



Stroke: The “Not-So-Silent Killer”— Much More Common Than Assumed

(Herman A. Taylor, Jr. MD, MPH)

This issue of our newsletter is dedicated to Stroke. If hypertension is called “the silent killer” then I will call stroke “the not so silent killer”. Stroke is related to hypertension and to cardiovascular diseases which makes it an important part of the Jackson Heart Study (JHS). Since Mississippi is in the stroke belt (along with most of our southern neighbors) and African Americans have a higher incidence of cardiovascular diseases including stroke than Caucasians, we at the JHS are paying as much attention to stroke as to all other major causes of cardiovascular diseases and their risk factors. This article will draw largely on the news from “World Stroke Day, October 29, 2008”.

Stroke is the rapidly developing loss of brain functions due to a disturbance in the blood vessels supplying blood to the brain. This can be due to one of two major causes; an interruption of the blood supply to the brain (Ischemic) or to a rupture of the blood vessels (Hemorrhage). Roughly 80% of all strokes are due to the former. As a result, the affected area of the brain is unable to function leaving an inability to move one or more limbs on one side of the body, inability to formulate speech or inability to see one side of the visual field. A stroke is a medical emergency and can cause permanent neurological damage, complications and death. I am sure you know someone who has had a stroke.

The theme of World Stroke Day 2008 was “Little stroke, big trouble”. The focus on “little” stroke is chosen for good reasons. Subclinical or “silent” strokes occur five times as often as clinically obvious strokes and can affect thinking, mood, and personality. A recent Study by Professor Hachinski at the University of Western Ontario, Canada presented at the World Stroke Congress (WSC) found that about 10 percent of apparently healthy middle-aged participants with no symptoms of stroke were affected by “silent strokes”. Since we live in the USA’s stroke belt where the incidence of stroke, hypertension and cardiovascular disease are much higher than the national average and even more so in the African American population, when we analyze the JHS stroke data, we can expect to find a much higher incidence among our JHS cohort.

The aim of this year’s World Stroke Day as well as this article is to improve awareness of the “preventable catastrophe” stroke presents.

By focusing on subclinical “silent” strokes we wish to emphasize the likelihood that the earlier we intervene the more likely we are to be successful. Subclinical “silent” stroke is a brain injury most commonly caused by a blood clot interrupting blood flow in the brain. It is called silent because like hypertension there may be no observable symptoms. “Silent” strokes are most often detected through brain imaging and several patients who have suffered “silent” strokes who undergo brain imaging tests prove to have neurological and neuropsychological damage. Unlike hypertension where one’s blood pressure can be checked regularly and routinely there are no similarly routine and cost effective way of checking for strokes.

A recent study (JUPITER) which received much publicity at the recent meeting of the American Heart Association suggests that cholesterol drugs (statins) may significantly reduce the risk of stroke and other cardiovascular events in healthy patients. Dr. Phillip Gorelick, Director of the Center for Stroke Research at the University

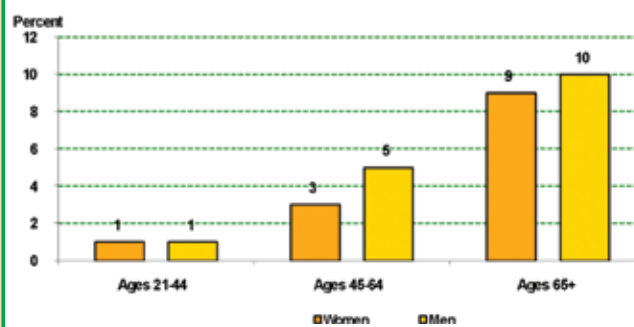
Of Illinois College Of Medicine, in an interview with the National Stroke Association suggested that the JUPITER findings will likely influence short-term treatment guidelines for cardiovascular prevention including stroke. “One must bear in mind that lifestyle modification remains an important aspect of stroke and

other cardiovascular disease prevention.”

