SECONDARY STROKE PREVENTION BY UNITING COMMUNITY AND CHRONIC CARE MODEL TEAMS EARLY TO END DISPARITIES (SUCCEED)

AMYTIS TOWFIGHI, MD
ON BEHALF OF THE SUCCEED INVESTIGATORS

AMYTIS TOWFIGHI, MONICA AYALA-RIVERA, FRANCES BARRY, HEATHER MCCREATH, ERIC CHENG, NERSES SANOSSIAN, BRIAN MITTMAN, WILLIAM CUNNINGHAM, DAVID GANZ, BIJAL MEHTA, ALI RAZMARA, TARA DUTTA, SHLEE SONG, ROBERT BRYG, THERESA SIVERS-TEIXEIRA, JAMIE TRAN, CHRIS EDISS, RENEE JOHNSON, ANA MONTOYA, MARILYN CORRALES, ELIZABETH MOJARRO-HUANG, MARISSA CASTRO, PATRICIA GOMEZ, MAGALY RAMIREZ, SHINYI WU, PHYLLIS WILLIS, JEREMY WACKSMAN, HILARY HABER, DIANE FACTOR, NANCY IBRAHIM, BARBARA VICKREY
Disclosures

- NIH/NINDS U54NS081764-01; Sub-Project ID:5155
- California Community Foundation
Rationale: Statement of Problem

- ~25% of strokes are recurrent
- Blood pressure, diet, physical inactivity, smoking & abdominal obesity account for 82% and 90% of population-attributable risk for ischemic & hemorrhagic stroke
- <50% stroke survivors receive guideline-recommended care, achieve vascular risk factor targets, or change health behaviors
- Situation more pressing among indigent, minority populations, with low stroke literacy, barriers to accessing care
- Culturally tailored interventions that bridge the gap between the healthcare system and community are urgently needed

3Towfighi A et al. Stroke 2012
6Lin MP, Ovbiagele B, Markovic D, Towfighi A. JAHA 2015
Setting: Los Angeles County Safety Net

LA County Department of Health Services safety-net system:

- Integrated network of 4 hospitals (red markers on map) 19 ambulatory care centers
- Serves 800,000 individuals each year:
  - 2/3 don’t have private insurance or Medicare
  - >2/3 Hispanic; 90% minorities
  - <1/2 households speak English

Los Angeles County=4751 sq mi
Specific Aims

1. Develop a Chronic Care Model-based secondary stroke prevention intervention that includes a substantive home/community-based component
Core Structural Elements of SUCCEED Intervention

**Health Care System**
- CHW teaches **BP monitor** use
- **Huddle**: APP, CHW, MD (<14 d)
- APP Clinic Visit (6 wks)
- APP Clinic Visit (4 mo)
- APP Clinic Visit (8 mo)
- Additional APP Clinic Visits & Calls as Needed

**Community**
- CHW Home Visit (<4 wks)
- CHW Home Visit (3 mo)
- CHW Home Visit (6 mo)
- Additional CHW Home Visits & Calls as Needed

**Mobile App for Decision Guidance**
- Culturally-Tailored Educational Materials

**CDSMP Sessions (6)**

---

**APP**: Advanced Practice Provider

**CHW**: Community Health Worker

Towfighi, et al. BMC Neurology. 2017
Conceptual Model: **Mediators Linking Core SUCCEED Structural Elements** to Improve Stroke Risk Factor Control

**Healthcare System**
- APP Clinic Visits
- Team Huddles
- Risk Factor Goal Card

**Community Health Worker**

**Community**
- Chronic Disease Self-Management Program (CDSMP) Workshops
- CHW Home Visits
- Home BP Monitor Distribution

**MEDIATORS**
- Home BP Monitoring Use & Tracking
- ↑ Medication Rx and Adherence
- ↑ Stroke Literacy
- ↑ Self-efficacy
- ↑ Self-management skills

**Improve physiological risk factors:**
- ↓BP
- ↓LDL
- ↓HbA1c
- ↓BMI

**Improve lifestyle:**
- ↓Smoking
- ↑Physical Activity
- ↑Healthy Diet

Addressing the above → reduced stroke events
Example: Impacting Mediators of Adherence and Stroke Literacy via Culturally-Tailored Tools
Example: Impacting Mediator of Self-Efficacy via Risk Factor Goal Cards

