The Adaptation of the High Blood Pressure Roadmap for Africa: A Case Study

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On behalf of the PASCAR Task Force on Hypertension
Adaptation of the WHF roadmap at national level

CVD Roadmaps

Situation Analysis

Policy dialogues

Implementation of selected tailored solutions
Steps in PASCAR Roadmap

- The creation of the Task force.
- The situational analysis
- Customizing the WHF global roadmap
- Our next steps
- Conclusion
PASCAR recommendations of priority interventions to ministries of health for prevention of heart disease, diabetes and stroke in the African region: The 10 “Best buys”

1. Provide multidrug regimens (e.g., a fixed dose pill containing an angiotensin converting enzyme (ACE) inhibitor and diuretic for hypertension), and adopt an absolute risk approach to prevent stroke, chronic kidney disease, ischaemic heart disease and heart failure.

2. Food control legislation with public education for reducing the salt and saturated fat content of food.

3. Promotion of physical activity in schools, workplaces and the built environment.

4. Maintain and extend tobacco control activities especially for young people, and encourage quitting by means of counselling and nicotine replacement therapy.

5. Syndromic treatment of sore throat with penicillin in children to prevent rheumatic fever.


7. Needs-driven modular training of health professionals to meet the needs of the population.

8. Strengthen district-based primary health system, and integration of care of communicable and non-communicable diseases.


10. Develop surveillance and quality assurance systems for heart disease, diabetes and stroke.

(Bongani Mayosi, Heart, 2013)
PASCAR practice guidelines for management of hypertension in Africa

Anastase DZUDIE <aiddzudie@yahoo.com>  
To  Albertino Damasceno, albertino damasceno

03/11/14 at 8:40 AM

Dear Albertino,
I trust you are well, you remember we discussed about this important project. I am now contacting you in my role of the coordinator of the PASCAR writing committee of the PASCAR practice guidelines for management of hypertension in Africa.
We are now in the process of assembling all potential experts. Your recent publications in this field are very pertinent and we do believe your input in this project will be very valuable for the group. We are therefore very excited to be able to count on your input, and please feel free to suggest any name that you think shall be contacted at this initial phase. After assembling all experts, our next step will be to agree on the methodology that will be used to tackle this important project.
Looking forward to read from you soon,
All the best,

Anastase

Albertino Damasceno <tino_7117@hotmail.com>  
To  Anastase DZUDIE

03/11/14 at 11:32 PM

Dear Anastase,

Thank you again for this kind invitation that I accept.
I would like to suggest Prof. YK Seedat as a member of the writing committee and Basden Onwobere.
Looking forward to hear from you,

Best regards

Albertino
The continental coalition for the fight against hypertension: The Nairobi meeting

Conference Proceedings

Development of the roadmap and guidelines for the prevention and management of high blood pressure in Africa:

Proceedings of the PASCAR Hypertension Task Force meeting: Nairobi, Kenya, 27 October 2014
Outcome of the Nairobi meeting

PASCAR fight against BP

- Creation of Task force
- Agreed on a timeline & milestones
- Defined Consensus on next steps
- Identified cardiac & hypertension societies
Outcome of the Nairobi meeting

- Need for a clear continental policy program.
- Need for research: outcome data & RCTs
- Urgent next step: To do a situational analysis & create a Warehouse of existing drug evidence (Clinical trials) and national policy program.
Prevalence, Awareness, Treatment and Control of Hypertension in Africa

Prevalence 30% (27-34%)

Awareness 27% (7-56%)

Not aware 73%

Treated 18% (14-22%)

Untreated 72%

Controlled* 7% (5-8%)

Uncontrolled 93%

* BP < 140/90 mmHg

Adapted from original publication by Anastase DZUDIE; Chair, PASCAR task force on hypertension

Feven Ataklte et al; Hypertension. 2015, DOI: 10.1161/HYPERTENSIONAHA.114.04394

Hypertension policy programs in Africa: Creation of a Warehouse

- Existing randomized control clinical trials (RCTs)

Pan African Society of Cardiology

& Centre for the Development of Best Practices in Health – CDBPS

With the technical support of: African Community of Guidelines International Network – G-I-N Africa
Research questions

– What are the RCTs conducted for hypertension in Africa?

