

Agenda
CIAHD Monthly Research Meeting
SPH Tower 1, Room 4645
September 30, 2008
12:00 – 2:00pm

- I. Introductions/Meeting Objective Ana Diez Roux, Center PI (5 min)

- II. Introductions/Jackson Heart Study Herman Taylor, JHS PI (5 min)

- III. Project Presentations
 - a. Research Projects Update (15 minutes per project including Q/A)
 - i. Project 1, PI – **Ana Diez Roux**: Social and Geographic Predictors of Heterogeneity in Cardiovascular Risk in African Americans –
 - ii. Project 2, PI – **Sharon Kardia**: Genetic and Social Factors in Blood Pressure Control in Hypertensives
 - iii. Project 3, PI – **James Jackson**: Racial and Ethnic Disparities in Mental and Physical Health: Stress, Self-Regulation of Health Behaviors and the HPA-Axis

 - b. 2008/2009 Funded Pilot Projects (10 minutes per project including Q/A)
 - i. Pilot Project 1, PI – **Emily Nicklett**
 - ii. Pilot Project 2, PI – **Briana Mezuk**
 - iii. Pilot Project 3, PI – **Yan Sun**:
 - iv. Pilot Project 4, PI – **DeMarc Hickson**
 - v. Pilot Project 5, PI – **Marc Turenne**

- IV. Other Items (20 minutes)
 - a. Advisory Panel Meeting – November 6-7, 2008
 - b. CIAHD Spring or Fall symposium at JHS
 - c. CIAHD Seminars – possible speakers

- V. Meeting Wrap-up/Action Items (15 minutes)

**Lunch will be provided for UM attendees*

CIAHD

September 30, 2008

RESEARCH PROJECTS

Michigan Center for Integrative Approaches to Health Disparities

- To promote and support research that comprehensively integrates social and biological factors within a multilevel framework in understanding the determinants of minority health and health disparities
 - Scientific understanding
 - Interventions to eliminate health disparities

Overall Specific Aims

- To advance scientific understanding of how the interrelation of social and biologic factors contributes to health in minority populations and health disparities with a specific focus on cardiovascular risk
- To establish a mutually beneficial partnership between the University of Michigan and the Jackson Heart Study (JHS) (through its partners Jackson State University and the University of Mississippi Medical Center (UMMC)) to advance research and training within our multilevel integrated framework
- To create a forum that will integrate ongoing minority health and health disparities research broadly at the University of Michigan and at our Jackson partners under the general umbrella of a multilevel framework that integrates social and biological factors
- To disseminate the multilevel integrated paradigm to the biomedical and health research community, as well as to the public generally.

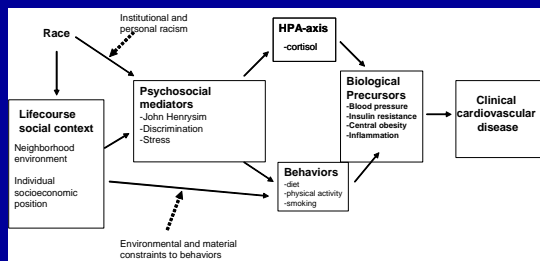
Themes

- Biological and social factors
- Multilevel determinants
- Heterogeneity within groups
- An integrated multilevel conceptual model

Project 1

- To examine social and geographic predictors of heterogeneity in cardiovascular risk within African-Americans.
 - Jackson Heart Study
 - Multiethnic Study of Atherosclerosis (MESA).

- Focus on heterogeneity in cardiovascular risk within African Americans
- Social, psychosocial, and geographic factors
- Analyses of the Jackson Heart Study and the Multiethnic Study of Atherosclerosis



Specific Aims (Project 1)

- 1. To examine social predictors of cardiovascular risk factors (including novel biologic markers) and incident events in the Jackson Health Study
- 2. To investigate the role of psychosocial factors hypothesized to be of special relevance in African Americans (including John Henryism, discrimination, and life stressors) in the social patterning of cardiovascular risk

Specific Aims (Project 1)

- 3. To examine geographic variability in selected risk factors and biological markers examined in Aims 1 and 2 by comparing data from the Jackson Heart Study to data from multiple geographic sites of the Multiethnic Study of Atherosclerosis.
- 4. To determine whether any geographic differences observed in Aim 3 are attributable to geographic differences in social factors or psychosocial factors

Progress to date

- Social patterning of diabetes in JHS (Herman Taylor/Mario Sims/Shawn Boykin et al.)
- Discrimination and hypertension (Mario Sims et al.)
- Food availability and diet/BMI in JHS (Demarc Hickson et al)
- Geographic heterogeneity in hypertension in MESA (Kiarri Kershaw)
- Race/ethnic differences in social patterning in MESA (Shawn Boykin et al.)
- Acculturation and neighborhood factors in MESA (Sandra Albrecht et al.)