At the JHS, Stroke Surveillance is a critical part of the study. It will help us better understand and monitor stroke risk factors as well as stroke care, stroke incidence and stroke mortality. It will allow us to develop an overall picture of stroke in the African American community, do time trend analyses, to better explore its distribution, stroke risk and care in this important subpopulation.

Such a surveillance system would also help us to formulate policy decisions concerning programs and research for the African American population. The stroke outcome data obtained through the surveillance will also help to develop a stroke prediction model specific for our African American population which can be used to further educate and inform both our cohort members and the physicians who care for them.

Percent of JHS Participants with previous stroke



Stroke was more prevalent in older than younger or middle-age participants, and more common in men than women.

Source: The Jackson Heart Study Data Book: A Report to the Cohort and Community
NIH Publication No. 08-5848
September 2008

Jackson Heart Study Partners with the Delta States Stroke Consortium (Evelyn Walker, MD, MPH)

The Delta States Stroke Consortium (DSSC) is a five-state collaborative effort funded by the Centers for Disease Control and Prevention (CDC) to identify and address factors associated with the high rate of strokes in the southeastern states. This consortium of states includes Alabama, Arkansas, Louisiana, Mississippi, and Tennessee—five of eight southeastern states comprising the “stroke belt,” where the stroke death rate is 1.5 times the national average. The DSSC, divided into five working groups, recently convened in Memphis, TN to discuss stroke mortality and morbidity reduction, and prevention/awareness strategies. The overall goal focuses on enhancing the coordination and collaboration among partners in the five-state region. Among Mississippi’s representatives were Dr. Evelyn Walker, the Jackson Heart Study Field Site Director and member of Mississippi’s Task Force on Heart Disease and Stroke Prevention, and members of the Mississippi State Department of Health’s Office of Preventive Health.

The American Heart Association estimates that in 2008 the direct and indirect costs related to stroke will exceed 65 billion dollars. Recognizing this alarming cost, and considering the socio-demographic characteristics of the consortium states, the five working groups discussed and established priorities for data collection, program interventions, and policy improvements related to the delivery of stroke care. The consortium’s anticipated outcome for this fall’s

meeting was initiation of the brainstorming that would provide the building blocks of a 2–5 year action plan. The five working groups contributed to the strategic plan in individual breakout sessions.

In an effort to maintain an updated stroke burden document, the **data support (epidemiology)** workgroup assessed data needs and deficits in the region. They began the discussion of guideline development and coordination of data collection across the region.



Access to care and medication issues were addressed in the **systems change/access to care** workgroup. Early transport to an appropriate stroke care facility, and enhancement of the Delta Stroke Telemedicine Network were the identified priorities for this group.

The **systems change/training and education** workgroup’s areas of concern included patient and health care provider education. Increasing the public’s awareness and early recognition of stroke warning signs along with enhancing providers’ training in stroke

management were this group’s specifically established priorities. The importance of acting fast when stroke symptoms occur is highlighted in the attached graphic.

Encouragement for the development and adoption of appropriate policies by regional/state medical boards and organizations, hospital associations, health departments, and state legislatures dominated the discussion of the **policy development and advocacy** workgroup. Identification of appropriate advocacy partners for increasing the attention to stroke was seen as the first step in policy change or development.

The **integration and media** workgroup discussed ways to facilitate integration of work plans and projects of State Heart Disease and Prevention Programs, State Task Forces, and other national and regional partners and stroke networks. This group will assist in the development of regional media and advertising messages in collaboration with partnering state agencies to support the general work of

the DSSN.

The overarching theme of impacting the stroke mortality rate and decreasing the burden of stroke in the five-state region was well expressed by all attendees. Much work and continued commitments remain for the consortium; however, maintenance of this collaborative partnership will assure that through the consortium’s long term goals for research, planning, policy development, and program implementation the unfortunate “stroke belt” label will become but another part of the old south’s past.

