa, Tlalpan, 14308 Mexico City.

5. General Hospital of Mexico «Dr. Eduardo Liceaga». Distance: approximately 20 km. (40-50 minutes driving). Location: Dr. Balmis 148, Doctores, Cuauhtémoc, Mexico City.

6. Pemex Central South High Specialty Hospital. Distance: approximately 7.7 km (20-30 minutes driving). Location: Anillo Perif. 4091, Fuentes del Pedregal, Tlalpan, 14140 Mexico City.

7. Medica Sur Tlalpan Hospital. Distance: approximately 1.8 km (10 minutes driving). Location: Puente de Piedra 150. Col. Toriello Guerra Tlalpan. 14050 Mexico City.

**Hospitals closest to Akron Stadium in Zapopan, Jalisco**

1. New Civil Hospital of Guadalajara «Dr. Juan I. Menchaca». Distance: 16 km (25-30 minutes driving). Location: Salvador Quevedo and Zubieta 750, Independencia Oriente, Guadalajara.

2. General Hospital of the West (Zoquipan). Distance: 10 km (15-20 minutes driving). Location: Av. Zoquipan 1050, Zapopan, Jalisco.

3. Puerta de Hierro Andares Hospital (Zapopan). Distance: 11 km (15-25 minutes driving). Location: Blvd. Puerta de Hierro 5150, Zapopan, Jalisco.

4. Puerta de Hierro Sur Hospital. Distance: 18 km (25-35 minutes driving). Location: Av. López Mateos Sur 1710, Tlajomulco de Zúñiga, Jalisco.

**Hospitals closest to Monterrey BBVA Stadium in Monterrey, Nuevo Leon**

1. University Hospital «Dr. José Eleuterio González». Distance: approximately 12 km from the BBVA Stadium. (25-35 minutes driving). Location: Av. Dr. José Eleuterio González S/N, Mitras Centro, 64460 Monterrey, NL.

2. Zambrano Hellion Hospital. Distance: 16 kilometers from the BBVA Stadium (20 to 25 minutes driving). Location: Av. Batallón de San Patricio 112, Real San Agustín, 66260 San Pedro Garza García, N.L.

3. Christus Muguerza Alta Especialidad High Specialty Hospital. Distance: approximately 16 km. (20-25 minutes driving). Location: Miguel Hidalgo y Costilla 2525, Obispado, 64060 Monterrey, N.L.

4. Ángeles Monterrey Hospital. Distance: About 17 km (20 to 25 minutes driving). Location: Calz. del Valle 325, Del Valle, 66220 Monterrey, NL.

5. Doctors Hospital East. Distance: 7 Km (17 minutes driving). Location: Av. Prol. Francisco I. Madero 6060, Libertad, 67130 Guadalupe, N.L.

This planning will ensure the protocol is effective and operational from pre-event to conclusion.

## CONCLUSIONS

1. Any stadium has a high incidence of SCA among athletes, spectators, and staff. The three World Cup Mexican stadiums are no exception. AEDs should be in sufficient numbers and placed strategically with easy access to the SCA event site.
2. Survival and complications of patients with SCD are significantly improved when CPR and AED are provided at the site of the SCA. The three World Cup Mexican stadiums should be equipped with AEDs and CPR-trained personnel on-site, without having to wait for EMS systems to come from outside the stadium to provide the service.
3. All three World Cup Mexican stadiums must have proper signage, and visualization of the AED location improves ease of use and facilitates rapid deployment. Visible signage, including bright colors, instructions, and additional directional signage > 5m

away, will allow for early deployment of defibrillation.

4. The three World Cup Mexican stadiums must have a dedicated program and an emergency action plan that includes the care of an SCA at any stage. The plan must be practiced at least once a year to improve, review, and care for the SCA.

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