**Center for Integrative Approaches
to Health Disparities – Project 2**

**GENETIC AND SOCIAL FACTORS IN BP
CONTROL IN HYPERTENSIVES**

Overview of Specific Aims

- **Aim 1**
 - Investigate associations between variety of factors (socio-demographic, anthropometric, familial, and lifestyle) and the distributions of hypertension awareness, treatment, and control
- **Aim 2**
 - Determine whether factors investigated in Aim 1 are also associated with age of hypertension diagnosis and type of anti-hypertensive therapy
- **Aim 3**
 - Investigate influence of various interactions (risk factor*drug, risk factor*gene, and gene*drug) on BP control
- **Aim 4**
 - Predict 5 year BP changes using factors identified in Aims 1-3

Study Data

- FBPP Established in 1995 by NHLBI
- Objective - identify genetic and environmental factors associated with hypertension
- 4 large multi-center networks
- Genetic Epidemiology Network of Arteriopathy (GENOA)
 - FBPP core measurements
 - Largest collection of single nucleotide polymorphisms (SNPs) in candidate genes

Hypertension Outcomes NHANES

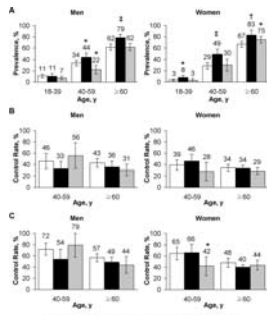
TABLE E. Percentage of noninstitutionalized U.S. adults with hypertension* and, among those with hypertension, estimated percentage of persons who are aware of, treated for, and in control of their condition, by sex, race/ethnicity, and age group — United States, 1999–2002

Characteristic**	Hypertension prevalence % (95% CI)†	Awareness of condition % (95% CI)†	Under current treatment % (95% CI)†	Condition controlled % (95% CI)†
Sex				
Men	27.8 (24.9–29.7)	59.4 (55.9–63.1)	45.2 (40.9–49.6)	27.5 (23.7–31.3)
Women	29.0 (27.3–30.8)	69.3 (61.7–77.0)	56.1 (29.3–83.1)	35.5 (28.4–42.7)
Race/Ethnicity				
White, non-Hispanic	27.4 (25.3–29.5)	62.0 (57.3–66.5)	48.6 (44.1–53.1)	29.8 (25.7–34.0)
Black, non-Hispanic	40.5 (36.3–42.9)	70.3 (64.0–75.0)	55.4 (51.3–59.6)	29.8 (25.2–34.5)
Mexican American	25.1 (23.1–27.1)	49.8 (40.4–59.2)	34.9 (27.5–42.3)	17.3 (10.7–23.9)§
Age group (yrs)				
20–39	6.7 (5.3–8.2)	48.7 (38.8–58.7)	28.1 (20.1–36.1)	17.6 (11.6–23.7)
40–59	29.1 (25.9–32.4)	73.5 (69.1–77.9)	61.2 (57.1–65.2)	40.5 (36.4–44.5)
≥60	65.2 (62.4–68.0)	72.4 (70.0–74.7)	65.6 (61.9–69.2)	31.4 (29.7–34.2)
Total¶	28.6 (26.8–30.4)	63.4 (59.4–67.4)	45.3 (41.3–49.2)	29.3 (25.0–32.7)

* Had a blood pressure measurement ≥ 140 mm Hg systolic or ≥ 90 mm Hg diastolic or took antihypertensive medication.
 † Test by a health-care professional that blood pressure was high.
 ‡ Took an antihypertensive medication.
 § Hypertension levels < 140 mm Hg systolic and < 90 mm Hg diastolic.
 ¶ All characteristic estimates (including age groups) are age-adjusted.
 †† Confidence interval.
 ‡‡ Estimate should be used with caution; relative standard error is 20%–29%.
 §§ Total population estimates (including sex and age group) include only non-Hispanic whites, non-Hispanic blacks, and Mexican Americans.

Centers for Disease Control and Prevention (CDC) MMWR. *MMWR Morbidity and Mortality Weekly Report* 54(1): 7-9

Hypertension prevalence and control rates in 2003–2004 by age and race/ethnicity in men and women



Ong, K. L. et al. *Hypertension* 2007;49:69-75

Hypertension
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Learn and Live

Hypertension Outcome Distributions in GENOA Samples

- **Jackson, MS (N=1857, 71% Female)**
 - 72% hypertensive (N=1329)
 - 97% aware (N=1294)
 - 87% treated (N=1123)
 - » 53% controlled (N=590)
- **Rochester, MN (N=1578, 55% Female)**
 - 72% hypertensive (N=1129)
 - 91% aware (N=1025)
 - 95% treated (N=970)
 - » 61% controlled (N=587)

Statistical Analysis

- All analyses stratified by race/ethnicity (cohort)
- Analyses of quantitative BP outcomes
 - All hypertensives from each sample
 - Observed BP measurements
 - Stepped fixed effects added to observed values to account for treatment effects
 - All hypertensives that are treated | awareness
- Reduced analytical sample sizes for binary hypertension outcomes
 - * Awareness - conditional on being hypertensive
 - * Treatment - conditional on being aware
 - Control - conditional on being treated

