# Cardiovascular Disease Urban Intervention: Baseline Activities and Findings 

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#### Abstract

Regular exercise, good dietary habits, knowledge of the disease and its warning signs as well as ability to perform CPR (cardiopulmonary resuscitation) are all important to prevent and combat Cardiovascular Disease (CVD) and Stroke. In 2005-2006, an AHA sponsored "Search Your Heart" cardiovascular disease intervention was conducted in 388 urban African-American/black and Latino/Hispanic faith based institutions, all churches of various denominations, to improve members' knowledge and preparedness about CVD and stroke. The intervention involved (a) distribution of a customized multi-component CVD and stroke related educational and skill development package to 388 "ambassadors" for all participating


[^0]churches, (b) AHA staff coordinated educational sessions for the ambassadors and (c) 211 Ambassadors coordinating the conduct of at least one CVD educational activities in their churches. In May 2006, a written survey was distributed to 211 ambassadors affiliated with the Heritage affiliate of AHA, which covers New Jersey, Connecticut, Long Island and New York City, to: (a) assess the intervention's effect, and (b) plan and implement a targeted forward intervention approach based on findings. Survey questions addressed regular exercise, healthy eating, disease knowledge, and warning signs and ability to perform CPR.

Keywords Cardiovascular disease • Stroke • Public knowledge • Public preparedness

## Introduction

Cardiovascular disease (CVD) is the leading cause of death in the United States accounting for nearly $40 \%$ of all annual deaths. More than 870,000 Americans die of cardiovascular diseases each year, which is 1 death every 36 s . Stroke is the third leading cause of death in the United States with 150,000 deaths in 2004 , or on average one death every $3-4 \mathrm{~s}$ and the leading cause of serious, longterm disability. The risk factors associated with CVD and Stroke are well established and include smoking, high blood pressure, diabetes, Atrial Fibrillation (for Stroke), insufficient physical activity, high cholesterol, family history of stroke or heart disease and being older or male. However more females die of CVD and Stroke than men. Significant racial and ethnic health disparities exist in the United Stated for black and Hispanic males and females suffering from CVD. The 2004 prevalence for CVD for
black males was $44.6 \%$ vs. $37.2 \%$ for white males and $49 \%$ for black females vs. $35 \%$ for white females. The overall death rate from CVD is significantly higher for African Americans males (448.9) than white males (335.7) as well as for black females (331.6) than white females (239.3) [1]. African Americans have a significant increased risk of stroke over whites, with a $4.1 \%$ prevalence for African American males or females versus $2.4 \%$ prevalence for white males and $2.7 \%$ for white females [1]. Consequently, African Americans are $48 \%$ more likely to die prematurely of stroke than Whites [2]. The direct and indirect (e.g. lost workdays and productivity) costs associated with CVD and Stroke are estimated to be almost $\$ 431.8$ billion for 2007, including $\$ 62.7$ billion for Stroke [1].

Significant racial and ethnic health disparities exist within the tri-state area ( $N Y, N J$, and $C T$ ). The death rate for Black New Yorkers is $55 \%$ higher than for White New Yorkers for ages 45-54 [3]. In New Jersey mortality rates for African American men from hypertension are three times higher than white men and African-Americans in New Jersey have higher mortality rates from cardiovascular disease than whites, both for heart disease ( 287.6 vs . 249.6 per 100,000 ) and for stroke ( 65.6 vs. 41.9 per 100,000) (Age adjusted death rates, 2001) [4]. In Connecticut African American females have a significantly higher mortality rate for cardiovascular disease than White or Hispanic/Latina females and Black non-Hispanics have significantly higher hospitalization rates for cerebrovascular disease [5].

National guidelines such as those from the National Cholesterol Education Program (NCEP Adult Treatment Panel III) and the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VI) recommend life style changes such as exercise, a diet low in saturated fat and cholesterol, and weight control for patients with hyperlipidemia and hypertension along with drug treatment for those who fail to respond to those measures [6].

Despite the known benefits of improved risk factor control, $33.6 \%$ of Americans over age 20 have high blood pressure, $48.4 \%$ have high total cholesterol $(200 \mathrm{mg} / \mathrm{dl}$ or above) and $66 \%$ are overweight or obese, including $17 \%$ of adolescent children age 12-19 [1]. In addition many Americans do not know they have high blood pressure or high cholesterol and are not receiving appropriate treatment. The Heritage Affiliate (covering New York City, Long Island, Connecticut and New Jersey) of the American Heart Association formed a Health Disparities Committee with as goal to increase focus on cardiovascular health disparities and as such to improve cardiovascular outcomes. One of its goals is to leverage existing American Heart Association initiatives and channels, to increase awareness of health disparity initiatives and impact
outcomes. To that end the Committee set to analyze a 2006 survey that was initiated among mainly African American churches to assess the level of public awareness of CVD and Stroke with existing data and facilitate program enhancements to achieve better outcomes.