**Trifold Card**

- Folds into size of a business card
- Easy to keep in wallet or purse
- Front: Displays 3 levels (traffic light)
- Space to document the individual’s current status
- Back: Lists tips for reaching each goals
- Participant encouraged by CHW and APP to use this tool with other providers

---

**MANAGING MY STROKE RISK**

**STROKE RISK FACTOR**

- My Systolic Blood Pressure
  - Not at Goal
  - Under 130
  - At Goal
  - Under 120

- My LDL Cholesterol
  - Not at Goal
  - Under 70
  - At Goal
  - Under 60

- My Blood Sugar
  - Not at Goal
  - Under 100
  - At Goal
  - Under 90

- My Smoke-Free Stroke-Free Life
  - Not at Goal
  - Smoker
  - At Goal
  - Non-Smoker

- My Healthy Diet
  - Not at Goal
  - 2 servings of fruits/veg
  - At Goal
  - 5 servings of fruits/veg

- My Physical Activity
  - Not at Goal
  - Not regular activity
  - At Goal
  - 30 min. 5 days a week

- My Healthy Weight
  - Not at Goal
  - Over 30
  - At Goal
  - Under 25

- My Emotional Health
  - Not at Goal
  - Over 14
  - At Goal
  - Under 7

- My CLOT PREVENTION MEDICATION
  - Not at Goal
  - Not taking
  - Near goal Miss dose
  - At goal Never miss a dose

---

**TIPS FOR DECREASING MY BLOOD PRESSURE**

- Do not add salt to food
- Check blood pressure twice a day

**TIPS FOR DECREASING MY LDL CHOLESTEROL**

- Do not eat fried foods
- Take cholesterol medication

**TIPS FOR CONTROLLING MY BLOOD SUGAR**

- Limit tortillas, bread, pasta and sugar
- Check sugar as prescribed

**TIPS FOR A SMOKE FREE STROKE FREE LIFE**

- List reasons to quit
- Set a quit date

**TIPS FOR IMPROVING MY DIET**

- Keep a food diary
- Eat 5 servings of fruits/veg per day
- Do not add salt to food

**TIPS FOR IMPROVING MY PHYSICAL ACTIVITY**

- Add 10 minutes of exercise daily
- Go for a daily walk

**TIPS FOR MANAGING MY WEIGHT (BMI)**

- Follow diet and physical activity tips

**TIPS FOR IMPROVING MY EMOTIONAL HEALTH**

- Do a hobby I enjoy
- Stay physically active
- Make time daily to sit quietly, breathe deeply, & think of a peaceful picture
- Discuss feelings with trained counselor, support group, spiritual leader, trusted family member or friend

**TIPS FOR MANAGING MY CLOT PREVENTION MEDICINE**

- Take medications at the same time each day
- Set alarm for medication reminders
- Use a pill box

---

NAME ____________________________

HEALTHCARE PROVIDER ____________________________

EMERGENCY CONTACT ____________________________
Specific Aims

1. Develop a Chronic Care Model-based secondary stroke prevention intervention that includes a home/community-based focus

2. Conduct RCT to test impact of intervention versus usual care on control of SBP (primary outcome), and other stroke risk factors (secondary outcomes)
SUCCEED RCT Design: Intervention vs Usual Care

- **INCLUSION CRITERIA:**
  - Age ≥40 years
  - Ischemic stroke, intracerebral hemorrhage or TIA ≤ 90 days prior
  - SBP ≥130 OR 120-130 plus h/o hypertension
  - English, Spanish-speaking

- **SETTING:** LA County safety net

- **RANDOMIZATION:** 1:1 to SUCCEED intervention vs usual care, stratified by site, language, type of stroke (ischemic vs. hemorrhagic)

- **INTENTION-TO-TREAT** analyses, pre-planned moderators, and modeling for mediator mechanism