A Note from the Field on Stroke (Mohammad Shahbazi, PhD, MPH, CHES)

I was in a post doctoral public health program, School of Public Health at University of California in Los Angeles (UCLA) when I learned about Mississippi Delta region’s poor health conditions—similar to less-developed countries in the world’s richest country. “How could that be the case?”, I asked myself.

A few months later I found myself before a faculty search committee that was established to hire several faculty members for a newly started Masters of Public Health Program at Jackson State University.

When the first classes started in 1999, I started hearing from my students how their families and friends had suffered from preventable, for the most part, diseases in Mississippi. One of my students, Patricia Frye (now holding a doctor of public health from the Jackson State University’s accredited Public Health Program—the first to graduate from the program), presented a paper on stroke and showed that every 53 seconds someone had a stroke in the United States, and that every 3.3 minutes an individual died as a result of it, making stroke the 3rd leading cause of death. The paper also documented that many peo-

ple, particularly, African Americans in Mississippi’s Delta region experienced strokes. “The stroke treatment in Mississippi” she emphasized was estimated to be approximately \$367 million annually. Some nine years later, the picture continues to remain the same. Something is just wrong with this situation.

In 1999, Mississippi’s stroke mortality rate was the 8th highest in the nation. The African American stroke mortality rate was 32% higher than the White American rate. Nationally, at the time, the African American stroke mortality rate was 82.5 per 100,000

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Hypertension Education and Treatment (HEAT) Partnership

(Rosie Calvin, RN, DNS and Venetra McKinney, BS)

Overview/ Mission

The University of Mississippi Medical Center (UMMC) and the Jackson-Hinds Comprehensive Health Center (JHCHC) propose to address cardiovascular health disparities among African Americans through the establishment of its HEAT Partnership. HEAT is an acronym for Hypertension Education and Treatment.

Responding to RFA-HL-04-002, “Partnership Program to Reduce Cardiovascular Disparities,” the University of Mississippi Medical Center (UMMC) will participate as the research-intensive medical center (RIMC). Jackson-Hinds Comprehensive Health Center (JHCHC) will participate as the minority healthcare serving system (MSS).

The mission of the proposed HEAT Partnership is to improve cardiovascular health, particularly among African Americans, by (1) increasing awareness among the lay public about cardiovascular disease in general and hypertension in particular; (2) providing easily accessible, culturally sensitive, state-of-the-art medical care for hypertensive patients, which includes a multifaceted approach addressing lifestyle and diet; and (3) engaging community residents, leaders, and institutions to collaborate in an ongoing promotion of cardiovascular health.

In order to accomplish our mission, we have identified the following objectives:

- Foster collaboration between UMMC and JHCHC to improve healthcare delivery at both institutions;
- Provide cross-training opportunities for research in health disparities, cultural sensitivity, and cardiovascular health;
- Accommodate long-term partnerships in education and health care delivery initiatives;
- Conduct joint research addressing cardiovascular health disparities; and
- Sponsor outreach initiatives to provide meaningful public education programs about cardiovascular health, hypertension, and the importance of lifestyle choices to promote health.

Organization

The HEAT Partnership is organized into four cores. The **administrative core** includes the principal investigators from the RIMC and the MSS as well as the directors and co-directors

of the other three cores: research, education, and community outreach. Specific aims for the research, education, and community outreach cores were developed to achieve the objectives of the HEAT Partnership, and include the following:

- **Research Core.** The primary goal of the Research Core is to examine the effect of provider and patient education on the control of hypertension among a minority population. We hypothesize that an intervention comprising provider and patient education, access to a patient advocate, and encouragement for patients to utilize a “health partner” will result in improved rates of hypertension control. In order to test our hypothesis, we have identified four specific aims:
 1. Provide a series of workshops for healthcare providers that focus on assessment and treatment of hypertensive patients according to current guidelines.
 2. Enroll a sufficient number of patients with uncontrolled hypertension to participate in our study and encourage each of them to continue treatment throughout the duration of the intervention as a means of promoting lifetime hypertension control.
 3. Provide a program of patient education that includes (a) a series of workshops for the intervention participants that focus on the impact of hypertension, and the efficacy of proper diet and exercise in managing hypertension; (b) a patient advocate, who will serve as a liaison between patient and provider; and (c) a “health partner” from the patient’s social circle of acquaintances who will help reinforce the workshop lessons in a participatory manner.
 4. Compare the results of the intervention group and the control group, and determine the effectiveness of the intervention.
- **Education Core.** The primary goal of the Education Core is to promote enhanced knowledge, professionalism and collegiality among those who provide healthcare to Mississippi’s minority and disenfranchised

populations. Specific aims of the Education Core are to:

1. Enhance cultural competency among healthcare providers and address its impact on health disparities among the nation’s racial and ethnic minority populations.
 2. Explore issues of race, racism and health disparities in research and medical care, particularly as they affect African Americans in Mississippi.
 3. Provide career development training for new investigators capable of conducting research to reduce cardiovascular health disparities.
- **Community Outreach Core.** The primary goal of our Community Outreach Core is to raise public awareness of the prevalence of hypertension and the importance of managing the disease. Designed to address the objectives of the HEAT Partnership and the Community Outreach Core’s primary goal, we have identified the following three specific aims:
 1. Conduct focus group sessions in selected vulnerable populations to assess the level of awareness about hypertension, and identify realistic lifestyle hypertension-prevention goals for the intended audience.
 2. Pursue partnerships with community-based organizations to enhance the activities of the Community Outreach Core.
 3. Develop and disseminate culturally and linguistically appropriate education materials to the lay public about hypertension, including detection, diagnosis, and strategies for its prevention.

Recruitment/Workshop Process

Intervention Site (JHCHC Main Clinic)

Participants in the intervention group received a series of workshops that focused on the impact of hypertension, and the efficacy of proper diet and exercise in managing hypertension. The participants’ knowledge

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of the workshop topic was assessed prior to each workshop. The Instrument used includes portions of the behavioral risk factor surveillance survey related to cardiovascular health and questions regarding risk factors and physical activity. A comprehensive assessment of the participants' knowledge was obtained 6 to 8 weeks after the three workshops. The participants received a \$10.00 Wal-Mart gift certificate after each workshop for their participation. Secondary analyses, administered via telephone 6 to 8 weeks after the final visit, evaluated the effectiveness of participant workshops, access to a patient advocate, and role of a health partner.

Workshop A: Cardiovascular Disease Health in the Family. This workshop focused on hypertension as a risk factor for cardiovascular disease, the meaning of cardiovascular disease, and the impact on the family.

Workshop B: Dietary Approaches to Improve Blood Pressure. This workshop was designed to teach the DASH diet and to provide culturally specific educational materials and instruction on food choices, reading food labels, and improving dietary intake. Additionally, a discussion included attention to the effect alcohol and smoking has on blood pressure control and cardiovascular disease.

Workshop C: Effect of Exercise and Body Weight on Blood Pressure. This workshop provided information on the meaning of exercise, culturally appropriate exercise programs and locations in the community, and strategies for increasing exercise in the home. Pedometers were provided to participants to measure daily exercise. Participants

were encouraged to use home blood pressure monitoring as a way to understand the effect of exercise and diet on blood pressure.

Workshops were conducted at a variety of times during the intervention. Participants were required to attend the three workshops and the final visit to complete their participation.

Health Partners

To improve adherence to recommended dietary and exercise programs participants were encouraged to identify a health partner. The health partners were friends, family member, or someone to promote healthy lifestyle behaviors, perhaps serve as an exercise partner, and support and offer encouragement to the participant. The health partners attended all participant workshops and will receive a \$10.00 Wal-Mart gift certificate for each workshop attended with the HEAT participant.

