STROKE RISK AND OUTCOMES: THE COMMUNITY CONTEXT

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• Stroke disparities
• Neighborhood characteristics and stroke disparities
• Neighborhood characteristics and stroke:
  o Incidence
  o Post-stroke outcomes
  o Potential mechanisms
• Community-level strategies to reduce stroke disparities
  o UCLA Stroke Prevention and Intervention Research Program (SPIRP)
World Health Organization:
“differences in health which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust.”

Economic Burden of Health Disparities in US

Between 2003 and 2006 alone:
“...the combined costs of health inequalities and premature death in the United States were $1.24 trillion.”

Joint Center for Political and Economic Studies, 2010
795,000 strokes annually:
- ~610,000 are first events
- ~185,000 are recurrent

In 2007, stroke caused 1 of 18 deaths

- 5-30% are permanently disabled
- 20% need institutional care at 3 months
- 50% with hemiparesis at 6 months
Racial/Ethnic Disparities in Stroke
African American and White Differences

Incidence
- Age-sex–adjusted black/white stroke incidence rate ratio = 1.5 (95% CI, 1.3–1.8)
- Overall incidence of ischemic stroke decreased from 1993 to 2005, but there was no change over time among African Americans

Mortality
- Age-adjusted stroke mortality ratio: 1.5 (CDC, 2012)

Post-Stroke Outcomes
- African American stroke survivors are more likely to become disabled and have difficulty with activities of daily living than non-Hispanic Whites.

REGARDS; Greater Cincinnati/ Northern Kentucky stroke study; CDC
Racial/Ethnic Disparities in Stroke (cont.)

Incidence

• For Mexican Americans vs. non-Hispanic whites:
  o *Ischemic stroke* has higher cumulative incidence risk ratio = 2.0 (45–59 yrs age group)
  o *Intracerebral hemorrhage* is more common: age-adjusted risk ratio = 1.6 (95%CI: 1.2, 2.2)

• For African Americans, Latinos, Native Americans, and Chinese-Americans vs. non-Hispanic whites:
  ▪ *Hemorrhagic stroke incidence* is higher

Mortality

• For Asian-Americans vs non-Hispanic whites in US:
  ▪ *Stroke death* relative risk is 1.4 times higher
“The real challenge lies not in debating whether disparities exist, but in developing and implementing strategies to reduce and eliminate them.”

Institute of Medicine Committee Chair, commenting on 2002 report on health disparities
OVERVIEW

• Stroke disparities
• Neighborhood characteristics and stroke disparities
• Neighborhood characteristics and stroke:
  o Incidence
  o Post-stroke outcomes
  o Potential mechanisms
• Community-level strategies to reduce stroke disparities
  o UCLA Stroke Prevention and Intervention Research Program (SPIRP)
A contaminated water pump in Broad Street proved to be the source for the spread of cholera (Drawn by Dr John Snow about 1854)
Focus has traditionally been on individual-level risk factors
- Behavioral
- Biological

Management related to
- Individual choice
- Medical care

Prevention/Treatment strategies:
- Health education to enhance awareness and motivate individuals to change habits
- Early detection of traditional risk factors
- Treatment with medications, established clinical strategies
CVD AND STROKE RISK: THE NEIGHBORHOOD CONTEXT

• Epidemiologic studies suggest geographic differences in:
  – Coronary heart disease
  – Cerebrovascular disease ("Stroke Belt")
  – Decline in CHD and stroke mortality over time
• “Obesity epidemic”: role of environmental factors
• Rapid advances and interdisciplinary work in:
  – Geography (Geographic information systems)
  – Public health
  – Sociology
  – Urban planning
  – Biostatistics
WHAT IS A NEIGHBORHOOD?

- Geographic area that captures *exposures*
  - Social environments
    - e.g. concentrated wealth or poverty, segregation
  - Physical/Built environments
    - e.g. parks, sidewalks, toxins
  - Resource environments
    - e.g. educational opportunity, food stores, health care facilities
WHAT IS A NEIGHBORHOOD?