## Subjects and Methods

## Design and Study Sites

The American Heart Association (AHA) has established a network of Ambassadors among the African American and Latino churches, who serve as liaisons to educate the congregants about cardiovascular disease and stroke as part of a national AHA program called Search Your Heart (SYH). The program is based on a "train the trainer" model. The AHA invited faith based organizations to send one or two ambassadors to ongoing heart disease and stroke workshops. Workshop topics included diabetes, high blood pressure, high cholesterol, stroke, obesity, nutrition, physical activity, CVD warning signs and CPR. After attending the workshops, ambassadors could request brochures, videos, posters and other standardized supplies to duplicate the educational session with their organization. Ambassadors were also encouraged to sign up for free, monthly health packets with easy to use materials on the various themes. The packets included bookmarks, recipes, reproducible facts sheets and health tips for newsletters and bulletins. Contents vary depending on theme. Ambassadors were also given a list of speakers to contact if they need a healthcare professional to present the educational message on site. In this way, Search Your Heart links organization to health care providers in their area. Building relationships with community leaders, securing Pastor buy-in and creating regional volunteer task forces to suggest activities was and continues a vital part of the program.

Early in 2006, 388 ambassadors affiliated with the Heritage affiliate of the AHA, covering New Jersey, Connecticut, Long Island and New York City participated in at least one training activities. 211 Ambassadors consequently conducted various educational sessions at their respective churches, using SYH materials and resources (Table 1). During April and May 2006211 established (active with AHA for more than 6 months) ambassadors were given copies of the survey instrument (Table 2) to distribute among their churches. The surveys were mentioned at the "train-the-trainer" workshops on an ongoing basis, as a necessary document for program operation. Incentives were established (\$50-\$100 gift certificates) for returning this 2006 survey to improve participation. Churches were issued surveys on more than one occasion in an attempt to get more surveys returned. The only issue

Table 1 Church trainings offered during 2005-2006

| Physical activity | Cooking heart healthy |
| :--- | :--- |
| CPR anytime demo and orientation | Hypertension |
| Men's heart health | Holiday eating |
| Stroke | Stress management |
| Medicare part D | Nutrition/cooking demo |
| Diabetes | Nutrition/reading food labels |

with the design was that the question and answer categories were not aligned on the page requiring an instruction sheet to guide people. It was noted that live interactive support from a facilitator was needed to ensure that the answers were marked so as to align with the appropriate question.

The ambassadors distributed and collected the surveys post intervention, on one designated Sunday service in April or May of 2006 as agreed upon by the ambassador and Minister of the church. The survey contained 4 epidemiological questions, one question around church activities, one question around advocacy involvement and 9 questions testing knowledge around CVD and Stroke. The survey was easy to use, anonymous and easy to collate using a computer scan lay out.

## Study Measures

A range of measures was assessed to evaluate knowledge and attitude about the disease, among the African

Table 2 Survey instrument

## Search your heart survey questions

1. What type of health activities has you church/organization offered in the past year?
a. Health fair
b. Screening
c. Exercise
2. How many days a week do you exercise for 30 min or more?
a. Zero
b. 1-2
c.3-4
3. Do you smoke?
a. Yes
b. No
4. On average, how many fruits and vegetables do you eat each day?
a. Zero
b. 1-2
c. 3-4
d. 5-6
e. 7 or more
5. Have you had any of the following checked in the past year? (Select all that apply)
a. Cholesterol
b. Blood pressure
c. Glucose (sugar level)
6. Have you ever taken a CPR class?
a. Yes
b. No
7. What are the warning signs of a stroke?
a. Sudden numbness or weakness in the face,
b. Sudden confusion, trouble
c. Sudden trouble walking, speaking or understanding dizziness or loss of balance arm or leg
8. What is the number one killer of women and men?
a. Cancer
b. Diabetes
c. HIV
9. Have you talked to a doctor about you heart disease/stroke risk in the past year?
a. Yes
b. No
10. If someone is experiencing a stroke, what do you do first?
a. Call 911
b. Call doctor
c. Drive to hospital
d. Wait for
e. Call family member, symptoms friend or neighbor
11. Have you ever written or spoken to a government leader about a health issue?
a. Yes
b. No
12. What type of health insurance do you have for yourself?

| a. Employer/private b. Medicare | c. State program | d. Medicaid | e. None |
| :---: | :---: | :---: | :---: |
| 13. What is your gender? |  |  |  |
| a. Female b. Male |  |  |  |
| 14. What was your age on your last birthday? |  |  |  |
| $\begin{array}{ll}\text { a. 18-29 } & \text { b. 30-39 }\end{array}$ | c. $40-49$ | d. $50-59$ | e. $60+$ |
| 15. What ethnic background best describes you? |  |  |  |
| a. African-American/Black b. Hispanic/Latin | c. Asian | d. White. | e. Other |

American and Latino population. These measures included knowledge of and self- efficacy toward CVD and Stroke risk factors and CVD and Stroke-related behavior.