– Which countries have been actively involved?

– In which years were the RCTs conducted?
Methods

• Systematic search using MeSH terms

• Database searched: PubMed, Cochrane Library, ISH, WHO ICT, PACTR

• Language: English, French, Spanish & Portuguese.

• No assessment of quality
Results

- 84 studies, from 69 authors, in 18 countries

- 43 out of 84 studies were RCTs

- Published in 47 journals (9 African Journals).

- Studies ranged from between 1971 to 2015.

- NIH 2015: 32 CTs with only 22 drug trial

- Most are old, small sample and single centre hospital studies.
RCTs leading country Sites in Africa

No of Studies

Nigeria | South Africa | Kenya | Cameroon | Ghana | Rest of Africa
Conclusions on RCTs search

- Very little knowledge on treatment of hypertension has been generated from Africa through randomised controlled trials.

- Most are small sample size and single center urban hospital study.

- Compared to what we need to develop evidence based guidelines, there is still a long way to go.

- NB: No quality assessment, simply we need research (outcome data → registries & RCTs)!!!!
Outcome of the Nairobi meeting

THE CREOLE TRIAL

PROJECT TITLE: Comparison of Three Combination Therapies in Lowering Blood Pressure in Black Africans (The CREOLE study).

RESEARCH TEAM:

Continental PI: Dike Ojji (Co-chair, PASCAR Task Force on Hypertension).
Co-PI: Neil Poulter

Investigators Cameroon (1): Anastase Dzudie (Douala); Kenya (2): Elijah Ogola (Nairobi), and Ayub Barasa (Eldoret); Mozambique (1): Albertino Damasceno (Maputo); Nigeria (3): Egenti Nonye and Manmak Mamven (Abuja), Okechukwu Ogah (Ibadan), and Mahmoud Sani (Kano); South Africa (2): Biddy Buchanan Lee and Ikechi Okpechi (Cape Town), Gboyega Ogunbanjo.
Clinical Practice Guidelines for hypertension & hypertension policy program in Africa

Pan African Society of Cardiology

& Centre for the Development of Best Practices in Health – CDBPS

With the technical support of: African Community of Guidelines International Network – G-I-N Africa
Step 1: PASCAR Internal Survey

Is the ministry of health of your country running a hypertension focus national program to tackle hypertension?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very much</td>
<td>30.1%</td>
</tr>
<tr>
<td>Much</td>
<td>16.1%</td>
</tr>
<tr>
<td>Active</td>
<td>11.9%</td>
</tr>
<tr>
<td>Neutral</td>
<td>7.7%</td>
</tr>
<tr>
<td>Not so much active</td>
<td>3.5%</td>
</tr>
<tr>
<td>Very dormant</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

983 emails sent via our internal system
146 answers from 40 countries (27 African)

With courtesy of George Nel
Step 2: Research questions with the CDBPS

– Which countries have developed or adapted guidelines for hypertension within the African region?

– Which countries have made these CPGs available either on the MOH website, medical associations or as documents to clinicians and patients?

– Which countries are using adopted but not adapted guidelines?

– Which countries have their CPGs still in the works?

– Which countries do not have CPGs for hypertension?
Methods
Search in May and July 2015

- **Web** search of guidelines and related articles: Google, Google scholar and PubMed.
- **Hand** search: MOH, WHO & association websites.
- **Emails authors** and request for CPGs

- **Languages**: English-French-Spanish-Portuguese.

