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001

SOME CARDIOVASCULAR EFFECTS OF HYPOXIS HEMEROCALLIDEA (HYPOXIDACEAE) CORM (AFRICAN POTATO) AQUEOUS EXTRACT

JAO Ojewole¹; DR Kamadyaapa²; CT Musabayane².

¹Departments of Pharmacology and ²Human Physiology, Faculty of Health Sciences, University of KwaZulu-Natal, Durban, South Africa.

In some rural communities of southern Africa, decoctions and infusions of *Hypoxis hemerocallidea* (Hypoxidaceae) corm ['African Potato'] are frequently used for the management, control and/or treatment of cardiovascular disorders, including essential hypertension and certain cardiac dysfunctions. The present study was, therefore, undertaken to investigate some cardiovascular effects of African Potato aqueous extract in experimental animal paradigms. The effect of the corm's aqueous extract (APE) on myocardial contractile performance was evaluated on guinea-pig isolated atrial muscle strips *in vitro*; while the antihypertensive (hypotensive) effect of the plant's extract was examined in hypertensive, Dahl salt-sensitive rats *in vivo*. APE (25–400 mg/mL) produced concentration-dependent, significant ($P < .05$ –.001) negative inotropic and negative chronotropic effects on guinea-pig isolated, electrically-driven left-, and spontaneously-beating right-atrial muscle preparations, respectively. The negative inotropic and chronotropic effects of APE on guinea-pig atrial muscle strips were not modified by exogenous administration of atropine (ATR, 7.5×10^{-7} – 2.5×10^{-6} M) to the bath-fluid. APE (25–400 mg/kg *i. v.*) also caused dose-related, transient but significant ($P < .05$ –.001) reductions in the systemic arterial blood pressures and heart rates of the hypertensive rats used. Although the exact mechanisms of the cardiodepressant and the transient hypotensive actions of APE could not be established in the present study, the findings of the study lend pharmacological credence to the ethnomedical uses of African Potato in the management of certain cardiovascular ailments, and suggest that the herb may be used as a natural supplemental remedy in essential hypertension and some cases of cardiac dysfunction.

002

A PROMOTORA MODEL TO IMPROVE HYPERTENSION CONTROL AMONG MEXICAN AMERICANS IN THE EL PASO/JUAREZ BORDER AREA

H Balcazar; T Byrd; C Ayala; K Claros; M Chavez.

The major objective of this project is to evaluate the acceptance, effectiveness, and sustainability of a promotora demonstration program to improve hypertension control among medically under-served Mexican (M) and Mexican Americans (MA) living in the El Paso/Ciudad Juarez border area.

The project methodology includes: a) conducting five focus groups and a community survey with M/MA hypertensives to ascertain perceived barriers that prevent hypertension control; and b) implementing intervention mapping methodology to develop and test a promotora program.

Results of the five focus groups (two conducted in Ciudad Juarez and three in El Paso) include themes emerging as barriers for lack of hypertension control. These include: fear and lack of internal locus of control, beliefs about symptoms, not following directions for prescribed treatment, lack of knowledge and information, cost of medications, and lack of health insurance. An in-depth survey conducted among M/MA adults with hypertension further explored the results from focus groups showing that only 26% of participants ($n=63$) had their blood pressure under control. For almost all behaviors explored, participants were classified in the pre-contemplation and contemplation stages (range: 18% to 47%).

These results, among others, suggest that targeted interventions need to tailor messages according to participants' responses to baseline assessments. Further analyses are being used to guide an intervention mapping strategy with the support of promotoras from the community.

003

INFECTIONS AND BLOOD PRESSURE IN PYGMIES LIVING IN LIBREVILLE, GABON

D Mavoungou^{1,2}; M Bouity-Voubou^{1,2}; PHamet².

¹Centre de Recherche sur les Pathologies Hormonales, Libreville, Gabon; ²Centre de Recherche du Centre Hospitalier de l'Université de Montréal, Montréal, Canada.

Background. Infections have been identified as risk factors for cardiovascular diseases via pro-inflammatory cytokines. We showed recently that pygmies in Central Africa have the capacity to growth, while the interaction between the GH-IGF-I axis and the renin angiotensin aldosterone and immune systems via the converting enzyme inhibitors and decrease of hematocrit is well documented. Resistance to malaria is always observed in pygmies not in Bantu.

Aim of the study. To investigate body mass index (BMI), blood pressure and the common infections in pygmies living in Libreville.

Methodology. 12 male and 17 female apparently healthy pygmies ages 12 to 47 were included in the study. All subjects were from the same tribe and the same origin. BMI was estimated using WHO criteria while BP was recorded by the same physician using an automatic BP monitor "microlife model 3BTO-H." Common infections such as Chlamydia trachomatis (organics), Plasmodium falciparum (Cypress Diagnostic); Toxoplasma gondii, HIV-1, and syphilis (Biomerieux) were analyzed in the same subjects; results were expressed as mean \pm SE (t test, prism 3.0).

Results. Height (m) was higher in male than in female pygmies ($P < .01$); the percentage of females with BMI ≥ 25.0 kg/m² was 3 times higher than in males. BP measurements were similar or lower than in Bantu ($P < .01$). From all studied infections, Toxoplasma gondii was present in all male and female pygmies, contrasting with the absence of syphilis and Plasmodium falciparum (malaria) in the same subjects. Seven males and nine females were co-infected by Chlamydia trachomatis, and by HIV-1.

Conclusions. Pygmies living in the capital of Gabon maintained their resistance to malaria, exhibiting, however, high susceptibility for Toxoplasma gondii, Chlamydia trachomatis and HIV-1 that are known to be involved in cardiovascular diseases.

004

CARDIOVASCULAR EFFECT OF MANGANESE EXPOSURE IN HUMANS: A MODEL FOR GENES AND ENVIRONMENT INTERACTION

D Mavoungou^{1,2}; B Ongali²; PHamet².

¹Centre de Recherche sur les Pathologies Hormonales, Libreville, Gabon; ²Centre de Recherche du CHUM Campus Hotel-Dieu, Montreal, Canada.

Background. Steroidogenesis in ovaries, testis, adrenal gland, brain and heart is in the control of specific enzymes encoded by genes such as CYP11 β 1, CYP11 β 2, CYP11A and CYP17 that can mutate during stress conditions including infections, malnutrition, metal exposure and can lead to delayed growth and immune disorders. Relations between Dehydroepiandrosterone (DHEA), cortisol and prolactin (PRL) in cardiovascular disease (CVD) have been described in parallel with the inverse correlation between the pro-inflammatory cytokines (IL6, IL10, TNF-alpha) and DHEA.

Design and methods. Using RIA and NIOSH technique spectroscopy absorption, this study was undertaken to study the effect of manganese (Mn) exposition on prolactin (Prl), and some ACTH-related hormones including DHEA and cortisol (F) and on blood pressure (systolic and diastolic) and plasma rennin activity (PRA), in Gabonese miners exposed at low (LR) and high (HR) risk of toxicity during a period of 10 years; results were expressed as mean \pm SE (t test, prism 3.0).

Results. Miner groups were identified as: LR (n=14), air Mn = 0.06 ± 0.004 mg/m³, HR (n=24, air Mn: 51.12 ± 6.07 mg/m³) without significant difference for age and exposure duration. Significant increase of Mn levels ($P < .001$), PRL ($P < .01$) and systolic blood pressure ($P < .05$) were noted in HR group; while DHEA levels were significantly decreased ($P < .001$) in the same group. Tendency to low F levels were also noted in HR group. PRA remained unchanged in LR and HR groups.

Conclusion. These data indicated notable dose-dependent manner effects of Mn on the studied parameters in agreement with ACTH mineralocorticoid stimulation. The significant increase of systolic blood pressure observed in the HR group showed the cardiovascular effect of manganese via PRL and DHEA alterations and also suggested gene mutations.

005

GROUP MEDICAL VISITS FOR PATIENT CARE TO REDUCE CARDIOVASCULAR RISK BURDEN

MA Kleinpeter.

Tulane University School of Medicine, New Orleans, Louisiana.

Introduction. As a result of increasing rates of obesity in the United States, the incidence of the metabolic syndrome and diabetes is increasing. This is especially true in urban minority communities. In an effort to provide increased access to care for these patients at high risk for cardiovascular disease, group medical visits (GMV) or shared medical appointments (SMA) were implemented in an urban primary care clinic.

Setting and participants. After the initial internal medicine or specialty clinic visit, patients were invited to attend SMA for future visits. The format of the SMA included an educational presentation by a nurse or other medical provider with open discussions by the patients. Each patient was allowed a few minutes outside of the group session with the physician or nurse practitioner to discuss private issues or be examined further.

Results. Following the initial SMA, patients were given the option of future SMA or individual appointments. Many patients selected the SMA to gain additional information on their diseases and for additional information on cardiovascular risk factor modification strategies. Many patients invited family members to future sessions to provide information to family members with similar cardiovascular risk factors.

Conclusions. This practice model offers improved access to patient care, additional educational opportunities for patients and additional self-care options for patients for cardiovascular risk factor modification. Further studies will need to demonstrate if this format results in better patient outcomes in high-risk patient populations.

006

LEFT ATRIAL DIMENSIONS AND FUNCTION AND LEFT VENTRICULAR GEOMETRY AND FUNCTION IN NEWLY DIAGNOSED NIGERIAN HYPERTENSIVES

AK Adebayo; OO Ogunleye; OO Oladapo; A Adebisi; OS Ogah; DB Ojji; AM Adeoye; K Ochulor; EO Enakpene; AO Falase.

Background. A spectrum of changes in structure, size and function of the different chambers of the heart occur in individuals with hypertension. This study aimed to determine if changes in the left atrium precede changes in the left ventricle.

Methods. Echocardiography was performed in 100 newly diagnosed patients with hypertension and in 50 normal individuals to assess left ventricular geometry, systolic function, Doppler mitral inflow and pulmonary venous flow velocities. The endocardial border of the left atrium was traced to obtain the atrial area and left atrial volumes and emptying fraction were derived from measured areas.

Results. The baseline characteristics of the 2 groups were comparable. The group with hypertension had thicker septum ($1.2 \pm .27$, $1.0 \pm .16$; $P < .0001$), higher left ventricular mass (108.8 ± 42.15 , 90.9 ± 26.91 ; $P = .008$) and relative wall thickness ($.48 \pm .14$, $.42 \pm 0.08$; $P = .005$). The ejection fraction was comparable between the two groups ($P = .597$). The patients with hypertension had a higher linear left atrial dimension ($P < .0001$), a longer pre-atrial contraction length ($P = .02$) and a higher Peak atrial mitral inflow velocity ($P = .010$). Other measures of left atrial dimension and function were comparable between the 2 groups.

Conclusion. Changes in the structure and geometry of the left ventricle occur relatively early in hypertension and precedes deterioration in left ventricular systolic function. The corresponding left atrial changes are marginal and are indicative of accentuated atrial systolic function.

007

RISK FACTORS ASSOCIATED WITH CHILDHOOD HYPERTENSION AND DIABETES IN TAIWAN

JFC Sung; CC Liao; KL Chien; TC Su; CC Lin; CC Chiang.

China Medical University, National Taiwan University; The Chinese Foundation of Health.

Studies on hypertension and diabetes among children are limited in Taiwan. We estimated the annual incidence of hypertension and diabetes for children based on Taiwan's National Health Insurance data of 1996–2003. We also investigated risk factors associated with these diseases in school children using data of a mass urine screening conducted by the Chinese Foundation of Health. The descriptive analysis of the insurance data revealed that the average prevalence rates in 1996–2003 were 4.28 per 10,000 for hypertension and 8.24 per 10,000 for diabetes.

Multivariable logistic regression analyses based on the urine screening data revealed that higher body mass index (BMI) was the most significant risk factor for both hypertension (OR=6.42, 95% CI=3.27–9.93) and diabetes (OR=10.4, 95% CI=9.12–11.9) for children with BMI>25 kg/m² compared with the BMI of <20 kg/m². Family history of hypertension and diabetes were also associated with childhood hypertension and diabetes. Children with hyperlipidemia were also at higher risk for diabetes (OR=3.34, 95% CI=3.01–3.71). Our findings suggest that children share similar risk factors as adults.

010

THE RELATIONSHIP BETWEEN SERUM ADIPONECTIN AND LIPIDS AND LIPOPROTEINS IN AFRICAN AMERICAN WOMEN WITH VARYING DEGREES OF GLUCOSE TOLERANCE

T Gaillard; D Schuster; K Osei.

Division of Endocrinology, Diabetes and Metabolism, The Ohio State University, Columbus, Ohio.

Objective. Adiponectin (ADIPO) is an adipocytokine solely derived from adipose tissue. Decreased ADIPO appears to be associated with insulin resistance and atherosclerosis. ADIPO is lower in African Americans (AA) when compared to Whites and predicts future development of type 2 diabetes. Therefore, we examined the relationships between serum ADIPO and cardiovascular risk factors in AA women (AAW) with varying degrees of glucose tolerance (GT).