* Frequency high in samples, inhibiting predictors of P(Aware|Hypertensive) and P(Treatment|Aware)

Multi-level Models

- Outcomes are not independent
 - Sibship design
 - Neighborhood context
 - Potential familial and/or neighborhood aggregation
- Correlation in data
 - Minimal to no effect on parameter estimates
 - SE estimates are biased
- Multi-level models account for this correlation
 - Effect of given variable after "controlling" for random effects
- Random intercept only models
- Linear mixed effect models for quantitative outcomes
 - ML estimation
- Generalized linear mixed models for binary outcomes
 - LAPLACE ML approximation

Descriptive Statistics Hypertensive Treated|Aware Subjects

Continuous variables

	African-Americans (N=1123)	non-Hispanic Whites (N=970)
SBP	139.8 (22.7)	136.1 (16.4)
DBP	78.3 (12.5)	79.1 (9.4)
Age	60.4 (9.4)	57.9 (9.8)
Height	168.0 (8.5)	168.2 (9.3)
Weight	90.4 (18.8)	88.5 (20.2)
BMI	32.1 (6.8)	31.2 (6.6)
Waist	106.2 (16.5)	102.3 (15.8)
Hip	115.2 (14.9)	111.0 (13.0)
Waist:Hip	0.9 (0.1)	0.9 (0.1)
Age Hyt Diagnosis	43.1 (10.3)	44.0 (10.9)
Education years	11.7 (3.5)	13.2 (2.4)
Jog/walk	2.7 (6.0)	6.7 (9.0)

Descriptive Statistics Hypertensive Treated|Aware Subjects

Categorical variables

	African-Americans	non-Hispanic Whites
% BP Controlled	53	61
% Female	73	57
% Diabetic	28	13
% Diabetic Rx	24	8
% History of CHD	8	11
% History of CVD	6	4
% Lipid Rx	9	23
% Parental History Hyt	74	83
% Drink Alcohol	30	70
<u>Smoking</u>		
% Never Smoke	58	50
% Former Smoke	25	38
% Current Smoke	17	12
<u>Education</u>		
% >= 16 years	17	18
% >= 12, <16 years	42	74
% <12 years	41	8

Aim 1 Update

- Examination of quantitative SBP/DBP
- Focus here on P(BP Control|Treated)
- Socio-demographic and anthropometric factors
- GLMM for binary outcome (Random Intercept)
 - General Model Form
 - $\text{Logit}(\text{BP Controlled}_i) = b_0 + b_1 \text{Age}_i + b_2 \text{BMI}_i + b_3 \text{Gender}_i + b_4 \text{Education}_i$
 - $b_0 = \gamma_{00} + U_{0i}$ $U_{0i} \sim N(0, \tau_{00})$
 - $b_1 = \gamma_{10}$
 - $b_2 = \gamma_{20}$
 - $b_3 = \gamma_{30}$
 - $b_4 = \gamma_{40}$
 - $\text{Logit}(\text{BP Controlled}_i) = \gamma_{00} + \gamma_{10} \text{Age}_i + \gamma_{20} \text{BMI}_i + \gamma_{30} \text{Gender}_i + \gamma_{40} \text{Education}_i + U_{0i}$
- "lmer" function in R "lme4" library

Variables

- Outcome
 - Blood Pressure Control (<140/90 mm Hg, SBP/DBP)
 - Average of last 2 of 3 readings
- Individual-level predictors
 - Continuous
 - Age (years)
 - BMI
 - Education (years)
 - Categorical
 - Gender (male = 0, female = 1)
- Group-level identifier
 - Family ID

Jackson, MS (Treated Hypertensives)

- **Formula:** **BP Controlled ~ Age + Sex + BMI + Education_years + (1 | netid)**
- Number of obs: 1123, groups: netid, 598
- **Fixed effects:** OR (CI)
 - Age **0.970** (0.956, 0.985)
 - Sex 0.782 (0.585, 1.046)
 - BMI 1.004 (0.984, 1.024)
 - Education (yrs) **1.039** (1.001, 1.079)

Rochester, MN (Treated Hypertensives)

- **Formula:** **BP Controlled ~ Age + Sex + BMI + Education_years + (1 | netid)**
- Number of obs 970, groups: netid, 528
- **Fixed effects:** OR (CI)
 - Age **0.951** (0.936, 0.967)
 - Sex 1.246 (0.940, 1.653)
 - BMI 0.994 (0.972, 1.016)
 - Education (yrs) 1.012 (0.951, 1.078)

Co-morbidities

- Jackson, MS (N=1123, Treated Hypertensives)
 - 28% Diabetic
 - 8% History of CHD
 - 6% History of CVD
- Rochester, MN (N=970, Treated Hypertensives)
 - 13% Diabetic
 - 11% History of CHD
 - 4% History of CVD

Influence of Diabetes in Jackson Cohort

- Adjusted for Age, Sex and BMI
 - Diabetes, OR = 0.602 (0.454, 0.799)
- Diabetes potential confounder of Education – BP Control relationship
- Education effect retained after additional control for Diabetes (co-morbidities)

