

Arrhythmia treatment in AFRICA -

Development and roll-out of treatment strategies

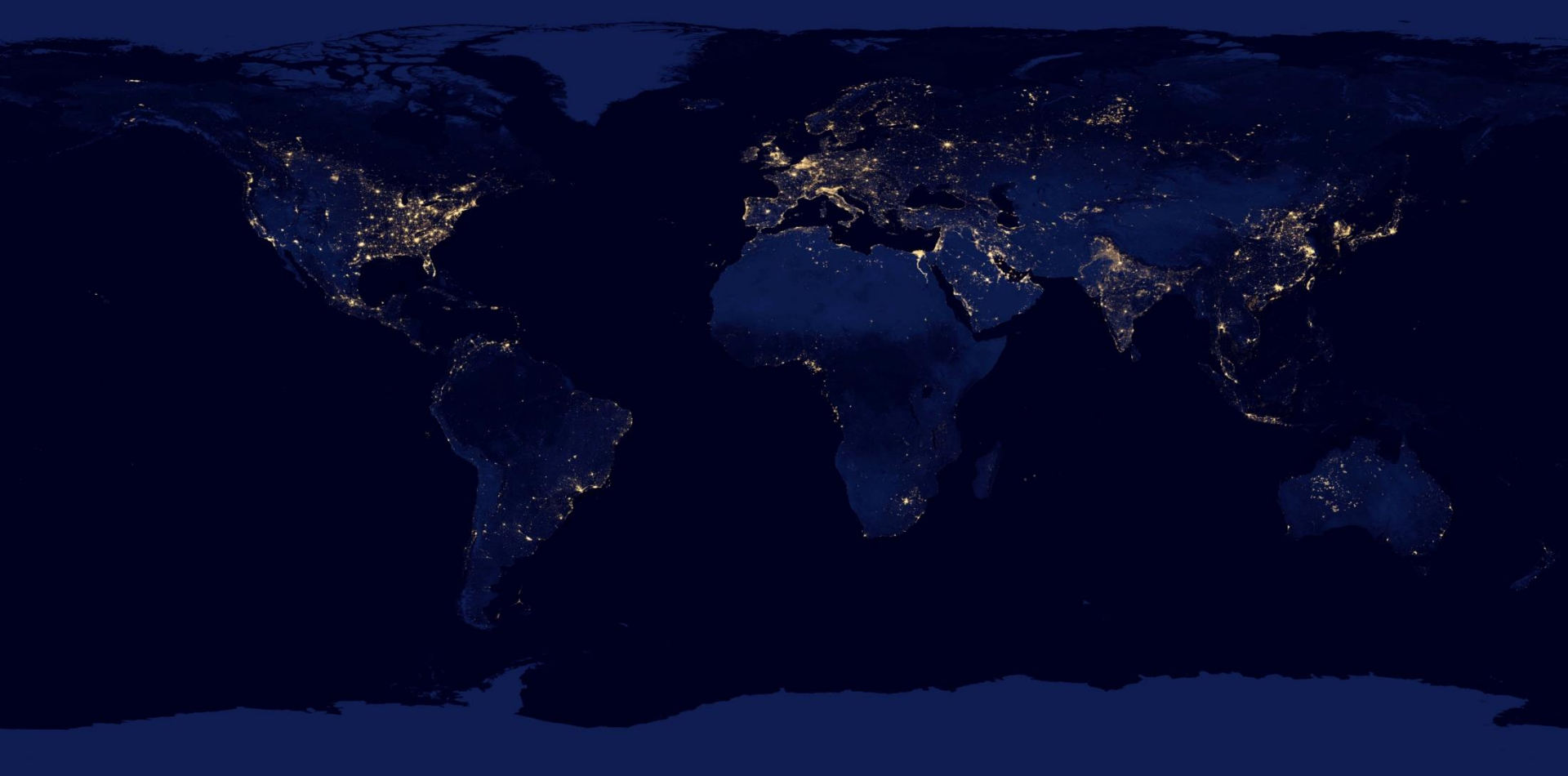


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SA Heart Congress 2015, Sun City