- Understand **mechanisms**
- **Superimposed on** more traditional individual level risk factor modification (e.g. medications, clinical care, behavior change)
- Understand **interplay** between exposures
- Identify **policy and community** strategies to prevent CVD/stroke and improve health outcomes
CONCEPTUAL FRAMEWORK: NEIGHBORHOOD EXPOSURES AND CVD/STROKE?

Neighborhood Risk Factors

Socioeconomic Environment
- Neighborhood SES
- Racial isolation
- Residential stability

Physical Environment
- Food resources
- Walkability / street design
- Housing quality / type / density
- Disorganization

Individual Risk Factors

Biologic Risk Factors
- Hypertension
- Diabetes
- Atrial fibrillation
- Subclinical CVD
- Cholesterol

Behaviors
- Smoking
- Alcohol use
- Physical activity
- Diet

Individual Characteristics
- Age, gender, race
- Education / Income

Psychosocial Factors
- Depression
- Social support
- Social networks

Physiologic Response
- Traditional and novel biomarkers

Medical Care
- Access to care
- Quality of care

Incident stroke

Post-stroke outcomes (e.g., Mortality)

Adapted from Diez Roux, 2003
• 5888 participants
• Extensive Survey + Clinical data collected 1989-1999
• Continued surveillance mortality/events through June 1, 2006
• Addresses geocoded
• Linked to data from:
  • Center for Medicare and Medicaid Services (CMS)
  • National Death Index (NDI)
  • U.S. Census, 1990 and 2000
Entire CHS cohort
N = 5888

Excluded:
947 Not geocoded or >30% group qtrs
205 Stroke prior to baseline
± 82 TIA prior to baseline
35 Other race/ethnicity

Final analytic sample
N = 4619

Average 11.5 yr follow-up

Incident Stroke
N = 781

Ischemic Stroke
N = 650
## Neighborhood Socioeconomic Status (NSES)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Census Tract Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td>• Median household income</td>
</tr>
<tr>
<td></td>
<td>• Median value of housing units</td>
</tr>
<tr>
<td><strong>Wealth</strong></td>
<td>• % Households with interest, dividend, or rental income</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>• % Residents &gt;25 with high school degree</td>
</tr>
<tr>
<td></td>
<td>• % Residents &gt;25 with college degree</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td>• % Residents in executive, managerial, professional specialty occupation</td>
</tr>
</tbody>
</table>
ANALYSES

• Multivariate Models
  – Multilevel Models
    • Individual level characteristics
    • Neighborhood level characteristics
  – Multilevel Cox Proportional Hazard ("Frailty") models to examine time to an event (e.g. stroke, death)
  – Mediation Analyses
    • Behavioral risk factors
    • Biological risk factors
    • Psychosocial risk factors
**NSES: Overall vs. Race-specific Quartile Ranges**

Little overlap between Whites and African Americans

---

Brown et al., *Stroke*, 2011
## Incident Ischemic Stroke, Whites Hazard Ratio (P)

<table>
<thead>
<tr>
<th>Neighborhood SES:</th>
<th>Unadjusted</th>
<th>Model 1 (Age, sex, income, education)</th>
<th>Model 2 (Model 1 + behavioral(^1))</th>
<th>Model 3 (Model 1 + biologic(^2))</th>
<th>Model 4 (Model 1 + behavioral + biologic (^{1,2}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 (Highest)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Q2</td>
<td>1.34 (0.02)</td>
<td>1.27 (0.07)</td>
<td>1.27 (0.07)</td>
<td>1.21 (0.15)</td>
<td>1.21 (0.14)</td>
</tr>
<tr>
<td>Q3</td>
<td>1.43 (0.005)</td>
<td>1.27 (0.07)</td>
<td>1.26 (0.08)</td>
<td>1.17 (0.24)</td>
<td>1.16 (0.26)</td>
</tr>
<tr>
<td>Q4 (Lowest)</td>
<td>1.56 (0.0004)</td>
<td>1.32 (0.04)</td>
<td>1.30 (0.06)</td>
<td>1.16 (0.29)</td>
<td>1.15 (0.32)</td>
</tr>
</tbody>
</table>

\(^1\)Behavioral Risk Factors – smoking, alcohol use, and diet;
\(^2\)Biologic Risk Factors – EKG abnormalities, subclinical cardiovascular disease, hypertension, diabetes, LDL-c