Research Methods. We studied 53 AAW, mean age-48.7±10.0 years and BMI-34.5±5.8 kg/m² with varying degrees of GT (NGT, n=30, IGT, n=13, DM, n=10). Standardized OGTT was performed in each subject. Fasting serum glucose (GLU), insulin (INS), c-peptide (CPEP) and lipids and lipoproteins were obtained. Insulin sensitivity was calculated by homeostasis (HOMA-IR).

Results. ADIPO decreased as GT and insulin resistance worsened. Similarly, as subjects progressed from NGT⇒IGT⇒DM, we found increases in fasting GLU, INS and CPEP. Total cholesterol (CHOL), LDL-C, and triglycerides (TRIG) increased as GT status worsened while HDL-C decreased. SBP and DBP were not different between groups. ADIPO significantly correlated with GLU (r=-0.3720, P=.007), INS (r=-0.3215, P=0.02) and CPEP (r=-.3889, P=.005), while ADIPO did not correlate with CHOL (r=-.1087, P=.466) and LDL-C (r=-.2380, P=.10). ADIPO significantly correlated with TRIG (r=-.3128, P=.03) and HDL-C (r=+.4657, P=.0009). ADIPO negatively correlated with HOMA-IR (r=-.4693, P=.005).

Summary. Serum ADIPO decreased as GT deteriorated in high risk AAW. We found a strong negative correlation of ADIPO with TRIG and HOMA-IR and a strong positive relationship with HDL-C. Conclusion. ADIPO could play a pivotal role in the pathogenesis of CVD in AAW.

011

COMPREHENSIVE TRAINING AND SUPPORT INTERVENTION FOR DIABETES (CTSI-D)D Levine¹; D Anderson²; S Ohmit¹; L Corsino¹; X Guo²; Z Lai¹; S Nasser¹; M Britton¹; P Dews¹; J Flack¹.¹Department of Internal Medicine, Wayne State University, Detroit, Michigan; ²Department of Internal Medicine, Morehouse School of Medicine, Atlanta, Georgia.

Background. Inadequate clinical training and failure to apply evidence-based approaches to care provision can lead to inferior care and adverse outcomes for patients with diabetes.

Methods. We initiated a diabetes education and support program targeting resident physicians. The intervention included in-service programs, distribution of evidence-based guidelines and implementation of an electronic medical record/clinical decision support system. An evaluation will compare pre- and post-intervention outcomes in aggregate patient clinic data and test scores of targeted residents. Data considered here were from the pre-intervention period (Jan 2002–Aug 2003). Patients with ICD-9 code 250.X (diabetes) were identified from billing databases; those with at least 2 clinic visits during the previous 12-months had records abstracted. Descriptive analyses (SAS, v9, SAS Institute) examined blood pressure (BP) and glucose treatment and control outcomes and resident test scores.

Results. The 450 eligible patients averaged 4.3 visits (1,920 total visits); 416 (92%) were African American, 309 (69%) women, mean age was 59 years. Average BP was 142/78 mm Hg. 201 (44.7%) patients never attained goal BP (JNC-6 <130/85 mm Hg), and BP was at or below goal at only 22% of visits. 366 (81%) patients had HbA1C tested at least once; values were >7% indicating failure to attain glycemic control for 201 (55%) of those tested. HbA1C was tested at 33% of visits. Resident pre-intervention test scores averaged 56%.

Conclusions. Results indicate that failure to attain and maintain goal BP and glycemic control were common. These findings may indicate the need for better education of supervising attending faculty.

012

SALT SENSITIVITY AND THE METABOLIC SYNDROMELX Cubeddu¹; I Hoffmann².¹NOVA Southeastern University, Fort Lauderdale, Florida; ²Division of Clinical Pharmacology Unit, School of Pharmacy, Central University of Venezuela.

The metabolic syndrome (MS) is characterized by a cluster of cardiovascular and metabolic risk factors. The mechanism of the increased blood pressure (BP) in patients with MS is poorly understood. We investigated the role of salt sensitivity in the pathogenesis of HT associated with MS. 290 subjects (80 M, 210F) of 41.5±0.7 years of age completed a salt sensitivity test and were evaluated for the presence of MS. BP and 24-hour sodium excretion were obtained at usual, high and low salt intakes. Salt sensitivity was markedly increased in subjects with metabolic syndrome. Reducing salt intake from the average usual intake to 2.4 g/day decreased SBP by 9±1 mm Hg in subjects with four and five traits, 6.0±1.1 in those with three traits, and failed to modify the BP of subjects with one or no traits of the syndrome (P<.0001). Salt restriction decreased the prevalence of hypertension in subjects with the MS from 23.8% to 8.2% (χ^2 :23.6; P<.0001), and effectively lowered the BP of non-hypertensive subjects with the MS (7.1±1.5 and 4.2±1.1 mm Hg in those with 4 or 5 traits and three traits, respectively).

We propose that increased salt sensitivity is the major cause of high BP in subjects with MS, that the MS is a strong clinical predictor of salt sensitive hypertension, and that salt restriction should be an essential part of the treatment for patients with MS.

013

CARDIOVASCULAR EFFECTS OF TWO PLANT EXTRACTS USED IN FOLKLORE MEDICINE BY CARIBBEAN ETHNIC POPULATIONS

PDA Singh¹; D Shirley-Singh¹; PE Singh-Gandretti².

¹University of the West Indies, Mona, Jamaica; ²Medical University of Ohio, Toledo, Ohio.

Bush teas are widely used in folklore medicine by ethnic populations in the Caribbean to treat hypertension, diabetes, and obesity, either alone or in combination with drugs. Most of these plant extracts have not been evaluated for efficacy or safety. Here, we examined extracts of soursop (*Annona muricata* - SS) and milkweed (*Euphorbia hirta* - MW) for cardiovascular effects and toxicity.

Aqueous plant extracts were prepared by boiling the leaves in water and the filtrates (SS and MW) used for the pharmacological investigations. Male Sprague-Dawley rats were anesthetized with urethane (1.25 g/kg) and the left carotid artery cannulated and connected to a Satham P23AC pressure transducer and Grass polygraph for measuring blood pressure and heart rate. ECG leads were attached and the force of contraction of the heart was also measured *in vivo*. Acute toxicity studies were performed in albino mice.

SS and MW decreased the systolic, diastolic, and mean arterial blood pressures in a dose-dependent manner. SS decreased the rate and force of contraction of the heart and arrhythmias were observed at the higher doses; MW did not significantly affect these parameters. SS and MW showed few symptoms of toxicity in mice at oral and intraperitoneal doses up to 5 g/kg. However, at higher doses, hind limb paralysis and convulsions were observed in mice given SS.

These studies suggested that there may be some pharmacological basis for the folkloric use of these plant extracts in the treatment of hypertension but caution should be exercised because of possible toxic effects.

014

IMPAIRED STRESS INDUCED PRESSURE NATRIURESIS CLUSTERS WITH REDUCED ENDOTHELIAL FUNCTION IN AFRICAN AMERICAN YOUTH AT RISK OF HYPERTENSION

M Eady; G Harshfield; G Kapuku.

Hypertension in African Americans (AA) is characterized by impaired stress-induced pressure natriuresis (SIPN) and endothelial dysfunction. This study examined the link between these blood pressure (BP) regulatory systems in youth. Specifically, we hypothesized that mental stress-induced changes of BP and sodium excretion (UNaV) may identify individuals at risk for deteriorating endothelial function. The 52 healthy AA adolescents were aged 15–18 years. The protocol consisted of a one-hour stress period preceded and followed by two hours baseline and recovery periods. BP was obtained every 15 minutes and UNaV was assessed hourly. Endothelium-dependent arterial dilatation (EDAD) was assessed at baseline using ultrasound technique. Thirty-one individuals showed the normal natriuretic response to the stress-induced increase in BP while 21 showed an impaired natriuretic response. The mean value of EDAD for those with impaired SIPN was lower than those with normal SIPN ($12 \pm 6\%$ vs $15 \pm 6\%$, $P = .04$). In addition, EDAD was associated with higher pre-stress U_{NaV} ($r = -.371$; $P < .05$) and higher casual diastolic BP ($r = .398$; $P < .04$). However, EDAD was correlated with the stress-induced increase ($r = .384$; $P = .08$) and post-stress decrease ($r = .569$; $P = .007$) in systolic BP suggesting that despite low EDAD, these youth maintain a vasodilatory reserve. In conclusion, these results suggest a possible association of impaired SIPN and degradation of endothelial function in AA youth. The clinical implications of low EDAD in AA youth need to be determined.

015

RACE AND GENDER INFLUENCE SUCCESS OF PHLEBOTOMY IN LABORATORY STUDIES OF MECHANISMS UNDERLYING RACE DIFFERENCES IN THE DEVELOPMENT OF HYPERTENSION IN YOUTH

DC Gillis; K Norland; M Castles; L Mackey; GA Harshfield.

The prevalence of essential hypertension has increased 300%–700% in minority youth; for this reason, we began our study. We developed a 5-hour protocol to examine the effect of impaired hormonal regulation on the pressure natriuresis response to prolonged stress. The purpose of this study is to report factors related to the success of our phlebotomy procedures. Success was defined as collection of all 6 blood draws. The 301 subjects (153 girls/148 boys) aged 15 to 19 years included 167 African Americans and 134 Caucasians. Overall, 73.75% (222) of the procedures were successful. Success was related to race ($P=0.036$) with 80.59% (108) success in Caucasians compared to 68.26% (114) in African Americans. Success was also related to sex ($P=.015$), with 82.43% (122) for boys compared to 65.53% (100) for girls. The highest success rate of 87.14% (61/70) was observed for Caucasian boys, followed by 78.2% (61/78) for African American boys, 73.43% (47/64) for Caucasian girls, and 59.55% (53/89) for African American girls. Age, weight, body mass index, casual blood pressure, blood pressures and heart rates throughout the protocol were not correlated with success; however, height ($\rho=.143$; $P=.013$) had a positive correlation. In conclusion, this is an effective protocol to examine the importance of hormonal regulation underlying race differences in the prevalence of hypertension in youth.

016

STRESS-INDUCED PRESSURE NATRIURESIS IS RELATED TO MICROALBUMIN IN AFRICAN AMERICAN YOUTH

C Hanevold; L Ortiz; Y Dong; GK Kapuku; H Zhu; GA Harshfield.

Impaired pressure natriuresis in response to stress (SIPN) is more common in African Americans than Caucasians and has been associated with changes in cardiac structure and function. The purpose of this study was to relate SIPN to microalbumin, a measure of target organ damage to the kidney. The subjects included 276 healthy, normotensive adolescents aged 15 to 18 years including 135 boys, 141 girls, 189 African Americans, and 87 Caucasians. The 5-hour testing protocol included a 1-hour period of mental stress preceded and followed by 2-hour rest periods. Blood and urine samples were collected hourly and hemodynamic measures were obtained at 15-minute intervals. Urinary microalbumin excretion (UAE) was obtained during the first 60 minutes of rest and a log transformation was used to normalize the data. African Americans had greater UAE (2.1 ± 1 vs 2.4 ± 1 mg/min; $P=0.006$) which was accompanied by a smaller stress-induced change in sodium excretion ($U_{Na}V$: 4.5 ± 6 v 3.0 ± 5 mEq/hr; $P=.04$) and lower $U_{Na}V$ during stress (17 ± 7 v 15 ± 7 mEq/hr; $P=0.07$). African Americans also had higher blood pressure throughout the protocol ($P<.01$ for each). Within African Americans, higher UAE was associated with a smaller stress-induced change in $U_{Na}V$ ($\rho=-.125$; $P=.04$) and higher blood pressures throughout ($P<0.05$ for each), ie, an impaired pressure natriuresis relationship. In conclusion, African American youth have greater target organ changes to the kidney that are associated with the pressure natriuresis response to stress.

017

EFFECTS OF CHRONIC STRESS, HOSTILITY AND LIFESTYLE ON RISK FACTORS FOR CARDIOVASCULAR DISEASE AND TYPE 2 DIABETES IN EUROPEAN AND AFRICAN AMERICAN YOUTH

D Ge¹; H Davis¹; L Musante²; FA Treiber¹; H Snieder¹.

¹Georgia Prevention Institute, Medical College of Georgia, Augusta, Georgia; ²Department of Psychology, University of Tampa, Tampa, Florida.

Compared to European Americans (EAs), African Americans (AAs) are exposed to higher levels of chronic stress, which has been related to adverse lifestyle behaviors and higher levels of hostility. These differences may partly explain AAs' higher risk of hypertension and type 2 diabetes. 470 twin pairs from the Georgia Cardiovascular Twin Study (44% AAs; age: 17.6 +/- 3.3 yr) were measured on a wide array of standardized questionnaires and risk factors of cardiovascular disease and type 2 diabetes.

