Addressing Multi-level Influences on Hypertension Disparities

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Disclosures: None
Objectives

1. Identify and discuss multiple levels influencing disparities in hypertension control among racial and ethnic groups.

2. Review effective strategies for reducing racial and ethnic disparities, including the Reducing Inequities in Care of Hypertension: Lifestyle Improvement for Everyone (RICHLIFE) Project.
US Trends
Hypertension and Cardiovascular Disease Risk

CVD risk increases in a log-linear fashion from SBP levels 115-180 mm Hg and from DBP levels 75 - 105 mm Hg.\(^1\)

20 mm Hg higher SBP and 10 mm Hg higher DBP doubles risk of death from CVD, stroke, or other vascular disease.

Among >1 million adult patients higher SBP and DBP increased risk of CVD incidence and angina, MI, HF, stroke, PAD, and abdominal aortic aneurysm.\(^2\)

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2. Rapsomaniki E et al. 2014. *Lancet*
Age-adjusted Prevalence of Hypertension: Adults ≥ 20 years, NHANES 2015-2018

U.S. adults with hypertension 47.3% (121.5 million)

Hypertension Prevalence among US Adults Varies by Geography

Prevalence of Hypertension Awareness, 2019, US Adults Ages 20 and older

2019
Adults who have been told they have high blood pressure (variable calculated from one or more BRFSS questions) (Crude Prevalence)

View by: Overall
Response: Yes

Behavioral Risk Factor Surveillance System (BRFSS)
Awareness, treatment, and control of high blood pressure by race/ethnicity and sex in the US, NHANES, 2015–2018

Virani, SS et al. 2021 *Circulation.*
Uncontrolled hypertension may be worsening in the US

Hypertension control: \(<140/90\) mm Hg

Uncontrolled hypertension may be worsening in the US

Hypertension control: <130/80 mm Hg

Blood pressure control among all adults with hypertension

About 1 in 5 adults have controlled BP

Muntner P et al. 2020. *JAMA*
Why are BP Control Rates Poor?

Environment / Society
- Poor social support
- Food deserts
- Inadequate community resources

Patients
- Low health literacy
- Unhealthy lifestyles
- Non-adherence to medications

Health System
- Quality orientation
- Staffing
- Team functioning
- Practice resources
- Outreach focus

Clinicians / Staff
- Clinical inertia
- Competing priorities
- Technical skills
- Communication skills
- Cultural competence
The Health Impact Pyramid
Population Health Framework

Health Outcomes
- Length of Life (50%)
- Quality of Life (50%)

Health Behaviors (30%)
- Tobacco Use
- Diet & Exercise
- Alcohol & Drug Use
- Sexual Activity

Clinical Care (20%)
- Access to Care
- Quality of Care

Social & Economic Factors (40%)
- Education
- Employment
- Income
- Family & Social Support
- Community Safety

Physical Environment (10%)
- Air & Water Quality
- Housing & Transit

Source: 2017 County Health Rankings: Maryland
Worlds Apart Though the Distance is 5 Miles

Roland Park
- 83.9 year life expectancy
- Death rate from Heart Disease: 13.6 per 10,000
- Death rate from Stroke: 5.1 per 10,000
- Median Household Income: $104,482
- <HS Diploma: 7%
- Unemployment Rate: 2.3%
- Hardship Index: 16
- % of Land Covered by Food Desert: 0%
- % of Land Covered by Green Space: 63.6%

Clifton-Berea
- 66.9 year life expectancy
- Death rate from Heart Disease: 27.7 per 10,000
- Death rate from Stroke: 6.9 per 10,000
- Median Household Income: $25,738
- <HS Diploma only: 63.3%
- Unemployment Rate: 17.4%
- Hardship Index: 61
- % of Land Covered by Food Desert: 47.9%
- % of Land Covered by Green Space: 11.8%

Multilevel Influences on Hypertension Disparities

Local Community
- Income inequality
- Poverty levels
- Racial segregation
- Interpersonal discrimination
- Crime rates
- Food availability

Provider/Clinical Team
- Knowledge of guidelines
- Awareness of disparities
- BP measurement skills
- Patient-centered communication skills
- Cultural competency
- Trustworthiness

Individual Patient Level
- Biological effectiveness of medications
- Adherence to medications/lifestyle
- Mental health and substance abuse
- Reactions to discrimination
- Health literacy
- English proficiency
- Health insurance coverage

National Health Policy
- Medicare reimbursement
- Health care reform
- National initiatives

State Health Policy
- Health care exchanges
- Medicaid expansion
- Hospital performance data policies
- State plans and programs

Organization/Practice Setting
- Organization structure and resources
- Clinical decision support
- Electronic medical records
- Patient education/care coordination
- Team functioning

Family/Social Support
- Family dynamics
- Family history
- Financial strain
- Social networks/peer support

Best Practice Strategies

Healthcare System Interventions

Have the potential to improve the delivery and quality of care in clinical settings. Effective strategies in this domain can lead to earlier detection, improved disease management, and even prevention of the onset of CVD.