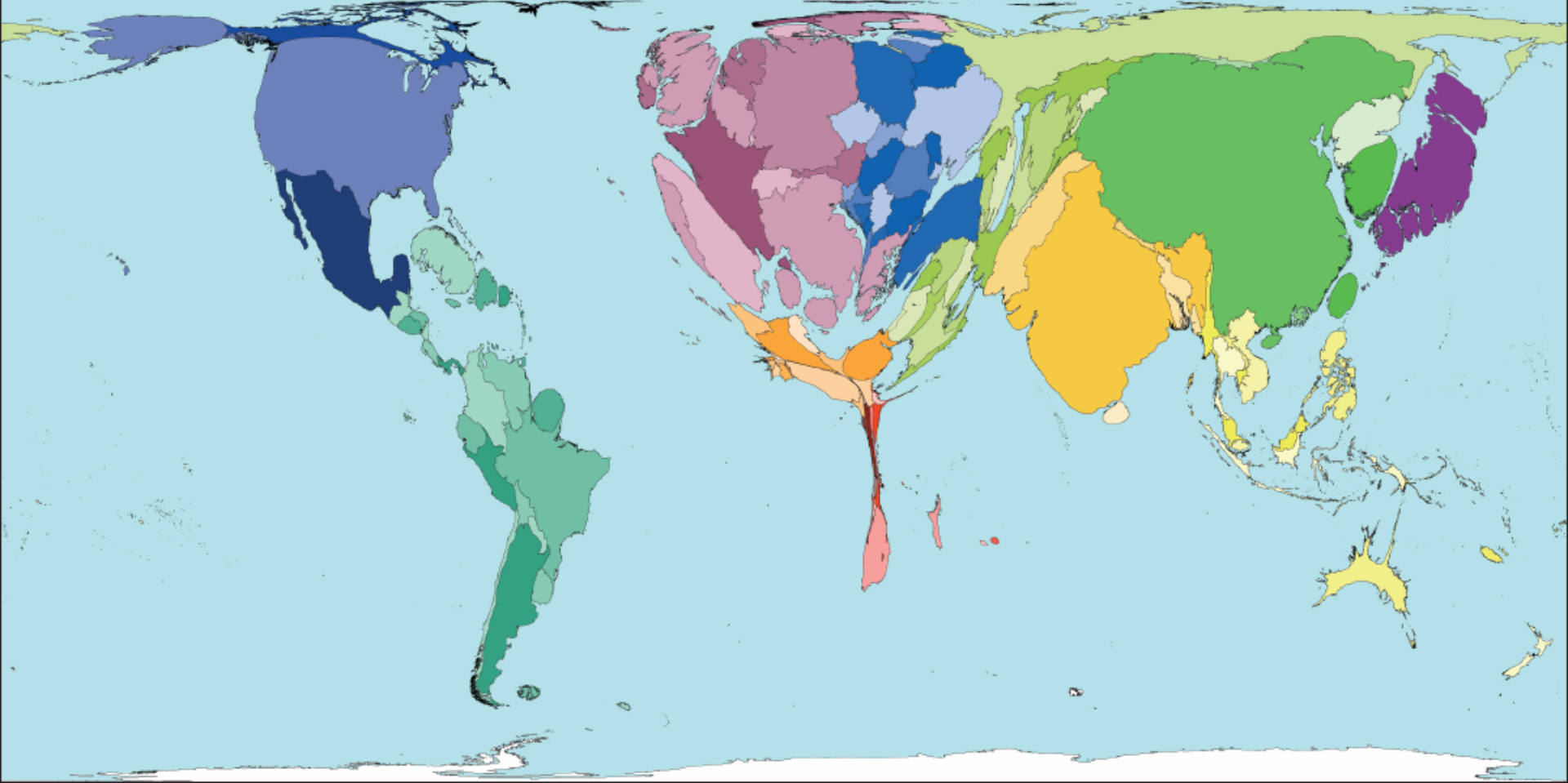
AFRICA

1.1 billion people (15% of the world population)