Chronic stress was defined as a three-component solution (negative events, major life events, social status) based on factor analysis of eight environmental stress questionnaires. Hostility was measured with the Cook Medley Hostility Inventory. Factor analysis of a lifestyle questionnaire yielded three factors: consumption of alcohol and cigarettes, physical exercise, TV watching. Risk factors included BMI, waist, left ventricular mass (LVM), stress-induced sodium excretion (Δ UNaV), systolic blood pressure, arterial stiffness, serum lipids, and fasting glucose and insulin.

Hostility and/or lifestyle significantly affect Δ UNaV, LVM, arterial stiffness and components of the metabolic syndrome (Table 1). Ethnic differences in these relationships may contribute to differential risk of hypertension and type 2 diabetes.

Table 1. Correlations (EA/AA)¹ of hostility and lifestyle with risk factors for cardiovascular disease and type 2 diabetes

Δ UNaV	LVM	Arterial stiffness	Glucose	Insulin	-0.10/-0.01	0.04/ 0.13	0.00/0.01	0.25 /0.20	-0.07/ 0.23 *
Hostility									
Smoke/drink					0.10 /0.05	0.08/-0.08	0.08/-0.07	0.29 /0.06	0.25 /-0.20*
Exercise					0.02/ 0.14 *	0.14 /0.06	-0.08/ -0.15	-0.05/0.05	-0.04/0.07

¹ Adjusted for age and gender. Significant correlations in bold.

* Significant ethnic difference in correlations.

018

ASSESSMENT OF CONCORDANCE WITH JNC7 GUIDELINES AND BLOOD PRESSURE CONTROL

RM Peters; R Benkert; K Butler; N Scanlon.

Objective. To examine provider concordance with JNC7 guidelines to determine if compliance with evidence-based guidelines improves blood pressure (BP) control.

Methods. Chart audits were conducted on 145 low-income hypertensive African Americans receiving care in two primary care clinics within an urban university health center. The Hypertension Quality Index was used with total scores reflecting percentage of concordance with guideline recommendations. Quality scores were calculated for patients with at least two visits during a six month period (n=104).

Results. The sample was evenly distributed by gender, age, and education; 45% of the patients met BP goals. Total concordance ranged from 27%–100% (M=77%); mean subscale scores were: 85% for cardiovascular risk assessment; 61% lifestyle intervention; 70% medication management; and 79% follow-up. Only adherence to follow-up visit schedule was significantly related to goal attainment (r=.25, P<.05). There was no significant difference in goal attainment by provider type; nurse practitioners were significantly more likely to document lifestyle interventions ($t_{(102)}=2.70$, P=.008). Men had increased follow-up visits ($t_{(102)}=2.41$, P=.02); and trended to increase goal attainment ($X^2=3.02$, P=.08). Subjects with a body mass index ≥ 35 had significantly higher systolic and diastolic BP.

Conclusion. Fairly high concordance with JNC guidelines was noted, and BP goal attainment in a population of low-income African Americans was greater than national rates. Lower index scores may reflect problems with documentation rather than practice, and may be an issue in a “pay for performance” model of care.

019

THE EFFECTS OF STRUCTURAL AND INTERPERSONAL PROCESS FACTORS ON CLINICAL OUTCOMES AMONG HYPERTENSIVE AFRICAN AMERICANS

RM Peters; R Benkert; R Clark; E Dinardo.

Purpose. To examine the effect of structural and interpersonal aspects of care on satisfaction and blood pressure (BP) outcomes among hypertensive African Americans.

Methods. A causal-modeling design based on Donabedian's Quality Care Framework was used to assess outcomes among 145 urban-dwelling African Americans. Structure variables included clinic type (nurse-managed vs joint-managed) and provider type (nurse practitioner or physician). Process variables included: 1) Racism and Life Experiences Scales; 2) Cultural Mistrust Inventory; and 3) Trust in Physician Scale. Clinical outcomes were the Michigan Academic Consortium Patient Satisfaction Questionnaire, and documented BP.

Results. The sample was well-distributed by gender, age, and educational level. Subjects reported high levels of trust and satisfaction and scored predominantly in the neutral range on cultural mistrust and perceived racism. Structural equation modeling revealed good model fit for hypothesized paths with $X^2_{(16)}=15.84$, $P=.46$, $CMIN/DF=.99$, $CFI=1.00$, $RMSEA=.00$ (90% $CI=.00-.08$). The model accounted for 27% of the variance in satisfaction with care and 9% of the variance in BP. Perceived racism had a significant negative direct and indirect effect on satisfaction and BP. Nurse-managed centers were significantly, positively related to trust and satisfaction.

Conclusion. Providers need to be aware that patients' experiences with racism and cultural mistrust affects trust in the provider, satisfaction with care, and BP outcomes. Further research is needed to determine the structural factors within a nurse-managed clinic that lead to improved trust and satisfaction among patients.

020

MEDITATION LOWERS AMBULATORY BLOOD PRESSURE IN PREHYPERTENSIVE AFRICAN AMERICAN ADOLESCENTSVA Barnes^{1,2}; RA Pendergrast²; HC Davis¹; FA Treiber^{1,2}.¹Georgia Prevention Institute, Department of Pediatrics, ²Medical College of Georgia, Augusta, Georgia.

This study evaluated the impact of a breathing awareness meditation (MED) program on ambulatory systolic blood pressure (SBP) in African American adolescents with high normal SBP levels (≥ 75 th to ≤ 95 th percentiles). This is part of a larger study examining effects of stress reduction on cardiovascular function at rest, during laboratory stress and in the natural environment.

Following three consecutive days of SBP screenings, 66 eligible 9th graders (age mean \pm SD, 15.2 \pm 0.8 years) were randomly assigned by school to either MED (n=19) or health education control (CTL, n=44) groups. The MED groups engaged in 10 min breathing mindfulness meditation sessions at school and at home after school each day for three months. The sessions were conducted during health classes at school by teachers. At pre- and post-evaluation, ambulatory SBP (ASBP) was recorded over 24 hour periods every 30 minutes during school and sleep hours and every 20 minutes during after school hours using Spacelabs 90207 monitors.

Significant changes from pre- to posttest were observed between MED and CTL groups for school-based ASBP (-4.2 vs -1.1 mm Hg, $P=.05$), nighttime ASBP (-4.2 vs -0.9 mm Hg, $P=.007$), and a trend for changes in 24-hour ASBP (-2.7 vs -0.8 mm Hg, $P=.06$).

These findings demonstrate the potential beneficial impact of meditation taught by school health teachers upon BP in the natural environment in youth at risk for development of hypertension.

021
CLINICAL AND ECONOMIC IMPACT OF HYPONATREMIA IN HOSPITALIZED PATIENTS

MA Callahan.

Objectives. Hyponatremia is the most common electrolyte abnormality in general hospital patients, with an incidence of 1%–6% in the United States. A retrospective case-controlled study was conducted to better understand the impact of hyponatremia on hospitalized patients, length of stay (LOS), and associated costs.

Methods. An existing clinical data warehouse for an 811 bed university hospital was used to identify all adult patients from January 2004 to May 2005 having a serum sodium level, at admission, <134 mEq/L. These included patients with a principal diagnosis of neoplasm, hepatic failure, or congestive heart failure (CHF). Controls were selected by matching the principal diagnosis ICD-9 codes with normal serum sodium level admissions (135 mEq/L–145 mEq/L). This generated 2,131 patients with moderate (130–134 mEq/L) or severe hyponatremia (<129 mEq/L) and 7,549 control cases. Univariate and trend tests and multiple regression models were constructed.

Results. Patients included 264 African Americans and Hispanics with severe hyponatremia, 793 with moderate hyponatremia, and 3,714 control cases. Patients with hyponatremia had significantly longer hospital LOS and severe cases of hyponatremia were more likely to be admitted to the ICU. These trends were also reflected in the cost per patient, with median costs of \$15,249 for severe hyponatremia and \$13,353 for moderate cases compared to \$12,439 for normal admissions ($P<.001$).

Conclusions. Patients with hyponatremia experienced increased morbidity and longer LOS compared with controls. The associated cost of care of patients with hyponatremia was also significantly higher.

022
COCAINE USE IN INNER CITY AFRICAN AMERICAN RESEARCH VOLUNTEERS

BW Weston; S Krishnaswami; MT Gray; G Coly; N Fitzgerald; JM Kotchen; CE Grim; TA Kotchen.

Objective. To determine the prevalence of cocaine use and associated risk factors in African Americans volunteering as research subjects for a blood pressure study.

Methods. African Americans recruited from Milwaukee's inner city received \$25 for completing a blood pressure screening protocol. They were offered the opportunity to participate in an additional protocol for \$200, contingent on a negative drug screen (Triage Drug of Abuse Panel).

Results. Of the 274 drug-screened participants, 49% were female, 52% were hypertensive, 37% tested positive for cocaine, 16% tested positive for tetrahydrocannabinol (THC), and 5% tested positive for both. Compared to cocaine-negative subjects, cocaine users were slightly older ($45.7 \text{ years} \pm 0.6\text{SE}$ vs 44.2 ± 0.6 $P=.07$) and had a lower BMI ($26.5 \text{ kg/m}^2 \pm 0.5$ vs 28.4 ± 0.4 $P=.003$). Cocaine users were more likely to be smokers (85% vs 53.2% $P<.0001$), heavier drinkers (63% vs 41% $P=.0004$), unemployed (75% vs 62% $P=.02$), and less likely to have a living mother (51% vs 65% $P=.02$) or living father ($P=.06$). Cocaine use was not associated with sex, history of hypertension, blood pressure level, income, or education. Smokers were nearly 5 times more likely to be cocaine users (OR 4.9, 95% CI 2.62–9.22). Participants with living mothers were 40% less likely to be cocaine users (OR 0.6, 95% CI 0.34–0.98).

Conclusion. A high prevalence of substance abuse was detected among inner city African Americans offered financial incentives for participating in a research protocol. This information may be relevant for designing future clinical trials and drug abuse intervention programs.

023

FACTORS ASSOCIATED WITH HYPERTENSION AMONG A MAYAN POPULATION OF GUATEMALASA Pollard¹; AJ Redwood²; M Mazariegos³; PE Jolly⁴; N Solomons³.¹Emory University, Atlanta, Georgia; ²Johns Hopkins University, Baltimore, Maryland; ³Center for Studies in Sensory Impairment Aging and Metabolism, Guatemala City, Guatemala; ⁴University of Alabama at Birmingham, Birmingham, Alabama.

Background. A nutrition study in Guatemala revealed a growing prevalence of hypertension among an indigenous Mayan population.

Methods. We examined hypertension and several sociodemographic, anthropometric and dietary factors among Mayans to identify the prevalence of possible factors contributing to hypertension.

Results. The 122 study participants (43 men and 79 women) ranged in age from 16 to 92 years. Thirty percent of the population was hypertensive, although only 23.3% self-reported hypertension and only 13% reported taking hypertension medicine. 25% of the hypertensive individuals also had diabetes; 10% of the entire population reported having diabetes. Based on body mass index, 42% of males and 36% of females were overweight and 9% of males and 17% of females were obese. For those aged 35–92 years, a higher percentage of females were obese (33%) compared to males (12%). With regard to dietary habits, 41% of participants reported that they never eat “street/take-out” food while 17% reported that they eat “street/take-out” food ≥ 3 times/week. Although 81% reported not adding salt to prepared meals, 70% reported using bouillon cubes in cooking \geq once/week. The mean systolic blood pressure was higher for females than males. We will examine the association between the different sociodemographic and dietary factors with hypertension in our study sample.

Conclusions. Mayan women have both high systolic blood pressure and high levels of obesity, placing them at high risk for the development of hypertension. Sodium intake from cooking habits may further increase hypertension risk. A high proportion of hypertensive individuals were not aware of their status and were not taking medication.

024

SOCIOCULTURAL DIFFERENCES IN DIETARY HABITS, PHYSICAL ACTIVITY LEVELS, AND BODY WEIGHT IDEALS AMONG AFRICAN AMERICAN AND CAUCASIAN FEMALE CHILDREN

B Nichols; RR Lee.

The prevalence of overweight and obesity in both adults and children in the United States has been steadily climbing over the past 40 years. The prevalence of obesity in African American girls is growing much faster than other sociocultural groups. This study utilized both a parent and child survey to evaluate the sociocultural differences that exist between African American and Caucasian female children. We found that there are significant differences in body weight ideals and physical activity levels as well as dietary trends that exist between these sociocultural groups. African American girls were found to have higher perceived levels of overweight ($P=0.012$) and obesity ($P=0.031$), exercise less ($P=0.031$), watch more television ($P=0.036$), and have heavier perceived healthy body weights ($P=0.071$) than Caucasian girls. African American girls were also found to eat more meat and sweets as well as fewer vegetables when compared to Caucasian girls. Surveying the parents yielded results that show the same patterns exist between African American and Caucasian adults. These patterns demonstrate that sociocultural differences may be learned behaviors that are passed from parent to child and that they are the significant factors underlying the differences in prevalence of overweight and obesity between African American and Caucasian female children.