- Only considered existence if we received a copy

- Not considered: CPGs could not be delivered to us or if delivered CPGs were for European/South American countries.
Map of African countries with evidence of existence of Clinical practice guidelines for hypertension management
<table>
<thead>
<tr>
<th>CPGs</th>
<th>Percentage</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing CPGs for Hypertension</strong></td>
<td><strong>16 (24.20%)</strong></td>
<td><strong>Burundi, Egypt, Ethiopia, Ghana, Kenya, Lesotho, Malawi, Mauritius, Nigeria, Rwanda, South Africa, Sudan, Uganda, United Republic of Tanzania, Zambia</strong></td>
</tr>
<tr>
<td>WHO - ISH</td>
<td>12.90%</td>
<td>Algeria, Gabon, Democratic Republic of Congo, Comoros Islands, Seycheles.</td>
</tr>
<tr>
<td>Adoption without Adaptation</td>
<td>3.20%</td>
<td>Angola, Equitorial Guinea, Mozambique</td>
</tr>
<tr>
<td>CPGs in the Works</td>
<td>4.80%</td>
<td>Sierra Leone, Tunisia, Cameroon</td>
</tr>
<tr>
<td>Non-Existent or Unclear (No evidence for existence or non-existence)</td>
<td>56.50%</td>
<td>Benin, Botswana, Canary Islands, Cape Verde, Central African Republic, Chad, Côte d’Ivoire, Djibouti, Eritrea, Gambia, Guinea, Guinea-Bissau, Liberia, Libya, Mali, Mauritania, Morocco, Niger, Republic of the Congo, Réunion, São Tomé and Príncipe, Senegal, Somalia, Swaziland, Togo, Western Sahara, Zimbabwe, Burkina Faso, Madagascar, South Sudan.</td>
</tr>
</tbody>
</table>

NB: We did assessed the quality of CPGs, eg Egypt 2003, Lesotho 2005
• Support African MOH, medical associations medical staff and all stakeholders with the development of high quality policy programs to tackle raised BP.
The target to achieve in 2025

Prevalence
30 %
(27-34%)

Awareness
27 % (7-56%)

Not aware
73 %

Treated
18 % (14-22%)

Uncontrolled
85 %

* BP < 140/90 mmHg

Adapted from original publication by Anastase DZUDIE; Chair, PASCAR task forcé on hypertension

Feven Ataklte et al; Hypertension. 2015, DOI: 10.1161/HYPERTENSIONAHA.114.04394

## Roadblocks for hypertension control & solutions for Africa

<table>
<thead>
<tr>
<th>No</th>
<th>Roadblocks</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government leadership and policy</td>
<td>1) Advocacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Pressure on the country to achieve the minimum standards</td>
</tr>
<tr>
<td>2</td>
<td>Funding and resources</td>
<td>1) Cost of doing it vs cost of not doing it</td>
</tr>
<tr>
<td>3</td>
<td>Guidelines (e.g. PACK)</td>
<td>1) Define simple and practical guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Simple message on who should be treated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Simple symbols that help identifying level of urgency</td>
</tr>
<tr>
<td>4</td>
<td>Awareness</td>
<td>Opportunistic screening</td>
</tr>
<tr>
<td>5</td>
<td>Screening</td>
<td>1) Get BP measure using both health workers and non-health system workers e.g. ambulants, barbers, lay organizations etc...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Use media to stress on the importance of screening</td>
</tr>
<tr>
<td>6</td>
<td>Accessibility of health care systems</td>
<td>1) Define minimum standard of care for Africa (basic package)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Integrate hypertension program to malaria and HIV polices</td>
</tr>
<tr>
<td>7</td>
<td>Healthcare professionals</td>
<td>1) Use task sharing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Influence prescription legislation (e.g. Mozambique)</td>
</tr>
<tr>
<td>8</td>
<td>Medicines</td>
<td>1) Availability, affordability and quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Define minimal universal coverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Influence legislation (on what a health worker can prescribe)</td>
</tr>
<tr>
<td>9</td>
<td>Adherence and keeping people in care</td>
<td>1) Universal coverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Minimal drug availability and affordability</td>
</tr>
<tr>
<td>10</td>
<td>Prevention</td>
<td>1) Invest on prevention in your</td>
</tr>
</tbody>
</table>
### PASCAR minimum standards for hypertension care in Africa: Basic Equipment

