HYPERTENSION CLINICAL PATHWAY: HEARTS
BLUEPRINT FOR THE DETECTION AND TREATMENT
OF HYPERTENSION

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HEARTS AND NCD SURVEILLANCE WORKSHOP
ST. LUCIA MAY 2023
Where HEARTS in the Americas Began

2013 First HEARTS Summit held in Miami Florida

Barbados first country to implement HEARTS

2016 First paper detailing HEARTS published

HEARTS now
- 26 countries
- 3 new implementing
- Over 20 million lives impacted

CDC Noncommunicable Disease Division and PAHO start planning

Guide and Essentials for Implementation

HEARTS in the Americas

Healthy lifestyle counseling
- Information on the four Behavioural risk factors for CVD (smoking, high blood pressure, diabetes, and obesity).
- Information on how to encourage people to adopt healthy lifestyles

Evidence-based treatment guidelines
- A collection of protocols to standardize a clinical approach to the management of hypertension and diabetes.

Access to essential medicines and technology
- Information on CVD medicines and technology procurement, quantification, distribution, management and handling of supplies at facility level.

Risk-based CVD management
- Information on a risk approach to the prevention and management of CVD, including country-specific risk charts.

Team-based care
- Guidance and examples on team-based care and task shifting related to the care of CVD. Some training materials are also provided.

Systems for monitoring
- Information on how to monitor and report on the prevention and management of CVD. Contains standardized indicators and data-collection tools.
Regulatory Framework on BPMDs
Access to medicines through the Strategic Fund
HEARTS App – CVD Risk Calculator
HEARTS pillars and technical package
2021 WHO Hypertension Guidelines
Hypertension Drivers and Scorecards
Maturity and Performance Indexes
WHO Guideline for the Pharmacological Treatment of Hypertension in Adults: Scope and Objectives

The guidelines address issues related to pharmacotherapy in adults with confirmed hypertension

1. BP threshold to start treatment
2. Whether lab tests or CVD risk assessment are needed first
3. Which drug(s) to prescribe and in which combinations
4. BP target for control of hypertension
5. Follow-up intervals
6. Use of nonphysician HCWs in the further management of hypertension
Hypertension Clinical Pathway

A  ACCURATE BLOOD PRESSURE MEASUREMENT
Measure blood pressure in all adults and at all visits

1. Don't have a conversation
2. Support arm at heart level
3. Put the cuff on bare arm
4. Use correct cuff size
5. Support feet
6. Keep legs uncrossed
7. Empty bladder first
8. Support back

B  CARDIOVASCULAR RISK
Know your risk of cardiovascular disease and how to modify it

CARDIOVASCULAR RISK CALCULATOR
Use the HEARTS App to assess your cardiovascular risk

Scan code to access the cardiovascular risk calculator

This App does not replace clinical judgment.
### Cardiovascular risk

<table>
<thead>
<tr>
<th></th>
<th>All Hypertensives</th>
<th>HIGH-RISK Hypertensives WITH established cardiovascular disease</th>
<th>HIGH-RISK Hypertensives WITHOUT established cardiovascular disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure TARGET &lt;140/90 mmHg</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic Blood Pressure TARGET &lt;130 mmHg</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>ASPIRIN 100 mg/daily</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-dose statins: ATORVASTATIN 40 mg/daily</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate-dose statins: ATORVASTATIN 20 mg/daily</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
1 Tablet of Telmisartan/Amlodipine 40/5 mg

Patient above target after repeat measurement:
1 Tablet of Telmisartan/Amlodipine 80/10 mg

Patient above target after repeat measurement:
1 Tablet of Telmisartan/Amlodipine 80/10 mg + ½ Tablet of Chlorthalidone 25 mg

Patient above target after repeat measurement:
1 Tablet of Telmisartan/Amlodipine 80/10 mg + 1 Tablet of Chlorthalidone 25 mg

Patient above target:
Refer to the next level of care
Primary Effectiveness Outcomes for ACE Inhibitors Compared With ARBs (on-Treatment, PS Stratification, Excluding NHIS/NSC)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>HR (95% CI)</th>
<th>P value</th>
<th>Calibrated HR (CI)</th>
<th>Calibrated P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute myocardial infarct</td>
<td>1.10 (1.04–1.17)</td>
<td>&lt;0.01</td>
<td>1.11 (0.95–1.32)</td>
<td>0.19</td>
</tr>
<tr>
<td>CVEs</td>
<td>1.04 (0.99–1.10)</td>
<td>0.12</td>
<td>1.06 (0.90–1.25)</td>
<td>0.49</td>
</tr>
<tr>
<td>Heart failure</td>
<td>1.02 (0.94–1.11)</td>
<td>0.64</td>
<td>1.03 (0.87–1.24)</td>
<td>0.68</td>
</tr>
<tr>
<td>Stroke</td>
<td>1.06 (1.00–1.12)</td>
<td>0.06</td>
<td>1.07 (0.91–1.27)</td>
<td>0.40</td>
</tr>
</tbody>
</table>

Calibrated hazard ratios (HRs), CIs, and P value are calibrated empirically using the distributions of positive and negative control outcomes to minimize residual systematic error (see Methods for detailed description). ACE indicates angiotensin-converting enzyme; ARB, angiotensin receptor blocker; CVE, composite cardiovascular event; HR, hazard ratio; NHIS, National Health Insurance Service; NSC, National Sample Cohort; and PS, propensity score.

