

Community-Wide Uses Of Cardiopulmonary Resuscitation (CPR), First Aid And Automated External Defibrillator (AED).: Why not in Saudi Arabia?

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Abstract

Over the last two decades a lot of success has been achieved in the healthcare delivery system in Saudi Arabia. While a minor success in the community This has been the outcome of the dedication and perseverance in organizing and conducting the training programs. Future progress will need the collaboration of several higher authorities and dedicated personnel at various levels in the hope of achieving such a task in a short period. Involvement of the whole community at large is mandatory in achieving this goal. It will be the epitaph of Saudi Arabia to accomplish this task and set an example for all the Gulf States and other Arab countries.

So finally my message to everybody is, the best way to know what you are doing is to enroll in a recognized CPR class to obtain a valid certificate. Performing CPR or using an AED when you are not sure of its proper application can be dangerous to the patient, attending personnel around the patient and yourself.

INTRODUCTION

CPR was introduced in the mid Sixties, as a measure to intervene immediately in cases of Cardiac or Respiratory Arrest, in order to provide the body with oxygenated blood, until the Emergency Cardiac Team arrives and the appropriate management is under taken. Throughout the last forty years, researchers' ideas were implemented, followed up and reviewed to achieve a better survival rate. Top medical experts consider the community as one massive Coronary Care Unit. This started during the civil war in Northern Ireland, when mobile Coronary Care Units were introduced into the service. Some European countries include doctors to be part of the Emergency team out of the hospital, while America developed Emergency Medical Technicians, which evolved into Paramedics and most recently the program developed to be a degree as a Physician's Assistant.

Cardiac arrest results in the immediate cessation of blood pumping out of the heart to vital tissue organs such as the brain and the heart itself whose normal function depends on continuous supply of oxygenated blood. Abnormal heart rhythm in the form of V.F. (the most treatable cardiac arrest) or asystole which has a poor prognosis, may result. Sudden cardiac arrest occurs anywhere, at home, in offices, in

factories, in the street, sport facilities and sometimes in cars. It can occur in old or young individuals and even athletes. Experience in this field plus studies prove that immediate intervention by the lay-person providing CPR (Basic Life Support, BLS), plays a vital role in maintaining tissue viability until the rescue team arrives or full recovery by return of patient's pulse and respiration. 60 – 85% of all Cardiac Arrests are due to Ventricular Fibrillation (V.F.) or pulseless Ventricular Tachycardia (V.T.). Those are the only two rhythms that must be attended to and without delay by performing CPR and shocking the patient using asynchronized waveform of the defibrillator. A good percentage of sufferers will recover if CPR combined with the use of an AED is implemented promptly and effectively by the first rescuer, EMS personnel or the public at large who have been trained, equipped and authorized to use the available equipment at their disposal. This was the prime recommendation of the new International Guidelines 2000 on CPR and ECC.

CPR is a measure to buy time and extend the window of survival if it is implemented on the spot and without delay until the experts arrive with the advanced resuscitation equipment to shock the patient and stabilize his condition. CPR does not stop or change the V.F. or pulseless V.T., but

it provides the most sensitive organs with oxygenated blood until shock is delivered to alter the existing arrhythmia (V.F. or pulseless V.T.) and to convert it into sinus rhythm. Without CPR, which is an effective tool, brain damage will unavoidably occur if oxygenated blood flow is not restored within a few minutes.

In the nineties the Chain of Survival was developed and implemented throughout the health care delivery system and in the community at large. It contains the following:

1. Early Call
2. Early CPR
3. Early Defibrillation
4. Early Stabilization

The Chain of survival is an essential and effective combined link in pre-hospital and hospital settings. Generally, no CPR is as bad as poor CPR that results in only 2.5% survival rate. Good CPR is when two certified personnel anywhere apply effective procedures to improve the outcome. Effective CPR means the application of effective artificial ventilation and chest compressions by the rescuers resulting in a better survival rate. Ideal CPR means that the patient recovers completely and is discharged from the hospital without neurological ill effects. Training of all medical professional and Paramedic personnel and the public at large on basic life support (BLS) of CPR and education on the importance of the Chain of Survival as a strong link in the Emergency Medical Service and is mandatory for the improvement of survival rate in our hospitals and the community at large. Such training improves performance and may be lifesaving, so nothing is better than hands-on training.