We will distribute the JNC-7 guidelines and the DASH diet to healthcare providers at the two control sites, but we will offer no review of them. Baseline data from patient charts will be collected prior to the distribution of recent guidelines. These data will be the same as collected in the intervention group.

Patient Advocate

A patient advocate at JHCHC served as a liaison between patients and providers and coordinated the scheduling of the participants for the workshops.

Control Sites (South Jackson and Hazlehurst Clinics)

During the initial visit with participants in the control group, baseline data was collected to assess their knowledge of hyperten-

sion and the efficacy of diet and exercise in managing hypertension.

Also, a comprehensive assessment of the participants' knowledge was obtained within 3–4 months. The same assessment instruments used by the intervention group were used with the control group. Materials developed for the intervention arm were distributed to participants but there were no workshops, health partners, or participant advocates. This minimal attention to education reflects the current practice pattern in many busy primary care clinics. The control group received only a \$10.00 Wal-Mart gift certificate for their participation within 3–4 months at the final visit. After an 18-month follow-up period, providers and participants at the control sites are offered an opportunity for more intensive education through workshops provided by the HEAT Partnership.

Recruitment

A total of 203 participants were targeted at the intervention site, Jackson Hinds Comprehensive Health Center Main Clinic. Also, a total of 203 participants were targeted at both control sites, Copiah and Jackson Hinds South Clinic. We exceeded our target by recruiting a total of 728 participants at all sites.

What's Next?

The deadline for completion of the intervention process was December 30, 2008. We should complete the telephone interviews in February 2009. We are currently preparing for data analysis and manuscripts development.

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individuals versus a White American stroke mortality rate of 59.8 per 100,000 individuals. Mississippi's rates in 1999 were 85.9 and 65.1 per 100,000 for African Americans and White Americans respectively. Not the cost, but the human suffering dimension of poor health conditions in general and stroke-related suffering in particular captured my professional enthusiasm, that has continued for close to a decade now. Through the following sections, I will, briefly, share my stroke-related activities (in words) with the readers. First a few words on stroke.

What is Stroke?

According to the American Stroke Association stroke is a type of cardiovascular disease. It affects the arteries leading to and within the brain. A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts. When that happens, part of the brain cannot get the blood (and oxygen) it needs, so it starts to die. In a layperson's term, stroke is kind of brain

attack (similar to heart attack that most people are familiar with).

Two Known Types of Stroke

- Ischemic (the vessel clogs within)
- Hemorrhagic (the vessel ruptures, causing blood to leak into the brain)

Stroke's Known Warning Signs

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause

Documented Risk Factors for Stroke

Risk factors that cannot be changed:

- Age
 - Gender
 - Race/Ethnicity
 - Family History
- Modifiable risk factors:
- High blood pressure
 - Smoking
 - Overweight/Obesity
 - High blood cholesterol level
 - Diabetes
 - Lack of regular physical activity

My Stroke-Related Activities Since Arrival in Mississippi

First Project: A Pilot Study

While there are a range of factors that may contribute to the high stroke-related morbidity and mortality rates, my first pilot study examined an area that might indeed be one of the more significant factors and one that may be expediently altered—stroke-

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related knowledge. Specifically, knowledge related to signs and symptoms of stroke and the actions an individual can take if experiencing stroke signs and symptoms.

My pilot project, sponsored by Jackson State University, had two main goals: (1) to obtain baseline information on the targeted community's knowledge of stroke-related signs and symptoms; and (2) to estimate the amount of time it took individuals to arrive at medical treatment facilities after the onset of stroke signs and symptoms.

A telephone survey was conducted to determine stroke-related knowledge levels. Hospital data was collected to determine how long it took individuals to present at medical treatment facilities after the onset of stroke-related sign and symptoms. While the number of people participating in this pilot study was small, and fewer numbers of stroke patients' records qualified to be included (records were not complete); nevertheless the findings were quite telling.