<table>
<thead>
<tr>
<th></th>
<th>Minimum care</th>
<th>at Primary Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Health Care Worker</td>
<td>Medical Practitioner</td>
</tr>
<tr>
<td>Calibrated sphygmomanometer either mercury or oscillometric plus appropriate cuffs</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Home blood pressure devices</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Ambulatory blood pressure devices</td>
<td>+/-</td>
<td></td>
</tr>
<tr>
<td>Tape measure for waist circumference</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Scale for weight</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Stadiometer for height</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Standard 12 lead ECG</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td>Glucometer</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Funduscope</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td>Stethoscope</td>
<td>+++</td>
<td>+++</td>
</tr>
</tbody>
</table>

+++: strongly, recommended.  +: recommended.  -: not done +/-: done if facilities are available
CAPACITY OF HEALTH CARE EXPERTS TO MANAGE HYPERTENSION IN AFRICA

PEOPLE WITH HYPERTENSION

Cameroon: 23 millions with
* 1,5 million living with hypertension

Primary care
* 18000 nurses and midwives

* 50

* 2500 GPs

Hypertension organizations and experts

Specialty organizations and experts

* Statistics for Cameroon
**Hypertension Management Algorithm**

**Step 1:** Assess

**Major Risk Factors**
- Levels of systolic and diastolic BP
- Smoking
- Dyslipidaemia:
  - Total cholesterol > 5.1 mmol/L
  - Diabetes mellitus
  - Men > 55 years
  - Women > 65 years
  - Family history of early onset of CVD:
    - Men aged > 55 years
    - Women aged > 65 years
  - Waist circumference - abdominal obesity:
    - Men ≥ 102 cm
    - Women ≥ 94 cm

**Step 2:** Measure Blood Pressure according to the ESC/ESH guidelines*

**Step 3:** Lifestyle changes
- Weight reduction
- Restrict salt, dietary sugars, and saturated fat
- Limit alcohol consumption
- Increase fruit and vegetables
- Increase physical activity
- Stop all tobacco products

**Step 4:** Target Organ Damage
- LVH: based on ECG
  - Sokolow-Lyons > 35 mv (S in V1 + R in V5 or V6)
  - Cornell product > 2440 mm.s (S in V3 + R in aVL + 6 in females) x QRS duration
- LV: in aVL > 11 mv
- +ve dipsticks for protein

**Step 5:** Complications
- Coronary heart disease
- Heart failure
- Chronic kidney disease:
  - +ve dipsticks for protein OR eGFR < 60ml/min
- Stroke or TIA
- Peripheral arterial disease
- Advanced retinopathy:
  - Haemorrhages OR exudates
  - Papilloedema

**Step 6:** Is there a hypertensive urgency or emergency? BP > 180/110 mmHg with symptoms and/or accelerated TOD
- Yes: Refer for hospital admission
- No

**Step 7:** Routine Management

**Step 1:** Choose any of the following:
- Hydrochlorothiazide 12.5 - 25 mg daily or indapamide 1.25 - 2.5 mg daily
- CCB
- ACE-I or ARB
- If 20/10 mmHg above goal proceed directly to step 2

**Step 2:**
1. Combine any of the above
2. Combine all 3 of above
3. Maximize doses of individual agents

**Step 3:**
- Spironolactone 25mg daily (monitor K+ and avoid if eGFR < 45mls/min)
- β blocker, α blocker, minoxidil, centrally acting drug, or hydralazine
- Consider furosemide 40mg b.d. in place of thiazide if eGFR < 45mls/min
- Check adherence, secondary causes, home or 24 hour BP monitoring for white coat or pseudoresistance

* CCBs/diuretics preferred in Blacks/Elderly
* 24 hour acting drugs and single pill combinations preferred