DATA NOT SHOWN: ARBs had significantly lower risk of angioedema, cough, pancreatitis, and GI bleeding

(Chen et al., Hypertension. 2021;78:591 - 603)
All-cause mortality in the single-pill concept (SPC) vs multipill combinations (MPC) groups

Figure shows the number of all-cause mortality per observed 100 patient-years in the respective cohorts. Comparisons are done between matched SPC versus MPC cohorts.

CAR/AML indicates candesartan/amlodipine; RAMI/AML, ramipril/amlodipine; VAL/AML, valsartan/amlodipine; and VAL/AML/HCTZ, valsartan/amlodipine/hydrochlorothiazide.

Results for the composite outcome of all-cause hospitalization and all-cause death.

Figure shows the results for the hazard ratios for the time to the first event regarding the predefined composite outcome of all-cause death and all cause hospitalizations based on a comparison of propensity score–matched single-pill concept (SPC) versus multipill combinations (MPC) cohorts.

CAR/AMLO indicates candesartan/amlodipine; RAMI/AMLO, ramipril/amlodipine; VAL/AMLO, valsartan/amlodipine; and VAL/AMLO/HCTZ, valsartan/amlodipine/hydrochlorothiazide.

(START STUDY: Schmieder et al., Hypertension. 2023;80:00–00. DOI: 10.1161/HYPERTENSIONAHA.122.20810)
HEARTS methodology for protocol development


Uses resources currently available

Improves the utilization of available resources

Get the ideal resources

HYPERTENSION TREATMENT PROTOCOL CURRENT

HYPERTENSION TREATMENT PROTOCOL ACCEPTABLE

HYPERTENSION TREATMENT PROTOCOL PREFERRED
The Hypertension Clinical Pathway is the fundamental tool for the HEARTS implementation, catalyzing the recommendations of the new WHO CPG and the Drivers for Hypertension Control.

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<th>Patients under control</th>
<th>Minimum 6-MONTH follow-up</th>
<th>Minimum 3-MONTH follow-up</th>
<th>Supply medicines for 3 MONTHS</th>
<th>Vaccination</th>
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<tr>
<td>All Hypertensives</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>HIGH-RISK Hypertensives</td>
<td>✓</td>
<td>✓</td>
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**HEARTS**

- ASSESS TREATMENT ADHERENCE AT EACH VISIT
- TAKE ALL MEDICATIONS AT THE SAME TIME EVERY DAY

*This protocol is NOT INDICATED in WOMEN of CHILDBEARING AGE*
Relationship between the COVID and NCD pandemics: the perfect storm

- Increased COVID morbidity and mortality
- Increased co-morbid diseases with COVID
- Increased HTN burden
- Interruption of HTN management
- Chronic NCD pandemic
- Acute COVID pandemic

DiPette, Ridley 2020
Skeete, Connell, Ordunez, DiPette Integrated Blood Control. 2020
The Hypertension Clinical Pathway is the fundamental tool for the HEARTS implementation, catalyzing the recommendations of the new WHO CPG and the Drivers for Hypertension Control.

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**HEARTS**

- Assess treatment adherence at each visit
- Take all medications at the same time every day

This protocol is **NOT INDICATED in WOMEN of CHILDBEARING AGE**
Cardiovascular outcomes in adults with hypertension with evening versus morning dosing of usual antihypertensives in the UK (TIME study): a prospective, randomised, open-label, blinded-endpoint clinical trial

Isda S Mackenzie, Amy Rogers, Neill R Poulter, Bryan Williams, Morris J Brown, David J Webb, Ian Ford, David A Rorie, Greg Guthrie, JW Kerr Grieve, Filippo Pigazzani, Peter M Rothwell, Robin Young, Alex McConnell, Allan D Struthers, Chim C Lang, Thomas M MacDonald, on behalf of the TIME Study Group

(Mackenzie et al., Lancet 2022; 400: 1417–25)

Study profile
(*participants who withdrew consent for all follow-up were included in the time-to-event analysis up to the point of withdrawal)

Cumulative hazard of the first primary composite endpoint event, accounting for the competing risk of deaths not included in the endpoint (intention-to-treat population; n=21 104).
The primary composite endpoint was vascular death or hospitalisation for non-fatal myocardial infarction or nonfatal stroke.

(Mackenzie et al., Lancet 2022; 400: 1417–25)
Hypertension Clinical Pathway: HEARTS Blueprint for Detection and Treatment of Hypertension: Closing Thoughts

“START WITH THE END IN MIND”: INCREASING HYPERTENSION CONTROL

- Comprehensive, evidence-based, aligned with current major hypertension guidelines (WHO)
- Combines the key components of detection and treatment
- Stresses the importance of the use of a standardized, straightforward, and simple treatment algorithms/protocol
- Details the use of two medications (two-pills or preferably a single-pill, fixed dose combination) in the initial treatment in newly diagnosed hypertension
- Importance of timely patient follow-up, rapid titration, and vaccinations
Thank You