Summary of Findings

- most people had never had stroke-related information provided by a health care provider;
- high blood pressure is the risk factor most often reported; however, nearly half of respondents did not report high blood pressure as a contributing factor for stroke;
- smoking (the second most important risk factor for stroke after high blood pressure) was reported only by one-fifth of respondents;
- majority of people couldn't name one stroke symptom or sign;
- many people said they would call 911 / ambulance after stroke onset;
- however, a large percentage of people said they would go directly to hospital / emergency room or call the doctor's office;
- there was not much difference between rural and urban residents; the urban residents were more likely to call 911;
- according to the charts (patients' records) reviewed, most people came directly to the hospital / emergency room, using private transport; only a few people called 911;
- time of arrival at hospital was recorded in nearly all cases;
- however, in most cases time of onset of stroke was not recorded in the chart;
- therefore, in most cases, time between onset and arrival at hospital / emergency room was not known;
- in the cases where onset times were available, the mean time between onset and arrival was nearly seven hours—the mean time was about five and a half hours;
- in the cases where onset times were available, the mean times between onset and evaluation by a physician were nearly six hours;
- in the cases where evaluation times were available, the mean time between arrival and evaluation was about one hour and the mean time three-quarters of an hour

It is important to note that stroke victims who qualify for immediate treatments (with a chemical that bust the vessel's clog) must receive the chemical within or sooner than three hours from the onset of the stroke. There were obvious issues at hand here.

Given these disturbing findings, it became clear to me that awareness of stroke's signs and symptoms as well as timely treatment must be advocated. Obviously, people needed to recognize the impor-

tance of rapid transfer—preferably by ambulance—to hospital/emergency room for evaluation and possible treatment. In turn, the 911/emergency response system will need to be expanded in rural areas.

Second Project

When a group of Jackson State University faculty, primarily from the Public Health Program, decided to apply to the National Institute of Health for a grant, I submitted a proposal where I reported the pilot study's findings. The grant was awarded and a four-year stroke awareness project started in 2003–2004. The following activities were conducted during the second project.

Digital telephone surveys were administered to several hundred Warren and Washington County residents (Washington County had the highest number of stroke victims in Mississippi). The plan was to provide educational materials on stroke signs and symptoms to Washington County residents, but not to residents in Warren County. So that we could determine if educating people with stroke-related knowledge would make a difference in terms of the number of stroke victims, and the action people, with knowledge of stroke signs and symptoms, would take (e.g., calling 911 or getting to a hospital).

The questions in the survey were designed to give us information on how much people living in these two counties knew about stroke signs and symptoms.

In both counties, approximately 80% of respondents stated that strokes could be prevented, but knowledge of specific stroke risk factors was poor. Less than 50% of respondents named hypertension (blood pressure) as a risk factor, and knowledge of other risk factors was much poorer. Recognition of individual stroke warning signs was fair to poor: just under 50% named weakness or numbness and fewer than 25% named others such as dizziness or loss of vision. When responses were analyzed in aggregate, the results were very poor: **only 2–3% could name all 5 major warning signs of stroke**, and **only 1–2% could name all signs correctly** and state the correct action to be taken (call 911).

Soon after completing this phase, an educational campaign was implemented in Washington County and continued for 6 months. With support from one of my former students, her family/friends, and other Jackson State University's alumni, a network was established for disseminating information to Washington County residents.

Several times each month for 6 months, I would load up the School of Public Health's van with students and head to Greenville. We would set up tables in the Greenville Shopping Mall and the Wal-Mart Store (usually on Saturdays). These tables held flyers, brochures, know-your-numbers information, and a Mississippi like magnetic map with stroke sign and symptoms printed on them.