Neighborhood Context

- Jackson, MS - 1236 hypertensive participants with baseline address information available
 - 1049 (Treated|Aware)
- Baseline addresses Geo-coded to tract level
- Participants spread across 123 neighborhoods
 - 103 tracts (Treated|Aware)

Neighborhood Definition

- 2000 US Census
- Census Tracts used as proxies
 - Subdivisions of Counties
 - ~ 4,000 residents (avg.)
- Socioeconomic Neighborhood Summary Score (NSS)
 - Based on previous factor analysis*
 - Variables from Census Tracts representing
 - Income/wealth
 - Education
 - Occupation
 - Z-scores

* Diaz-Roux AV, Merkin SS, Arnold D, Chambless L, Massing M, et al. (2011) Neighborhood of residence and incidence of coronary heart disease. *N Engl J Med* 365(2): 99-106.

Mean (SD) of 6 Indicator Variables in Jackson, MS Neighborhoods

- Log median household income = 4.5 (0.2)
– ~ \$35,000
- Log median value occupied housing units = 4.8 (0.2)
– ~ \$73,100
- % interest, dividends, rental income = 22.4% (13.4%)
- % high school completed = 75.3 % (13.3%)
- % college complete = 22.1% (16.2%)
- % managerial/professional occupations = 29.5% (12.7%)

- NSS Range (-10.2, 16.4)

Jackson, MS (Treated Hypertensives)

- **Formula:** BP Controlled ~ Age + Sex + BMI + Education_years + Diabetes + NSS + (1 |Census_Tract)
- Number of obs: 1049, groups: Tract, 103

- **Fixed effects:** **OR (CI)**
 - Age **0.974** (0.960, 0.989)
 - Sex 0.787 (0.588, 1.053)
 - BMI 1.013 (0.993, 1.033)
 - Education (yrs) 1.030 (0.992, 1.070)
 - Diabetes **0.648** (0.490, 0.857)
 - NSS 1.004 (0.976,1.033)

Issues with Neighborhood Context

- **Data Sparseness**
 - Range (1,92) Median = 4
 - Clarke P. *J Epidemiol Community Health* 2008; 62(8):752-8.
 - Unbalanced data and very small group size (<2)
 - Over-estimation group level random effects and SEs of these effects
 - Decreased precision → reduced power to detect significant between group variance
 - Monte Carlo simulations – 5 observations per group
 - 948 individuals in 48 Tracts
 - Loss of information from 101 individuals and 55 Tracts
- **Initial models only account for 2-level data structure**
 - Individuals within tracts
 - 3-level models to account for family correlation

Issues with Neighborhood Context

- Null Models – random intercept only with SBP/DBP as outcomes indicate no SBP/DBP clustering within neighborhoods
- $Y_{ij} = \gamma_{00} + U_{0j} + e_{ij}$ ($e_{ij} \sim N(0, \sigma^2)$, $U_{0j} \sim N(0, \tau_{00})$)
- $\gamma_{00} =$ (SBP) 139.63 (DBP) 78.19
- $\sigma^2 =$ (SBP) 521.51 (DBP) 156.73
- $\tau_{00} =$ (SBP) 3.26E-18 (DBP) 0.83
- $ICC = \tau_{00} / (\sigma^2 + \tau_{00}) =$ (SBP) 0 (DBP) ~0.005

Ongoing Efforts

- Aim 1
 - Examining influence of various factors on “Observed” and “Underlying” SBP/DBP
- Aim 2
 - Identifying predictors of treatment type within racial/ethnic groups
- Aim 3
 - Role of genetic variation on heterogeneous response to antihypertensive therapy

Hypertension Treatment Classes

- Anti-hypertensive med use assessed
 - Medi-Span Generic Product Identifier
- Stratify sample into subgroups based on Rx
 - Monotherapies
 - Beta blocker
 - Ca+ channel blocker
 - Diuretic
 - RAAS Inhibitor
 - Other
 - Combination Therapies
 - Beta blocker + Diuretic
 - Beta blocker + Other
 - Diuretic + Other
 - Neither Beta blocker nor Diuretic

Antihypertensive Class Distributions

	Jackson (N=1123)	Rochester (N=970)
<u>Mono-therapies</u>		
Beta-blocker	42 (4%)	155 (16%)
Ca-blocker	148 (13%)	62 (6%)
RAAS Inhibitor	107 (9.5%)	151 (16%)
Diuretic	155 (14%)	126 (13%)
Other	75 (7%)	18 (2%)
<u>Combo-therapies</u>		
Beta-blocker + Diuretic	107 (9.5%)	166 (17%)
Beta-blocker + Other	32 (3%)	71 (7%)
Diuretic + Other	351 (31%)	177 (18%)
Neither Beta-blocker nor Diuretic	106 (9%)	44 (5%)

