

## Save A heart: Enhancing Public Access Defibrillation (E-PAD) in Nigeria Program.

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### Problem Statement

According to the World Health Organization (WHO), **Nigeria's healthcare system** ranks among the poorest in the world. A critical gap in Nigeria's Healthcare system is the lack of a functional and well-coordinated Emergency Medical Service (EMS), leading to preventable mortality and morbidity.

**Cardiac arrest** is a sudden loss of heart function in which there is malfunctioning of the heart electrical activities. The heart stops beating properly hence said to have arrested or ceased in function. This may occur suddenly or preceded by some symptoms. It can occur anytime, anywhere and to anybody. Death becomes inevitable in victims of cardiac arrest if prompt intervention is not taken. Cardiac arrest may be reversible if there is timely intervention with adequate cardiopulmonary resuscitation (CPR) performed and a defibrillator is used. The combination of these actions can restore a normal heart rhythm within a few minutes.

The promptness and time interval in which CPR as well as defibrillation with an **Automated External Defibrillator (AED)** is carried out will determine the survival of the patient. It is estimated that 70 to 80 percent of sudden cardiac arrest incidents happen outside the hospital, and for every minute that passes without adequate and effective CPR and defibrillation, a **Sudden Cardiac Arrest (SCA)** victim's chance of survival decreases by 7 to 10 percent.

It is also estimated that with effective bystander intervention through Basic Life Support (BLS), Cardiopulmonary Resuscitation (CPR) and correct use of Automated External Defibrillator (AED), survival triples to 31.4 percent<sup>[iv]</sup>. With the growing number of non-communicable diseases in Nigeria, and the many unrecorded cases of ventricular fibrillation and cardiac arrest, the incidence of Out of Hospital Cardiac Arrest (OHCA) and avoidable deaths could be higher.



"Recently, there was an incident of the demise of a medical specialist following a sudden cardiac arrest among his trained colleagues. It was noticed that there was no access to a functional AED. Probably if AED was available, accessible and deployed immediately after SCA, he might have been revived. If this could happen to a medical practitioner in the midst of his colleagues, what is the fate of the general populace? This incidence triggered discussion among key opinion leaders and the urgent desire to find a lasting solution to the problem."

There is limited data and information on the state of **Emergency medical services (EMS)** in Nigeria that can guide policy makers and other stakeholders in healthcare strategic planning. In particular, we do not have current and reliable information on the incidence, prevalence of OHCA neither do we have a good understanding of the level of awareness of OHCA, preventive and other intervention measures. In addition, we do not have a formal registry (database) on availability, location and functionality of AEDs in Nigeria.

## Save A heart: Enhancing Public Access Defibrillation (E-PAD) in Nigeria Program.

### Our Solution

**PHASE 1: CREATION OF (AED) REGISTRY:** A survey was carried out to identify the availability and accessibility of AED at different locations in Nigeria using Ikeja Local Government Area (LGA) as the pilot and ultimately **creating an AED registry** for Nigeria.

A white paper has been produced and publication is ongoing. (Attached to this material)

**PHASE 2: ENSURING AVAILABILITY, ACCESSIBILITY AND FUNCTIONALITY OF AEDs AT STRATEGIC LOCATIONS IN NIGERIA:** Develop a marketing and advocacy package targeted at selected corporate bodies in Lagos to test out the **Buy-One Donate-One (BODO) strategy**, that is, corporate bodies who can afford not only provide for their facility and organization, but also purchase for at least one target area that cannot afford the AED. This phase has been halted due to the current COVID-19 pandemic.

**PHASE 3: BACK TO RHYTHM CAMPAIGN:** Use of social media platforms to raise awareness on prevalence, prevention of cardiac arrest and the use of AED. Engage influencers to support the campaign for wider coverage.

#### Program Goal:

Improve Quality of Life and Population Health, reduce mortality and morbidity through an enhanced Medical Emergence Response (MER).

#### Long-term Goals:

- Create a National AED Registry.
- Increased availability, accessibility and functionality of AEDs at strategic locations in Nigeria.
- Raise Wider Public Awareness to the prevalence of OHSCA and the importance of timely response.



### Expected Final Results



**10% decrease** in OHSCA incident rates in 5 years.



**10-20% increase** in survival rates from SCA.



**20% increase** in available and functional AEDs in Lagos.



**20% increase** in Medical Emergence Response.

### Partners:



# **NEED ASSESSMENT AND AVAILABILITY OF AUTOMATED EXTERNAL DEFIBRILLATOR (AED) IN NIGERIA.**



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# Background



According to the World Health Organization (WHO), Nigeria's healthcare system ranks among the poorest in the world[[]]. One of the critical gaps in Nigeria's Healthcare system is the lack of a functional and well-coordinated Emergency Medical Service (EMS), leading to preventable mortality and morbidity.