025

EVALUATION AND MANAGEMENT OF HYPERTENSION IN PREGNANCY

RE Watson; A Azeem; HJ Sauer; DJ DiPette; SW Watts; AFY Chen; GD Fink.

Objectives. Hypertensive disorders are the most common medical complications in pregnancy and among the leading causes of maternal, fetal, and neonatal morbidity and mortality. New data suggest that there are predictors of preeclampsia. We will summarize the diagnosis and appropriate treatment that can save the lives of many mothers and babies.

Methods. We conducted a comprehensive Medline search of the National Library of Medicine. Search terms included “hypertension,” “pregnancy,” “hypertensive crisis,” and “preeclampsia.” Search limits included randomized clinical trials and reviews.

Results. In the US, hypertensive disorders of pregnancy complicate 12% of all pregnancies, and preeclampsia occurs in 5%–8%. These rates are higher for Blacks. Pregnant women with hypertension are at high risk for serious complications. The four hypertensive disorders of pregnancy are: chronic hypertension, preeclampsia-eclampsia, preeclampsia superimposed on chronic hypertension, and gestational hypertension. We define each, describe the treatment, and discuss important prepregnancy assessment issues. We also discuss the pathophysiology of preeclampsia-eclampsia.

Conclusions. Hypertension in pregnancy is a spectrum of entities. Preeclampsia may now be predictable. Pregnant women with mild chronic hypertension and gestational hypertension have a favorable prognosis. Preeclampsia and eclampsia can be dangerous to the mother and fetus. Aggressive monitoring, treatment with appropriate antihypertensive drugs, and timely delivery are the keys to management of preeclampsia and eclampsia.

026

MANAGEMENT OF HIGH BLOOD PRESSURE IN ACUTE STROKE

RE Watson; A Azeem; A Majid; DJ DiPette; SW Watts; AFY Chen; GD Fink.

Objectives. High blood pressure occurs in 75% of all strokes. Management of high blood pressure in acute stroke is controversial. We will summarize the literature on this topic.

Methods. We conducted a comprehensive Medline search of the National Library of Medicine. Search terms included “hypertension,” “stroke,” and “blood pressure.”

Results. In acute stroke, cerebral blood flow (CBF) autoregulation is impaired, therefore CBF becomes very sensitive to changes in systemic blood pressure (BP). Lowering systemic BP can decrease perfusion to the ischemic penumbra, the zone of potentially salvageable, ischemic, brain tissue immediately surrounding the infarct. There probably exists a U-shaped relationship between baseline BP and stroke outcomes. We review the available data on the effects of lowering blood pressure in acute stroke on cerebral blood flow and on stroke outcomes. We also summarize the latest expert panel guidelines for the management of high and low blood pressure in acute ischemic stroke and acute spontaneous intracerebral hemorrhage.

Conclusion. There is no clinically proven benefit for lowering blood pressure in patients with acute ischemic stroke or acute spontaneous intracerebral hemorrhage. All management guidelines must be consensus expert panel reports until large clinical trial data provide clear directions. We review the major ongoing trials that hopefully will give these directions.

027

IMPACT OF MEDITATION ON SODIUM HANDLING IN PREHYPERTENSIVE AFRICAN AMERICAN ADOLESCENTSVA Barnes^{1,2}; GA Harshfield²; FA Treiber^{1,2}.¹Georgia Prevention Institute, Department of Pediatrics, ²Medical College of Georgia, Augusta, Georgia.

This study evaluated the impact of breathing awareness meditation (MED) on sodium handling in prehypertensive African American adolescents (SBP ≥ 75 th to ≤ 95 th percentiles). This evaluation is part of a school-based study examining effects of stress reduction on cardiovascular function at rest, during laboratory stress, and in the natural environment.

Ninth graders (15.2 ± 0.8 mean \pm SD years) were randomly assigned by school to MED or health education control CTL groups. The MED group engaged in 10-min sessions at school and at home after school each day for 3 months. The CTL group was provided health education sessions to match the MED group by time and attention. At pre- and 3-month post-test, overnight samples were collected and analyzed for urinary volume, sodium (UNa^+) and sodium excretion rate (UNa^+V).

After excluding those who were non-compliant and adjusting for baseline values and attendance (MED, $n=11$; CTL, $n=28$), overnight UNa^+V decreased from pre- to posttest in the MED group compared to an increase in CTL (-0.3 ± 4.9 vs 1.1 ± 4.0 mEq/hr, $P < .03$). Overnight UNa^+ level decrease in the MED group was not significant compared to the increase in CTL (-15.8 ± 84.5 vs 17.5 ± 74.9 mEq, $P > .15$), while urinary volume level decreased significantly more in the MED compared to CTL (-54.3 ± 178.0 vs -8.9 ± 208.5 mL, $P < .04$).

These findings in adolescents at risk for development of hypertension are interpreted as suggesting that meditation practice improves sodium handling as estimated by decreased overnight sodium excretion via the pathway of decreased chronic sympathetic activity.

028

ASSOCIATION OF SOLUBLE INTERCELLULAR ADHESION MOLECULE-1 (sICAM-1) WITH CIRCULATING RESISTIN AND LIPIDS IN BLACK AND WHITE TEENAGERS

V Bundy; MH Johnson; P Barbeau.

Development of atherosclerotic lesions begins with leukocyte adhesion to endothelium, a process mediated by adhesion molecules including intercellular adhesion molecules. The purpose of this study was to assess the relationship of sICAM-1 with adipokines, cytokines, and lipids. Black and White 13–19 year olds ($N=564$) were recruited from local high schools. Circulating sICAM-1, resistin, adiponectin, and C-reactive protein (CRP) (enzyme-linked immunosorbent assay), lipids (triglycerides – TG, high-density lipoprotein cholesterol – HDLC, and low-density lipoprotein cholesterol - LDL) (enzymatic methods), and fibrinogen (BBL fibrometer) were assessed from fasting blood samples. Percent body fat (%BF) was assessed by dual-energy x-ray absorptiometry. Associations with sICAM-1 were assessed using linear regressions that included age, race, sex, race*sex, and %BF. sICAM-1 levels were higher in boys than girls (227 ± 73 vs 208 ± 76 ng/mL, $P < .001$), and Whites than Blacks (244 ± 62 vs 186 ± 78 ng/mL, $P < .0001$). Higher sICAM-1 levels were associated with higher resistin ($P < .001$), LDL in Blacks only ($P < .001$), and TG in Black girls only ($P < .05$). sICAM-1 was not significantly associated with any of the other variables (all $P > .05$). However, there was a trend whereby higher sICAM-1 levels were associated with higher CRP ($P = .06$) and fibrinogen ($P = .09$) levels. These results suggest that pro-inflammatory markers may be associated with greater leukocyte adhesion to endothelium in teenagers, particularly Black teenagers. As such, this study may help explain mechanisms by which Blacks are at heightened risk for developing cardiovascular disease.

029**ENDOTHELIN-1 AND ENDOTHELIN RECEPTOR TYPE A GENE VARIANTS AND BLOOD PRESSURE AT REST AND IN RESPONSE TO STRESS IN A MULTI-ETHNIC SAMPLE OF YOUTH**

X Wang; H Xu; H Zhu; H Snieder; Y Dong; G Harshfield; V George; FTreiber.

The purpose of this study was to examine how variants in the endothelin-1 (ET-1) and endothelin receptor type A (ETAR) genes affect systolic blood pressure (SBP) at rest and in response to acute laboratory stress. The study population comprised 541 subjects from two cohorts, one including 349 individuals (mean age, 17.7; 49% Blacks; 51% females) and another including 192 individuals (mean age, 16.6; 55% Blacks; 51% females). BP was measured before and during a competitive video game challenge. Four polymorphisms were genotyped in the ETAR gene (G-231A, T323C, C+70G, C+1222T) and in the ET-1 gene (T-1370G, +138/ex1 del/ins, T-37/in2C, Lys198Asn). Repeated-measure ANOVA with age, gender, ethnicity and cohort as covariates revealed a main effect of ETAR T323C ($P=.005$) and C+1222T ($P=0.04$) polymorphisms on SBP at rest and during stress. Specifically, T323 carriers and C+1222 homozygotes exhibited higher SBP levels. A genotype-by-stress interaction was discovered for ET-1 variants T37/in2C ($P=0.016$) and Lys198Asn ($P=0.009$) with T-37 and Lys198 homozygotes showing greater SBP increases to stress. We also found a significant three-way interaction ($P=.0008$) among ET-1 T-1370G, stress and ethnicity such that White GG homozygotes showed the lowest increase in SBP to stress. These findings indicate that genetic variants in the ET-1 receptor gene contribute to resting BP variations while the ET1 gene seems to play a role in explaining individual differences in BP reactivity to stress.

030**IMPACT OF LIFESTYLE BEHAVIORS AND AFFECTIVE STATES ON AMBULATORY BLOOD PRESSURE AND HEART RATE**FA Treiber^{1,2}; VA Barnes^{1,2}; HC Davis¹.¹Georgia Prevention Institute, Department of Pediatrics, ²Medical College of Georgia, Augusta, Georgia.

Ambulatory blood pressure (BP) and monitoring has been shown to be a better predictor of future cardiovascular morbidity and mortality than casual office BP. Electronic technology (eg, personal digital assistants-PDAs) now enables collection of real-time data, which may shed light on behavior and affect phenotypes responsible for differences in levels of BP. A feasibility study on use of PDAs to evaluate individuals' activities during ambulatory BP monitoring was conducted using two samples (119 Black teenagers, 15.1 yrs [56 M] and 41 young adults, 27 Whites [15 M], 14 Blacks [6 M]). Time-stamped PDA diary entries were matched to ambulatory readings during a waking period within a single 24-hour period. SBP, DBP and HR were all significantly different by body position (all $P_s<.001$; lying down < seated < standing) and talking ($n<y$; all $P_s<.05$) in both groups. SBP also differed significantly by reported use of caffeine ($n<y$) and by reports of being tired ($n<y$; $P_s<.04$) in both groups. Within the teenage group, DBP and HR also differed significantly by reports of being tired ($n<y$; $P_s<.03$). Also within the teenage group HR differed significantly by use of caffeine and exercise ($n<y$; $P_s<.03$). Within the young adult group, SBP differed by feelings of being wronged ($n<y$; $P<.02$) and for DBP there was a significant interaction of race by feelings of anger ($P<.04$) with Whites having slightly higher DBP if angry (87.4 v 89.5) and the reverse for Blacks (88.0 v 86.7). These findings suggest that, in addition to postural position, health-related lifestyle behaviors and affective states (eg, caffeine intake, stress-related coping responses) play a significant role in BP. Such information may be used to better guide individualized intervention programs for BP control.

031

STRESS BLUNTS DIASTOLIC FILLING IN NORMOTENSIVE YOUTH

G Kapuku; H Davis; Y Rogers; J McCracken; L Nelson; J Edry; N McCoy; J Howard; D Gillis; G Harshfield.

Hypertension is associated with left ventricular filling abnormalities found to be predictive of subsequent cardiovascular morbidity and mortality. The effect of daily mental stress on the filling process is not completely understood. We propose that stress-induced hemodynamic arousal will affect diastolic function. Twenty-eight normotensive teenagers (18 males) underwent a 3-hour protocol of one-hour rest, video game stressor and recovery. Mitral inflow and RR interval were recorded every 30 minutes. Blood pressure and heart rate were obtained at 10-minute intervals. Analyses of variance were performed on filling indices using testing conditions and sex as factors.

There was an effect of condition for early (E) to late (A) peak filling ratio; E/A ($P=.045$) and for A ($P=.019$), but not for E. E/A ratio was lower during stress than resting and recovery periods. Increases in E/A were associated with lengthening of RR ($r=.49$, $P=.008$). Increases in A were associated with shortening of RR ($r=-.43$, $P=.023$). Increases in deceleration time were associated with lengthening of RR ($r=.43$, $P=.022$). No significant association was found between hemodynamics and changes in E or isovolumetric relaxation time. Sex by testing condition interaction on A was found such that females had a greater increase in A than males during stress. In conclusion, sex contributes to reduction of diastolic filling during stress, which, in part, accounts for heart rate differences.

032

USE OF A MODIFIED IDF DEFINITION OF METABOLIC SYNDROME AS A PREDICTOR OF IMPAIRED FASTING GLUCOSE IN ADOLESCENTS

M Morris; K Glenn; Y Huang; H Egwuogu; IS Okosun.