Genetic Variation

- *Why look at genetic variation?*
 - Despite established risk factor profile, causes of hypertension largely unknown
 - Multifactorial etiology (Genetic and Environmental)
- *Why look at effect modification by anti-hypertensive therapy?*
 - Heterogeneous response to therapy(s)
 - < 50% treated hypertensives have BP adequately controlled
 - “Try it and see” approach is clinical standard
 - Genetic variations may influence pharmacokinetic and pharmacodynamic mechanisms that regulate drug response
 - Altering structure, configuration, or quantity of proteins involved in these mechanisms
 - Individualized drug targeting based on genetic profile

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Project 3 – No printed slides available

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2008-2009 Funded Pilot Projects

- PI – Emily Nicklett
- PI – Briana Mezuk
 - PI – Yan Sun
 - PI – DeMarc Hickson
 - PI – Marc Turenne

Examining the role of Sociodemographic Characteristics in Diabetic Experiences and Outcomes

Emily Joy Nicklett, Sarah Burgard, Renee Anspach
University of Michigan
Department of Sociology
Department of Health Management and Policy

CIAHD Meeting
Ann Arbor, MI
09/30/2008, 2008

Objectives of Pilot Study

- Extend emerging research on life-course disparities to chronic illness outcomes (trajectories) and bio-social interactions
- Obtain a textured analysis of disparities in outcomes among diabetics

Guiding Research Questions

- Why do individuals from socially disadvantaged populations report worse diabetic outcomes as they age?
- What are the mechanisms underlying these disparities?

Why Diabetes?

- Diabetes is a growing issue worldwide and in US
 - Number of Americans with Diabetes increased from 5.8 million to 14.7 million between 1980-2004 (NHIS, CDC).
 - US born in 2000 have a estimated lifetime risk of getting diabetes greater than 1 in 3 (Narayan et al., 2003)
 - Predicted increase in prevalence of 165% over the next 50 years in the U.S. (Boyle et al., 2001)
 - DM costly:
 - Direct costs (\$44 billion/year)
 - Indirect costs – productivity (\$54 billion/year) [ADA, 1998]
 - Informal caregiving – \$3-6 billion per year (Langa et al., 2003).

Why Diabetic Disparities?

- The burden of diabetes is not evenly distributed in society:
 - Incidence, prevalence, morbidity, mortality:
 - Race/Ethnicity
 - Social Class
 - Gender

Conceptual Models

- Life Course Theory (Elder, 1998):
 - Historical time and place
 - Timing of lives
 - Linked or interdependent lives
 - Human agency

Specific Aims

Examine the extent to which there are disparities in the trajectories of diabetes later in life by:

Race/ethnicity,
Socioeconomic position, and
Sex

Hypotheses

1. Relative to non-Hispanic whites, both non-Hispanic African Americans and Hispanics will experience a more rapid decline of health status and onset of diabetes-associated complications and limitations, as well as earlier mortality

Mechanisms: Cumulative socio-economic disadvantage and racial/ethnic discrimination

Hypotheses

2. Those from relatively lower-status groups will experience sharper decline in well-being and earlier mortality than those from relatively higher-status groups.

Mechanisms: Proximal (health insurance, cost of medications, availability of equipment) and distal (stress, life stressors) sources

Hypotheses

3. Diabetic women will experience a sharper rate of health decline

Mechanisms: Provision/receipt of informal care

Data

- IOG
Mixed-method data collection from a small sample (30) of community-dwelling seniors from IOG Research Participant Program
- HRS
Triangulated from longitudinal (8-wave) Health and Retirement Study (HRS) data on diabetic older adults and HRS diabetic supplement.

Stages

1. Brief survey instrument
Co-morbidities, diabetes-specific data, socio-demographic characteristics (matching with HRS population)
2. Life History Calendars of Diabetics
 - Collect retrospective data on timing and sequencing of complex life events;
 - Estimated "trajectory" of adherence, functionality, self-assessed health status, and social support.
 - Disease history.
3. In-depth Interviews
Experiences and challenges related to diabetes
4. Triangulation with survey data
Group-based trajectory analysis (Nagin)

Project Timeline (revised)

- October – December 2008:
 - Conduct group-based trajectory analysis for preliminary results
- January – February 2008:
 - Continue data analysis
 - Begin recruitment for Community-based sample
- March – May 2008:
 - Conduct interviews for Community-based sample
 - Transcription of interviews and preliminary data analysis
- Onward:
 - Triangulation of qualitative and quantitative data analysis
 - Development of manuscripts

Thank you...

- Research Advisors
 - Renee Anspach, PhD
 - Sarah Burgard, PhD
 - Jersey Liang, PhD
 - Caroline Blaum, MD
 - Jane Banaszak-Holl, PhD
- CIAHD
- Hartford Doctoral Fellows Program
- AHRQ Pre-Doctoral Award

Thank you!

- Questions?
- Comments?
- Suggestions?