54 countries

World's poorest and most underdeveloped continent

GDP per capita: Many African countries < 2000 US dollars

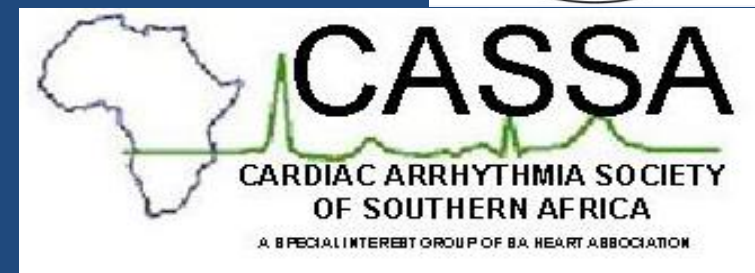


AFRICA

World-mapper, Working
Physicians, 2006

Development and roll-out strategies for arrhythmia treatment

- A. State of the nation/continent
2014 PASCAR survey of pacing and EP in Africa
- B. Training and teaching of personnel
Undergraduate and postgraduate level
Practising doctors (CPD)
Sub-specialist training in pacing and EP in Africa
- C. Facilities for pacing and EP
- D. Research into arrhythmias in Africa



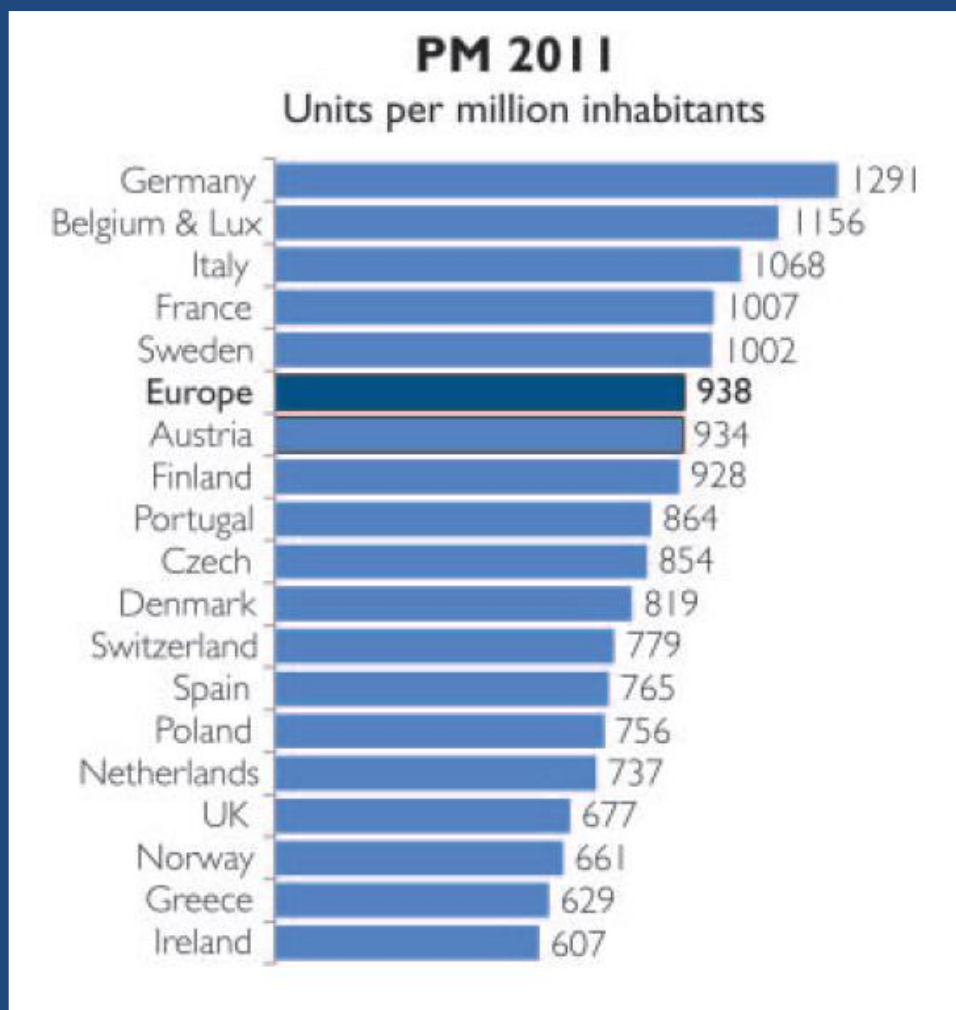
Pacing in Africa

“Permanent pacing remains one of the most cost effective treatments available in modern medicine”
 ...but is still unavailable to many in Africa.

R Sutton, The foundation of Cardiac Pacing 1991



PACING in AFRICA



| | PM 2009 (Units per million) |
|--------------|--------------------------------|
| SOUTH AFRICA | 60 |
| SUDAN | 5 |

2014 PASCAR SURVEY on PACING and ELECTROPHYSIOLOGY in AFRICA

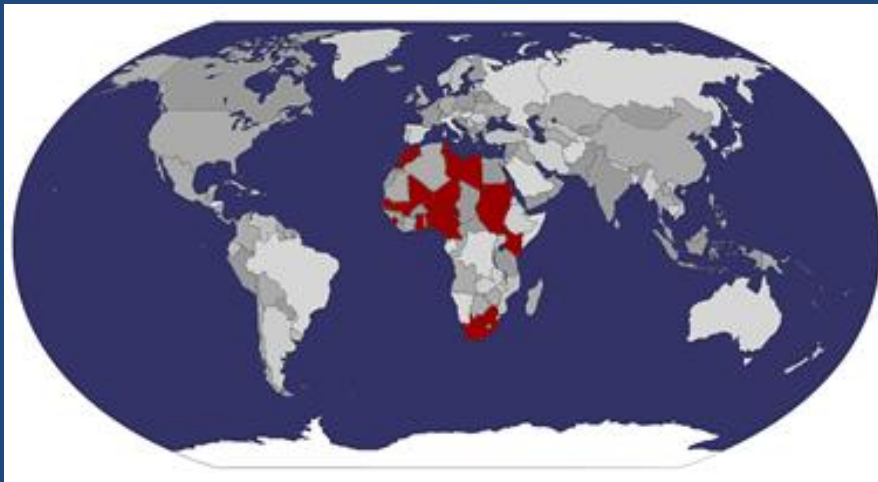
ACKNOWLEDGEMENTS:

Bongani Mayosi (PASCAR President)