Brown et al., *Stroke*, 2011
## INCIDENT ISCHEMIC STROKE, WHITES AND BLACKS

<table>
<thead>
<tr>
<th></th>
<th>Unadjusted</th>
<th>Model 1 (Age, sex, income, education)</th>
<th>Model 2 (Model 1 + behavioral$^1$)</th>
<th>Model 3 (Model 1 + biologic$^2$)</th>
<th>Model 4 (Model 1 + behavioral + biologic$^1,2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Whites (N=3834)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood SES:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Q1 (Highest)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
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<td>1.30 (0.06)</td>
<td>1.16 (0.29)</td>
<td>1.15 (0.32)</td>
</tr>
<tr>
<td><strong>African Americans (N=785)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood SES:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Q1 (Highest)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>• Q2</td>
<td>0.74 (0.26)</td>
<td>0.67 (0.15)</td>
<td>0.66 (0.13)</td>
<td>0.75 (0.33)</td>
<td>0.74 (0.31)</td>
</tr>
<tr>
<td>• Q3</td>
<td>0.84 (0.51)</td>
<td>0.70 (0.17)</td>
<td>0.63 (0.09)</td>
<td>0.75 (0.31)</td>
<td>0.68 (0.19)</td>
</tr>
<tr>
<td>• Q4 (Lowest)</td>
<td>0.71 (0.24)</td>
<td>0.60 (0.08)</td>
<td>0.59 (0.09)</td>
<td>0.72 (0.28)</td>
<td>0.72 (0.30)</td>
</tr>
</tbody>
</table>

$^1$Behavioral Risk Factors – smoking, alcohol use, and diet;

$^2$Biologic Risk Factors – EKG abnormalities, subclinical cardiovascular disease, hypertension, diabetes, LDL-c
Neighborhood Risk Factors

Individual Risk Factors

Biologic Risk Factors
- Hypertension
- Diabetes
- A-fib
- Subclinical CVD
- Total/HDL Cholesterol

Individual Characteristics
- Age, gender, race
- Education
- Income

Behaviors
- Smoking
- Alcohol use
- Physical activity
- Diet

Physical Environment
- Neighborhood SES

Post-stroke mortality

Neighborhood Disadvantage and Post-stroke mortality
Figure 1: Kaplan-Meier curves of death after incident stroke in 806 CHS participants at (a) 30 days and (b) 1 year post stroke event.
# NSES and Post-stroke Mortality at 1 Year*

<table>
<thead>
<tr>
<th></th>
<th>HR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neighborhood SES:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Q1 (Highest)</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>• Q2</td>
<td>1.10 (0.76, 1.60)</td>
<td>0.61</td>
</tr>
<tr>
<td>• Q3</td>
<td>1.43 (0.99, 2.08)</td>
<td>0.06</td>
</tr>
<tr>
<td>• Q4 (Lowest)</td>
<td>1.77 (1.17, 2.68)</td>
<td>0.007</td>
</tr>
<tr>
<td><strong>Stroke Type:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Ischemic Stroke (ref)</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>• Hemorrhagic Stroke</td>
<td>4.11 (2.98, 5.68)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>• Unknown Stroke Type</td>
<td>2.67 (1.77, 4.03)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>Age (5 year intervals)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.30 (1.15, 1.46)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td>1.41 (1.03, 1.92)</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Total/HDL ratio</strong></td>
<td>0.62 (0.41, 0.96)</td>
<td>0.03</td>
</tr>
</tbody>
</table>

*Models are also adjusted for demographics, smoking, alcohol use, diabetes, atrial fibrillation, TIA, subclinical cardiovascular disease, and interaction between NSES and race

Under Review, *Neurology*
**Psychosocial Pathways between Neighborhood Characteristics and Stroke**

### Neighborhood Risk Factors
- Physical Environment
  - Neighborhood SES

### Individual Risk Factors
- **Biologic Risk Factors**
  - Hypertension
  - Diabetes
  - A-fib
  - Subclinical CVD
  - Total/HDL Cholesterol
- **Behaviors**
  - Smoking
  - Alcohol use
  - Physical activity
  - Diet
- **Individual Characteristics**
  - Age, gender, race
  - Education
  - Income
- **Psychosocial Factors**
  - Depression
  - Social support
  - Social networks