Back-up Slides

Quantitatively

Health & Retirement Study

- + Eight-wave study over a period of 14 years
- + Large sample of diabetics (over 3,000)
- + Multiple measures of interest over time (incidence, prevalence, morbidity, mortality)
- + Diabetes-specific data (2003 mail-out)
- + Disease attitudes/beliefs (from HDM)
- - -
- Only begin tracking at late middle age
- Doesn't capture all measures in frameworks
- Lacks 'texture' and context; detail on life transitions

Qualitatively

Institute of Gerontology Research Participant Program at the Geriatric Center

- + Established sampling frame for small (n=30) study
- + Stratify recruitment by socio-demographic group
- + Mixed Methods approach:
 1. Survey instrument for quantitative comparisons
 2. LHC for life transitions/diabetes experiences
 3. In-depth, semi-structured interview (challenges)
- + Can triangulate with HRS data
- - -
- Small, convenience sample (AA not generalizable)
- Needs funding

Preliminary Diagnostics

- Proportion reporting health decline varies by Sociodemographic Group:
 - Age (highest burden in age group 80-89)
 - Being female (37 v. 32 percent)
 - Fewer years of education
 - Some ethnic differences (Hispanics 40%)

Preliminary Diagnostics 2

- Proportion reporting health decline also varies by:
- Health/Illness Status:
 - Self-rated health (79% among poor health)
 - Duration of Diabetes and T1B1
- Social Characteristics
 - Marital Status and Provision of Care (34-34%)

Conclusions:

- Findings:
 - Social Support for Adherence was not consistently associated with health status decline
 - Protective (Medications, Meal Plan, Tests)
 - Risk (Physical Activity, Feet, Appointments)
 - Relationship not statistically significant between Social Support for Adherence & Health Decline
 - Social Support for Adherence positively (and significantly) associated with Adherence

Conclusions:

- New Areas:
 - More population-based, longitudinal research needed to better examine these relationships among chronically ill populations
 - Also, such studies should comparatively address whether the relationships only hold in certain groups

Limitations:

- Social Support and Health:
 - Short Period of Analysis
 - Self-Report
 - Missing Data Problems, despite complex design
 - Not able to examine additional measures of social support found to be significant in previous health research (social networks and ties, community involvement & participation, support groups)
 - Availability of adherence measures only in 2003 poses limitations on analyzing data over time

Conceptual Models

- Health Decision Model (Eraker et al., 1984)
 - Health decisions, behavior, outcomes shaped by:
 - Sociodemographic characteristics, social interactions
 - Health care experiences and preferences for care
 - Knowledge about disease and Health Beliefs

The influence of work-related and financial stressors, workplace discrimination, and retirement on blood pressure in older adults:

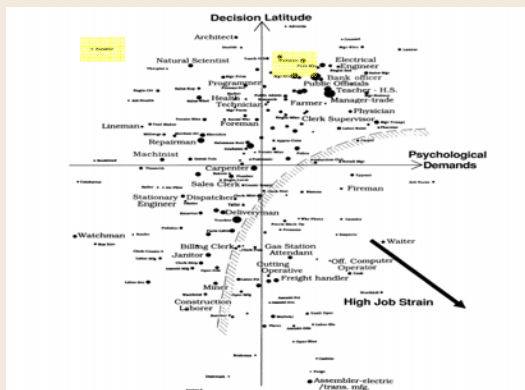
A focus on the effects of race and age-cohort

Briana Mezuk, PhD
CIAHD Meeting
September 30, 2008
Department of Epidemiology
bmezuk@umich.edu

Thanks and Acknowledgements

- Toni Antonucci (senior mentor)
- Kira Birditt (Co-I)
- Darrel Hudson
- Sha Juan Colbert
- Kiarri Kershaw
- Jane Rafferty

- Research assistant: Jacqueline Lim
- UROP student: Sujay Paknikar



Job strain and hypertension risk

- Numerous studies have reported an association between high job strain and blood pressure or hypertension
 - Most are cross-sectional
 - Longitudinal results are mixed
 - Most included only younger adults (aged <60)
 - Samples were primarily non-Hispanic white

Life course approach to disparities in occupational health

- Work-life is a “strategic domain” to conduct lifespan research
- Occupational history and trajectories vary across & within social groups and across historical time
- Retirement is a gradual life “event” that is more common and occurring earlier in the life course relative to previous historical periods

Specific Aims

- Aim 1: To examine how the effects of work-related stressors on high blood pressure vary across age cohorts
- Aim 2: To evaluate whether these age cohort patterns vary by racial/ethnic group
- Aim 3: To investigate the longitudinal influence of retirement on the effect of work-related stressors

Health and Retirement Survey

- Nationally-representative open panel study of U.S. adults aged 50 and older (N = 20,129)
 - 58.5% women
 - 80.4% non-Hispanic white
 - 14.3% African American
- 2004: 6,952 (34.5%) reported working (FT/PT)
 - Work-related stressors (exposure variables) only asked about current job

Primary exposures

- **Job stress:**
 - I have very little freedom to decide how I do my work
- **Job satisfaction:**
 - I receive the recognition I deserve for my work
- **Workplace discrimination:**
 - How often are you unfairly given the tasks at work that no one else wants to do?
- **Work/life interference:**
 - Job worries or problems distract me when I am not at work
- **Financial strain:**
 - How difficult is it for you to met your monthly payments on your bills?

