

PASCAR task force on Cardiac Arrhythmia and PACING

Chairman: Aimé BONNY

Co-Chairman: Mahmoud SANI

Members: PASCAR task forces on SCD/EP and Reuse CIED have embarked more than 20 experts, both from Africa and overseas.

- From Task Force on Sudden Cardiac Death and Electrophysiology

Mohamed Jeilan (Kenya), Emmy Okello (Uganda), Mohammed Abdullahi Talle (Nigeria), Amam Mbakwem (Nigeria), Adama Kane (Senegal), Ashley Chin (South Africa), Georges Milligo (Burkina Faso), Kemi Tibarzawa (Tanzania), George Nel (South Africa), Marcus Ngantcha (France/Cameroon), Kamilu Karaye (Nigeria), Yves Rais Lubenga (Democratic Republic of Congo), Sana Ouali (Tunisia), Yazid Aoudia (Algeria), Jean-Yves Le Heuzey (France), and Aimé Bonny (Cameroon).

- From Task Force on Reuse Pacemakers/ICD

Bongani Mayosi (South Africa), Ashley Chin (South Africa), Zaheer Yousef (United Kingdom), Lavan Balasundaram (United Kingdom), Thomas Crawford (USA), Kim Eagle (USA), Thomas Carrigan (USA), Kevin Weatherwax (USA), Olujimi Ajijola (USA), Adama Kane (Senegal), James Russell (Sierra Leone), Constantine Akwanalo (Kenya), Reuben Mutagaywa (Tanzania), Benedict Anisuiba (Nigeria), Mpiko Ntsekhe (South Africa), Zimasa Jama (South Africa), Ibrahim Toure (Niger), George Nel (GN), and Mahmoud Sani (Nigeria)

Report of the period 2014 to 2018

A- TASK FORCE ON SCD

The SCD task force has focused its activities around four main areas:

- ✓ Survey of statistics on the use of cardiac implantable electronic devices (CEID) and EP procedures in Africa (data published, EP Europace J)
- ✓ The population-based SCD incidence in Cameroon (data published, Archives of Cardiovasc. Diseases))

- ✓ Survey on cardiac arrhythmia services in Africa (accepted for publication, CVJA)
- ✓ Establish relationship with foreign cardiac arrhythmia groups (mainly EHRA)

1. Statistics on CIED and EP procedures

The group has worked through emails, to collect nation-wide data on pacemaker implantations as well as the availability of other pulse generators and ablation procedures. The data collection began in 2013 and ended in March 2017, and concerned the period from 2011 to 2016. The results of this survey were presented in several international meetings (WCC in Mexico 2016, ESC 2016, French Cardiac society congress 2017, EHRA/Europace/Cardiostim meeting 2017, and ESC 2017). The manuscript was almost accepted for publication in **Europace Journal** through fast-track review.

2. Incidence of sudden cardiac death in sub-Saharan Africa

As the first time in Africa, we conducted a population-based study on the incidence of SCD in the city of Douala (Cameroon). This study was published this year (2017) in the **International Journal of Epidemiology** (Impact Factor >7).

3. Managing cardiac arrhythmias in Africa

We have been invited by JACC editor-in-chief to publish a review paper on the status of cardiac arrhythmia services in Africa (Review of the week, **Journal of American College of Cardiology**). For this purpose, we conducted a survey on the state of the art which includes manpower resources, availability of diagnostic tools as well as treatment regimens. This survey which involved 34 out of 55 African countries was just accepted in CVJA.

4. Establishing collaboration with foreign cardiac arrhythmia groups (EHRA)

We achieved a great step towards the collaboration between PASCAR arrhythmia community and European Heart Rhythm Association (EHRA) which are willing to support all our actions leading to improve cardiac arrhythmia care in the continent. Pr AJ Camm (President of EHRA) and G. Hindricks (E-I-C of Europace Journal) have committed to support us.

After publication of several position papers on cardiac arrhythmias in the continent, it is time to go through targeted proposals with EHRA and other societies.

B- TASK FORCE ON PACEMAKER/ICD REUSE

The Pan African Society of Cardiology (PASCAR) Task Force on Pacemaker and ICD re-use was established on the 22nd of March 2014 to address among other things the unmet needs of pacemaker/ICDs in sub Saharan Africa. This followed series of discussions of partnership between the leadership of PASCAR, the Project MyheartYourheart from the University of Michigan and the Pace4life project in the United Kingdom. Over the last 4 years, the following has been achieved by the task force.