---

**Baseline Data Collection (In Person)**
Interview, BP measurement, anthropometrics, lipids, CRP, HbA1c

**Randomization**
1:1, stratified by site, language, type of stroke (ischemic vs. hemorrhagic)

**3 Month Data Collection (In Person)**
Interview, BP measurement, anthropometrics, lipids, CRP, HbA1c

**8 Month Data Collection (Telephone)**

**12 Month Data Collection (In Person)**
Interview, BP measurement, anthropometrics, lipids, CRP, HbA1c
### Baseline Characteristics of N=487 Enrollees

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Usual Care N=246</th>
<th>Intervention N=241</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years, mean (SD)</td>
<td>57 (9)</td>
<td>57 (9)</td>
</tr>
<tr>
<td>Female</td>
<td>37%</td>
<td>32%</td>
</tr>
<tr>
<td>Ischemic/TIA</td>
<td>85%</td>
<td>82%</td>
</tr>
<tr>
<td>NIHSS ≤5</td>
<td>65%</td>
<td>60%</td>
</tr>
<tr>
<td>Modified Rankin Scale ≥3</td>
<td>59%</td>
<td>68%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>72%</td>
<td>70%</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>70%</td>
<td>71%</td>
</tr>
<tr>
<td>Black</td>
<td>18%</td>
<td>19%</td>
</tr>
<tr>
<td>Asian</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Spanish-speaking</td>
<td>57%</td>
<td>58%</td>
</tr>
<tr>
<td>Born in US</td>
<td>28%</td>
<td>27%</td>
</tr>
<tr>
<td>No insurance</td>
<td>20%</td>
<td>22%</td>
</tr>
<tr>
<td>Married/domestic partnership</td>
<td>46%</td>
<td>44%</td>
</tr>
<tr>
<td>≤8th grade education</td>
<td>38%</td>
<td>38%</td>
</tr>
<tr>
<td>Working prior to stroke</td>
<td>58%</td>
<td>52%</td>
</tr>
</tbody>
</table>

*all p > 0.05*
RESULTS:
Primary Outcome (85% follow-up at 12 months)

<table>
<thead>
<tr>
<th>Primary Study Outcome</th>
<th>Arm</th>
<th>Baseline</th>
<th>12 months</th>
<th>Change from baseline to 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Usual Care</td>
<td>146 (19)</td>
<td>137 (22)</td>
<td>-9</td>
</tr>
<tr>
<td>SBP, mm Hg, mean (SD)</td>
<td>Intervention</td>
<td>143 (17)</td>
<td>133 (20)</td>
<td>-10</td>
</tr>
<tr>
<td>SBP ≤ 130 mmHg</td>
<td>Usual Care</td>
<td>22%</td>
<td>44%</td>
<td>+22</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>26%</td>
<td>45%</td>
<td>+19</td>
</tr>
</tbody>
</table>

all p>0.05 for comparisons of change across randomization arms
## Secondary Outcomes: Biomarkers and Antithrombotics

<table>
<thead>
<tr>
<th>Study Outcome</th>
<th>Arm</th>
<th>Baseline</th>
<th>12 months</th>
<th>Change from baseline to 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-HDL, mg/dL, mean (SD)</td>
<td>Usual Care</td>
<td>96 (40)</td>
<td>104 (49)</td>
<td>+8</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>94 (42)</td>
<td>99 (48)</td>
<td>+5</td>
</tr>
<tr>
<td>BMI kg/m², mean (SD)</td>
<td>Usual Care</td>
<td>29 (5)</td>
<td>29 (5)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>29 (6)</td>
<td>29 (6)</td>
<td>0</td>
</tr>
<tr>
<td>Filled prescription and has bottle for antithrombotic, %</td>
<td>Usual Care</td>
<td>100</td>
<td>92</td>
<td>-8</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>99</td>
<td>91</td>
<td>-8</td>
</tr>
</tbody>
</table>

*all p > 0.05 for comparisons of change across randomization arms*
## Secondary Outcomes: Lifestyle