#### Incident Stroke
QUESTION: Do psychosocial factors (depression, social support, and social networks) mediate observed associations between neighborhood characteristics and stroke risk and outcomes

METHODS: Mediation analyses:

NSE → Psychosocial → Stroke or Post-stroke Mortality

• Depression, social support, and social networks measured at baseline, as an average over the study period, and as last measurement

RESULTS:

• Depression at baseline associated with higher stroke incidence (unadj.)
• No adjusted associations between NSES and psychosocial factors
• No adjusted associations between psychosocial factors and stroke

CONCLUSIONS:

• Psychosocial factors played a minimal role in mediating the effect of NSES on stroke incidence.
SUMMARY

NSES AND INCIDENT ISCHEMIC STROKE

• Incident ischemic stroke
  o Shorter time to first ischemic stroke in the most disadvantaged neighborhoods for whites
  o No association between neighborhood and incident stroke among African Americans
  o Neighborhood disadvantage appears to influence stroke hazard primarily through higher levels of biologic risk in low income neighborhoods
    • Small influence of behavioral risk factors
    • Negligible mediation by depressive symptoms, social support, social networks
Shipper

Neighborhood Risk Factors

Individual Risk Factors

Biologic Risk Factors
- Hypertension
- Diabetes
- A-fib
- Subclinical CVD
- Cholesterol

Individual Characteristics
- Age, gender, race
- Education
- Income

Behaviors
- Smoking
- Alcohol use
- Physical activity
- Diet

Medical Care
- Discharge status
- Post-discharge visit

Post-stroke mortality

Physical Environment
- Neighborhood SES

Neighborhoods, Medical Care, and Stroke
QUESTIONS:
• Is early follow up after stroke associated with lower mortality
• Does this differ by NSES?

METHODS:
• Eligible: FFS Medicare participants with incident stroke who survived the interval (7, 14, 21, and 28 days)
• CPH models adj. for age/sex/race, stroke type, comorbidity, NSES

RESULTS:

<table>
<thead>
<tr>
<th>First visit within:</th>
<th>Eligible</th>
<th>≥ 1 Outpatient Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 days</td>
<td>495</td>
<td>86 (17.4%)</td>
</tr>
<tr>
<td>14 days</td>
<td>473</td>
<td>132 (27.9%)</td>
</tr>
<tr>
<td>21 days</td>
<td>456</td>
<td>166 (36.4%)</td>
</tr>
<tr>
<td>28 days</td>
<td>444</td>
<td>197 (44.4%)</td>
</tr>
<tr>
<td>1 year</td>
<td>386</td>
<td>347 (89.9%)</td>
</tr>
</tbody>
</table>
(a) Outpatient Visit – 7D

Log-rank P=0.0022

(b) Outpatient Visit – 14D

Log-rank P=0.0134

(c) Outpatient Visit – 21D

Log-rank P=0.0153

(d) Outpatient Visit – 28D

Log-rank P=0.0228

Visit within the interval

No Visit within the interval
Mortality after Stroke
Association Between First Outpatient Visit and NSES

<table>
<thead>
<tr>
<th></th>
<th>7 days Adj. HR (95% CI)</th>
<th>14 days Adj. HR (95% CI)</th>
<th>21 days Adj. HR (95% CI)</th>
<th>28 days Adj. HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First outpatient visit</td>
<td>0.42 (0.23-0.79)</td>
<td>0.53 (0.32-0.85)</td>
<td>0.52 (0.32-0.83)</td>
<td>0.59 (0.36-0.95)</td>
</tr>
<tr>
<td>NSES</td>
<td>0.98 (0.94-1.01)</td>
<td>0.99 (0.95-1.03)</td>
<td>0.99 (0.95-1.04)</td>
<td>0.95 (0.91-0.996)</td>
</tr>
</tbody>
</table>