1. PASCAR Fellowship of Cardiac Pacing: Three fellows have already been trained at the University of Cape Town on pacemaker implantation with the whole purpose to implanting both new and reused pacemakers in countries with no access to these expensive devices. These are Constantine Akwanalo (Kenya), James Russell (Sierra Leone) and Reuben Mutagaywa (Tanzania).
2. The re-use project has already started in Sierra Leone and Kenya in February/March 2018. Through the efforts of Drs Thomas Crawford and Kevin Weatherwax, FDA Approval of Export permit for pacemaker re-use was obtained in July 2015, to countries that have fully satisfy the requirements.
3. There have also been at least three symposia on pacemaker and ICD re-use, aimed ta enlightening the African Cardiology community and the general public.
4. Conference Presentations: Members of the task force make presentations related to the task force activities - Dr Ashley CHIN presented “Managing Arrhythmias in Africa” during CARDIOSTIM 2014 in NICE, France; Dr Mahmoud Sani presented “ The Case of Pacemaker and ICD re-use in Africa” during the WCC 2016 in Mexico.
5. Publications: a) “Performance of re-used pacemakers and ICDs compared with new devices at Groote Schuur Hospital Cape Town, South Africa” by members of the task force – Drs Zimasa Jama, Ashley Chin & Bongani Mayosi. Reference: Cardiovasc J Afr 2015 Jul-Aug 26(4): 181-187. b) “ The Pacemaker and ICD re-use programme of the Pan African Society of Cardiology by Mahmoud Sani & Bongani Mayosi. Reference: Heart. 2017 May 31. pii: heartjnl-2017-311462.

Collaboration: a) The task force had begun collaboration with the Heart Rhythm Society (HRS) and a meeting was held in the last HRS meeting in Chicago, attended by Ashley Chin, Thomas Crawford, Olu Ajijola and Kevin Weatherwax. A second meeting with leadership of the HRS has also been schedule during the HRS meeting. The first meeting took place in 2017 and the following points were agreed.

- HRS and PASCAR to create a Task Force to consider guidelines for refurbished single use pacemakers.
- HRS will examine online programs which would be accessible to the region.
- HRS/PASCAR to look at joint sessions that would take place in the PASCAR region.

- HRS will work with the Scientific & Clinical Documents Committee to determine methods of including PASCAR.
- HRS is reviewing membership and dues structure and will reportback to PASCAR.

Rational for unifying both task forces

- ✓ Cardiac arrhythmias are neglected field of cardiology in Africa owing to several reasons
 - Discrepancy between the high cost of arrhythmia treatments and overall public health budgets***, leading to the lack of EP laboratories able to manage cardiac arrhythmias:
 - The lack of facilities and inadequacy of trained practitioners*** (who need a specific training in well-developed laboratories rarely available in the most of African countries) to detect and manage cardiac arrhythmias
 - Lack of the political will by many governments*** of the region to establish and/or support hospitals in terms of manpower and equipment to provide comprehensive EP services.
- ✓ Lack of knowledge of the epidemiological status of cardiac arrhythmias on the continent which results in the following:
 - Poor public health policies addressing the expected increase in the morbidity and mortality from cardiac arrhythmias as the component of the global increase cardiovascular burden in Africa. Consequently, about one-third of sub-Saharan countries cannot provide any cardiac arrhythmia treatment for their citizens; exposing more than 100 million population to death from easily-treatable heart blocks
 - Scanty availability of fund raising for studies and health programmes in the field of cardiovascular electrophysiology.
- ✓ The sustainability of collaboration between PASCAR and foreign scientific societies [i.e Heart Rhythm Society (HRS), European Heart Rhythm Association (EHRA)] will be more effective if all PASCAR resources work together as a unit.

Therefore, the unification of these two task forces on cardiac arrhythmias should be regarded as an imperative step towards an improved diagnostic and treatment facilities for arrhythmias for the whole of Africa.

OBJECTIVES OF THE UNIFIED TASK FORCE

1. Prevent and treat CVD in Africa (treat heart block and prevent sudden death): at least one pacing and ICD unit per African country.
2. Educate and train African healthcare professionals about CVD: PASCAR Fellowship in Clinical Cardiology and Cardiac Pacing.
3. Educate laypersons about CVD: Procurement, supply and regulatory issues of used pacemakers and ICDs to participating sites.
4. Invest in CV research: PASCAR Registry on Cardiac Arrhythmias, Pacemaker and ICD Re-Use in Africa and RCT on new versus used pacemaker
5. Collaborate with International organization and institutions to improve cardiac arrhythmia care in Africa.

6. Define the epidemiology of sports related cardiac arrest and prevent sports related sudden cardiac death on the Africa continent.

