A Review of Cardiopulmonary Resuscitation in Nigeria

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INTRODUCTION

In the author's opinion, this review is the first overall review of Cardiopulmonary Resuscitation in Nigeria, putting in view the global literature to enable readers look at the past, present and the future of this non – communicable disease called cardiac arrest. Nigeria, the largest and most populous country in black Africa, needs to have the review to put in place a structured programme that can be built on.

There had been several attempts to put structured clinical guidelines for practice and training in place at the national level until the year 2000 when cardiac arrest became an issue as a cause of sudden death due to the changing lifestyle of the populace in the communities, urban and rural.

EPIDEMIOLOGY

Although there is paucity of epidemiological data on sudden cardiac death in Nigeria, there is a rising trend of cardiovascular risks. The current prevalence of hypertension in Nigeria which is estimated to be about 20% [1] is accompanied by low fruit-vegetable dietary intake, increasing prevalence of obesity, sedentary lifestyle, smoking, alcohol use and hyperlipidaemia. Hypertension is a widespread problem of immense importance in sub-Saharan Africa. It is frequently under-diagnosed with severe complications [2]. Stroke, the burden of which is on the rise, is said to be the third or fourth commonest neurological condition in the community with 80% attributable to hypertension [3].

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Media Awareness and Highlights of Cardiac Arrest

The sudden death of Samuel Okparaji (1989), a professional footballer who slumped and died while playing a football march between Nigeria and Angola at the National Stadium Surulere Lagos, was the first to bring to the awareness of the general populace the issue of cardiac arrest (CA). This was followed by the death of a sitting head of state that had been seen the night before in a good state of health and was said to have died suddenly from cardiac arrest. Chief MKO Abiola soon followed suit. Several similar reports have received media attention. This article reviews the peculiar situation in Nigeria in respect of training and awareness among health care providers; students and the lay public. It is suggested that prevention of cardiac arrest and training of the critical mass of the population is the way forward. This can be made possible by a partnership with the media. There is therefore a need to put up vigorous media (print and electronic) advertisement and enlightenment programmes. The role of various organizations in maintaining CPR training, ensuring that this training is continuously scheduled at regular intervals both as certificated and recertificated courses, to meet set international standards. This should be with adequate media coverage.

Establishment of the Resuscitation Society of Nigeria

The Nigerian Society of Anaesthetists initiated a plan for the establishment of a body on Cardiopulmonary Resuscitation. They then muted the idea of a Resuscitation Council of Nigeria similar to the UK, the European Resuscitation Council and the American Heart Association. The council consists of President / secretary, representatives of professional groups interested in the subject of resuscitation all of whom worked tirelessly to

produce a draft constitution with the assistance of a council lawyer. At inauguration in 2005, the preferred name acceptable to the registering body was Resuscitation Society of Nigeria.

Historical Perspective of Cardiopulmonary Resuscitation

Ventricular fibrillation (VF) and Pulseless electrical activity are common causes of cardiac arrest in the out- of- hospital cases requiring CPR in the developed world,[5, 6, 7] (this may well be true) with no documented evidence in the developing countries. However asystole and Pulseless electrical activity (PEA) also referred to as electromechanical dissociation is the two other pulseless rhythms, which occur, more often in the in- hospital- cases requiring CPR [8].

Accidents are recorded [9], as potential cause of reversible airway obstruction, hypovolaemia, apnea, blood loss, brain injury while heart attacks and strokes are leading causes of preventable sudden death before old age.

The irreversible brain damage that may occur when cessation of circulation (cardiac arrest) last longer than three to four minutes, or apnea of the same duration result in severe hypoxia informs the reason why prompt cardiopulmonary resuscitation is recommended as a must in all sudden collapse or non – responsiveness.

The training guidelines since the first in 1992[10], have been updated by international consensus through 2000[11], and the current guidelines of 2005[12, 13, 14, 15, 16]. Newer guidelines are to make the subject simpler to understand and teach.

The historical pioneer work on CPR of international importance emerged just before the1950's and it was this which put in place emergency resuscitation techniques which pioneered the modern respiratory resuscitation, followed by the 1960's pioneer work of circulatory re suscitation. The 1970's were promising work for brain resuscitation.

