2018

IMPLEMENTING COUNSELING AFRICAN AMERICANS TO CONTROL HYPERTENSION INTERVENTION IN LOUISVILLE METRO

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IMPLEMENTING COUNSELING AFRICAN AMERICANS TO CONTROL HYPERTENSION INTERVENTION IN LOUISVILLE METRO

CAPSTONE PROJECT PAPER

A paper submitted in partial fulfillment of the requirements for the degree of Master in Public Health in the University of Kentucky College of Public Health

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April 12, 2018

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Abstract

Hypertension disproportionately affects African Americans more than their White counterparts. Counseling African Americans to Control Hypertension (CAATCH) is an intervention program that is targeted at African American adults to decrease uncontrolled hypertension. The CAATCH intervention has three components, which includes 1) computerized hypertension education, 2) at home blood pressure monitoring, and 3) behavioral counseling. The CAATCH intervention will be implemented in three sites in the northwest portion of Jefferson County in Louisville, KY. The overall goals of the CAATCH intervention are to decrease the number of participants who suffer from uncontrolled hypertension, increase knowledge of hypertension among participants, increase the amount of participants who can correctly self-measure their blood pressure, and increase the amount of participants who engage in healthy lifestyle behaviors. In the longer term, the intervention is intended to decrease the amount of participants who are seen in the emergency department (ED) due to hypertension complications, reduced healthcare costs in medical expenses, and decrease in hypertension related complications.
Target Population and Need

Background Information

This intervention is targeted towards African American adults suffering from hypertension. The community that will be served is the northwest portion of Jefferson County in Louisville, Kentucky. The northwest portion of Jefferson County includes the neighborhoods of Algonquin-Park Hill-Duvalle, California-Parkland, Chickasaw-Shawnee, Downtown-Old Louisville-University, Germantown, Phoenix Hill-Smoketown-Shelby Park, Portland, Russell, Shively, and South Central Louisville. (Please see Figure 1 in appendix). These areas currently have the greatest need in Jefferson County for this type of intervention compared to other parts of Jefferson County. As seen in Figure 2 of the appendix, these neighborhoods experience more heart disease related deaths than the average US rate $^1$, which is 194 per 100,000, and the average rate for Louisville, which is 181 per 100,000. African Americans comprise the majority of the population in these neighborhoods (Figure 3 in appendix). African Americans are also more likely to die from a heart disease than their White counterparts. Dying from a stroke is a health disparity that this population faces. According to the 2017 Health Equity Report $^2$, African American men and women in the northwest portion of Louisville are dying at higher rate than the rate for Louisville Metro. The Health Equity Report also found that African Americans were more likely to die from a stroke than their white counterparts. In the Medicare population, those who were 65 and older were more likely to suffer from hypertension (62.7%) than those under the age of 65 (43.4%)$^3$. Heart disease and stroke are both complications of uncontrolled hypertension. Targeting hypertension in this target area can potentially lead to a decrease in the amount of deaths that this community experiences in terms of stroke and heart disease.
There are several health behaviors that could contribute to the hypertension experienced in this population. Adult smoking in Jefferson County is 23% and much higher than the US average, which is 14% \(^4\). Adult obesity is 32%, which is higher than the US average (25%) and is equal to the Kentucky average (32%). Jefferson County has a food environment index of 6.9. The food environment index is ranked on a scale from 0 (worst) to 10 (best). Jefferson County fares worse than the US average, which is 8.4, and the Kentucky average, which is 7.2. Physical inactivity (defined as no leisure time physical activity) is 26%, which is worse than the US average (20%) but better than the Kentucky average (29%). Excessive alcohol consumption for Jefferson County is 15%, which is higher than the US average (10%) and the Kentucky average (12%).

The percentage of those who are living in poverty in these neighborhoods is higher than the both the Louisville percentage (13.3%) and the US percentage (12.5%). The residents who live in these neighborhoods have a high percentage of households with no vehicle access. They all are higher than the Louisville average percentage (10.2%) and the US average percentage (8.9%). Food access is also a concern for these neighborhoods. A majority of the residents who live in these neighborhoods live in a food desert. As seen in Figure 4, they live in a USDA defined food desert that has one-half mile access to healthy food options. A food desert is defined as an area where the residents have low access to stores that sell healthy and affordable food. The percentage of healthy food stores in these neighborhoods is very small (Figure 5 in appendix). With the exception of Shively, these neighborhoods experience a high portion of the violent crime rates experienced in Jefferson County (Figure 6 in appendix).