Aime Bonny (Chair – PASCAR Task Force on Sudden Cardiac Death)

PARTICIPANTS:

Ashley Chin (South Africa), Isaac Kofi Owusu (Ghana), Adama Kane (Senegal), Houenassi (Benin), Jeilan (Kenya), A Gehani (Libya), Diakite Mamadou (Mali), Toure Ali Ibrahim (Niger), Sonia Marrakchi (Tunisia), Kamilu Karaye (Nigeria), Maiduguri (Nigeria), Anastaze Dzudie (Cameroon), Tantchou Cabral (Cameroon), Ouankou Debozard (Cameroon), James Russel (Sierra Leone), Icham Bouzelmat (Morocco), Brahim Hamdaoui (Morocco), Awad Mohamed (Sudan)



14 African countries

PACING in AFRICA in 2014

| COUNTRY | PM CENTRES | PM DOCTORS | PM/CENTRE (2013) | PM (2013) |
|--------------|------------|------------|------------------|--------------------|
| TUNISIA | 60 | 200 | | 2000 |
| SOUTH AFRICA | 54 | 173 | 144 | 3859 (Re- used PM) |
| MOROCCO | | 7 | | 600-700 |
| SUDAN | | | | 517 |
| KENYA | 6 | 20-30 | | |
| NIGERIA | 5 | 3 | | |
| SENEGAL | 3 | 11 | 89 | 89 (Re-used PM) |
| CAMEROON | 3 | 3 | 26 | 80 |
| LIBYA | 2 | 4 | 50 | |
| GHANA | 2 | 2 | 16 | |
| BENIN | 1 | 1 | 19 | |
| MALI | 1 | 2 | 16 | |
| NIGER | 0 | 0 | 0 | |
| SIERRA LEONE | 0 | 0 | 0 | |