**Step 8:** BP Targets
- <140/90 mmHg
- <150/90 mmHg if > 80 years

*Abbreviations*
- LVH = left ventricular hypertrophy
- eGFR = estimated glomerular filtration rate
- TOD = target organ damage
- TIA = transient ischaemic attack
- ACE-I = angiotensin converting enzyme inhibitor
- ARB = angiotensin receptor blocker
- CCB = calcium channel blocker
- HF = heart failure
- ISH = isolated systolic hypertension

With courtesy of Brian Rayner
<table>
<thead>
<tr>
<th>Month</th>
<th>Main Activities</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 2014</td>
<td>Build Task force</td>
<td>Appointment of chair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recruitment of task force Members</td>
</tr>
<tr>
<td>May 2014</td>
<td>Consolidate the taskforce</td>
<td>Planning the meeting</td>
</tr>
<tr>
<td>Oct 2014</td>
<td>1st meeting</td>
<td>1st taskforce meeting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review of previous relevant hypertension programs and guidelines and plan the Africa roadmap</td>
</tr>
<tr>
<td></td>
<td>2nd meeting</td>
<td>Internal survey – Identification of a Warehouse developer – Work with WHF on roadmap</td>
</tr>
<tr>
<td>Nov 2014</td>
<td>3rd meeting</td>
<td>Feedback from members and how to customize the WHF roadmap for Africa</td>
</tr>
<tr>
<td>Aug 2015</td>
<td>Warehouse - WHF</td>
<td>Draft of roadmap by PASCAR &amp; WHF experts</td>
</tr>
<tr>
<td></td>
<td>2nd meeting</td>
<td>Draft Afro roadmap</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discuss the Africa roadmap with National cardiac and hypertension societies</td>
</tr>
<tr>
<td></td>
<td>13 to 14</td>
<td>Task force review and agree on the final version of draft roadmap by emails</td>
</tr>
<tr>
<td></td>
<td>14 to 15</td>
<td>Validation</td>
</tr>
<tr>
<td></td>
<td>15 to 16</td>
<td>Submission of roadmap for external peer review</td>
</tr>
<tr>
<td></td>
<td>4th GDG meeting</td>
<td>Task force collect and summarize external peer review comments</td>
</tr>
<tr>
<td>June 2016</td>
<td></td>
<td>Task force review external peer review comments and update if needed</td>
</tr>
<tr>
<td></td>
<td>16 to 17</td>
<td>Task force review and agree on the final version of evidence report and recommendations by emails</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Review and approval + publication by PASCAR steering committee</td>
</tr>
</tbody>
</table>
Report

Status report on hypertension in Africa - Consultative review for the 6th Session of the African Union Conference of Ministers of Health on NCD’s

Steven van de Vijver¹,²,³, Hilda Akinyi¹, Samuel Oti¹,², Ademola Olajide³, Charles Agyemang⁴, Isabella Aboderin¹, Catherine Kyobutungi¹

THE PROPOSED PASCAR POLICY DIALOGUES

NATIONAL CARDIAC SOCIETIES

ISH, IFHA & NATIONAL HYPERTENSION SOCIETIES

AFRICAN HEART NETWORK NATIONAL HEART FOUNDATIONS

PASCAR Task force on Hypertension with WHF partnership

ALL PROFESSIONAL & LAY GROUPS

AFRICAN UNION HEALTH COMMISSION

AFRICAN MINISTRIES OF HEALTH

TRAINING INSTITUTIONS IN AFRICA HYPERTENSION TRAINING COURSES

WHO & OTHER UN AGENCIES
Take-away Messages

- PASCAR has identified the fight against hypertension as number 1 priority action to achieve WHO/WHF 25 x 25 goal

- A continental coalition of various experts: aim a 15% control rate of BP in the next 10 years,

- A situational analysis done → Urgent need of a clear and simple policy document that is appropriate for a wide range of stakeholders from policy to operational level.

- Our next steps
  - Improve our draft
  - Engage in policy dialogue with a wide openness with all stakeholders
  - Aim a final document by June 2016.
Abstract submission now open
www.worldcardiocongress.org