**Community Assessment**
In order to complete the community assessment, a team was formed to determine what residents in this community needed the most and the resources that were currently available to those that live in the community areas. The team found several resources that the Louisville Metro Department of Public Health and Wellness (LMPHW) provided to the residents that lived in Jefferson County. On the LMPHW website, it listed where each resource was available so the team was able to limit it to those that were available to residents that live in the northwest portion of Jefferson County. The team completed key informant interviews of religious leaders, physicians, nurses, the mayor, members of the LMPHW, business owner of the supermarkets and corner stores, and workers of the community centers in these community areas. Four public forums were hosted to see what the residents in the community thought about the hypertension problems of African Americans in their communities and items that the team should address first in order to tackle this problem. The forums were held at different times of the day and of the week in order to provide everyone an opportunity to participate. A focus group was also held in each area (10 total) with 10 participants in each focus group. The purpose of the focus groups was to get further thoughts on the hypertension problem in African Americans and how they felt the team could combat it. Gift cards to a local supermarket and a pedometer totaling $30 were provided to the participants. The team observed the environments of these areas, such as walkability, access to healthcare services, access to food, and etc. The team also observed residents in the community centers and clinics in these areas.

There are several resources that Jefferson County has in place to combat heart disease, including community fitness classes, community centers, community gardens, “Healthy in a Hurry” corner stores, pop up fresh food markets, farmer’s markets, and the “Mayor’s Mile”. The community fitness classes that are offered in the targeted community
areas are either free or very low cost ($1-$5)\textsuperscript{5}. The classes that are offered are aerobics, boot camp, karate, kickboxing, walking class, yoga, and Zumba. Most of these classes are offered during the evenings on weekdays. Jefferson County has 13 community centers, and 8 of them are in the target community areas. These community centers all have a gym and weight room and are open Monday-Saturday. The community centers are open for anyone in the community to use and are free. There are 11 community gardens operated in Louisville with 4 located in the target community areas. These four community gardens offer fresh fruit and vegetables year-round for these communities that do not have access to healthy foods\textsuperscript{6}.

“Healthy in a Hurry” corner stores is an initiative from the YMCA, the LMPHW, and the Center for Health Equity (CHE) to address the lack of fresh produce and vegetables in low income areas of Jefferson County and is grant funded\textsuperscript{7}. The YMCA, the LMPHW, the CHE provide technical and financial assistance to stores that participate in this program and are interested in providing healthy foods to residents in these communities. There are currently six stores that participate in this program, and they are all located in the target community areas. The CHE is a division of the LMPHW that works to address the root causes of health disparities by supporting projects, policies, and research working to change the correlation between health and longevity and socioeconomic status. Fresh Stop Markets are pop up fresh markets that reserve 75\% of their shares for individuals and families who are low income according to the WIC eligibility guidelines\textsuperscript{9}. The shares are sold at a discounted rate of $12 (compared to $25) and they are allowed to use their Electronic Benefit Transfer (EBT) / Supplemental Nutrition Assistance Program (SNAP) benefits to purchase shares. There are four farmer’s markets that come to the northwest portion of Jefferson County in the months of May-October\textsuperscript{10}. The Mayor’s Mile is a distance marking system for walking paths that are located in all of the parks in the northwestern portion of Jefferson County\textsuperscript{11}. It is an inexpensive way for residents to exercise and track their distance.
The team plans to continually monitor community needs and resources on an ongoing basis to ensure that any planned programs are aligned with changing community needs by checking in with the Community Advisory Group every month to make sure that the team is meeting the needs of the communities and to determine if they feel that there is anything that should be adjusted or changed.

Recruitment of Participants

The intervention Counseling African Americans to Control Hypertension (CAATCH) will be implemented in this community. The goal of the CAATCH intervention is to reduce uncontrolled hypertension of African Americans in the targeted community areas. The CAATCH intervention will reach approximately 250 participants at each of their sites, for a total of 750 during the initial pilot implementation of this intervention. The estimates of the initial total of participants were determined by taking into account the amount of participants the original CAATCH trial had and the capacity limits of the rooms that each setting has. In order to be eligible to participate in this intervention, participants will have to be African American adults who have been diagnosed by a physician with hypertension, have uncontrolled hypertension at the time of enrollment, and be taking at least one anti-hypertensive medication. Uncontrolled hypertension is defined as systolic blood pressure (SBP) ≥ 140 mm Hg or the diastolic blood pressure (DBP) ≥ 90 mm Hg (Fernandez et al., 2011)\textsuperscript{12}. If a participant has diabetes or kidney disease in addition to hypertension, uncontrolled hypertension is defined as SBP ≥ 130 mm Hg and DBP ≥ 80 mm Hg (Fernandez et al., 2011)\textsuperscript{12}.