ORGANIZATION CHART OF THE UNIFIED TASK FORCE

Board

- 1- Co-chairs: Chairpersons issued from both working groups (SCD/EP and CIED)
- 2- Secretary General: from one of WG
- 3- Deputy SG (2 persons): from each of WG. They lead specific activities of each WG
- 4- Treasurer: the PASCAR treasurer

Term of the board and election:

- 1- Term: 2 (or 4?) years
- 2- Mechanism to be elected: to be discussed

Proposal for activities from 2018 to 2022

The unified task force on cardiac arrhythmias has convened to carry out several activities, as follows:

1- Fellowship programmes in CIED training

The goal of this project is intended to cover all countries with pacemaker service by 2025. For this purpose, we acknowledge South-South and South-North cooperation

a. In Africa

The scientific committee of the task force should validate training centers which fulfill specific criteria (volume of implantation, number of senior operators, appropriate equipment...etc). At this stage, active countries like South Africa (UCT hospital, Cape Town), Sudan (*hospitals to be identified*), Kenya (Aga Khan University hospital, Nairobi?), Senegal (CHU Aristide Le Dantec), Tunisia (Hôpital La Rabta, Tunis) and Algeria (CHU Mustapha) are eligible.

b. Overseas

Partnership with HRS and EHRA will be explored to achieve this objective, which is to allow young cardiologists to gain complementally training courses in renowned EP centers in Europe and North-

America. Similar collaborations with the Asian scientific communities and renowned EP centres in Asia will be explored.

2- Reuse cardiac implantable electronic devices for all low-income populations

PASCAR in collaboration with the Project MyheartYourheart from the University of Michigan and the Pace4life project in the United Kingdom and other institutions and relevant bodies will continue to advance the concept of Pacemaker re-use in Africa.

PASCAR has been invited to have a HRS/PASCAR symposium on pacemaker/ICD re-use in the upcoming HRS meeting in Boston in May 2018. Members of the task force will present the following topics during the joint symposium.

- a. Cardiac Pacing in Africa: current status and future perspective – Ashley Chin (University of Cape Town)
- b. Pacemaker re-use in Africa and other continents: experiences and visions for the future - Thomas Crawford (University of Michigan)
- c. Pacemaker re-use outside Africa and visions for the future – Lavan Balasundaram (Pace4life UK)
- d. Industry perspective on challenges and opportunities for cardiac pacing in Africa – Amit Shanker (Boston Scientific)

A PASCAR Position Statement on Pacemaker and ICD re-use is being developed and intended to be published in the Cardiovascular Journal of Africa. This effort is being led by Prof Zaheer Youssef and Dr Zimasa Jama.

3- Sport cardiology

Africa is a continent of great athletes in various sport activities who have positively contributed to the image of the continent. As sport is a tremendous means for improving human well-being, socializing and development, as well as for health; sport medicine and particularly sport cardiology should be promoted.

The unified task force will embark on two important projects in this respect:

- a- **The epidemiology of sport-related cardiac arrest (srSCA)**

To estimate the incidence of srSCA, we will need to calculate the denominator of the study which is the prevalence of athletes (recreational and competitive) in the index area of interest. This sub-study is ongoing for the Cameroon part of the main study and might be considered as a pilot one.

- b- **Secondary prevention of sport-related sudden cardiac death (srSCD)**

Pre-participation screening in competitive sports is well established, although less followed in many part of the world, including Africa. This gap is more pronounced regarding non-competitive sports where the incidence of srSCA is at least equivalent.

In addition, some sub-clinical cardiac disorders are under diagnosed by conventional means (12-lead ECG, 2-D echo, exercise testing), whereas more advanced imaging techniques as not cost-effective in the population level.

As a result, srSCA remains a concern in many countries, more so in Africa, where resources are scarce. Therefore, combining preventive detection for athletes at risk of dying suddenly while exercising with improving the capability of the athletes to rescue their colleagues will help avoid srSCD in this young and apparently healthy population.

The task force intends to organize training campaigns for sport associations (professional and non-professional), in collaboration with national sport federations and Ministries of sport. To reach this objective, the TF would explore several steps:

- Identify members who have skills in cardiopulmonary resuscitation (CPR)
- Propose collaboration with such organizations as European Resuscitation Council (ERC) for sharing experiences and setting-up a program for training trainers
- Fundraising
 - a. By contacting renowned African professional athletes who have foundations
 - b. By calling governments to participate
 - c. By sensitizing all professional athletes to donate towards this course

4- Atrial fibrillation

Atrial fibrillation (Afib) is the most frequent cardiac arrhythmia in Africa. However, the outcomes of Afib are understudied. Moreover, anticoagulation is known to be one of the most challenging arrhythmia treatments in sub-Saharan Africa.

- A large epidemiological study intending to establish the real burden of the disease and its outcomes will take place. To begin with, an AF registry will be established in Africa under the task force
- The second concern is to identify barriers for the widely use of anticoagulants
- Call for reducing prices of non-vitamin K oral anticoagulants (NOAC)

5- Connected Arrhythmology

The lack of adequate manpower in cardiac arrhythmia management in Africa advocates for the use of information technology like telemedicine in improve cardiac arrhythmia care on the continent. GP and cardiologists could share challenging cases with PASCAR expert electrophysiologists through dedicated network (such as WhatsApp group).