Cardiac arrest is a sudden loss of heart function in which there is malfunctioning of the heart electrical activities. The heart stops beating properly hence said to have arrested or ceased in function. This may occur suddenly or preceded by some symptoms. It can occur anytime, anywhere and to anybody.

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It is also estimated that with effective bystander intervention through Basic Life Support (BLS), Cardiopulmonary Resuscitation (CPR) and correct use of Automated External Defibrillator AED, survival triples to 31.4 percent[iii]. With the growing number of non-communicable diseases in Nigeria, and the many unrecorded cases of ventricular fibrillation and cardiac arrest, the incidence of Out of Hospital Cardiac Arrest (OHCA) and avoidable deaths could be higher.

Recently, there was an incident of the demise of a medical specialist following a sudden cardiac arrest among his trained colleagues. It was noticed that there was no access to a functional AED. Probably if AED was available, accessible and deployed immediately after SCA, he might have been revived. If this could happen to a medical practitioner in the midst of his colleagues, what is the fate of the general populace? This incident triggered discussion among key opinion leaders and the urgent desire to find a lasting solution to the problem.

There is limited data and information on the state of EMS in Nigeria that can guide policy makers and other stakeholders in healthcare strategic planning. In particular, we do not have current and reliable information on the incidence, prevalence of OHCA neither do we have a good understanding of the level of awareness of OHCA, preventive and other intervention measures. In addition, we do not have a formal registry (database) on the availability, location and functionality of AEDs in Nigeria.



## Aims and Objectives

A survey was developed aimed at identifying the availability and accessibility of AED at different locations in Nigeria using Ikeja Local Government Area (LGA) as the pilot and ultimately creating an AED registry for the country.

The objectives of this study include;

1. To assess the knowledge and usage of AED amongst health care practitioners and in relevant organizations and strategic points in the LGA.
2. To determine the total number of AEDs available in out-of-hospital settings.
3. To determine the distribution / location of the AEDs and the status of their functionality.
4. To determine the level of training of the populace in the LGA on CPR and use of AED.
5. To assess the level of preparedness of the general population and the healthcare system in handling sudden cardiac arrest in the event of an emergency.
6. To generate survey report and geographical mapping.

# Chapter 3

## Materials and Methods

### Study Area

#### IKEJA

This pilot survey was conducted at Ikeja LGA which is the capital of Lagos State and as such, the seat of government. It has a land mass of about 49.92 KM Squared. with a population of 313,000 (March 2015) and Population density of 17,254/KM Squared. It is a metropolitan city with a mix of different ethnic groups, the majority being Yoruba.

The LGA has a large industrial park and is home to several manufacturing companies. In addition, there are several banks, educational institutions, hotels, sports arena, places of worship and motor parks including the recently opened park at Oshodi.

### Methodology

The survey was conducted among health care practitioners and in relevant organizations and strategic points in Ikeja LGA of Lagos State using self-administered questionnaires. There was a training session on the methodology for administering the questionnaires facilitated by Dr. Oluwamuyiwa Rotimi and Dr. Kunle Megbuwawon. A total of 3 volunteers were trained for field assessment and the volunteers had pre and post tests on their knowledge of AED.

The questionnaire was structured to provide answers to the following

1. Knowledge and awareness of Sudden Cardiac Arrest (SCA), Cardiopulmonary Resuscitation(CPR) and Automated External Defibrillator (AED).
2. Availability, location and functionality of AEDs.
3. Previous training and ability to use AEDs.
4. Capacity or organization.
5. Need and desire to be trained on BLS and AED.

The team distributed survey questions between 8.30 am and 5:00 pm daily for 5 working days. Focal persons that were approached and assisted with filling of the questionnaires at each of the places visited were doctors, nurses (matrons), principals, supervisors, admin personnel etc.

A platform which comprised of the project leads, coordinators and volunteers was created on one of the social media handles to facilitate easy communication among the people involved, to identify challenges encountered on the field, proffer necessary assistance and monitor progress.

The selection and target audience were based on the inclusion and exclusion criteria set out below:



### Inclusion criteria:

- A. Organizations must fall within the under listed organizations under target audience
- B. Must have a regular influx of people at an average of 100 or more per day?
- C. Must be within Ikeja LGA.

### Exclusions:

- 1. Pilot excludes other LGAs in Lagos.
- 2. Small organization with capacity of less than 100 per day.

### Target Audience

1. Public transportation hubs (Airport, Bus terminals and Jetties).
2. Public and private schools.
3. Sport centers.
4. Public (government and military) institutions.
5. Large church centers.
6. Large mosque centers.
7. City malls.
8. Large hotels and restaurants.
9. Large entertainment and event centers.
10. Private and public hospitals.