Hence the initial work was cardiopulmonary resuscitation (CPR), followed by cardiopulmonary – cerebral resuscitation (CPCR). Several groups around the world in the 1960's initiated intensive care necessary for long-term survival after emergency resuscitation.

Laerdal has produced realistic training aids called manikins, of various skill levels since the 1960's, and encouraged the agreements on the details of techniques and teaching methods, via various international committees and symposia, which have since been updated to the new guidelines with specific learning objectives (2005) allowing for easy training and certification.

This is the stage Nigeria has joined in taking the bold step at the Nigeria Society of Anaesthesiologists in a southwestern city of Sagamu in conjunction with the World Federation of Anesthesiologist refresher course in muting the idea of a Resuscitation Council of Nigeria. This is similar to the UK Resuscitation Council, European Resuscitation Council, And the American Heart Association.

Aims and Objectives of the Resuscitation Society of Nigeria

The Resuscitation Society was the name preferred by the Corporate Affairs Commission (CAC) the registering body on presentation for registration as an NGO. Following legislation and acceptance by government, then, the body may revert to the nomenclature Council .The aims and objectives, organization, membership, were stated in the draft constitution currently before the National Assembly (the House of Representative and the Senate through the health committee and disaster management committee respectively). There shall be a registrar, a qualified medical practitioner, representing government on the council in due process. By this, Council shall have some funding from government.

The aims and objectives are as follows:

-Teach all aspects of resuscitation and, transportation of the critically ill patients especially in our peculiar circumstances.

-Establish guidelines for resuscitation fashioned to the peculiar terrain in Nigeria.

-Make available training aids such as manikins, laryngoscopes, endotracheal tubes, Bag Valve Mask, Laryngeal Mask Airways, AED, Manual defibrillators, ECG, Simulators Protective gears, pocket mask, etc.

-Encourage research in the area and disseminate the result of such research to all zonal centers.

-Ensure public awareness and enlightenment.

The Learning Objectives

The current guideline for cardiopulmonary resuscitation 2005 includes: -

1. Basic Life Support (BLS) for Adult Child, Infant single or two rescuers.
2. Advanced Life support (ALS), while the Paediatrics Advance Life Support (PALS) is an alternative for Paediatrician and Paediatrics Health Care Providers.

Using the first six steps represented by the alphabets ABCDEF, ABCD is now accepted as the first step and is being taught in Nigeria as the Basic Life Support in line with international guidelines and the American Heart Association. This is based on the strategy that defibrillation which is known to improve survival rates of cardiac arrest victims and has encouraged the development of automatic external defibrillation that can be safely used by lay persons with minimal training be included in basic life support skill training. This represent the 'D' included in the basic life support for basic training and services that can be provided by paramedics, firefighters (first responders), whose training is being advocated for by this society whose executive arm is a council consisting of 12 – 15 representatives of professional bodies interested in the subject of resuscitation.

Effectiveness of the Training/ Courses

Put simply the learning objective put on CD's, video tapes and hard copies are as follows: -

I. Basic Life Support ABCD (for Adult, Child, Infant, one person and two persons CPR) This is taught as courses for the general public for family and friends teaching CPR and relief from choking and signs of heart attack and stroke.

II. Advanced Life Support DEF (one person, two persons), which may extend to the prolonged life support is often taught separately to doctors working in this area of advanced care aimed at restarting the heart and sustaining it.

III. Foreign body airway obstruction (FBAO) for Adult, Child, infant who may be responsive or non responsive.

IV. Strokes and Heart attacks. (These are included in the learning objectives for easy recognition and appropriate action.)

A pre-test carried out on participants was followed by didactic lectures, simulator training, video tape viewing as well as hands on practical training in small groups before a post test is administered. So far four batches of the training have been tried in the South and three in the Capital city, Abuja a catchment area for the Northern part of the country.

A review of the result of the batches grouped1, 2,3,4,5,6,7 consisting of 112 participants (58 males and 54 females) in batches of 35, 25, 25, 15, 10 and 2 in the University College Hospital, Ibadan and the National Hospital, Abuja, revealed a deficiency in knowledge in all aspects of the training. None of the participants scored the expected pass mark while a post training test showed an improvement in performance.

A crowded one-day programme did not get a good performance when compared to a two-day programme in which the post test showed a better performance in a group of 50. The CPR courses are cost effective, time saving for the professionals and individuals who need to learn the fundamentals of Basic Life Support, trauma basic and advanced trauma life support.