<table>
<thead>
<tr>
<th>Study Outcome</th>
<th>Arm</th>
<th>Baseline</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity, MET min/week, median (IQR)</td>
<td>Usual Care</td>
<td>540 (0,2040)</td>
<td>560 (0,1680)</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>600 (40,2400)</td>
<td>640 (160,1680)</td>
</tr>
<tr>
<td>≥ 5 servings fruits/vegetables/day</td>
<td>Usual Care</td>
<td>12%</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>0 servings soda/day</td>
<td>Usual Care</td>
<td>28%</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>29%</td>
<td>52%</td>
</tr>
<tr>
<td>*Reducing/watching salt intake</td>
<td>Usual Care</td>
<td>55%</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>43%</td>
<td>87%</td>
</tr>
<tr>
<td>Smoking</td>
<td>Usual Care</td>
<td>21%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>24%</td>
<td>12%</td>
</tr>
</tbody>
</table>

*p<0.05*
Were there positive effects of SUCCEED within subgroups? Analysis of **Moderators:** Primary Outcome of BP

<table>
<thead>
<tr>
<th>Variable</th>
<th>Arm</th>
<th>SBP, mm Hg, mean (SD)</th>
<th>Change in BP, mm Hg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline</td>
<td>12 months</td>
</tr>
<tr>
<td><strong>Subgroup:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modified Rankin Score 4-5*</td>
<td>Usual Care, n=51</td>
<td>139 (12)</td>
<td>137 (27)</td>
</tr>
<tr>
<td></td>
<td>Intervention, n=50</td>
<td>142 (14)</td>
<td>127 (18)</td>
</tr>
<tr>
<td>Working prior to stroke*</td>
<td>Usual Care, n=141</td>
<td>147 (19)</td>
<td>138 (22)</td>
</tr>
<tr>
<td></td>
<td>Intervention, n=178</td>
<td>145 (19)</td>
<td>132 (19)</td>
</tr>
</tbody>
</table>

*Comparison p<0.05

**21 other pre-planned moderators evaluated were all non-significant for BP:**

Site, Date of enrollment, Age, Sex, Education, Marital status, Race, Insurance, Ethnicity, Living Situation, Country of Birth, Acculturation, Preferred Language, General Health, type of index event (stroke/TIA), Social Support, NIHSS, Depression (PHQ9), Competing Needs, Chaos, whether had regular medical provider
Did the SUCCEED Intervention Have an Impact on Mediators (but without impacting risk factors)?

**Healthcare System**
- Advanced Practice Provider Clinic Visits
  - Team Huddles
  - Evidence Based Protocols
  - Risk Factor Goal Card

**Community Health Worker**

**Community**
- Chronic Disease Self-Management Program (CDSMP) Workshops
- Community Health Worker Home Visits
- Home BP Monitor Distribution

**MEDIATORS from SUCCEED intervention to risk factor control:**
- Home BP Monitoring Use & Tracking
- ↑ Medication Rx and Adherence
- ↑ Stroke Literacy
- ↑ Self-efficacy
- ↑ Self-management skills

**Improve physiological risk factors**
- ↓BP
- ↓LDL
- ↓HbA1c
- ↓BMI

**Improve lifestyle stroke risk factors:**
- ↓Smoking
- ↑Physical Activity
- ↑Healthy Diet

Did intervention impact mediators?
# Impact of SUCCEED intervention on mediators (intention to treat)

<table>
<thead>
<tr>
<th>Mediator:</th>
<th>Arm</th>
<th>Baseline</th>
<th>12 months</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses BP monitor at home</td>
<td>Usual Care</td>
<td>25%</td>
<td>70%</td>
<td>+45</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>26%</td>
<td>89%</td>
<td>+63</td>
</tr>
<tr>
<td>Filled prescription and has statin medication</td>
<td>Usual Care</td>
<td>88%</td>
<td>76%</td>
<td>-12</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>84%</td>
<td>82%</td>
<td>-2</td>
</tr>
<tr>
<td>How often did any of your medical providers spend enough time with you? Reported: usually/almost always</td>
<td>Usual Care</td>
<td>45%</td>
<td>41%</td>
<td>-4</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>24%</td>
<td>55%</td>
<td>+31</td>
</tr>
<tr>
<td>How often did any of your medical providers explain things in a way that was easy to understand? Reported: usually/almost always</td>
<td>Usual Care</td>
<td>58%</td>
<td>49%</td>
<td>-9</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>31%</td>
<td>70%</td>
<td>+39</td>
</tr>
</tbody>
</table>

No Significant Differences for these mediators:
- Global rating of medication adherence
- Antihypertensive – filled prescription & has bottle
- Antidepressant – filled prescription & has bottle
- Self-efficacy
- Intention to quit smoking

- Health literacy
- Stroke literacy
- Stroke risk and worry
- Patient Assessment of Chronic Illness Care (PACIC)

All significant, p<0.05
Was the lack of effect of the SUCCEED intervention due to level of implementation of the intervention components?