To let shoppers know about our stroke related activities, such events were announced in local media (radio, newspaper, and television stations). Banners were almost always displayed at the entrances of the locations where the educational campaign team members were at work. To further bring the shoppers to the tables with information, we had several students at the table ready to take the blood pressure of anybody who approached them. These opportunities were utilized to ask the participants a few questions about their stroke-related knowledge and to provide them with pertinent information along with the magnet that was mentioned earlier. On at least one occasion we joined a congregate, as they celebrated an event, in a park where we provided them

with information and enjoyed lunch with them. See photos of events described.

Other activities included delivering stroke-related information (flyers, brochures, magnets, etc) to churches both within Greenville and those located in rural areas. Such information materials (bundle of 50–100; depending on church sizes) were usually delivered on Saturday (left at churches' entrances) with cover letters addressed to the church pastors requesting them to distribute the materials to the churches' attendees on Sundays.

Several months after conducting the last educational activities in Washington County, the same digital telephone surveys were administered in both counties to find out if the educational campaign had any impact on the County's residents. Below are the results of the second survey.

County Comparison

In many cases, when there was an increase in percentages in Washington County, a similar increase was seen in Warren County. Even in those cases where an increase occurred in Washington County while a decrease occurred in Warren County, numbers (sample size) were not sufficiently large to show statistical significance, with one exception. The exception was in the percentage reporting high blood pressure as a risk factor for stroke, which increased from 48% to 57.3% in Washington County while decreasing from 50.3% to 44.2% in Warren County for difference between counties.

Conclusion

Although response rates to several of the questions increased after the intervention in Washington County, the results of this small sample survey do not show sufficient evidence to support any effect of the intervention. A valuable lesson that was learned from this study was that intervention activities must target well-defined groups rather than the entire population in a county.

Yet, another valuable lesson learned from this project was that many stroke survivors in the region reported that they did not feel they were at risk of stroke. In other words, they didn't smoke, were not on the heavy side, ate "good" food, and were physically active. Such observation made me wonder if there are other factors that have not been looked at. I am therefore currently looking at some 200 stroke survivors data. Hopefully, collecting life histories from some of these individuals might explain if there are other contributing factors to stroke.

Acknowledgements

I must thank Jackson State University officials for sponsoring the pilot project, which helped with getting the NIH grant # 5P20-MD000543-02 (EXPORT PROJECT), which funded my stroke awareness project. I also wish to express my thanks to Dr. Sarpong, and other colleagues at Jackson Heart Study who have always treated me like one of their own. Obviously, I want to thank all of my public health students at Jackson State University and my friends in Greenville Without help from the students/local friends who often scarifies their weekend for over 6 months, I couldn't have completed my second project. I thank them all.

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UMMC CONFERENCE CENTER
SATURDAY, FEBRUARY 28, 2009
8:30 A.M.

Article Submissions

JHS Heartbeat is published quarterly to enhance health awareness and understanding of cardiovascular disease among the community by presenting research findings, articles, book reviews on cardiovascular disease, diabetes, hypertension, strokes, cholesterol, physical activity and nutrition. Additionally, the newsletter facilitates communication among Jackson Heart Study staff, investigators, cohort members, contractors and the extended JHS family.

Articles are being selected for the following upcoming issues:

<i>Submission Date</i>	<i>Newsletter Publication</i>
March 15	Summer Edition
September 15	Winter Edition

Submissions should be about 800 words or less. Relevant pictures, illustrations and/or charts may be submitted with the articles. Information regarding forthcoming educational conferences and/or meetings is also requested. All material is subject to copyediting. Please include the author's full name and credentials, the agency's full name, street and web address and the author's contact information, including telephone, fax and e-mail. Information should be e-mailed or mailed to **Ms. Brenda Jenkins**, at:

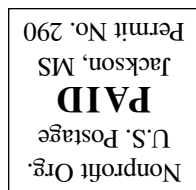
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JHS HEARTBEAT

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