Knowledge of CVD and Stroke risk factors was assessed with questions regarding Cardiovascular and Stroke risk factors and knowledge of stroke symptoms. Self-efficacy and Behavior was assessed using questions regarding diet, physical activity (days exercising each week), nutrition (frequency of eating fruit and vegetables), tobacco use and visits to the physician.

## Data Collection and Analysis

Data were collected by means of self-administered surveys. Surveys were distributed by the ambassadors after an actual church service during the months of April and May, 2006, at church activities, at SYH workshops and by the Ambassadors individually and were always completed at the site of distribution. Descriptive statistics were used to analyze the survey data.

## Results

## Responding Church Members' Characteristics

A total of 1499 surveys were returned from 29 (7.5\%) of the 388 SYH churches, located in NYC, LI and NJ. The level of participation varied for the 29 churches from a few congregants to close to 2000 and did not appear to relate to the size of the congregation. $69 \%$ of the participants were female; equally distributed by age between 18 and 60; with $76 \%$ African American/black and $11 \%$ Hispanic/Latino (Table 3).

Health Knowledge, Self-Efficacy and Health Behavior Measures
$78 \%$ of participants recorded knowing all five warning signs of stroke and $67 \%$ of respondents considered Heart Disease the \#1 killer of women and men. Less than half of the respondents had talked with their doctor about risk factors for heart disease/stroke. Slightly more than half of the respondents indicated not knowing CPR (Table 4).

A total of $77 \%$ of respondents had their blood pressure checked. $63 \%$ of respondents indicated that they had their cholesterol or glucose checked, however just $36 \%$ of respondents had all three measures-their blood pressure, cholesterol and glucose checked during the last year. The majority of congregants responded no to exercise most days of the week. The majority also responded no to eating the recommended servings of fruit and vegetables each day (Table 5). $91 \%$ of the respondents indicated did not smoke.

Table 3 Baseline of respondents

| Characteristics | $n$ | $\%$ |
| :--- | ---: | ---: |
| Age in years $^{\mathrm{a}}$ |  |  |
| $18-29$ | 217 | 16 |
| $30-39$ | 299 | 19 |
| $40-49$ | 338 | 21 |
| $50-59$ | 281 | 19 |
| $60+$ | 288 | 18 |
| Gender |  |  |
| Female | 1035 | 69 |
| Male | 401 | 27 |
| Race | 1138 |  |
| African-American/Black | 163 | 76 |
| Hispanic/Latino | 24 | 11 |
| Asian | 110 | 2 |
| White | 52 | 7 |
| Other |  | 3 |
| Health insurance |  |  |
| Employer/private health insurance | 904 | 6 |
| Medicare | 91 | 60 |
| State program | 21 | 6 |
| Medicaid | 33 | 1 |
| More than 1 insurance | 41 | 2 |
| No health insurance | 64 | 3 |

${ }^{\text {a }}$ Age data was not provided by $76(5 \%)$ respondents
${ }^{\mathrm{b}}$ Gender data was not provided by 63 (4\%) respondents
${ }^{\text {c }}$ Race data was not provided by $12(1 \%)$ respondents
${ }^{\mathrm{d}}$ Health Coverage data was not provided by 22 (2\%) respondents

## Discussion

The survey data clearly shows a disconnect between what members of the congregations report to know and their actual behaviors regarding heart disease and stroke prevention. It seems that, even though respondents reported knowledge of risk factors and their significance, this did not translate into healthy lifestyles, e.g. participation in exercise or eating a healthy diet. Although more than $2 / 3$ of the participants had one or more health measures checked during the last year, less than half discussed risk factors with their physician. A statistical assessment of the relation (or lack of association) between alleged "knowledge," risk factors and behaviors would be necessary to confirm the apparent disconnect between knowledge and behaviors, taking in account that, church members are also exposed to health programs other than the AHA's Search Your Heart Program.