<table>
<thead>
<tr>
<th>Implementation of Intervention</th>
<th>Enrollees</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL</td>
<td>15%</td>
</tr>
<tr>
<td>INCOMPLETE</td>
<td>29%</td>
</tr>
<tr>
<td>NO</td>
<td>13%</td>
</tr>
<tr>
<td>No intervention activity</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>
Exploratory Analysis: ‘Per Protocol’ Analysis of Change in Systolic BP by Extent of Receipt of Intervention
Summary

- We successfully enrolled a racially/ethnically diverse patient population, with high retention through 12 months.
- No efficacy of the SUCCEED intervention on primary or secondary outcomes.
- There were few subgroup (moderator) effects on the primary outcome of systolic BP control.
- A few mediators were affected in intention-to-treat analyses, including home BP monitor use and statin Rx.
Possible Explanations for Findings

1) Several processes improved in usual care in the LAC-DHS system over time:
   - Affordable care act expanded access
   - BP monitor routine distribution to patients
   - Post-stroke transition clinic
   - Education of primary care providers on stroke guidelines

2) Concern for early stroke recurrence risk with tight BP control → less aggressive control protocols in first 6 months

3) Inadequate intensity of intervention; 15% received all components and 10% received none

4) Anecdotally, considerable time spent on addressing social determinants of health

5) Preliminary per-protocol analysis suggests ‘healthy volunteer phenomenon’, further diluting capacity to measure impact
Next Steps

Additional Analyses

- Additional secondary study outcomes (HgA1c, CRP)
- Extent of adherence to medications
- More in-depth per-protocol analyses
- Implementation evaluation
PROJECT TEAM

LEADERSHIP
- **PI:** Amytis Towfighi, MD (Rancho/USC)
- **PI:** Barbara Vickrey, MD, MPH (Icahn School of Medicine at Mount Sinai)
- **Project Manager:** Monica Ayala-Rivera, BS

INTERVENTION TEAMS
- **Rancho**
  - Site PI: Amytis Towfighi, MD; Ali Razmara, MD, PhD; Tara Dutta, MD
  - APPs: Theresa Sivers-Teixeira, PA-C; Chris Ediss, PA-C; Renee Johnson, NP, PhD
  - CHWs: Marisa Castro, Patricia Gomez, Marilyn Corrales
- **LAC+USC**
  - Site PI: Nerses Sanossian, MD
  - APPs: Theresa Sivers-Teixeira, PA-C; Renee Johnson, NP, PhD
  - CHWs: Elizabeth Mojarro-Huang
- **Harbor-UCLA**
  - Site PI: Bijal Mehta, MD
  - APPs: Jamie Tran, NP
  - CHWs: Ana Montoya
- **UCLA-OVMC**
  - Site PI: Robert Bryg, MD
  - APP: Betty Shaby, NP
  - CHW: Ana Montoya
- **Cedars Sinai**
  - Site PI: Shlee Song, MD
  - APP: Samantha Theaker, PA-C
  - CHW: Marisa Castro
- **UCLA CTSI**
  - Martin Lai (Redcap)

COMMUNITY PARTNERS
- Worker Education & Resource Center
  - Diane Factor, MS
  - Mireya Macias
- Watts Labor Community Action Committee
  - Phyllis Willis, MSW
- Esperanza Community Housing Corporation
  - Nancy Ibrahim, MPH
  - Lupe Gonzalez

MOBILE HEALTH TECHNOLOGY/SYSTEMS ENGINEERING
- Magaly Ramirez, PhD; Shinyi Wu, PhD (USC)
- Hilary Haber & Jeremy Wacksman, DiMagi, Inc