No universally accepted definition exists for metabolic syndrome in pediatric populations. This study examines the usefulness of the International Diabetes Federation definition, modified for children, in predicting pre-diabetes as defined by impaired fasting glucose (IFG).

Data were examined from 886 subjects aged 12 to 19 who participated in the 2001–2002 United States National Health and Nutrition Examination Survey. IFG was defined by American Diabetes Association guidelines. Subjects exhibited the pre-metabolic syndrome (pre-Met S) if they had a waist circumference >90th percentile by age/gender and have abnormal values on two or more of the other components of the definition. Logistic regression was utilized to establish associations.

Adjusting for age, gender, race, and health insurance coverage, the presence of pre-Met S was significantly associated (OR=2.21; 95% CI=1.03–4.75) with IFG. This association was considerably stronger in males (OR=2.57; 95% CI=1.07–6.14) than in females (OR=1.08; 95% CI=.14–8.59). The association among Whites (OR=1.14; 95% CI=.23–5.61) was much lower than in other races (OR=3.14; 95% CI=1.26–7.82). The same patterns were exhibited when the cut-points for pre-Met S were reduced to the 75th percentile.

This study demonstrates the usefulness of a pre-Met S state, defined by both the 90th and 75th percentiles, as a predictor of pre-diabetes as defined by IFG. The relationship was particularly strong among minority populations. The results of this study underscore the need to identify the most efficient thresholds for establishing pre-Met S in youth.

033**BEHAVIORAL TREATMENT OF METABOLIC SYNDROME IN OLDER AFRICAN AMERICAN WOMEN
PART 1: BASELINE COMPARISONS AND A COMPOSITE SYNDROME INDEX**

KG Walton; OS Randall; SI Nidich; C Gaylord-King; CL Harris; G Strayhorn; M Rainforth; K Cavanaugh; J Salerno; S Xu; RH Schneider.

Center for Natural Medicine and Prevention, Maharishi University, Fairfield, Iowa; Howard University Hospital, Washington, DC; Morehouse School of Medicine, Atlanta, Georgia.

Obesity and metabolic syndrome are at their highest in older African American and Hispanic American women. Psychosocial stress, lack of exercise, poor diet, and “metabolic stress,” a new concept suggested by our earlier study of the cortisol response to a glucose bolus, may contribute to one or both of these conditions. Part 1 of this study examines the risk factor status of metabolic syndrome and obesity subgroups and evaluates a composite index of metabolic syndrome derived from the standardized values of four factors—central obesity, glucose metabolism, dyslipidemia, and blood pressure. Participants were 200 inner-city African American women (mean age 64y, range 55–85y) with one or more CVD risk factors. Of the total, 128 (64%) were obese (BMI \geq 30.0) and 98 (49%) met the NCEP ATP III criteria for metabolic syndrome. Obese patients had greater disturbances in glucose and lipid metabolism, higher scores on the composite index, and higher intima-media thickness (IMT) of the carotid arteries (a surrogate measure of coronary atherosclerosis) than the non-obese. However, carotid IMT correlated significantly with the index and with systolic blood pressure (SBP), but not with any measure of obesity. Index scores were highly correlated with each of the six risk factor components of the syndrome, with *r* values of .76, .55, $-.54$, .46, .31, and .25 for waist, triglycerides, HDL-C, fasting glucose, SBP, and DBP, respectively. In a multiple regression analysis, all six risk factors were significant predictors of index scores. We conclude that this continuous variable index is a meaningful measure of metabolic syndrome for comparing the effects of different interventions in this high-risk population.

034**BEHAVIORAL TREATMENT OF METABOLIC SYNDROME IN OLDER AFRICAN AMERICAN WOMEN
PART 2: A RANDOMIZED TRIAL OF TRANSCENDENTAL MEDITATION AND HEALTH EDUCATION**

KG Walton; OS Randall; C Gaylord-King; SI Nidich; CL Harris; G Strayhorn; M Rainforth; K Cavanaugh; J Salerno; S Xu; RH Schneider.

Center for Natural Medicine and Prevention, Maharishi University, Fairfield, Iowa; Howard University Hospital, Washington, DC; Morehouse School of Medicine, Atlanta, Georgia.

The stress and lifestyle factors contributing to metabolic syndrome and obesity may be reversible through behavioral interventions. Part 2 of this 2-part presentation examines the effects of two behavioral interventions on a composite index of metabolic syndrome (described in Part 1) and on the risk factor components of the syndrome. Participants were all of the 200 African American patients in Part 1 who met the NCEP ATP III criteria for metabolic syndrome except the 17 hypertensives whose BP was well controlled with medications. Measurements were taken before and one year after randomly assigning patients either to the standardized Transcendental Meditation (TM) program, or to a time-and-attention-matched health education (HE) program including extensive dietary and training exercises. The decrease of the index from pretest to posttest was highly significant in each group ($P < .001$ for TM and $P < .0001$ for HE). The two groups did not differ significantly in their mean reduction of the index or on reductions of individual factors. Both groups also declined significantly on many individual factors. Among the six variables used to determine metabolic syndrome status, within-group improvements for the TM group were (mean changes, *P* values): SBP (-5.3 mm Hg, .02), DBP (-4.2 mm Hg, $< .007$), triglycerides (-31.2 mg/dL, $< .04$), HDL-C ($+3.5$ mg/dL, $< .04$), and waist circumference (-2.0 cm, $< .08$). For the HE group the declines were: SBP (-8.3 mm Hg, .02), DBP (-4.1 mm Hg, $< .05$), triglycerides (-21.8 mg/dL, .05), and fasting glucose (-14.8 mg/dL, $< .007$). Carotid artery intimal-medial thickness did not change significantly, in contrast to the usual increase observed in such high-risk populations over a one-year period. These results indicate significant benefits for both of these behavioral interventions in reducing CVD risk in this high-risk population.

035

DIFFERENCES IN PRESCRIBING PATTERNS BETWEEN FRENCH CARIBBEAN AREAS AND CONTINENTAL FRANCE: DO THEY EXIST? ARE THEY JUSTIFIED?J Inamo¹; V Zizka¹; M Bolo-Blaquiere¹; C Platon¹; T Lang².¹University Hospital Fort de France; ²INSERM, U 558, Toulouse, France.

Introduction. There is no consensus for the pharmacological treatment of hypertension in Afro-Caribbean and Afro-American populations. Knowledge of clinical practice in this setting remains poor. In this study were compared antihypertensive medications between continental France and French Afro-Caribbean regions.

Methods. Cross-sectional analysis of two work-site cohort studies held in French Caribbean regions and continental France. Analysis of self-declared prescribing patterns of 631 treated hypertensive subjects out of 6113 Afro-Caribbean workers, and 1713 treated hypertensives out of 29,515 French workers. Blood pressure was assessed with an automatic device during two separate visits for each participant.

Results. Age-adjusted prevalence of hypertension was higher in Caribbean areas compared to continental French regions (men: 19.5% vs 16.1%, women: 18.9% vs 9.4%, all $P < .01$). Caribbean women had higher treatment rates (14.1 vs 5.9%, $P < .001$) and a significant three times higher rate of complex combination of medications when compared to French women. As a result, they had better blood pressure control rates (61.3% vs 51.6%, $P < .01$) compared to French women. Differences in prevalence of hypertension, blood pressure control, treatment rate and complex combinations, could not be explained by differences in age, obesity or education level. Differences between Caribbean and French male workers were less obvious. Caribbean men and women were more likely to receive diuretics than their French counterparts (OR=1.7 for women and 1.4 for men, all $P < .01$ in multivariate analyses).

Conclusion. Unexpected higher blood pressure control rate was found in Caribbean workers compared to French workers and may have been driven by quantitative and qualitative differences in pharmacological management.

036

FIT AND FAITHFUL: EVALUATION OF A CHURCH-BASED FITNESS PROGRAM

RR Lee; J Landry.

Center For Healthy Communities, University of South Alabama.

Background. The overall health of the American population has improved over the past decades, but not all Americans have shared equally in these improvements. Many African American's health status lags behind other ethnic groups in America. Among the complex reasons for these health disparities are lower levels of physical activity and obesity. These factors are major risk factors for debilitating diseases such as hypertension, diabetes, and cardiovascular disease.

Objective. The purpose of this study was to develop and implement a church-based healthy lifestyle 12-week intervention.

Methods. Participants, ages 35–65, were recruited from four different predominately African American churches (approximately 20 per church). Intervention included five healthy living lectures and introduction to different physical activities. Measurement included a knowledge and attitude questionnaire and pre/post intervention self-reported daily pedometer readings.

Results. 70 participants were recruited into the study (44 women). There was a statistically significant increase in pedometer readings post intervention. Questionnaire data indicated major misconceptions regarding healthy eating, physical activity and obesity knowledge

Conclusions. These findings suggest that African American churches are feasible venues for conducting health promotion programs. These programs have the potential for changing behaviors related to physical activity and obesity.

037

BARRIERS TO HEALTH CARE AMONG PATIENTS ADMITTED TO THE EMERGENCY DEPARTMENT FOR AMBULATORY CARE SENSITIVE CONDITIONS: A PILOT STUDY

M Arrieta; A Mularz.

Center for Healthy Communities, University of South Alabama.

Background. Hospitalizations due to ambulatory care sensitive conditions (ACSC) suggest poor access to health care. Approximately 60.5% of Emergency Department (ED) encounters at the University of South Alabama Medical Center (USAMC) are ACSC, manageable in primary care (PC) settings. It is unclear why USAMC ED is utilized for ACSC by disadvantaged individuals.

Objectives. This pilot investigation seeks to identify barriers to PC access and evaluate a survey instrument.

Methods. Thirty participants over 18 years of age were recruited through the ED based on five ACSC criteria: asthma, hypertension, cellulitis, diabetes mellitus, and pelvic inflammatory disease. The data collection survey was tested and edited.

Results. 77% of patients had a usual source of care (USC). Reasons for seeking care at the ED included: professional referral (27%), satisfaction of care (17%), location (17%), and lack of health insurance (17%). 70% knew other healthcare sources. Of those, 73% named another hospital and 20% named PC centers. Financial circumstances were identified as a major barrier to accessing health care.

Conclusions. Although subjects reported a non-ED USC and identified their regular physician, they accessed the ED for ACSC's. ED use per professional referral infers PC settings may be unwilling or unable to care for this population. A larger study is currently in progress to further investigate these findings.

038

ZIP CODE-LEVEL MORTALITY AS LOCAL HEALTH STATUS INDICATOR

MI Arrieta; HL White.

Center for Healthy Communities, University of South Alabama.

Background. Professionals addressing health disparities lack health-related data specific to local jurisdictions. Zip code mortality data can be used to provide health indicators of small areas.

Objectives. We sought to calculate cause-specific mortality rates for two zip-code defined areas, describe their socio-economic context, and compare their mortality experience.

Methods. Seventeen zip codes were collapsed into two groups: study (SAP, $\geq 20\%$ living below poverty) and comparison area populations (CAP, $< 20\%$ living below poverty). We established the socio-economic profile for the areas using census data. We calculated cause-specific mortality rates using the aggregated zip code population as the denominator, and cause-specific number of deaths as the numerator. The age-structure for the populations was evaluated and supported direct comparison of crude, rather than age-adjusted, mortality rates.

Results. Census-based indicators of area deprivation (eg, percent living in poverty, percent with less than high school diploma, percent unemployment) were higher in the SAP. Death rates from 16 of 22 conditions considered were at least 40% higher in the SAP. Excess risk of death due to human immunodeficiency virus (RR=3.7), homicide (RR=3.4), kidney diseases (RR=2.6), prostate cancer (RR=2.1), hypertensive heart disease (RR=2.0), diabetes mellitus (RR=1.7), essential hypertension (RR=1.6), cerebrovascular disease (RR=1.6) and colorectal cancer (RR=1.5) was evident for the SAP.

Conclusions. Zip code-level mortality rates can establish health indicators of small geographical areas and support evaluation of interventions.

039

CLINICAL OUTCOMES BY RACE IN PARTICIPANTS WITH THE METABOLIC SYNDROME IN THE ANTIHYPERTENSIVE AND LIPID-LOWERING TREATMENT TO PREVENT HEART ATTACK TRIAL ON DOXAZOSIN VS CHLORTHALIDONE

JT Wright; BR Davis; J Haywood; PEinhorn.
ALLHAT Collaborative Research Group.

Introduction. Antihypertensive drugs with favorable metabolic effects are recommended for first-line therapy in hypertensives with the metabolic syndrome (MetS). Alpha-blockers have the most favorable metabolic profile of all antihypertensives. This randomized, double-blind, active-controlled, 4-arm, outcome trial allowed assessment of first-step drug therapy with an alpha-blocker compared with thiazide-type diuretic in Black (n=7,373) and non-Black (n=14,025) persons with/without MetS.

