Hypertension Treatment – A Crucial Step on the Pathway to Universal Health Coverage
Cardiovascular Disease Is the World’s Leading Killer

<table>
<thead>
<tr>
<th>RANK</th>
<th>CAUSE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart disease</td>
<td>12.2</td>
</tr>
<tr>
<td>2</td>
<td>Stroke</td>
<td>9.7</td>
</tr>
<tr>
<td>3</td>
<td>Lower respiratory infections</td>
<td>7.0</td>
</tr>
<tr>
<td>4</td>
<td>Chronic obstructive pulmonary disease</td>
<td>5.1</td>
</tr>
</tbody>
</table>

2004 (actual)

<table>
<thead>
<tr>
<th>RANK</th>
<th>CAUSE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart disease</td>
<td>14.2</td>
</tr>
<tr>
<td>2</td>
<td>Stroke</td>
<td>12.1</td>
</tr>
<tr>
<td>3</td>
<td>Chronic obstructive pulmonary disease</td>
<td>8.6</td>
</tr>
<tr>
<td>4</td>
<td>Lower respiratory infections</td>
<td>3.8</td>
</tr>
</tbody>
</table>

2030 (projected)

World Health Organization
High blood pressure kills more people than any other condition

...more than all infectious diseases combined

“Every 20 mm increase in systolic BP doubles vascular mortality at ages 35-69”
Of All Adult Primary Care Interventions, Improvement in Management of Hypertension Treatment Can Save the Most Lives
Most People With Hypertension Globally Do Not Have It Under Control

Less than 1 in 7 with hypertension worldwide have it under control


- Have high blood pressure: 1.4 Bn
- Aware: 734M
- Treated: 489M
- Controlled: 192M
- Less than 14%
Universal Health Coverage and Hypertension

Providing effective hypertension treatment services both requires and facilitates the establishment of effective and high-impact primary health care systems!

*Equity:*

Control rates range from 70% (Canada) to less than 5% (most of Africa), but are only 10-15% globally, including in China and India
Key Components of Hypertension Control

- Consistent protocol
- Medication supply
- Community-based treatment
- Patient-centered care
- Information systems
Hurdles to Blood Pressure Control

**DIAGNOSIS**
- Screening not done
- Diagnosis not made
- Low attendance
- Inaccurate measurement

**TREATMENT**
- No protocol
- Drug shortages
- Therapeutic inertia
- Private sector
- Patient flow

**CONTINUITY OF CARE**
- No reminders
- No recall system
- Medications not affordable
- No information system
- Low adherence
Treatment Protocols Improve Outcomes

• Precise protocols to establish standard treatment of patients

• Drug- and dose-specific, with schedule for titration or addition of medications if blood pressure not controlled

• Eases logistics, training, task-sharing, financing, supervision, evaluation, and future changes

Recommended single-pill combination treatment protocol
Kaiser Permanente Hypertension Program vs. United States Hypertension Control

KPNP ~90% Control

National ~44% Control
KPNC Hypertension Drug Treatment Algorithm

http://kpcmi.org/how-we-work/hypertension-control

**ACE Inhibitor / Thiazide Diuretic**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisinopril / HCTZ</td>
<td>20/25 mg x ½ daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20/25 mg x 1 daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20/25 mg x 2 daily</td>
<td></td>
</tr>
</tbody>
</table>

Pregnancy potential: avoid ACE inhibitors

If ACEI intolerant or pregnancy potential

**Thiazide Diuretic**

- HCTZ 25 mg ⇒ 50 mg
  - OR
  - Chlorthalidone 12.5 mg ⇒ 25 mg

If not in control

For ACEI intolerance due to cough, use ARB

Add losartan 25 mg daily
⇒ 50 mg daily ⇒ 100 mg daily

Do not combine ACEI and ARB.
Pregnancy potential: avoid ARBs

If not in control

**Calcium Channel Blocker (CCB)**

Add amlodipine 2.5 mg daily ⇒ 5 mg daily ⇒ 10 mg daily

If not in control

**Spironolactone** - Aldosterone Receptor Antagonist (ARA)

- Spironolactone 12.5 mg ⇒ 25 mg daily
- *If on thiazide AND eGFR ≥ 60 mL/min/1.73 m² AND potassium < 4.5 mmol/L

If spironolactone eligibility criteria not met:
- Bisoprolol 2.5 mg ⇒ 5 mg daily ⇒ 10 mg daily
  - Titrate to BP; maintain pulse of > 55
Medication access is essential

• Improvements in procurement, supply, and distribution systems needed

• Adequate budget (although costs may be as low as $2-10/patient/year)

• Efficient procurement – procurement prices range 30-fold for the same medications, even from the same company, in different countries

• Many standards of care not yet applied in low- and middle-income countries, including measurement of blood pressure in all adult outpatients, prompt treatment of all with hypertension, and use of high-quality medicines

• ~75% of people with hypertension require ≥2 drugs to achieve BP control

• All core anti-hypertensives are generic, inexpensive, safe, effective, and have been used in high-income countries routinely for half a century

  • Combination medications improve blood pressure control with no increase in withdrawals from adverse events, recommended by WHO, ESC/ESH, ACC/AHA & others
The time for action is now.

200 people have died from hypertension since I started this talk.

FDCs could help 80 million more people control hypertension.

That’s hundreds of thousands of lives saved.