CORE C BIOMARKERS:
- H McCreath, PhD; T Seeman, PhD (UCLA)

IMPLEMENTATION SCIENCE
- B Mittman, PhD (Kaiser, VA, UCLA)
- V Hill, OT, PhD (USC/Rancho/Univ Cincinnati)*

STATISTICS/DATA MANAGEMENT
- Frances Barry, MS (UCLA)
- Honghu Liu, PhD (UCLA)

OUTCOMES/EVALUATION
- E Cheng, MD, MSc (UCLA)
- W Cunningham, MD (UCLA)
- D Ganz (UCLA, VA)
- RAs: Moreno, Lopez, Valdez, Fernandez, Garcia
Efficacy of a Chronic Care–Based Intervention on Secondary Stroke Prevention Among Vulnerable Stroke Survivors
A Randomized Controlled Trial

- RCT chronic care model-based secondary stroke prevention intervention (N=404)
- Inclusion Criteria:
  - Ischemic stroke or TIA <90 days
  - English or Spanish speaking
- Intervention
  - ≥2 clinic visits with advanced practice provider
  - Evidence-based protocols & computerized decision support
  - Self-management support (BP cuffs)
  - 3 group education visits
  - Report cards
- Results
  - At 12 mo: SBP ↓17 mmHg in intervention vs 14 mmHg in usual care
  - Intervention participants more likely to have LDL<100 (OR 2.0, 1.1-3.5)
- Barriers
  - Transportation, 29% didn’t attend any group clinics
  - Time spent helping patients navigate healthcare system
CommCare: Care Management Tool

Manage Patients
- CHWs follow protocols with decision support, track tasks, perform assessments, and communicate with APP

Engage with Multimedia
- CHWs use images, audio, and video to educate and engage patients

Manage Data
- CHWs collect data which is submitted to the web in real-time

Manage Patients
- APPs develop care plans, track tasks, perform assessments, communicate with CHW

Manage Apps and Users
- PIs can remotely manage workforce from web-based application

Monitor Activities & Support Workforce
- “Active Data Management” enables PIs and team to focus on continuous performance improvement

CommCareHQ Information System
Theoretical Framework for SUCCEED: Health Belief Model

- Perceived Benefits vs. Perceived Barriers
- Perceived Threat
- Self-Efficacy
- Cues to Action
- Likelihood of Engaging in Health-Promoting Behavior

Modifying Variables
- Perceived Seriousness
- Perceived Susceptibility

Champion & Skinner, 2008
Were there positive effects of SUCCEED within subgroups?

Analysis of **Moderators**: Primary Outcome of BP

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Arm</th>
<th>% SBP&lt;130 mm Hg</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline SBP</td>
<td></td>
<td>Baseline</td>
<td>12 months</td>
</tr>
<tr>
<td>&lt;140 mm Hg</td>
<td>Usual Care, n=124</td>
<td>43</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Intervention, n=126</td>
<td>49</td>
<td>53</td>
</tr>
<tr>
<td>≥ 140 mm Hg</td>
<td>Usual Care, n=122</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Intervention, n=115</td>
<td>0</td>
<td>35</td>
</tr>
</tbody>
</table>
Community Engagement

- Community Advisory Board
- Held focus groups for developing educational materials, goal cards, cultural tailoring of intervention
- Yearly All Hands Retreat – Projects, Cores, Community Partners
- Community partners assisted in:
  - recruiting/training CHWs
  - developing curriculum for CHWs
  - identifying sites for CDSMP workshops
  - finding community resources
# Outcomes

## PRIMARY OUTCOME

Systolic blood pressure  
- Continuous  
- % controlled (<130 mm Hg)

## SECONDARY OUTCOMES

- non-HDL  
- Hemoglobin A1c  
- C-reactive protein  
- BMI, WC, WHR  
- Physical activity  
- Diet  
- Smoking cessation  
- Patient perception of quality of stroke preventive care  
- Medication adherence  
- Vascular Events

---

1Towfighi, et al. BMC Neurology. 2017
Team-based secondary stroke prevention intervention was not superior to usual care for BP control at 12 months, but was effective in 2 subgroups:
- Moderate/severe disability
- Employed prior to stroke

Among secondary outcomes, SUCCEED intervention was effective in reducing self-reported salt intake.