Methods. ALLHAT was a practice-based study of hypertensive participants age >55 years with at least one other risk factor for coronary heart disease (CHD). Interventions included chlorthalidone (C) or doxazosin (D), plus other agents to reach blood pressure goal. The primary outcome (PO) was fatal CHD or non-fatal MI. MetS was defined as 2 or more of the following: fasting glucose ≥ 100 mg/dL, BMI ≥ 30 , fasting triglycerides ≥ 150 mg/dL, HDL cholesterol < 40 mg/dL (men)/ < 50 mg/dL (women).

Results. In participants with MetS (n=13,209) randomized to D compared with C, BP was 3.6/0.3 and 1.2/-0.8 mm Hg at 36 months for Blacks and non-Blacks, respectively. However serum glucose, cholesterol, and incident diabetes averaged 4.3 mg/dl, 9.5 mg/dl, and 1.8% lower in the doxazosin vs. chlorthalidone groups overall. The relative risks [(RR) (95% CI)] for D vs. C in Blacks and non-Blacks for the PO was 1.18 (0.87-1.58) and 1.09 (0.92-1.29) respectively. RR for heart failure (HF) was 1.87 (1.43-2.44) and 1.86 (1.55-2.23); stroke 1.49 (1.09-2.03) and 1.20 (0.95-1.53); and combined CVD (CCVD) 1.37 (1.19-1.58) and 1.18 (1.08-1.30), respectively. There were no treatment differences for ESRD or mortality. In Blacks and non-Blacks without MetS (n=8,189), RR for D compared to C were significant only for HF (1.83, 1.37-2.44 and 1.85, 1.45-2.36) and CCVD (1.20, 1.04-1.39 and 1.14, 1.02-1.27).

Conclusion. Despite a more favorable metabolic profile, higher CVD rates were seen with alpha-blockers vs diuretics in Black and non-Black hypertensives with the MetS.

040

COMPARISON OF BLOOD PRESSURE RESPONSE TO ACUTE PHYSIOLOGICAL AND PSYCHOLOGICAL STRESSORS IN AFRICAN AMERICANS

M McClelland; S Yancey; R Abou-Chacra; PPetrusi; C Somasundaram; M Pointer.

North Carolina Central University, JLC Biomedical/Biotechnology Research Institute, Department of Biology and School of Business, Durham, NC.

With increasing evidence that blood pressure (BP) response to acute psychological stressors may be better predictors of cardiovascular risk and hypertension development than physiological stressors, the use of physiological stressors has been brought into question. To determine whether or not a psychological and physiological stressor will both identify the same individuals as having increased cardiovascular reactivity, we compared the BP response to anger recall (AR, psychological stressor) and cold pressor test (CP, physiological stressor) in 171 normotensive African Americans (109 females and 62 males; 18-60 years old). Average systolic arterial pressure (SP) was measured at baseline and AR and CP testing. The AR stressor consisted of recalling and verbally describing an angry event and the CP test consisted of immersion of the hand in ice-cold water for 90 seconds. The change in SP was calculated as peak SP minus the average baseline SP. While the mental recall was not associated with a rise in SP, the verbal description was associated with a rise in SP that was accompanied by a rise in HR. The SP increase during the CP test was also associated with a rise in HR. There was a significant correlation between the CP test SP response ($P < .005$) and verbal description but not with mental recall ($P = NS$). However, when the change in SP was compared between AR verbal and CP, there was no significant correlation ($P = NS$). These data suggest that psychological stressors and physiological stressors do not identify the same individuals as having increased cardiovascular reactivity.

041
DISPARITIES IN PERSISTENCE ON COMBINATION ANTIHYPERTENSIVE THERAPY IN A MEDICAID POPULATION

Shaya FT^{1,2}; El Khoury AC¹; Fatodu H³; Garber H³; Zacker C⁴; Frech-Tamas F⁴; Ngan G⁴.

¹Department of Pharmaceutical Health Services Research, University of Maryland School of Pharmacy, Baltimore, Maryland;

²Department of Epidemiology and Preventive Medicine, University of Maryland School of Medicine, Baltimore, Maryland; ³Johns Hopkins Health Care LLC, Baltimore, Maryland; ⁴Novartis Pharmaceutical Corporation, East Hanover, New Jersey.

Objective. To identify predictors of persistence on antihypertensive combination drugs in a Medicaid population.

Methods. Retrospective medical and pharmacy claims data analysis for Maryland Medicaid patients who were prescribed combinations of ACEI/HCTZ or ACEI/CCB during the period of 1/1/2002–12/31/2004. Inclusion: continuously enrolled patients with at least one month of follow up. Exclusion: use of combination antihypertensive drugs between 1/1/2002 and 6/30/2002 (to define incident cohort). Non-persistence was defined as the failure to refill a prescription within 15 days of the expiration of the last prescription. Race-specific persistence rates were adjusted for age, gender, comorbidities, and use of either single pill or two concurrent pill combination therapies.

Results. Total of 1701 patients, 61.85% females, 66.84% African Americans, median age of 51 years, 40.09% on single pill combination therapy, 72.07% started on ACEI/HCTZ, 17.52% persistent. Patients less than 40 years of age (HR=1.26, P = .01, CI 1.06–1.50), African Americans (HR=1.21, P=.003, CI 1.06–1.37), and those who have a higher comorbidity index (HR=1.04, P = .03, CI 1.00–1.08) are more likely to discontinue than patients older than 60 years of age, non-Blacks, and those with lower comorbidity index respectively. Those on single pill combination drugs (HR=0.82, P = .0005, CI .74–.92) are less likely to discontinue their therapy.

Conclusion. There exists a significant difference in persistence rates within race categories. African Americans are more likely to discontinue their therapy when compared to others. Higher persistence rates may enhance cardiovascular disease management outcomes in African American populations.

042
CME PROGRAMS IMPROVE PATIENT ENROLLMENT IN HYPERTENSION STUDY

E Saunders; FT Shaya; CD Mullins; W Johnson; C Foster; D Howard; A Laird; F Larkins; B Weaver; R Winston; A Gu; N Samant.

Study Purpose. The purpose of this study is to track and assess a Continuing Medical Education (CME) program for physicians enrolled in the Baltimore Partnership Programs to Reduce CVD Disparities, with regard to physician perceived benefit and patient enrollment.

Methods. The hypertension arm of the study has enrolled 10 physicians and 302 patients to date. Per protocol, half of these physicians participate in a CME program offered every other month: a series of interactive lectures on JNC VII guidelines by the principal investigator Dr. Elijah Saunders, followed by a session on research methods. Following each lecture, physicians complete a feedback survey as well as knowledge tests. Physicians in the control group do not participate in the CME program.

Results. Intervention and control physicians are mostly African American (57% and 60%), female (71% and 80%), 47 and 49 years old, respectively. Physicians generally perceive value in the CME programs, as more than 80% of physicians indicated that high satisfaction with the information scope and use of information presented, and value in improving professional effectiveness. Enrollment is higher for patients of intervention physicians (252) than those of control physicians (50).

Conclusions. Intervention physicians report satisfaction with the CME program and tend to enroll more patients than physicians in the control group. These results suggest that in addition to their intended effect on adherence to JNC VII guidelines, CME programs may help engage physicians in the study, inciting them to promote patients' interest in the study and patient enrollment.

043

CONTROLLING DIABETES THROUGH PATIENT EDUCATION

E Saunders; FT Shaya; R Winston; N Samant; W Johnson; CD Mullins; C Foster; A Gu; D Howard; A Laird; FLarkins; B Weaver.

Study Purpose. To assess the impact of patient education on hemoglobin A1C (HbA1C) control in diabetes patients.

Methods. The study enrolled 77 diabetes patients, a subset of those enrolled in the Baltimore Partnership Programs to Reduce CVD Disparities, who completed a first follow-up cycle. Patients and their physicians were randomly assigned to either intervention or control group, in a factorial design. Intervention patients attended quarterly counseling sessions, and intervention physicians received bi-monthly educational sessions. Control patients received standard care. HbA1C measured at baseline was repeated every six months. Multiple regression models, adjusted for demographics, were used to assess the effects of patient and physician intervention on HbA1C change, defined as change of HbA1C from baseline.

Results. The majority of study subjects were African American (96%), female (61%), average age 61. Mean HbA1C was 9.14 at baseline and 8.6 at first follow-up; mean HbA1C reduction was 0.47. HbA1C drop is larger in intervention patients whose physicians are in the intervention group, than those whose physicians are in the control group. The drop is also larger in intervention than in control patients, even as their physicians are in the control group. Males, non-smokers, and patients of intervention physicians had a larger drop in HbA1C levels. Note: The study is powered to show significant estimates at the end of 2 years of enrollment.

Conclusions. In this patient sample, we see trends of patient and physician education on HbA1C control. These results may help guide future patient interventions supporting diabetes disease management programs.

044

IMPACT OF PATIENT EDUCATION ON BLOOD PRESSURE CONTROL

E Saunders; FT Shaya; A Gu; CD Mullins; W Johnson; C Foster; D Howard; W Johnson; A Laird; FLarkins; B Weaver; R Winston.

Study Purpose. The purpose of this study is to assess the impact of patient education on blood pressure control in hypertension patients.

Methods. The study is composed of 50 hypertension patients, a subset of those enrolled in the Baltimore Partnership Programs to Reduce CVD Disparities project, who completed a first follow-up cycle. Patients and their physicians were randomly assigned to either intervention or control group, in a factorial design. Intervention patients attended quarterly counseling sessions, and intervention physicians received bi-monthly educational sessions in JNCVII guidelines and research methods. Control patients and physician received no intervention. Systolic Blood pressure (SBP) was measured at baseline, upon enrollment and three months thereafter, when the intervention of the first period was completed. We used multiple regression models to assess the effects of interventions on blood pressure change, defined as percent of SBP reduction from baseline. The models were adjusted for physician intervention (yes, no) and sociodemographic variables.

Results. The majority of study subjects were African American (79.2%), females (61.2%), and younger (<65) patients (71.4%). Mean pre- and post-intervention blood pressures were 138/82 mm Hg and 134/82 mm Hg, respectively. The mean SBP reduction was 4.2 mm Hg. The SBP reduction is significantly larger in the intervention group, compared to control group ($p=0.0008$).

Conclusions. In this patient sample, the impact of patient education on blood pressure control is highly significant. These results may help guide future patient interventions supporting hypertension disease management programs.

045

STRESS LOWERS ESTROGEN LEVELS IN AFRICAN AMERICAN BUT NOT CAUCASIAN TEENS

M Castles; D Gillis; K Norland; L Mackey; G Harshfield.
Georgia Prevention Institute, Medical College of Georgia.

Very little attention has been given to the racial differences in the sex hormonal response to stress. Our purpose was to examine racial differences in estrogen levels in response to stress and relate these to blood pressure (BP) patterns. Subjects were 48 teenagers (30 Caucasian/18 African American) who participated in a 3-hour stress protocol consisting of playing competitive video games for 1 hour. This was preceded and followed by 1-hour rest periods. Blood samples were collected hourly and BP was taken at 15-minute intervals. African American and Caucasian subjects showed similar BP response patterns ($P=.001$ for both), with significant increases from pre-stress to stress ($P=0.02$ for both) and decreases from stress to post-stress ($P=.001$ for both). However, the estrogen response pattern differed by ethnic group ($P=0.02$). African Americans showed a significant change in estrogen across the conditions ($P=.03$), with a significant decrease from pre-stress to stress (37 ± 30 to 33 ± 28 pg/mL; $P=.05$) followed by an increase from stress to post-stress (38 ± 33 pg/mL; $P=.06$) that approached significance. In contrast, the effect of condition was not significant for the Caucasian subjects. These results show that stress lowers estrogen levels in African Americans but not Caucasians despite similar BP response patterns. It is also unclear as to which is the adaptive response pattern. However, this could be another contributing factor to racial differences in cardiovascular disease.

046

PREDICTORS OF BLOOD PRESSURE RESPONSE TO ANGIOTENSIN RECEPTOR BLOCKER/DIURETIC COMBINATION THERAPY: A SECONDARY ANALYSIS OF THE IRBESARTAN/HYDROCHLOROTHIAZIDE (HCTZ) BLOOD PRESSURE REDUCTIONS IN DIVERSE PATIENT POPULATIONS (INCLUSIVE) STUDY

E Saunders¹; G Cable².

¹Department of Cardiology, University of Maryland School of Medicine, Baltimore, Maryland; ²Department of Biostatistics, sanofi-aventis, Bridgewater, New Jersey.

Objective. To determine whether selected baseline demographic and clinical variables from the INCLUSIVE trial are predictors of blood pressure lowering response with an angiotensin receptor blocker (ARB)/diuretic treatment regimen.