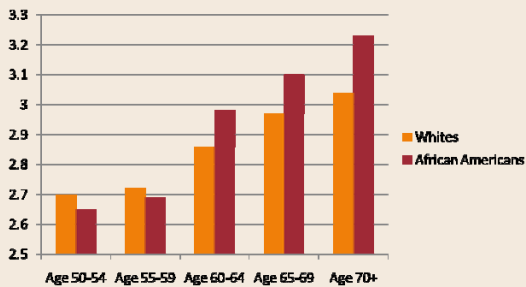
Primary outcome

- **Hypertension:**
 - Self-report
 - Doctor-diagnosed condition and/or anti-hypertensive medication use
- **Blood pressure control:**
 - Perceived control and change (improvement/worsening of control) compared to previous interview

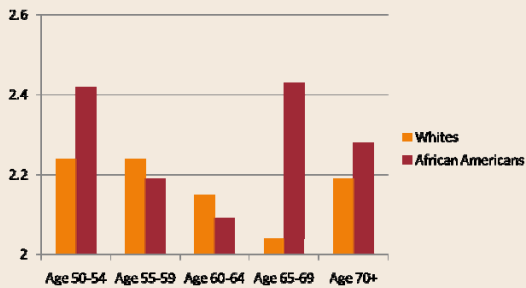
Analytic strategy

- Aims 1 & 2: ANOVA and cohort tables stratified by age group and race
- Aim 3: Stepwise hierarchical regression and structural equation modeling

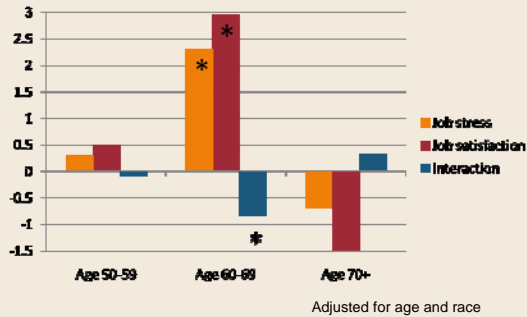
Preliminary data:
Job stress by age and race



Preliminary data:
Job satisfaction by age and race



Log-odds of prevalent hypertension in 2004



Significance

- “Baby boomer” generation is the largest number of U.S. adults to begin the retirement transition to date
- Hypertension is a common – and modifiable – condition associated with premature mortality and risk of other chronic conditions
- “Work-related disease is socially produced, and is, therefore, preventable; and work can be the source of good health and happiness rather than disease and misery.”
 – HK Abrams. *A short history of occupational health*, 1994

Disparities in Access to Higher Quality Health Care: Access to and Choice of an Initial Renal Dialysis Provider

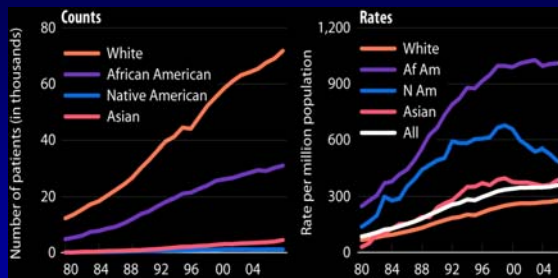
Marc Turenne

September 30, 2008

Background

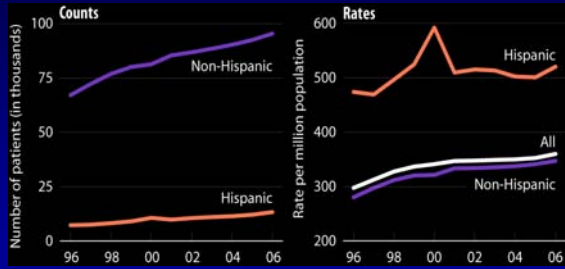
- End-stage renal disease (ESRD)
 - Cause: usually secondary to diabetes or hypertension (71%)¹
 - Treatment: transplantation (18K/year) or dialysis (355K on 12/31/06; 60K on transplant waiting list)¹
 - Comorbidity: cardiovascular disease (61%)², cerebrovascular disease (20%)³
- Dialysis facility: regular source of care
 - 3 sessions/week for in-center dialysis
 - Regular (e.g., monthly) evaluations for home dialysis
 - Management of anemia, bone disease, and other conditions related to ESRD
- Medicare coverage
- Major health disparities by race and ethnicity in ESRD

Disparities in the incidence of ESRD



Source: USRDS 2008 Annual Data Report.¹

Disparities in the incidence of ESRD (cont'd)



Source: USRDS 2008 Annual Data Report.¹

Disparities in ESRD care

- For example, black patients (vs. white) are:
 - Less likely to have the preferred type of vascular access for dialysis^{4,5}
 - Less likely to achieve the minimum clinical target for the dose of dialysis^{6,7}
 - Less likely to receive a kidney transplant^{8,9}