Over the years the following steps have proved to be the best way to respond to an emergency:

If someone collapses and is unresponsive, immediately call

Airway: Open the airway and check for breathing, if breathing is present, put the victim carefully in the recovery position.

Breathing: If the victim is not breathing, start artificial breathing and give two slow breaths. Watch chest rising as the rescuer breathes into the patient and falling when the victim passively expires. (Avoid direct body contact with the victim by using any barrier devices such as a towel, your

Ghutrah or Shumakh between yourself and the victim.)

Circulation: Check for pulse in the Carotid Artery or look for signs of circulation (breathing, coughing, and movement). If pulse is present but no breathing, continue breathing every fifth second (10-12 times per minute). If there is no pulse, begin chest compressions after locating the correct heart position. Depress the lower half of the sternum down four-five centimeters (two inches), and then relax the pressure on the sternum, allowing the chest to rise to its normal position between compressions. Perform 15 compressions followed by 2 slow breaths. Complete four mini cycles of 15 compressions and 2 breaths for about one minute. At the end of one minute check for pulse or signs of circulation or life, (breathing, coughing, movement and change of skin color). Continue according to the findings:

- When there is pulse or signs of circulation or life (breathing, coughing, movement, & change of color): Place in the recovery position carefully, especially if neck injury is suspected, monitor Vital signs until EMS arrives.
- If there is pulse or signs of circulation but no breathing. Continue rescue breathing, one breath every 5 sec. (10 - 12/min.)
- When there is no pulse or signs of circulation or life. Continue CPR 15:2 ratio, (Start with chest compressions) for 3 – 4 minutes, then check again for pulse or signs of circulation or life.
- If an Automated External Defibrillator (AED) is available in your establishment, ask someone to bring it immediately during the ongoing CPR. The AED is connected to the patient, according to the instructions and then switch on the power. The AED will automatically start analysis and according to the rhythm, advise the rescuer, no shock is required in the case of normal rhythm or shock is required in case of abnormal rhythm (V.F., pulseless V. Tach), when the charge is ready. The machine will inform clearly for all personnel to be cleared off the patient and then instruct the rescuer to press the button to deliver the shock. Three consecutive shocks are delivered. If there is no return of pulse and breathing, continue CPR for another one minute, and repeat the same procedure of delivering three consecutive shocks to the patient. You can repeat delivering of

the shock up to four times, alternating with one minute of CPR in between each three cycles of shocks.

On-the-spot usage of AED results in a high percentage of survival rate; 90% recovered in the first minute, 50% in the fifth minute, 30% in the seventh minute, 10 – 12% in the tenth minute and about 2% up to the twelfth minute. In other words there is a fall of 7 – 10% for every minute delay in using AED. Automated External Defibrillator is a simple, safe machine that an ordinary untrained person can operate. It has recently been approved by the International Liaison Committee on Resuscitation (ILCOR) to be available in areas of mass gatherings such as Stadiums, Sport facilities, train stations, airports, airplanes, old people homes (Rubat), jails, parks, factories, theatres, big malls, conferences...etc. In Saudi Arabia the best and most suitable places to have these AEDs would be the holy mosques in Makkah, and Madina, to be manned by trained nurses who are available at all times in specified dispensaries within the premises of the mosque and can utilize the AED effectively or by qualified EMT paramedics. The machine is reliable and simple to be used by any person who is trained, certified and authorized. The statistics prove its efficacy beyond any doubt, therefore it has been agreed by all experts concerned with the improvement of the outcome of resuscitation that it should have a broader application extended to the public at large.