* Also adjusted for age, sex, race, stroke type, comorbidity
• Summary
  o Early outpatient follow up after stroke appears to mitigate the impact of neighborhood disadvantage on post-stroke mortality

• Next Steps
  o Explore associations between neighborhood SES and other post-stroke outcomes (e.g., rehospitalization) and whether these too are mitigated by early follow up.
OVERVIEW

• Stroke disparities
• Neighborhood characteristics and stroke disparities
• Neighborhood characteristics and stroke:
  o Incidence
  o Post-stroke outcomes
  o Potential mechanisms

• Community- and policy-level strategies to reduce stroke disparities
  o UCLA Stroke Prevention and Intervention Research Program (SPIRP)
3 RESEARCH PROJECTS:

“SUCCEED” intervention, Vickrey/Towfighi – Secondary stroke prevention: by Uniting Community and Chronic care model teams Early to End Disparities
  - Community health workers teamed with NP/PAs and MDs
  - Community health workers to use mobile technology
  - Partnerships with community organizations


“Worth the Walk” intervention, Sarkisian – Primary prevention: culturally-tailored (Hispanic, Korean, Chinese, African-American), behavioral stroke risk factor reduction intervention for high risk seniors
  - Promotes walking – linked to stroke risk messaging
  - Integrated into LA aging services network via training in-house senior center staff in program delivery
Los Angeles Stroke Prevention/Intervention Research Program in Health Disparities

3 research projects:

“SUCCEED” intervention – Secondary stroke prevention: by Uniting Community and Chronic care model teams Early to End Disparities
- Community health workers teamed with NP/PAs and MDs
- Community health workers to use mobile technology
- Partnerships with community organizations

“Worth the Walk” intervention – Primary prevention: culturally-tailored (Hispanic, Korean, Chinese, African-American), behavioral stroke risk factor reduction intervention for high risk seniors
- Promotes walking – linked to stroke risk messaging
- Integrated into LA aging services network via training in-house senior center staff in program delivery
- Potentially scalable nationally

LOS ANGELES STROKE PREVENTION & INTERVENTION RESEARCH PROGRAM IN HEALTH DISPARITIES

4 CORES:

Administrative Core A
- support full range of efforts of program

Research Education and Training Core B
- add curriculum on stroke disparities to existing programs
- recruit 2 Stroke Disparities Research fellows each year

Biomarker Collection & Analysis Core C
- support biomarker data collection for two trials
- collaborate in analysis for all 3 studies

Community Engagement, Outreach & Dissemination Core D
- bi-directional knowledge-sharing
- Community Action Panel
- annual Community Engagement Symposium
COMMUNITY STROKE SYMPOSIUM OBJECTIVES

- Organize a one-day community symposium using a community partnered participatory (CPPR) framework to:
  - Share stroke knowledge
  - Obtain community input into stroke research conducted in the UCLA Stroke Prevention and Intervention Research Program (SPIRP)
  - Build trust and foster collaborations with community members for stroke research
SYMPOSIUM PLANNING

• Symposium conceptualized and planned by community and academic partners:
  o Healthy African American Families (HAAF)
  o LA SPIRP Investigators
• Partnered on all processes:
  o Developing Agenda
  o Compiling Background Materials
  o Training of Staff
  o Data Collection and Analysis
• Involved broader community:
  o CTSI’s Community Engagement and Research Program
  o CDU investigators / students
  o AHA/ASA
  o UCLA Stroke Force students
SYMPOSIUM AGENDA

• Didactic sessions
  – Stroke disparities
  – Stroke risk factors
  – Center goals and projects
  – Stroke in Korean-Americans

• Patient/family experiences

• Break out group discussions with report-back
• **Stroke Resource Guide**
  o Systematic search of PubMed, health websites (e.g., AHA/ASA), online ethnic media, and NIH resource lists (NIA, NINDS, NHLBI, etc)
  o Compiled by summer interns

• **Six categories of resources:**
  o Stroke Warning Signs
  o Prevention/Risk Factors
  o Women and Stroke
  o Types of Stroke Treatment
  o After a Stroke
  o Clinical Research
  o **Guide distributed to all symposium attendees**
DISPARITIES IN AVAILABLE STROKE RESOURCES