Community-Clinical Links

Connect community programs with health systems to improve chronic disease prevention, care, and management. Effective links can reduce barriers to care and increase patient adherence to clinician recommendations.

Promoting Team-Based Care to improve Hypertension Control
Self-Management Support and Education
Pharmacy: Collaborative Practice Agreements to Enable Collaborative Drug Therapy Management
Reducing Out-of-Pocket Costs for Medications
Self-Measured Blood Pressure Monitoring with Clinical Support
Implementing Clinical Decision Support Systems

Examples of Promising Interventions to Address Hypertension Disparities

**Individual Level**
- Dietary Approaches to Stop Hypertension (DASH)
- Patient self-management strategies, e.g., problem-solving skills, SMBP

**Family, Peer, & Social Network**
- Peer support interventions
- Barber shop/beauty parlor interventions

**Provider/Team Levels**
- Nurse and pharmacist-delivered care management
- Provider audit and feedback and communication skills training

**Organizational Level**
- Electronic medical records with decision support
- Tele-monitoring
- Virtual visits

**Community Level**
- Community health worker outreach, education and support

**Policy Level**
- Early childhood education
- Urban planning and community development
- Housing
- Income enhancements and supplements
- Employment

Reducing Inequities in Care of Hypertension: Lifestyle Improvement for Everyone

Lisa Cooper MD, MPH and Jill Marsteller, PhD, MPP

Co-PIs

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Our Health System Partners

- Berks Community Health Center
- Choptank Community Health
- Johns Hopkins Medicine
- Johns Hopkins Healthcare
- Johns Hopkins Community Physicians
- Total Health Care
- Park West Health System
  “Putting Patients First”
Our Community Partners
Project Overview

- **Design**: Cluster randomized trial
- **Setting**: 30 practices in Maryland and Pennsylvania
- **Participants**: 1,822 patients (~60 per site)
  - Must have uncontrolled hypertension plus at least one other condition: diabetes, depression, high cholesterol, heart disease, or tobacco smoking
- **Interventions**:
  - Standard of care plus (SCP)
  - Collaborative Care/Stepped Care (CC/Stepped Care)
- **Primary outcomes at 12 and 24 months** (subgroup analyses: race and ethnicity)
  - *Biomedical*: BP control (<140/90 mm Hg) and change in average systolic BP
  - *Patient reported*: change in patient activation from baseline

Arm 1: Standard of Care Plus

- Standardized BP Measurement Training
- Hypertension Care and Best Practices Training
- Health System Leaders Learning Network
- Hypertension Dashboard
Arm 2: Collaborative Care/Stepped Care Intervention

All Standard of Care Plus elements as well as:

- Dashboard data review facilitated by champions
- Clinic champions also receive additional health equity leadership training through monthly coaching calls
- Collaborative care intervention delivered by nurse care managers
- Stepped care component
## Stepped Care