Methods. INCLUSIVE was an 18-week, multicenter, open-label, single-arm study evaluating the efficacy and safety of irbesartan/HCTZ in a broad range of adult hypertensive patients, with moderate systolic blood pressure (SBP) uncontrolled on monotherapy. In this secondary analysis, a statistical model was constructed with available data from the intent-to-treat population ($n=736$) to identify the demographic and clinical factors that explain changes in SBP from baseline to week 18 following irbesartan/HCTZ combination therapy.

Results. Model results indicated increased change in SBP from baseline to week 18 and baseline SBP with higher baseline SBP (a 10 mm Hg increase in baseline SBP was associated with an average decrease of 9.3 mm Hg; $P<.0001$), female gender (3.0 mm Hg greater reduction vs male; $P=.002$), diabetics (5.0 mm Hg vs non-diabetics; $P<.0001$), and concomitant statin use (2.1 mm Hg vs non-statin use; $P=.03$). On average, the mean SBP reductions for diabetic females were reduced by 3.4 mm Hg relative to diabetic males ($P=.04$). Longer duration on therapy resulted in reduced SPB at week 18 ($P=.0001$). African American race was not a significant predictor of SBP changes from baseline to week 18.

Conclusions. INCLUSIVE demonstrated that irbesartan/HCTZ was effective and safe in a broad range of patients uncontrolled on monotherapy. Data from the current analysis suggest significant correlation may exist between certain baseline clinical/demographic characteristics and the extent of therapeutic response with irbesartan/HCTZ therapy.

047

A COMPARISON OF GOAL ATTAINMENT BETWEEN AFRICAN AMERICANS AND NON-AFRICAN AMERICANS TREATED WITH AMLODIPINE/ATORVASTATIN SINGLE-PILL THERAPY: A POST-HOC COMPARISON OF THE CAPABLE AND THE GEMINI TRIALSJM Flack¹; R Victor²; K Watson³; K Ferdinand⁴; E Saunders⁵; L Tarasenko⁶; MJ Jamieson⁶; F Sun⁶; P Bruschi⁶.¹Wayne State University Health Center, Detroit, MI, USA; ²University of Texas Southwestern Medical Center, Dallas, TX, USA;³UCLA Medical Center, Los Angeles, CA, USA; ⁴Association of Black Cardiologists, Atlanta, GA; ⁵University of Maryland, Baltimore, MD, USA; ⁶Pfizer Inc, New York, NY, USA.

Objectives. To compare goal attainment in African Americans and non-African Americans treated with amlodipine/atorvastatin single-pill therapy.

Methods. CAPABLE and Gemini were open-label, non-comparative, multicenter trials investigating the efficacy/safety of amlodipine besylate/atorvastatin calcium single pill in patients with concomitant hypertension and dyslipidemia. Both trials had the same entry criteria except that CAPABLE enrolled only African Americans whereas only non-African-American patients from Gemini (90.1% of the original study) were included in this analysis. Eight dosage strengths of amlodipine/atorvastatin single pill (5/10, 5/20, 5/40, 5/80, 10/10, 10/20, 10/40, 10/80 mg) were administered in both trials as initial, add-on, or substitution therapy and electively titrated to improve blood pressure (BP) and lipid control. The primary efficacy assessment was the percentage of patients attaining both BP (CAPABLE, JNC 7; Gemini, JNC 6) and low-density lipoprotein cholesterol (LDL-C; NCEP ATP III) therapeutic goals (for differences between these trials).

Results. At endpoint, 48.3% of African Americans vs 58.5% of non-African Americans reached both BP and LDL-C goals (vs 0.8% and 0.6% at baseline). 56.8% of African Americans vs 66.0% of non-African Americans reached BP goals (vs 1.4% and 2.2% at baseline). LDL-C goals were reached by 73.7% of African Americans vs 82.7% of non-African Americans (vs 28.5% and 38.9% at baseline).

Conclusions. Amlodipine/atorvastatin single pill improves attainment of BP/LDL-C goals in African Americans and non-African Americans. Goal attainment was lower in African Americans; a number of factors may have contributed to this.

048

AMLODIPINE/ATORVASTATIN SINGLE PILL IS AN EFFECTIVE AND WELL-TOLERATED TREATMENT FOR HYPERTENSION AND DYSLIPIDEMIA IN AFRICAN AMERICANS: THE CAPABLE TRIALJM Flack¹; R Victor²; K Watson³; K Ferdinand⁴; E Saunders⁵; L Tarasenko⁶; MJ Jamieson⁶; F Sun⁶; P Bruschi⁶.¹Wayne State University Health Center, Detroit, MI, USA; ²University of Texas Southwestern Medical Center, Dallas, TX, USA;³UCLA Medical Center, Los Angeles, CA, USA; ⁴Association of Black Cardiologists, Atlanta, GA; ⁵University of Maryland, Baltimore, MD, USA; ⁶Pfizer Inc, New York, NY, USA.

Objectives. To investigate amlodipine/atorvastatin single pill therapy in African Americans who have the highest cardiovascular (CV) death rate of any ethnic group in the United States.

Methods. CAPABLE was a 20-week, open-label, multicenter trial of the efficacy and safety of amlodipine/atorvastatin single pill in African Americans with hypertension and dyslipidemia (n=499). Eight dosage strengths of amlodipine/atorvastatin single pill (5/10, 5/20, 5/40, 5/80, 10/10, 10/20, 10/40, 10/80 mg) were administered as initial, add-on, or substitution therapy and electively titrated to improve blood pressure (BP) and low-density lipoprotein cholesterol (LDL-C) control. The primary efficacy assessment was the percentage of patients attaining both BP (JNC 7) and LDL-C (NCEP ATP III) goals. Secondary efficacy endpoints included mean change from baseline in BP and LDL-C levels. Results for LDL-C and goal attainment are from patients with uncontrolled LDL-C at baseline (n=346).

Results. At baseline, mean (\pm SD) BP was 147.4 \pm 11.7/91.2 \pm 7.9 mm Hg and LDL-C was 157.3 \pm 34.1 mg/dL. The mean change from baseline in BP was -17.5 \pm 14.8/-10.1 \pm 8.7 mm Hg and LDL-C was reduced by -30.9% \pm 20.0. At endpoint, 43.6% of patients reached both their BP and LDL-C goals. Only 6.8% of patients discontinued due to adverse events (AEs). Overall, most AEs were mild to moderate in intensity.

Conclusions. Amlodipine/atorvastatin single pill reduced BP and LDL-C levels, improved goal attainment, and was well-tolerated in African Americans. It therefore constitutes a promising approach for CV risk reduction in this high-risk population.

049

I KNOW IT WAS MEANT FOR ME: USING STORYTELLING TO PROMOTE BEHAVIOR CHANGE

AA Barnes; J Banks-Wallace.

The purpose of this poster is to examine storytelling as a strategy to promote healthy behavior change among African American women with hypertension.

Womanist theory and social cognitive theory provided the framework for using storytelling as a means to create a safe space for woman to explore alternative behaviors to promote their cardiovascular health, taking into consideration the context of their lives.

This 12-month group intervention combined a 3-hour monthly meeting with a home-based walking program. A pre/post single group design with a 6-month follow-up was used to collect outcome data. Qualitative data for this poster was audio-taped during the debriefing at the first and sixth month sessions. Narrative analysis of transcripts was completed using a technique that was developed by the PI.

Our sample consisted of 21 sedentary hypertensive African American women 25–68 years old. Narrative analysis revealed four substantial ways storytelling promoted behavior change including: 1) enriching self-reflection; 2) exposing the context of women's individual and collective lives; 3) creating a sisterhood; and 4) affirming healthy behavior change. Storytelling was a powerful strategy for promoting healthy behavior change.

050

NAD(P)H OXIDASE P22 PHOX GENE C242T POLYMORPHISM, NITRIC OXIDE PRODUCTION, SALT SENSITIVITY AND CARDIOVASCULAR RISK FACTORS IN HISPANICS

AM Castejon¹; J Bracero¹; IS Hoffmann²; AB Alfieri²; LX Cubeddu^{1,2}.

¹College of Pharmacy, Nova Southeastern University, Florida, USA; ²School of Pharmacy, Central University of Venezuela.

Mutations in the NAD(P)H oxidase gene may be associated with abnormal superoxide generation, nitric oxide (NO) availability and cardiovascular diseases. We investigated the prevalence of the NAD(P)H oxidase p22phox gene C242T polymorphism, and its possible association with blood pressure (BP), NO production, salt sensitivity and cardiovascular risk factors in Hispanics.

Genotype frequencies were as follows: CC, 52.9%, CT, 40.3%, and TT, 6.8%. The presence of the T allele was not associated with cardiovascular risk factors. BP reactivity to salt was increased in women, but not in men with the T allele. NO metabolite excretion was markedly decreased in the TT genotype (CC: 868±79, CT: 839±75, TT: 534±78 mmoles/day; P<0.05). Women carrying the T allele had the lowest levels of NO metabolites.

In conclusion, the prevalence of the NAD(P)H oxidase p22phox gene C242T polymorphism in Venezuelans was comparable to that of Caucasians, but different from that of Chinese and Japanese. Although the T allele was not associated with cardiovascular risk factors, hyperinsulinemia or hypertension, in women, it appeared to be a genetic susceptibility factor for salt sensitivity. Our results suggest that the p22phox gene may play a role in the genetic control of NO levels.

051

DIPPING STATUS OF BLACK HEALTHY YOUNG ADULTS IS NOT DETERMINED BY DIET OR URINARY CATION EXCRETION

EB Ripley; RE Toman; DA Sica.

Virginia Commonwealth University, Richmond, VA.

A single ABPM inconsistently predicts dipping status. The current study evaluated diet and urinary cation excretion in persistent dipper or nondipper Black nonhypertensives, age 18–35 years. 81 individuals had two 24-hour ABPMs performed. Using a dipping definition of >10% overnight drop in blood pressure, 34 were consistently dippers and 27 were consistently nondippers. A three-day diet log was performed and split day-night urines were collected during the ABPM monitoring. Logistic regression was used to model diet and urinary cation excretion. Dipping status was not determined by Kcals, fat, potassium, sodium, calcium, magnesium, or caffeine intake. Urinary excretion of sodium, potassium, norepinephrine and epinephrine as total, day, or night excretion did not determine dipping status. Data are presented as mean+SD.

	Gender	Age (yrs)	% Dip	Weight (kg)	BMI	Waist (cm)	
Dipper	27F/7M	22.3+4.2	13.6+1.9	75.5+19.0	27.0+5.7	81.4+11.7	
Nondipper	17F/10M	21.2+3.7	6.4+2.0	78.2+21.7	27.3+7.5	81.4+13.2	
Three-day diet analysis							
	Kcals	Fat (g)	Potassium (mg)	Sodium (mg)	Magnesium (mg)	Calcium (mg)	Caffeine (mg)
Dipper	1926.7+562.1	75.6+25.6	1786.7+538.7	3041.0+1009.7	187.8+54.8	657.3+310.6	53.1+103.6
Nondipper	1899.3+57.3	75.4+28.3	1961.2+719.0	3445.0+1171.5	205.4+64.0	658.0+272.1	27.7+33.0
24-hour urinary excretion							
	Sodium (mmol/min)	Potassium (mmol/min)	Norepinephrine (ng/min)	Epinephrine (ng/min)			
Dipper	0.23+0.09	0.06+0.02	0.009+0.006	0.06+0.03			
Nondipper	0.22+0.08	0.06+0.02	0.008+0.006	0.05+0.02			

When carefully determined, dipping status cannot be predicted by diet, body habitus or urinary excretion. Unlike past studies where reduced dietary K⁺ and increased caffeine intake predicted nondipping status such was not the case in these subjects.

052

MODERN DAY “EVOLUTION” AND CARDIOVASCULAR DISEASE: SURVIVORS OF STARVATION FOR CALORIES AND SALT AND THE INCREASED RISK OF HIGH BLOOD PRESSURE AND ITS CONSEQUENCES

CE Grim.

A review of the history and epidemiology of four major human population tragedies has been conducted. The physiological forces that likely selected those who survived were compared and the epidemiological consequences in the survivors today tabulated. The populations included the descendents of: the African Slave Trade in the Western Hemisphere; the Irish migrants to the US during the Potato Famine; migration of Indian indentured workers to the Caribbean during severe famines in India and the Siege of Leningrad. A common feature documented in the descendents of these forces is higher blood pressure and an increased risk of cardiovascular disease.

Starvation places severe stress on the body's ability to conserve salt thru the process of starvation natriuresis which is amplified in a hot environment. Also common to these histories was lack of salt due to its high cost and poverty (India/Ireland) or severe limitation of access to salt (Slavery and Siege). The ensuing hypovolemia and hypotension lead to reduced sweating and death from heat stroke characterized by high fever – a common cause of death in all these histories. Diarrhea was (and is) the most common terminal event in starvation deaths.

It seems likely that the surviving genotype would include avid salt and calorie conserving mechanisms which in modern day society predisposes to salt sensitive high blood pressure, obesity, diabetes and CVD. Those providing long-term health care to the survivors of present day populations undergoing similar famines and selection pressures (Africa and North Korea) must be prepared for an epidemic of hypertension and CVD and implement preventive strategies.