A brief multiple-choice questions (MCQ) is given to the participants as recommended by the American Heart Association (AHA) after the lectures and practicals. A post-test often reveals an improvement in the knowledge and skills of participants. A CPR certificate, which can be framed, is offered to the participants upon the completion of the course.

ETHICAL ISSUE

Ethics is the term used to indicate professional conduct backed by law in patient care. It is also a code of practice to which the professional

Adopted Guideline for Cardiopulmonary Resuscitation Course Similar to the Immediate Life Support (UK) Emergency Cardiovascular Care (ECC) and Basic Life Support (AHA)

	ADULT	*CHILD*	*INFANT*
	(Over 8 years of age)	(12 months to 8years)	(Up to 12 months)
Check for Responsiveness	By shaking and shouting	By shaking and shouting	By patting feet and chest
Dial emergency code 3 digit not decided by Nigeria 222 suggested by RESON	If unresponsive call first	After 1 to 2 min of CPR call fast	After 1 to 2 min of CPR call fast
Pulse location for health care responders	Carotid artery (neck)	Carotid artery (neck)	Brachial Artery (arm)
Airway	Lift the neck and tilt the head, chin lift. Jaw thrust if trauma present.	Lift the neck and tilt the head, chin lift. Jaw thrust if trauma present.	Slightly tilt the head into "snifters position"
Breathing	Pinch the nose; give two breaths	Pinch the nose; give two breaths	Mouth over mouth and nose; give two gentle puffs.
Circulation	2 hands, 2 inches; 30 compression	1 hands, 1 inches; 30 compression	2 fingers, 1/2 inches; 30 compression

Check for Pulse Every Minute. Repeat A-B-C Cycle as Neccesary Until Ambulance or Transport Arrives. Preferably Transport Equipment to Patient. Defribillate on Site!! Within Short Period. This is the Immediate Life Surport A, B, C, D

is bound and must be respected by all patients and care-giver [17]. In CPR the goals of emergency cardiovascular care are interventions, curative or supportive which are to preserve life, restore health, limit disability and reverse clinical death. Addressing these CPR decisions in our environment is a gigantic responsibility especially in respect of the following topics discussed in this paper. On the issue of autonomy or psychiatric competence, CPR patients or victims have no autonomy except via an advanced directive documented as Do Not Resuscitate (DNR). CPR decisions are often made in seconds by rescuers who may not know the patient or know if an advance directive exists when undertaking the resuscitation of a patient. Most of our patients are not knowledgeable enough in respect of advance directive; this does not pose much of an ethical problem in Nigeria as opposed to what obtains in developed countries where conflict may arise if CPR is administered contrary to patient's desires or best interest.

The guidelines however exist to help health care providers in making these decisions. The ethical and cultural norms are not too powerful in our environment. The patient depends on the physician's judgment to a large extent as opposed to the patient's autonomy, which is highly respected ethically, and legally in other parts of the world – which are often

truly informed as the patients have received and understand the accurate information about their conditions, its progress, the risk and benefits of CPR as it concerns them [18]. They can therefore give an advanced directive, a living will or what is termed self-determination [19]. In the African environment this is often not the case.

The treating physician makes the decision to terminate resuscitation considering duration of CPR, onset time of defibrillation, preexisting disease, initial arrest rhythm and witness of collapse. In many witnessed CPR outcomes, the survival falls as duration of resuscitation increases, and reports have shown that the choice of being alive without a neurological defect is diminished with prolonged CPR, hence, it is well documented that it is best to terminate ACLS except in primary hypothermia state which is very uncommon in our environment.

Ethics of organ and tissue donation in Nigeria shows a big gulf in knowledge and practice. In the developed world who responds favourably to the need of organ and tissue donation medical directors and emergency services discuss the issue in cases receiving CPR. There is a need for enlightenment due to cultural beliefs and taboos of the population in general.

Research and training issues constitutes a major subject as CPR research involving consent of human subject in our environment will obviously have to be an authorized surrogate considering the level of literacy, beliefs, religious interference which will obviously pose a great challenge. Obtaining consent may therefore be impossible. It is hoped that discussions will be engaged by various bodies and societies involved in health care delivery. This will enable us authenticate information.