Availability and accessibility of higher quality providers

- Community level: limited choice of providers in some areas
 - Rural
 - Residential segregation by race/ethnicity → number of providers¹⁰ and clinical outcomes⁹
- Facility level: available resources for patient care
 - Payer mix
 - 24% had EGHP and 24% had Medicaid at onset of ESRD¹
 - Higher rates of uninsurance and Medicaid and lower rates of EGHP for black, Native American, and Hispanic patients¹
 - Institutional goals
- Patient level: differences in characteristics of providers that vary with patient race and may be related to quality (e.g., for primary care physicians¹¹)

Using information about quality of care to select a dialysis provider

- Information about treatment options and quality of care for individual dialysis facilities is available on the CMS website
- Socioeconomic and cultural factors may influence whether patients use such information to select a dialysis provider vs. using other criteria
 - Differences in awareness of information about quality
 - Ability to obtain information before requiring dialysis
 - Comfort in asking about quality issues
 - Willingness or ability to regularly travel longer distances to a provider with a higher reported quality of care

Potential impact of pre-ESRD care

- 40% are not evaluated by a nephrologist before ESRD
 - Pre-ESRD nephrologist care is less common for black and Hispanic vs. white patients^{1,12,13}
- May influence disparities in ESRD care
 - Choice of dialysis modality: earlier referral (>4 mos.) facilitates choice of therapy that allows greater independence¹⁴
 - Use of catheters for vascular access: 17% for those with >1 year of pre-ESRD nephrologist care vs. 50% for those with no pre-ESRD nephrologist care¹
- Lack of pre-ESRD care may restrict initial choice of a dialysis provider

Research Question

Are there disparities in access to higher quality dialysis care related to:

- I. Availability and extent of choice of dialysis providers
- II. Accessibility of higher quality dialysis providers
- III. Use of information about quality of care in selecting a dialysis provider

Study Design

- Study population: individuals who began chronic renal dialysis for the treatment of ESRD during 2006 (n~100,000)
- Analyses will examine how patient access to and choice of an initial dialysis provider vary according to:
 - Patient characteristics
 - Race and ethnicity
 - Insurance coverage
 - Regional socioeconomic indicators

Measures of patient access to and choice of providers

1. Average number of dialysis facilities within several radii of the zip code of the patient's residence. Larger radii will be used for rural areas.
2. The percentage of patients having a dialysis facility with a favorable quality indicator (e.g., for an already available measure such as attainment of clinical guideline for anemia management) within specified radii of their residential zip code.
3. The percentage of patients bypassing a nearer dialysis facility in favor of a more distant facility.
4. The percentage of patients bypassing a nearer dialysis facility in favor of a more distant facility having a more favorable quality indicator (e.g., a low publicly reported risk-adjusted mortality rate according to *Dialysis Facility Compare* on the CMS website).
5. The percentage of patients starting treatment at a dialysis facility with a less favorable quality indicator when there is another facility with a more favorable quality indicator within a similar distance (e.g., a low publicly reported risk-adjusted mortality rate according to *Dialysis Facility Compare*).

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CIAHD

September 30, 2008

Other Items

Center for Integrative Approaches to Health Disparities

Advisory Panel Meeting

Draft Agenda

November 6 - 7, 2008

November 6, 2008 1:00 – 4:00pm

Symposium – Genetics and Health Disparities: Opportunities and Challenges

Moderator: Sharon Kardia- Department of Epidemiology University of Michigan

Panelist:

Eric Boerwinkle, PhD – UT Houston School of Public Health, Human Genetics Center
Lundy Braun, PhD – Brown University, Johns Hopkins University School of Hygiene and Public Health

Vivian Ota Wang, PhD - National Science and Technology Council Representative
National Nanotechnology Coordination Office

5:00pm

PI/Speaker/Advisor Dinner

November 7, 2008

8:00 – 8:45 am	45 minutes	Registration/Light Breakfast
8:45 – 9:00 am	15 minutes	Welcome, Meeting Overview/Purpose
9:00 – 9:10 am	10 minutes	Introductions
9:10 – 9:20 am	10 minutes	CIAHD Overview
9:20 – 9:50 am	30 minutes	Project 1 (20 min + 10min q/a)
9:50 – 10:20 am	30 minutes	Project 2 (20 min +10min q/a)
10:20-10:30 am	Break	
10:30 – 1100 am	30 minutes	Project 3 (20 min + 10min q/a)
11- – 11:20 am	20 minutes	Research projects review and discussion
11:20-12 Overview of pilots and newly funded pilots		
12- – 1:15	1hr 15 minutes	Lunch
1:15-1:35 pm	20 minutes	Pilot Project 1
1:35 – 1:55 pm	20 minutes	Pilot Project 2
1:55 – 2:15 pm	20 minutes	Pilot Project 4
(afternoon snacks – no break)		
2:15 – 2:45 pm	30 minutes	Pilot projects review and discussion
2:45 – 3:05 pm	20 minutes	Panel review/recommendations
3:05 – 3:45 pm	40 minutes	Closed Discussion
3:50 pm		Adjourn