<table>
<thead>
<tr>
<th>Stepped Care Element</th>
<th>Types of Clinicians Available to Provide Services</th>
<th>Description of Role/Issues Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subspecialist Consultation Services</td>
<td>Subspecialty trained physicians</td>
<td>Engage specialists in the areas of hypertension, diabetes, psychiatry, preventive cardiology, and smoking cessation to assist primary care team in managing complex cases and educating providers</td>
</tr>
<tr>
<td>Community-based Contextualization</td>
<td>Community health workers</td>
<td>Support patients in reaching self-management goals; help patients address social and environmental barriers through outreach and navigation services; engage, activate, and empower patients to participate in their care</td>
</tr>
</tbody>
</table>
**RICHLife Participant Characteristics, N=1822**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender, N (%):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1082</td>
<td>59.4</td>
</tr>
<tr>
<td><strong>Race/Ethnicity, N (%):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>1044</td>
<td>57.3</td>
</tr>
<tr>
<td>Hispanic</td>
<td>174</td>
<td>9.6</td>
</tr>
<tr>
<td>White</td>
<td>604</td>
<td>33.2</td>
</tr>
<tr>
<td><strong>Age, years: Mean (SD), range</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60.3</td>
<td>11.9</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>99</td>
</tr>
<tr>
<td><strong>Education, highest degree, N (%):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No degree (less than HS diploma)</td>
<td>335</td>
<td>18.4</td>
</tr>
<tr>
<td>High school diploma/GED</td>
<td>863</td>
<td>47.4</td>
</tr>
<tr>
<td>College degree</td>
<td>436</td>
<td>24.0</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>183</td>
<td>9.9</td>
</tr>
<tr>
<td><strong>Marital status, N (%):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married / Living with Partner</td>
<td>820</td>
<td>45</td>
</tr>
<tr>
<td>Widowed</td>
<td>204</td>
<td>11.2</td>
</tr>
<tr>
<td>Divorced/separated</td>
<td>403</td>
<td>22.1</td>
</tr>
<tr>
<td>Never married</td>
<td>390</td>
<td>21.4</td>
</tr>
<tr>
<td><strong>Has health Insurance</strong></td>
<td>1782</td>
<td>97.8</td>
</tr>
<tr>
<td><strong>Health insurance type, N (%):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>815</td>
<td>45.7</td>
</tr>
<tr>
<td>Medicare / Medi-Gap / Medicaid</td>
<td>1262</td>
<td>70.8</td>
</tr>
<tr>
<td>Military health care</td>
<td>237</td>
<td>13.3</td>
</tr>
<tr>
<td>Indian health services</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>State sponsored / Other gov’t plan</td>
<td>207</td>
<td>11.6</td>
</tr>
<tr>
<td>Single service plan</td>
<td>458</td>
<td>25.7</td>
</tr>
<tr>
<td>Other</td>
<td>73</td>
<td>4.1</td>
</tr>
<tr>
<td><strong>Main daily activity, N (%):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working full-time / part-time</td>
<td>698</td>
<td>38.3</td>
</tr>
<tr>
<td>Unemployed / Looking for work</td>
<td>118</td>
<td>6.4</td>
</tr>
<tr>
<td>Student</td>
<td>6</td>
<td>0.3</td>
</tr>
<tr>
<td>Keeping house, raising children</td>
<td>48</td>
<td>2.6</td>
</tr>
<tr>
<td>Not working due to health</td>
<td>361</td>
<td>19.8</td>
</tr>
<tr>
<td>Retired</td>
<td>584</td>
<td>32.0</td>
</tr>
</tbody>
</table>

*Type of health insurance was coded as all that applied.*
## Implementation Challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>RICH LIFE Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM/CHW engagement with patients</td>
<td>Monthly case and panel reviews, in-service trainings, implemented difficult to engage protocol</td>
</tr>
<tr>
<td>Confusion over the use of the phrase “Step-up”</td>
<td>Discontinued use of the phrase “step-up” and adopted “CHW referral” and “specialist consultation.”</td>
</tr>
<tr>
<td>Establishing clear understanding of the CM and CHW roles within the context of RICH LIFE</td>
<td>In-service trainings, webinars, and individual CM-CHW team meetings to discuss roles and responsibilities in RICH LIFE</td>
</tr>
<tr>
<td>Unable to fully document RICH LIFE patient visits into existing EMR templates</td>
<td>Created a separate research database for CMs and CHWs to enter more detailed accounts of their visits with patients</td>
</tr>
<tr>
<td>Cumbersome documentation requirements for CMs and CHWs</td>
<td>Regular meetings with CMs and CHWs to review data entry, discuss challenges, and offer support in completing data entry</td>
</tr>
<tr>
<td>Shifting care from a traditional medical assessment focus to a patient needs approach</td>
<td>Motivational interviewing (MI) trainings with CMs and CHWs and application of MI to patient case review</td>
</tr>
</tbody>
</table>
Primary Content of CM Follow-Up Visits

N = 2691
Referrals to Stepped-Care Interventions

Overall Health System A Health System B Health System C Health System D Health System E
Percent referred to CHW
Percent referred to specialist core

- 28.5% 12.9% 30.1% 71.4% 34.6% 38.4%
- 2.1% 1.9% 2.7% 1.6% 0.0% 3.1%
Primary Content of CHW Follow-Up Visits

- **Medical Condition**: 42.3%
- **Social Determinants of Health/Barriers to Care**: 38.2%
- **Lifestyle**: 8.7%
- **COVID-19**: 8.1%
- **Other**: 2.4%
Social Determinants of Health/Barriers to Care Topics

Care Manager, N=149

Community Health Worker, N=74
Discussion

- Stay tuned for outcomes of the RICHLife Project
- Hypertension control is worsening in the US
- Multi-level influences drive persistent hypertension disparities
- Build on population health fundamentals and address SDOH
- Employ best practices for healthcare system interventions and to establish robust community-clinical links
- Engage partners across sectors
- Meet people where they learn, play, pray and work

Our impact on improving hypertension control and reducing inequities is dependent on our success in translating evidence-based recommendation into “practice” and high level adoption at the population level.
QUESTIONS?
COMMENTS?

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