We frequently see on televised sports such as football, boxing, ice hockey, rugby, squash, etc., players collapsing in front of our eyes and with little or no appropriate and immediate intervention to provide basic care for the victims. Sometimes we also hear that a spectator died from heart attack because his beloved team lost. Something has to be done and can be done.

As a living example, CPR activities were started in the Kingdom of Saudi Arabia⁽¹⁾ personally by introducing it into the⁽²⁾ fifth year medical undergraduates. In 1983 the first CPR Instructor Course was conducted by the American Heart Association at King Khalid University Hospital which started the formal CPR activities in 1984. In 1987 The Saudi Heart Association was established and took over this activity as the recognized body. Through these long years of experience the training activities has evolved into several prime examples of the benefits derived from establishing CPR, First Aid and AED certification in Saudi Arabia. These are:

1. Health care delivery system. This huge establishment took several years to accomplish and there is still a long way to go.
2. The introduction of CPR (Basic and Advanced) courses as a compulsory requirement before graduation from the medical, dental and applied medical science colleges of the King Saud University.
3. The recent introduction of the EMT basic and advanced program in Saudi Arabia to upgrade and update the existing Red Crescent personnel and private technical institutions to produce new graduates for different government and private health organizations.
4. The recent approval of the Saudi Council for Health Specialties of all CPR courses being recognized as part of the Continuous Medical Education (CME) and is mandatory for the renewal of the license to practice medicine in the Kingdom of Saudi Arabia for all Saudi and Non-Saudi Healthcare Professionals

The following are further suggestions to the higher authorities and indeed for all sectors of the community to contemplate:

1. All Medical, Dental and Applied Health Science Colleges in all universities must implement in their curriculum the mandatory teaching of CPR to bring them in line with the graduates of King Saud University and reduce the burden on the existing centers for certification of these graduates.
2. Security forces (i.e. Civil defense, fire Brigade, Traffic and Highway patrol personnel) should have training leading to certification in CPR, first aid and the use of AED. This can be achieved by introducing such training in the curriculum of the colleges or institutions concerned.
3. The Youth Welfare Presidency must install and expand CPR training and make it compulsory for all coaches, trainers and physiotherapists who are working in all sports facilities and provide them with AEDs.
4. Saudi Arabian Airlines (Saudia) has to join the

American compatriots in the service. The Federal Aviation Administration (F.A.A.) has issued a final rule requiring U.S.A. airlines to carry the AED and enhanced Emergency Medical Kits (EMKs) on all its domestic and international flights within three years. The aim is to provide the means to resuscitate and shock any cardiac victims in the airports by medical or paramedical personnel, and also in the air by designated, certified and authorized chief stewardesses.

5. The Ministry of Education should introduce CPR and first aid into the curriculum of high schools.
6. Security personnel in private establishments, banks, industrial areas etc. should undergo compulsory first aid and CPR training and be authorized to use the AED.
7. All drivers must hold a valid certificate in CPR and first aid as a compulsory requirement for obtaining or renewing their driver's license.
8. Media such as newspapers, radio and television should be actively involved in changing their existing one-week campaign per year into longer and more frequent participation annually.
9. The general public who are interested, either as individuals or groups in private clubs and institutions can get their wish for training fulfilled by contacting the National CPR training center of the Saudi Heart Association or their nearest affiliated CPR training center. In this respect healthcare delivery systems can play an important role in educating the public by organizing and conducting campaigns on Coronary Heart Diseases, hypertension, cigarette smoking, First Aid and CPR etc. These campaigns can be arranged in collaboration with various medical associations with the know-how who can be of great help in such a task.

Figure 1

Figure 1: The author watching Mr Paul Harvey attaching the pad of AED on two sites 1- on the left upper chest and 2- on the lower Right below the heart beat on the chest



Figure 2

Figure 2: Chest copression on dummy by Saudi national undersupervision



References

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