CONCLUSION

This review on CPR in Nigeria to the knowledge of this author is the first comprehensive review on the subject which, following this documentation may stimulate discussion at various levels, promote further action at the different levels for legislation in the realms of clinical practice, training guidelines and ethical control. Above all, several victims of moving vehicle accidents who could provide a good source of organ transplant go to their graves with all their organs. What a waste, considering the scourge of chronic renal failure in Nigeria. The Nigerian Society of Resuscitation is working very hard in all directions in collaboration with the international training organization based in the College of Medicine, University of Ibadan and the various chapters of the society in functional status in the various teaching hospitals across the country. The sustenance of the efforts of the Resuscitation Society is important for continuity, which had been the bane of previous efforts.

REFERENCES

1. Onwubere B, Kadiri S. (eds).Guidelines for the management of hypertension in Nigeria.Ezu Books Ltd.Enugu.2005.

2. Opie L.H, and Seedat Y.K, Hypertension in Sub-Saharan African Population. Circulation. 2005; 112 (23): 3562-3568.

3. Ogunniyi A and Talabi I.O. Cerebrovascular complications of hypertension. Nigerian Journal of Medicine: Journal of the National Association of Resident Doctors of Nigeria 2001; 10 (4): 158-61.

4. White RD, Bunch TJ and Hankins DG. Evolution of a community-wide early defibrillation programme experience over 13 years using police/fire personnel and paramedics as responders. Resuscitation. 2005; 65: 279–83.

5. Rea TD, Eisenberg MS, Sinibaldi G and White RD. Incidence of EMS-treated out-of-hospital cardiac arrest in the United States. Resuscitation. 2004; 63: 17–24.

6. Caffrey SL, Willoughby PJ, Pepe PE and Becker LB. Public use of automated external defibrillators. N Engl J Med. 2002; 347: 1242–1247.

7. Peberdy MA, Kaye W, Ornato JP, Larkin GL, Nadkarni V, Mancini ME, Berg RA, Nichol G and Lane-Trultt T. Cardiopulmonary resuscitation of adults in the hospital: a report of 14720 cardiac arrests from the National Registry of Cardiopulmonary Resuscitation. Resuscitation. 2003; 58: 297–308.

8. Cooke M.W: How much to do at the accident scene. BMJ, 1999, 319-1150.

9. Guidelines for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). JAMA. 1992; 286: 2135–2302.

10. American Heart Association in collaboration

with International Liaison Committee on Resuscitation. Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2000; 102 (suppl): I1–I384.

11. International Liaison Committee on Resuscitation. 2005 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Circulation. 2005; 112: III-1–III-136.

12. Zaritsky A and Morley P. The evidence evaluation process for the 2005 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. Circulation. 2005; 112: III-128–III-130.Billi JE, Eigel B, Montgomery WH, Nadkarni V, Hazinski MF. Management of conflict of interest issues in the American Heart Association emergency cardiovascular care committee activities 2000–2005. Circulation. 2005; 112: IV-204–IV-205.

13. Billi JE, Zideman D, Eigel B, Nolan J, Montgomery WH and Nadkarni V, from the International Liaison Committee on Resuscitation (ILCOR) and American Heart Association (AHA). Conflict of interest management before, during, and after the 2005 international consensus conference on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. Circulation. 2005; 112: III-131–III-132.

14. Hazinski MF, Nadkarni VM, Hickey RW, O'Connor R, Becker LW and Zaritsy A. The major changes in the 2005 AHA guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. Circulation. 2005; 112: IV-206–IV-211.

15. White RD, Bunch TJ and Hankins DG. Evolution of a community-wide early defibrillation programme experience over 13 years using police/ fire personnel and paramedics as responders. Resuscitation. 2005; 65: 279–283

16. Bossaert L. European Resuscitation Council Guidelines for Resuscitation. In: The Ethics of Resuscitation in Clinical Practice. Amsterdam, Netherlands: Elsevier; 1998: 206–217.

17. Marco CA and Schears RM. Societal opinions regarding CPR. Am J Emerg Med. 2002; 20: 207–211.

18. Naess AC, Steen E and Steen PA. Ethics in treatment decisions during out-of-hospital resuscitation. Resuscitation. 1997; 33: 245–256.