Severe shortage of PM centres exist in all countries surveyed

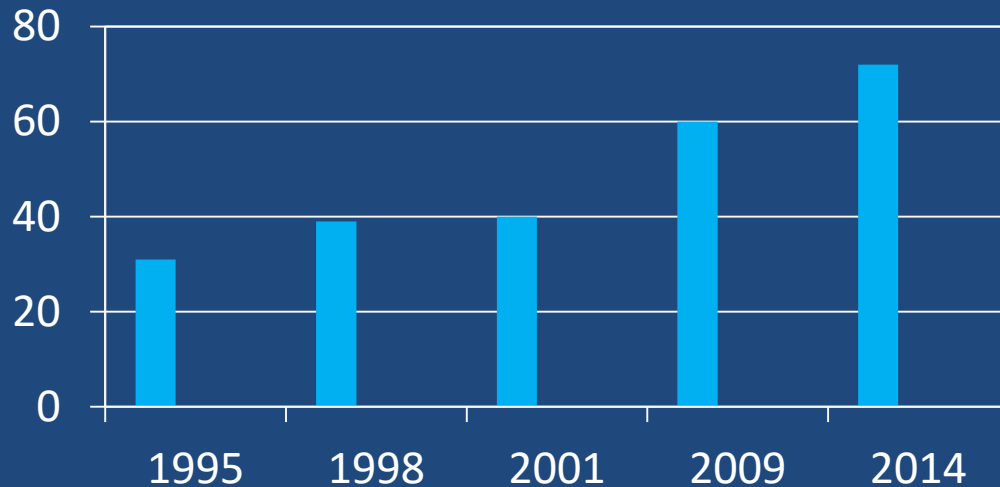
Severe shortage of PM doctors

Mostly low-volume implanters

PM implantation rate is very low

PACING in SOUTH AFRICA

PM (Units per million)



Increase in PM implants over time but rates are still low compared to Europe



Increase in PM doctors:

112 PM doctors (31 centres) in 1998

173 PM doctors (54 centres) in 2014

Large geographic discrepancies

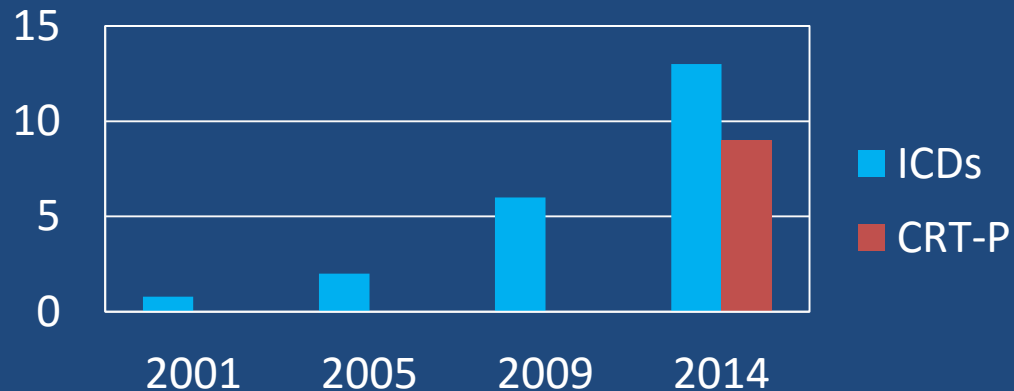
ICDs and CRT in AFRICA in 2014

| COUNTRY | ICD CENTRES | ICD DOCTORS | CRT CENTRES | CRT DOCTORS |
|--------------|-------------|-------------|-------------|-------------|
| SOUTH AFRICA | 40 | 70 | 39 | 68 |
| TUNISIA | 15 | 30 | 15 | 30 |
| KENYA | 4 | 10 | 1 | 1 |
| MOROCCO | N/A | 7 | N/A | 2 |
| CAMEROON | 2 | 2 | 0 | 0 |
| LIBYA | 1 | 2 | 1 | 2 |
| SENEGAL | 1 | 1 | 1 | 2 |
| NIGERIA | 1 or 2 | ? | 0 | 0 |
| GHANA | 0 | 0 | 0 | 0 |
| BENIN | 0 | 0 | 0 | 0 |
| MALI | 0 | 0 | 0 | 0 |
| NIGER | 0 | 0 | 0 | 0 |
| SIERRA LEONE | 0 | 0 | 0 | 0 |

ICDs and CRT are available in a few centres in Sub-Saharan Africa

ICDs and CRTs in SOUTH AFRICA

ICDs and CRTs (per million)



Increase in ICD implants over time but rates are still low compared to Europe

40 ICD centres (70 implanters) in 2014



EP in AFRICA in 2014

| COUNTRY | EP CENTRES | EP DOCTORS |
|--------------|------------|------------|
| SOUTH AFRICA | 9 | 11 |
| TUNISIA | 7 | 40 |
| MOROCCO | 3 | N/A |
| LIBYA | 1 | 2 |
| SENEGAL | 1 | 4 |
| GHANA | 0 | 0 |
| BENIN | 0 | 0 |
| KENYA | 0 | 0 |
| MALI | 0 | 0 |
| NIGER | 0 | 0 |
| NIGERIA | 0 | 0 |
| CAMEROON | 0 | 0 |
| SIERRA LEONE | 0 | 0 |

No EP centre in Sub-Saharan Africa (excluding South Africa and Senegal) - 912 million people

EP in SOUTH AFRICA



13 CASSA-accredited electrophysiologists in South Africa

1 full-time electrophysiologist in the state sector

3 academic hospitals with EP exposure

SA national average: 13 (1 EP per 4 million people)

US national average: 2000 (1 EP per 127 500 people)

All will requiring overseas training

PASCAR Task Force on Pace-maker and ICD Re-use

Bongani Mayosi (Chair) (S Africa), Ashley Chin (S Africa), Zaheer Yousef (UK), James Russell (Sierra Leone), Kevin Weatherwax (USA), Thomas Crawford (USA), George Nel (S Africa), Zimasa Jama (S Africa), Mahmoud Sani (Nigeria), Benedict Anisiuba (Nigeria), Constantine Akwanalo (Kenya), Andrew Thornton (SA) and Balasundram Lavan (UK)

Aims:

1. Treat heart block in Africa
2. Training of African doctors in brady-pacing (PASCAR fellowship in cardiac pacing)
3. Procurement of re-used pacemakers



Rationale and design of the Pan-African Sudden Cardiac Death survey: the Pan-African SCD study

Aimé Bonny, Marcus Ngantcha, Sylvie Ndongo Amougou, Adama Kane, Sonia Marrakchi, Emmy Okello, Georges Taty, Abdulrazzak Gehani, Mamadou Diakite, Mohammed A Talle, Pier D Lambiase, Martin Houenassi, Ashley Chin, Harun Otieno, Gloria Temu, Isaac Koffi Owusu, Kamilu M Karaye, Abdalla AM Awad, Bo Gregers Winkel, Silvia G Priori; on behalf of the Pan-African Society of Cardiology (PASCAR) Task Force on Sudden Cardiac Death

Aims:

1. To estimate the incidence of sudden cardiac death in Africa
2. To determine the factors/diseases associated with sudden cardiac arrest
3. To determine the outcomes of sudden cardiac arrest

A topographical map of the African continent is centered on a black background. The map uses a color gradient from green to yellow to represent elevation, with the highest elevations in yellow and the lowest in green. The map is slightly tilted and has a textured, almost stone-like appearance. Overlaid on the map are two lines of text in different colors and fonts.

**"If you want to go quickly,
go alone."**

- African Proverb

**If you want to go far,
go together."**