In order to recruit individuals to participate in this intervention, the team will post flyers on public transits, in grocery stores and quick stop markets, community centers,
churches, daycares, and physician’s offices. This strategy will allow the team to reach the target population since these are areas that they frequent. There will also be ads posted in the local newspaper and on the popular radio stations in this area. Another recruitment strategy that will be used is to recruit at local community activities and events. This will again allow the team to describe the purpose of the study and interact with those in the community. One last recruitment strategy that the staff plans to do in order to recruit participants would be to actively recruit in the three major African American churches (Bates Memorial Baptist Church, Canaan Christian Church, and St. Stephen’s Baptist Church) in Louisville, Ky. The staff plans to have fliers posted around the church, have the intervention announced in weekly announcements, and table after church in order to engage with the members of the churches. The staff will also recruit at different events and activities that the churches hold.

In order to retain participants during this intervention, participants will be given gift cards throughout the duration of their time in the intervention. For the completion of every component of the study, a $30 gift card will be given to the participant. The participant will also receive a $15 gift card at the end of each behavioral counseling session they attend. For completing the entire intervention (all three components), the participant will receive a $75 gift card. Incentives are known to make individuals want to participate and stay in studies. Since this is a low-income area, a grocery store gift card will likely incentivize participation. The team also plans to send out birthday cards, give out small gifts whenever someone maintains low blood pressure for a certain amount of weeks, and praise them when they maintain their lifestyle modifications that they are taught in their behavioral counseling sessions. These items will make the participant feel more engaged while they are completing the intervention. One of the team’s goals for this intervention is to increase the participant’s self-efficacy in regards to self-management of their blood pressure. The team wants to have
the participants feel empowered to self-manage their blood pressure. This intervention will provide the participants with the skills that they need in order for them to self-manage their hypertension.

**Program Approach**

**Intervention Program**

Over a 3 year period, CAATCH intends to decrease the number of participants who suffer from uncontrolled hypertension, increase knowledge of hypertension among participants, increase the amount of participants who can correctly self-measure their blood pressure, and increase the amount of participants who engage in healthy lifestyle behaviors. In the longer term, our effects are intended to decrease the amount of participants who are seen in the emergency department (ED) due to hypertension complications, reduce healthcare costs in medical expenses, and decrease hypertension related complications.

The CAATCH intervention will be a good fit for this community because the program is specifically geared towards African Americans. This intervention has three major components for the participants and two major components for the physicians in this intervention (Ogedegbe, N. et al, 2009)\(^1\). The three components that are targeted at the participants are interactive computerized hypertension education, home blood pressure monitoring, and behavioral counseling on lifestyle modification. The two components that are targeted at the physicians are monthly CME-accredited case rounds and chart audit and provision of feedback on clinical performance. The team plans to implement only the three components that are targeted at the participants, which include computerized hypertension education, home blood pressure monitoring, and behavioral counseling on lifestyle
modification. The reasoning for not implementing all of the components is to focus more on the participants. Not implementing the components targeted at the physicians will serve as a limitation for this study because there could be a certain amount of bias that is introduced due to physicians not monitoring the behaviors of the participants. In order to eliminate or decrease any bias, the staff plans to take on the role of monitoring the behaviors of the participants and ensuring that a blood pressure reading by trained staff is taken at each behavioral counseling session. The length of the intervention for participants is 12 months from their start date. The goal is to have at least 750 participants at the start of this intervention and allow participants to join throughout the duration of the intervention until the end of the second quarter of year two.