Although it is not known which ambassadors actually shared materials from the kit with their congregation, ongoing communication with a subset of these ambassadors indicates consistent usage of the educational materials. As we implement a number of action plans based on these

Table 4 Reported baseline health knowledge of respondents

| Characteristics | $n$ | $\%$ |
| :--- | ---: | ---: |
| Stroke warning signs |  |  |
| Face/limb numbness/weakness |  |  |
| Confusion and trouble speaking | 127 | 8 |
| Dizziness/loss of balance | 44 | 3 |
| Severe headache | 27 | 2 |
| All five warning signs of stroke | 1162 | 78 |
| Heart disease awareness |  |  |
| Cancer the \#1 killer of women and men | 180 | 12 |
| Diabetes the \#1 killer of women and men | 85 | 6 |
| HIV the \#1 killer of women and men | 76 | 5 |
| Heart Disease the \#1 killer of women/men | 1005 | 67 |
| Stroke the \#1 killer of women and men | 107 | 7 |
| Physician dialogue |  |  |
| Talked with MD about CVD risk | 708 | 47 |
| Didn't talk with MD about CVD risk | 727 | 48 |
| Know CPR |  |  |
| Participants have taken a CPR class | 678 | 45 |
| Participants have not taken a CPR class | 784 | 52 |

${ }^{\text {a }}$ Stroke warning signs data was not provided by $16(1 \%)$ respondents
${ }^{\text {b }}$ Heart Disease awareness data was not provided by 12 (1\%) respondents
${ }^{c}$ Physician dialogue data was not provided by 23 (1.5\%) respondents
${ }^{\text {d }}$ Taking a CPR class was not provided by 37 (2\%) respondents
results we will continue to perform pre-and post surveys to gather insight on the efficacy of our actions.

Consistent with our findings, in a recent briefing sponsored by the National Medical Association (NMA) January 16, 2007 data presented also highlighted a disconnect of knowledge and actions for African-American patients. In 502 African-American patients who had a first heart attack, although $63 \%$ thought it was a wake-up call and $63 \%$ thought it was a life-altering event, $26 \%$ did not see their doctors regularly and $22 \%$ were not taking their medications as prescribed. For African-American and Latinos more emphasis must be placed by physicians and providers on self efficacy in the areas of diet, exercise and health screening [7].

More emphasis on the health benefits of exercise, good nutrition and the importance of monitoring Glucose, BP and Cholesterol measures appears warranted and/or better understanding what the barriers are to increasing exercise and healthy eating habits as well as measurement of key health measures. Providing educational materials for people to use when meeting with their physician may be warranted to help increase dialogue between patient and physician.

The AHA Heritage affiliate has formulated a number of specific action steps including introduction of the 3 newest modules of the Search Your Heart workbook to the

Table 5 Baseline health behavior of respondents

| Characteristics | $n$ | $\%$ |
| :--- | ---: | ---: |
| Exercise $^{\mathrm{a}}$ |  |  |
| Zero days per week for 30 min | 460 | 31 |
| 1-2 days per week for 30 min | 437 | 29 |
| 3-4 days per week for 30 min | 363 | 24 |
| 5-4 days per week for 30 min | 155 | 10 |
| 7 days per week for 30 min | 58 | 4 |
| Diet $^{\text {b }}$ |  |  |
| Zero fruits and vegetables each day | 81 | 7 |
| 1-2 fruits and vegetables each day | 725 | 48 |
| 3-4 fruits and vegetables each day | 446 | 30 |
| 5-6 fruits and vegetables each day | 159 | 110 |
| 7 or more fruits and vegetables each day | 67 | 4 |
| Health Measures checked in past year |  |  |
| Cholesterol | 112 | 8 |
| Blood pressure | 419 | 28 |
| Glucose | 98 | 7 |
| Cholesterol and BP | 150 | 10 |
| Cholesterol and glucose | 5 | 0.3 |
| BP and glucose | 45 | 3 |
| Cholesterol, BP and glucose | 539 | 36 |

${ }^{\text {a }}$ Exercise data was not provided by $205(1 \%)$ respondents
${ }^{\text {b }}$ Dietary data was not provided by $16(1 \%)$ respondents
${ }^{\text {c }}$ Health Measure data was not provided by 131 ( $9 \%$ ) respondents
churches, covering Nutrition, Physical Activity and Cardiovascular disease. We will continue to offer Nutritional Cooking Demonstration Workshops to the church Ambassadors. We will facilitate CPR training to church participants using the CPR anytime kits and make kits available to the churches. We will provide materials to facilitate discussion at the doctor's visit, including a wallet card to document one's own numbers. We will steer women to our HeartCheckUp website to help them assess their lifetime risk for CVD and Stroke. And we will reach out to male church groups by using male church ambassadors as well as ask current church ambassadors and ministers for solutions on how to reach more male congregants.

The Heritage Affiliate will continue to collect surveys on an annual basis in an effort to measure the impact of intervention that have been formulated based on the current knowledge gained from the 2006 survey. Additionally, we continue to reach out to those churches that did not participate in the 2006 survey.

## Conclusion

The survey provides good "baseline data," albeit on a small segment of the larger target population that should lead to a
more inclusive and more rigorous training program for ambassadors and a more formalized educational strategy for members of the congregations, with before and after intervention risk factor and health behavior measurement.

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