### Ikeja LGA was divided into 6 zones for ease of location:

- Oba Akran
- Allen Avenue
- Agidingbi
- Alausa
- Oregun
- Airport



With the aid of google mapping, the various organizations were identified through desk search. Other areas were assessed due to their proximity to earlier identified locations.

### Validation of Result

During the survey, organizations that claimed to have AEDs were asked about the functionality and usage. The volunteers requested to see the device. The team coordinator also placed a call to the various organizations that indicated that they had an AED to cross check and validate the information received through the survey team including availability, functional status and training need.





# Result

A total number of 300 questionnaires were administered. Table 1 showed the different organizations that were visited. The largest number of facility visited was Events centers and hotels (52) followed by hospitals (36).

**Table 1:**

S/N	Type of Facility	No visited
1	Hospitals	36
2	Schools	29
3	Airport	1
4	Markets, Supermarkets and City Malls	17
5	Government Agencies	1
6	Entertainment /Event Centers, Hotels and Restaurants.	52
7	Banks	6
8	Others – bus stations, taxi parks, churches, mosques, large pharmacy outlets, filling stations, large private organizations, ICT companies, stores etc.	158

**Table 2:**

S/N	Name of Facility
1.	Lagos State University Teaching Hospital
2.	The Brighthope Hospital and Wellness Centre
3.	Blue Cross Hospital
4.	Jajo Hospital
5.	Duro Soley Hospital
6.	St Ives Specialist Hospital
7.	Mother and Child Hospital
8.	Deseret International Hospital Groups
9.	Ikeja Medical Centre
10	Lagoon Hospitals Ikeja
11.	Olukayode Clinic
12.	Liberty Specialist Hospital
13.	Holy Trinity Hospital
14.	Lagos State Ministry of Health
15	Muritala Muhammaed International Airport

Fifteen (15) AEDs were available in the LGA surveyed and all were found only in hospitals, except the Lagos State Ministry of Health and the international Airport.

Effort was made to verify this with calls to each of the facilities. Although the facilities claimed their AEDs were functional, none of the machines were tested to confirm their functionality. Table 2 shows the facilities where the AEDs are located. More than half of the (21/36; 58%) of 36 Health Facilities surveyed did not have AEDs including major locations.

Other important places with high influx of people that do not have AEDs included the shopping mall, government agencies, high profile hotels and event centers. Some major hospitals also did not have an AED in their facility.

# Result

Figure I depicts the level of knowledge and awareness of the population studied on SCA, CPR and AED. 84% of the respondents had no knowledge of what SCA was all about, 55.3% attested knowing about CPR and 75.3% claimed they had knowledge of AED.

The percentage of the respondents that claimed to have been trained on AED and its usage was 58.7%. This can be inferred as training on CPR and BLS among health workers and the general public on management of emergencies.

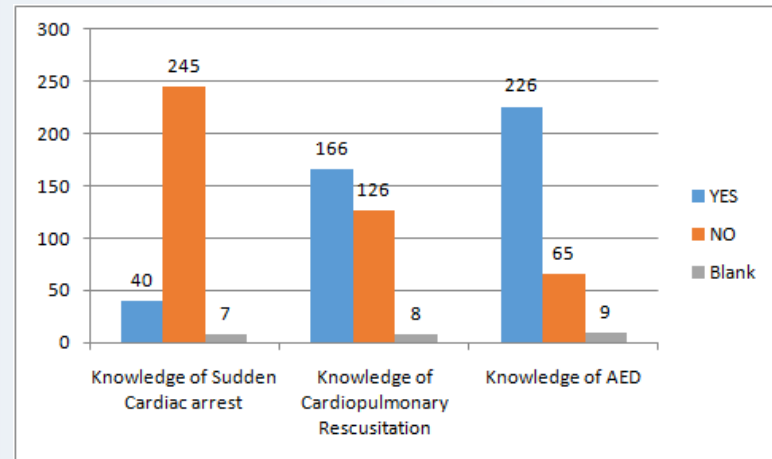


Figure 1:

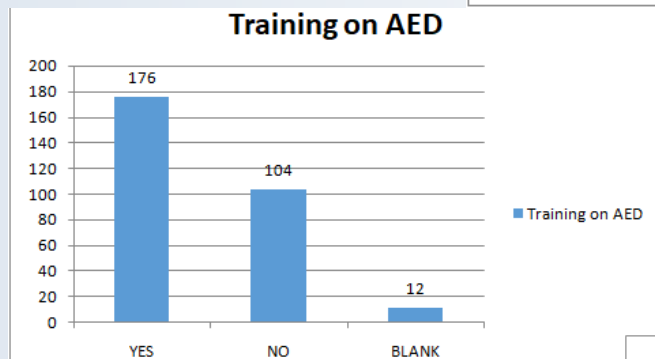


Figure 3:

60% of the respondents claimed to have training on AED (figure II) while 85% had knowledge of usage of AED as seen in figure III.