Among mediators, SUCCEED intervention was effective for improving:
- Use of BP monitor at home
- Use of statin
- Perceptions of care
**Example: Impacting Mediator of Home BP Monitor & Tracking via Distribution of BP Monitor & Training**

### Blood Pressure Log

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>PM</td>
<td>AM</td>
<td>PM</td>
</tr>
<tr>
<td>MON</td>
<td>TUE</td>
<td>WED</td>
<td>THU</td>
</tr>
<tr>
<td>FRI</td>
<td>SAT</td>
<td>SUN</td>
<td></td>
</tr>
</tbody>
</table>

### Registro de Presión Arterial

<table>
<thead>
<tr>
<th>Semana 1</th>
<th>Semana 2</th>
<th>Semana 3</th>
<th>Semana 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>PM</td>
<td>AM</td>
<td>PM</td>
</tr>
<tr>
<td>LUN</td>
<td>MAR</td>
<td>ABR</td>
<td>MAY</td>
</tr>
<tr>
<td>JUN</td>
<td>JUL</td>
<td>AGO</td>
<td>SEP</td>
</tr>
</tbody>
</table>

### Applying the Cuff

**STEP 1**
Roll up sleeve. Make sure it's not rolled up too tightly on your arm.

**STEP 2**
Turn the palm of your hand upward.

**STEP 3**
Place the cuff to your upper arm so the thumb grip is centered on the inside of your inner arm. The bottom of the cuff should be approximately ½ inch above your elbow.

**STEP 4**
Wrap the cuff firmly in place around your arm using the cloth fastener.

**STEP 5**
Make sure the air plug is securely inserted in the main unit.

### Taking a Measurement

**STEP 1**
Make sure the monitor is plugged into electrical outlet or has 4 AA batteries.

**STEP 2**
Sit on a chair with your feet flat on the floor. Place your arm on a table so the cuff is level with your heart.

**STEP 3**
To turn monitor, press the START/STOP button once. Sit still and do not talk or move during the measurement.

**STEP 4**
Hold still until cuff deflates and results are displayed.

**STEP 5**
Document on blood pressure log.

**STEP 6**
Press the START/STOP to turn off monitor.

### Poniendo el Manguito

**PASO 1**
Enrollar la manga. Asegúrese de que no esté enrollada demasiado apretada en su brazo.

**PASO 2**
Volee la palma de su mano hacia arriba.

**PASO 3**
Ponga el manguito en la parte superior del brazo de modo que el agujero del pulgar se centre en la parte interna del brazo. La parte inferior del manguito debe quedar aproximadamente 1/2 pulgada por encima del codo.

**PASO 4**
Envolver el manguito de manera alrededor de su brazo utilizando el seguro de la tira.

**PASO 5**
Asegúrese que el tornillo de su muñeca esté correctamente insertado en el aparato principal.

### Tomar una Medida

**PASO 1**
Asegúrese de que el monitor está conectado a un tomacorriente o tiene 4 pilas AA.

**PASO 2**
Síntese en una silla con sus pies apoyados en el suelo. Coloque el brazo sobre una mesa, de modo que el manguito quede al nivel de su corazón.

**PASO 3**
Para prender el monitor, presione el botón de START/STOP una vez. Permanezca quieto y no haga ni de mueva durante la medición.

**PASO 4**
No se mueva hasta que el manguito se desenrolle y aparezcan los resultados.

**PASO 5**
Documentelo en el registro de presión sanguínea.

**PASO 6**
Presione el botón de START/STOP para apagar el monitor.
Example: Impacting Mediator of Self-Management via Chronic Disease Self-management Program Workshops

- Evidence-based program developed at Stanford
- Held in community venues such as senior centers and libraries, as well as DHS facilities
- CHWs trained to facilitate 6-session workshops in English or Spanish
- Sessions addressed:
  - Action planning
  - Disease-related problem solving
  - Decision making
  - Effective communication