**Program Component #1: Computerized Hypertension Education**

The interactive computerized hypertension education session includes four modules that will educate the participant on the cause, complications, and treatment of hypertension. This component will be completed at the participant’s initial session in one of their three sessions. The participants are only expected to complete the module once during their participation in this intervention. The modules will also include the side effects of hypertension medication and methods to achieve and maintain a healthy lifestyle. The modules are based on two National Heart, Lung, and Blood Institute publications, “Your Guide to Lowering Blood Pressure” and “Facts about the DASH Eating Plan”. The modules are written at an appropriate reading level for the participants. The interactive computerized hypertension education session should be completed in one sitting lasting approximately two hours. If a participant is unable to complete the education session in one sitting then the team will allow the participant to complete half one day and the other half another day. Participants will be given a pre-test before they complete the education session in order to
gain an understanding of their current knowledge. The participants will also be given a post-test after they have completed the education session in order to analyze if there was knowledge gained from the education sessions. The pre-test/post-test will be completed online before they complete the first module and immediately after the last module.

**Program Component #2: At Home Blood Pressure Monitoring**

The at-home blood pressure monitoring will consist of the participants monitoring their blood pressure at home. Each participant will receive a free at-home blood pressure monitor. They will have a log to keep track of their blood pressure. They will be asked to take their blood pressure twice a day (one in the morning before they have taken their blood pressure medications and one in the evening at 30 minutes after they have eaten). The participants will be expected to keep measure their blood pressure at least three days out of the week. The participants will be asked to bring their logs with them to each behavioral counseling session. During the participant’s initial session, they will learn how to properly use their blood pressure monitor.

There have been studies to show that at home blood pressure monitoring is a reliable way to monitor blood pressure over a long period of time. According to a study by Mi-Hyang et al.\textsuperscript{14} testing the accuracy of at home blood pressure monitoring, they found that only 14.6% of the participants experienced inaccuracy with their blood pressure readings. Another study conducted by Nordmann et al.\textsuperscript{15} found that 89.9% (2915 out of 3240) of the measurements observed were accurate for at home blood pressure readings. Though at home blood pressure measurements may not be as accurate as those taken in the physician’s office, they are a great way to measure blood pressure levels over a long period of time.

**Program Component #3: Behavioral Counseling**
There will be six behavioral counseling sessions that will last one hour. These sessions will be held various days of the week and at different times every other month at each setting in order to give participants a fair opportunity to come to the sessions. The behavioral counseling sessions will take place in a group setting of approximately 75 participants for each session. Participants are encouraged to make an effort to come each counseling session since this is when the staff will receive their logs. Participants will be allowed to miss up to two classes in order to stay in this component of the program. Each behavioral counseling session will cover a different topic that is geared towards lifestyle modification. Topics will include motivational interviewing, goal setting, problem solving, stimulus control, cognitive strategies, and self-monitoring. The motivational interviewing session will be the only one on one session that will take place during implementation. The motivational interviewing session will take place during the initial behavioral counseling session and will last approximately 45 minutes for each individual. The purpose of motivational interviewing is to assist with providing strategies for improving the participant’s nutrition, physical activity, weight loss, and promoting medication adherence. Just as in the original CAATCH intervention, there will only be one session of motivational interviewing. There will be a pre/post test that will take place at the initial and final behavioral counseling session. The pre/post test will test for knowledge for the behavioral counseling.

Participants that choose to be involved in this intervention have the option to opt-out of a component if they feel the need to. Participants who do not complete all three of the components will not be included in final data analysis.

**Program Settings**
The first setting where this intervention will be implemented would be St. Stephen’s Baptist Church Family Life Center. The church is located in Downtown Louisville, so it would be a central location for the participants to access this facility. Because the pastor (Rev. Kenneth Williams) will be a member of the Community Advisory Group, he can encourage participants to continue with their physical activity and healthy eating habits. The Family Life Center has a small fitness center, so participants would be able to use this free of charge for their physical activity. The intervention being implemented at the Family Life Center will contribute to the other services that this center offers by increasing the knowledge of the participants of all of the fitness classes and events that this center offers. It also has a low monthly fee of $10, so after the intervention is over the participants may be able to continue to go to the Family Life Center for physical activity.

The second setting this intervention will be implemented at would be at the Shawnee Community Center. This setting was selected because it is located in the western portion of the community, so participants who live in that area would have access to it. This location also has a weight/cardio room, so they can choose to exercise after the sessions. This community center also has several multipurpose rooms, which will be used to have behavioral counseling sessions for the intervention. The intervention being implemented at the Shawnee Community Center will contribute to the other services that this community center offers by increasing the knowledge of all of the programs that the community center offers. This program offers various nutrition programs, so a partnership could be developed on the nutrition education and demonstrations that is provided through this intervention. This community center also has fitness classes and a walking club available a low fee after the intervention is finished.
The third setting that this program will be implemented is at the South Louisville Community Center. This setting was selected because it would be within access for those who live in the Shively and the southern area of the targeted community. This community center also has several conference style rooms, which can be used for the behavioral counseling sessions that the intervention plans to hold. This intervention will contribute to the South Louisville Community Center by increasing the participant’s knowledge of the fitness classes and center that are located in this community center that they may not have previously known about.