Majority of the facilities had a staff strength of between 100 - 200 and as such there is a need for AEDs in such facilities and establishments.

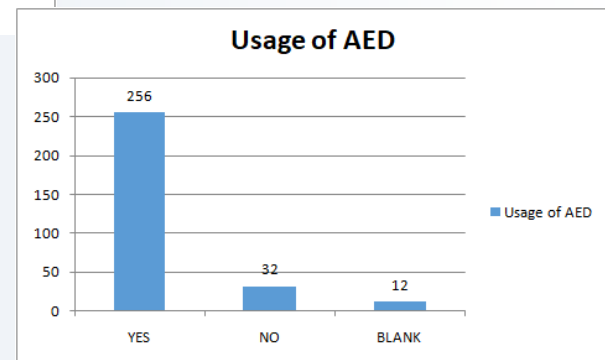
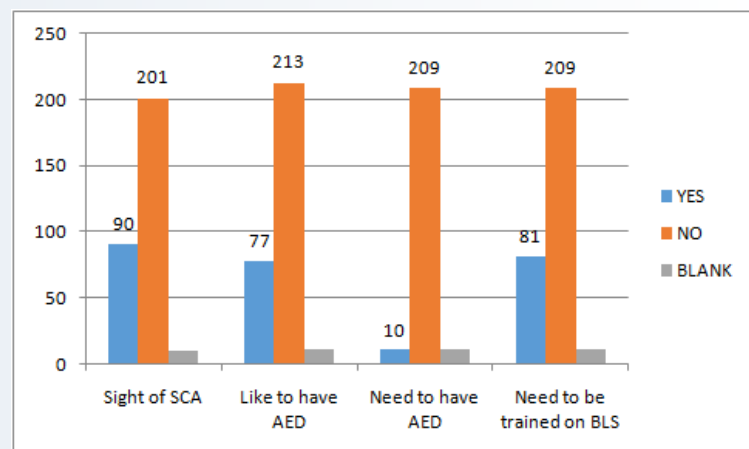


Figure 4: Perception on Need for AED



# Conclusion

From the survey, it can be concluded that

1. Only 15 facilities have AEDs in Ikeja LGA and these are mainly hospitals except the Ministry of Health and international Airport.
2. Facilities like event centers, hotels, schools, parks and bus stations do not have AEDs.
3. Functionality of the AEDs could not be ascertained in the facilities that claimed they had the device.
4. There is lack of knowledge of the people at Ikeja LGA on what sudden cardiac arrest is all about
5. Most people claimed to know about CPR and use of AED
6. The level of preparedness of the general population and the healthcare system in handling sudden cardiac arrest in the event of an emergency is VERY POOR
7. Geographical mapping can be used to assess the location of AEDs in Ikeja LGA

## Location of AED in Ikeja LGA



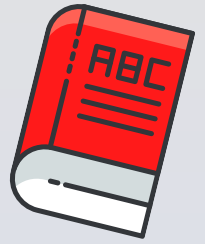
# Recommendations

Leverage professional associations e.g. Association of Private General Medical Practitioners to influence focal persons within institutions to support the survey and provide responses. This is likely to improve sample size and statistical significance.

- Ensuring the availability of affordable AEDs at strategic locations in the country can be sustained by ensuring that those who can afford not only provide for their facility and organization, but also purchase for at least one target area that cannot afford the AED ie Buy-One-Donate-One (BODO). Social enterprise model can be applied to improve the distribution of AEDs in low-income areas and informal establishments
- Develop a marketing and advocacy package targeted at selected corporate bodies in Lagos to test out the Buy-One-Donate-One (BODO) strategy.
- Need for advocacy from the government and private organizations
- Need for training in the CPR and use of AED in event of emergency
- Organization of seminars, talks, training, symposia at various facilities and use of various means of publicity and adverts in order to improve knowledge and awareness of the populace on CPR and AED.
- Routine regular check of the available AEDs to ascertain its functionality per time
- Support and Funding of the project/survey by the government and other relevant stakeholders at different levels for ease of conduct of survey in order to ensure wide coverage across the nation.
- Set up a dedicated project Management team to replicate the Surveys in other Local Government Ares of Lagos State and eventually the rest of the country
- The entire Nigerian Health System needs urgent attention.



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