053

THE LENINGRAD SIEGE AND RISK FACTORS FOR AND DEATHS FROM CARDIOVASCULAR DISEASE: SELECTIVE SURVIVAL OF THE SALT SENSITIVE GENOTYPE?

CE Grim.

The 900-day siege of Leningrad during WWII (1941–1944) led to the death from starvation of 1/5 of the population (630,000/2,900,000). The estimated calorie intake during this time was 300–460 calories/day. When the siege was lifted the most common reason for hospital admission was malignant hypertension. We have suggested this epidemic was due to selective survival of those best able to store calories and salt. When the siege was lifted the salt-sensitive genotype was re-fed of this genotype with high sodium foods including SPAM.

A recent followup of men aged 6–28 during the siege (BMJ 2004;238:11) compared to men who did not live in the area during the siege has revealed a 1.5 (odd ratio) greater risk of high blood pressure (BP) and greater skin fold thickness. Also increased were all cause death, ischemic heart disease, stroke, and hemorrhagic stroke; these risks were mostly due to the higher blood pressure. Adjustment for occupation, education, marital status, smoking or alcohol intake did not affect the risk estimates.

We suggest that the increased risk of high blood pressure and its consequences in survivors of a combination of starvation and low-sodium intake is related to an increased frequency of the salt-sensitive genotype. Studies of the survivors and their descendents of these and other major famines may provide new insights into the pathophysiology of high blood pressure in human populations.

054

THE IRISH POTATO FAMINE, COFFIN SHIPS AND CARDIOVASCULAR DISEASE IN THE IRISH DIASPORA

A Goyal; CE Grim.

Since the earliest US public health data (1850), those of Irish descent have had higher death rates from dropsy (CHF), stroke, and cerebral hemorrhage than other migrant populations and greater than those who stayed in Ireland. The major risk factor for these and other CVD deaths is high blood pressure. It has been suggested that discrimination, social disadvantage and dietary changes account for these observations with little consideration of genetic factors.

A unique feature of the force driving migration from Ireland to the US was the “potato famine” during 1845–1850 in which one million Irish starved to death. Migrants to the US came from the areas of the greatest famine and were transported in “coffin ships” on which mortality was higher than in the Slave trade. Major causes of death were diarrhea and fever. Records suggest that salt was limited in Ireland due to poverty and aboard ship as well.

We suggest the greater risk of CVD in those of Irish descent in the US is related to selective survival of the genes that permitted survival during famine and limited access to salt. If the severe conditions resulted in selective survival, as suggested during the African Slave Trade, one would expect a greater prevalence of diabetes and salt sensitive blood pressure in the survivors and their descendents. The Irish Diaspora population should provide a useful genotype to test for genetic factors driving CVD in the US and in Ireland itself.

055

ON THE HIGH PREVALENCE OF HIGH BLOOD PRESSURE, DIABETES AND CVD MORTALITY IN THE INDIAN DIASPORA IN THE CARIBBEAN

A Goyal; CE Grim.

The prevalence of hypertension (HTN) has been reported to be similar between descendents of the forced African(A) migrants (slaves) and indentured Asian Indian(I) migrants to Trinidad and the prevalence of severe HTH was more common in Indians. Furthermore, the prevalence of diabetes in Indians is greater than A (8% vs 20%) and CVD mortality is driven by the higher blood pressure in I.

In reviewing the economic/medical history of the two migrations we found remarkable similarities in mortality during the migration: holding before embarkation, the passage on ship, the quarantine on arrival and the first few years of labor (seasoning). However a striking difference was the nutritional state of populations that supplied the migrants. In contrast to Africa, the Indian migrants populations (Guyana=239,000 and Trinidad=144,000) were recruited and indentured from starving populations during the period of major Indian famines (1845–1917). In the recruiting grounds, 30% of the parent populations had starved to death, salt supplies were severely limited due to the British salt monopoly and taxation, and peak temperatures can reach 120F (40 C). Thus, the genetic substrate of the migrant population would have favored the ability to conserve and store sodium and calories.

We suggest that selective mortality before and after migration is the major genetic force driving the excess burden of HTN and CHD in the descendents of the Indian Diaspora in the Caribbean where slave labor was replaced by indentured Indians.

056

STANDARDIZED VIDEOTEST EXAMPLES FOR TESTING BLOOD PRESSURE OBSERVERS

GRIMCM; GrimCE.

As many facilities have moved to aneroid devices, we have developed and tested audio-video programs to test observers for accuracy, reliability, direction bias and terminal digit bias with aneroid examples.

Each aneroid video test contains 12 examples. The standardized answers for each example were developed by having 3 expert BP observers view the videos at least 4 times and the average answers were used as the standard answers. The tests are used in a classroom setting or are mailed to sites who are being evaluated. Observers view the tests and answers are graded.

A total of 250 persons being trained for BP studies have viewed the tests and submitted answers. Most had never had their ability to take BP objectively tested by video testing, although all had been measuring BP for over 1 year. On the first viewing 40% (101/250) made an error of 8,10 or 12 on at least 1 reading and needed to be retested.

This testing permits the identification of BP observers who have problems with reading an aneroid device. Once the diagnosis of reading errors is made, these BP observers can be corrected by retraining or assigned to non-BP measuring duties.

057

ETHNIC DIFFERENCE IN VISCERAL FAT BUT SIMILAR RESPONSE TO EXERCISE IN BLACK AND WHITE OVERWEIGHT CHILDREN

CL Davis¹; J Tkacz, MS¹; J Allison²; C Boyle, MS¹.

¹Georgia Prevention Institute, Pediatrics; ²Radiology, Medical College Of Georgia.

Objectives. This study examined the influence of ethnicity and an exercise intervention on visceral adipose tissue (VAT) in overweight children.

Methods. 94 healthy overweight (≥ 85 th BMI %ile) children 7–11 yrs ($M \pm SD = 9.6 \pm 1.0$ yr, 55% black, 60% female) were randomly assigned to a control ($n=27$), low-dose (20 min/d, $n=33$), or high-dose exercise group (40 min/d, $n=34$). A 10–15 week aerobic after-school exercise program was conducted (average heart rate=164 bpm). At pre and post, children underwent anthropometry (BMI z-score 2.1 ± 0.4 , waist 77.6 ± 8.3 cm), dual-energy x-ray absorptiometry (body fat= $42 \pm 5\%$) and MRI of VAT (3682 ± 1467 cm³). Regression analyses examined ethnic differences in VAT at baseline and in response to intervention.

Results. At baseline, an ethnic difference was detected on VAT, where Blacks had less than Whites ($t(92)=3.4$, $P=.001$; 3248 ± 1370 vs 4219 ± 1418 cm³). This effect persisted when age, gender, percent body fat, BMI z-score, and waist were partialled ($P<.001$, F change (1,87)=22.5, R^2 change=0.11). Age and gender did not contribute to the model. Exercise reduced VAT in both high and low dose groups, while controls increased ($F(2,94)=3.4$, $P=.04$; -290 ± 105 and -243 ± 107 vs 95 ± 118). There was no interaction between race and group assignment on VAT change ($F(2,94)=0.7$, $P=0.5$).

Conclusions. While there are ethnic differences in VAT, ethnicity does not influence the effect of exercise on reduction of VAT. Thus, such interventions can be widely implemented to promote health and reduce cardiovascular risk among overweight children regardless of ethnicity.

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SUPPLEMENTAL VITAMIN D INCREASES PLASMA 25-HYDROXYVITAMIN D CONCENTRATION, BUT DOES NOT ATTENUATE SALT-INDUCED HYPERTENSION

M Thierry-Palmer; S Cephas; F Muttardy.

From the Department of Biochemistry, Morehouse School of Medicine, Atlanta, GA.

Background. The African-American population is characterized by greater prevalence of salt-induced hypertension and hypovitaminosis D than the Caucasian-American population. An inverse correlation has been demonstrated between blood pressure and plasma 25-hydroxyvitamin D concentrations of Dahl salt-sensitive (S) rats during high salt intake. Hypovitaminosis D during high salt intake was caused by loss of protein-bound vitamin D metabolites into urine.

Objective. We tested the ability of supplemental dietary vitamin D (5 and 10-fold) to increase plasma 25-hydroxyvitamin D concentrations and decrease blood pressure of S rats during high salt intake.

Methods. S rats were fed 0.3% salt (low salt, LS), 3% salt (high salt, HS), or 3% salt and vitamin D (high salt-vitamin D, HS-D) and sacrificed at week 4.

Results. Plasma 25-hydroxyvitamin D concentrations of LS, HS, and HS-D rats were 42 ± 4 , 29 ± 4 , and 58 ± 11 nmol/L, respectively, and urinary vitamin D metabolite content were 78 ± 27 , 122 ± 17 , and 292 ± 28 pmol/24 h, respectively. Mean kidney/body weight and urinary protein were higher for HS ($P < .01$) and HS-D ($P < .001$) rats than for LS rats. Mean systolic blood pressure of LS, HS, and HS-D rats were 125 ± 2 , 168 ± 3 , and 166 ± 3 mm Hg, respectively.

Conclusions. We conclude that supplemental vitamin D increases plasma 25-hydroxyvitamin D concentrations of Dahl S rats during high salt intake, but does not ameliorate the hypertension and kidney damage, which lead to loss of vitamin D metabolites into urine.

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RACIAL AND GENDERED STRESS AND ANGER AMONG AFRICAN AMERICAN WOMEN: IMPLICATIONS FOR CARDIOVASCULAR RISK

FM Jackson.

Rollins School of Public Health, Emory University.

Objectives. The results of the validity testing of the Jackson, Hogue, Phillips Contextualized Stress measure indicate significant associations for racial and gendered stress and anger. This presentation will discuss the qualitative and quantitative findings from research on identity stress and their implications for the potential pathway from racial and gendered stress and anger to hypertension and other cardiovascular risks for African American women.

Statement of Methodology. Nearly five hundred African American women between the ages of 17–77 living in Atlanta collaborated in community-based research designed to document and assess racial and gendered stress. As the result of an iterative process that combined qualitative and quantitative methods (interviews, focus groups, and inventories and measures) the Jackson, Hogue, Phillips Contextualized Stress Measure, with the subscales of racism and burden, was constructed. To test the psychometric properties of the measure, validity testing was conducted that included the Spielburger Anger Inventory.

Summary of Results. Correlational analysis indicates significant associations for the race/racism and anger and burden and anger ($r = .33, < .01$; $r = .29, < .01$). Findings also demonstrate differential correlations for anger and the subscales of race and burden by age with stronger associations for younger women than for older women. Qualitative analyses provide the contexts for the stressors and resulting anger experienced by African American women.

Conclusion. This research asserts the need for assessments that capture the particular stress that pose risk for cardiovascular disease among African American women.

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VARIABLES CONTRIBUTING TO PARTICIPATION IN THE DALLAS HEART STUDY

M Jones¹; D Leonard¹; RG Victor²; SD Nesbitt¹.

¹Department of Internal Medicine, Division of Hypertension and ^{1,2}Donald W. Reynolds Cardiovascular Clinical Research Center, University of Texas Southwestern Medical Center at Dallas, Dallas, Texas, USA.

The Dallas Heart Study (DHS) was a multiethnic population-based probability sample investigating biologic and social variables contributing to ethnic differences in cardiovascular health in Dallas County. The objective of the current analysis was to identify variables associated with participation in the DHS. The DHS was composed of three participation visits: 1) health survey and blood pressure measurement 2) home phlebotomy and 3) clinical testing. The sampling frame was designed around 10 geographic strata based on % African American (AA) households (strata 1–3, 96%, 84.7%, and 62.9% AA; strata 8–10, 4.1%, 1.9% and 0.5% AA). There were a total of 7,586 individuals, age 18–65, selected to participate and 6,101 (80.4%) completed the survey visit. Among AA, 4,102 were selected to participate and 3,456 (84.3%) completed the survey visit. The visit 2 participation rate, out of a total of 4,525 individuals age 30–65 was 75.1% and 68.3% out of 2,575 AA. The cumulative participation rate from visit 1 to visit 2 for all eligible participants was 60.4% and for AA it was 57.6%. Participation was greater among women vs. men ($p < 0.05$), Whites vs. other ethnic groups ($p < 0.05$), married vs. unmarried ($p < 0.05$), educated vs. non-educated ($p < 0.05$), hypertensives vs. normotensives, diabetics vs. non-diabetics ($p < 0.05$) and high income vs. low income ($p < 0.05$). These variables were correlated with geographical strata. Strata with greater % AA households were more likely to be unmarried, less educated, hypertensive, diabetic and low income. Multivariate modeling suggested that geographic stratum was more predictive of phlebotomy visit participation than ethnicity alone.