- Fewer resources in languages other than English
- Mandarin/Korean resources
  - Less engaging
  - Few/no graphics
  - Black & white

English Language Resources: N = 268

Spanish Language Resources: N = 65

Mandarin Language Resources: N = 30

Korean Language: N=2

DISPARITIES IN AVAILABLE STROKE RESOURCES
Nearly all documents (including speaker’s slides) translated into Korean, Mandarin and Spanish and available for attendees.
• **Stroke knowledge survey** using audience response system pre- and post-session

• **Small group discussions** to obtain community perspectives on questions important to SPIRP investigators

• **Paper-pencil evaluation** at close of symposium
  - Included questions on trust in medical research
COMMUNITY STROKE SYMPOSIUM

236 Attendees

140 Participated in Audience Response Questions

126 Evaluations collected

35 Received CEU credits
CHARACTERISTICS OF SYMPOSIUM ATTENDEES

- Predominantly female participants (73%)
- Broad age distribution
- High education level: 78% at least some college
CHARACTERISTICS OF SYMPOSIUM ATTENDEES

Race/Ethnicity

- African American: 64%
- Hispanic/Latino: 18%
- Asian/Pacific Islander: 11%
- White: 4%
- Other: 3%

Affiliation

- Community-based org.: 22%
- Health provider: 19%
- Community Member: 17%
- Academic/researcher: 12%
- Faith-based org.: 8%
- Other: 4%

Characteristics of Symposium Attendees

- 64% African American
- 18% Hispanic/Latino
- 11% Asian/Pacific Islander
- 4% White
- 3% Other
CHARACTERISTICS OF SYMPOSIUM ATTENDEES

Chronic Medical Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Blood Pressure</td>
<td>41%</td>
</tr>
<tr>
<td>High Cholesterol</td>
<td>19%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>10%</td>
</tr>
<tr>
<td>Prior stroke, TIA, or mini-stroke</td>
<td>3%</td>
</tr>
</tbody>
</table>
Prior stroke knowledge mainly from family, friends, media

Improved awareness of Risk Factors, Warning Signs, and Disparities

Example: Stroke is the fourth leading cause of death in the United States and a leading cause of serious, long-term disability in adults. (Correct answer = True)
Topics addressed in breakout sessions:

1. Community-based strategies to address stroke disparities
2. Strategies to increase racial/ethnic minority participation in stroke research

Qualitative methods to analyze data:

- Content-analysis used to code notes from groups
- Pile-sorting by community and academic attendees to identify themes
QUESTION 1: COMMUNITY STRATEGIES TO ADDRESS STROKE DISPARITIES

• Culturally sensitive advertising on risk factor reduction
• Community participation in media campaigns
• Use mobile vans to provide access to information and medical treatment
• Educate primary and secondary students about stroke risk factors
• Make healthy food affordable (community gardens, local farmers markets)
• Recognize the family’s role in prevention and treatment
Strategies to Increase Diversity in Research Studies

- Investigators should partner with community organizations to increase trust in research.
- Have trusted, community-based medical and non-medical personnel recruit for studies.
- Use stories to appeal to community members.
- Research should benefit the community.
- Provide non-monetary incentives (e.g. blood pressure monitors).
- Research should take place in the community.
• Community Initiatives
  o Annual community stroke symposium planning will include advocacy organizations (e.g. AHA Latino and Asian programs), stakeholder organizations, LA County Department of Health Services and Department of Public Health
  o Wider recruitment representing the diversity of LA County
  o Provide support to smaller, culturally targeted stroke disparities programs in Latino, Korean communities in LA
“SUCCEED” intervention – Secondary stroke prevention: by Uniting Community and Chronic care model teams Early to End Disparities
  o Potential to integrate into LA County Department of Health Services and Department of Public Health

Trends in Traditional and Novel Stroke Risk Factors (NHANES)
  o Linkages to policy and prediction models through the Kaiser-UCSF Stroke Disparities Center
  o Community-partnered CVD/stroke risk reduction

“Worth the Walk” intervention – Primary prevention: culturally-tailored behavioral stroke risk factor reduction intervention in senior centers
  o Potentially scalable nationally