All of the settings are located near a public transit stop, so if the participant does not have a car they will still have access to the setting. All three of the components will be implemented at each the settings. Throughout the course of this intervention, the staff also plans to work with all of the locations in order to secure a lower monthly fee for participants who successfully complete this program, so they will have access to a place they can exercise.

Initial Planning

The first six months are critical for the implementation of the CAATCH intervention since the staff will be preparing to implement the CAATCH intervention. Once all of the staff is hired for the CAATCH intervention, they will begin to prepare for implementation of the intervention. The staff plans to finalize the Community Advisory Board and sites for the implementation of CAATCH. The staff will also review the modules and material that are presented in CAATCH. During the first six months, the staff will also meet with partners and collaborators in order to finalize their contribution to the intervention. The recruitment of participants will also take place during this time period. Purchasing the supplies for the
intervention will be done within the first four months in order to ensure that they have everything before implementation.

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<tr>
<th>Program Tasks and Timeline</th>
<th>Year 1</th>
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**CAATCH Tasks**
- Hire staff
- Review material
- Finalize partners and collaborators
- Train staff
- Recruit participants
- Meet with sites and Community Advisory Board
- Implementation of CAATCH
- Performance measures
- Evaluation
- Outcome measures

CAATCH plans to have referrals of physicians who can provide healthcare services for the participants. The compilation of the referral sheets will be completed during the first six months. The physicians that the staff refers participants to are from the Family Health Centers (FHC) and the Division of Nephrology and Hypertension at the University of Louisville Hospital. The staff would like to utilize FHC because the Louisville Metro Government manages it, and it has multiple locations in the target area. Another reason to utilize FHC is due to their sliding fee payments for those who do not have health insurance. This allows participants without insurance to have an affordable option. The staff plans to utilize the Division of Nephrology and Hypertension at the University of Louisville Hospital due to the staff potentially collaborating with them during the intervention and also due to them specializing in hypertension. The list of physician referrals and the services each place offers will be given to the participants during their initial behavioral counseling session. Participants will be encouraged to use the physician referrals to continue to monitor and manage their hypertension. These referrals are also in place in the event that a participant has
complications with their hypertension through the duration of their time in CAATCH, they will be able to see someone for follow-up.

The staff plans to establish a Community Advisory Group to lead the community mobilization planning and activities. The goal is for Dr. Gregory Timmons, Dr. Timothy Vickers Jr., and Dr. Kenneth Williams, who are the pastors of three large and well-known churches that have pre-dominantly African American attendants in Louisville, KY, to participate in the Community Advisory Group. These three men were chosen to be members of the Community Advisory Group because pastors play an important role in the lives of African Americans. They would be able to discuss why it is important to take care of their bodies and present scripture verses that God wants them to take care of their bodies. A member from the LMPHD will be on the Community Advisory Group. By having someone from LMPHD, the team would be able to have a person who is knowledgeable not only of the community that is going to be served, but also in the field of public health. The staff plans to have someone from the American Heart Association and the Chronic Disease Self-Management Program. Having members from these two organizations will be beneficial since they have experience working with those who suffer from hypertension. The staff plans to have at least one staff member from FHC and the Division of Nephrology and Hypertension to continually provide guidance throughout the implementation of the program. The team plans to have the directors of the community centers in these communities in the Community Advisory Group. These centers play a role in the communities that they are located in, so the directors can help engage the African American adults into decreasing hypertension.

Adaptations
A major adaption that will be taking place in the implementation of this intervention will be not incorporating two components of the intervention. As stated earlier, the two components that are targeted at physicians will not be implemented in this intervention. This would be considered a major adaptation. This will not fully change the program because the program will still implement the three major components for the participants. Another adaptation that may happen in the implementation of this program is allowing participants to opt out of a component of the intervention. In the original study, the participants were expected to participate in each component of the intervention. The team feels that allowing participants to opt out of certain components will still assist them with managing their uncontrolled blood pressure, which is the main goal of this intervention. As stated earlier, participants who opt out of a component of the intervention will not be included in the final data analysis. This is a minor adaptation since it is not changing the intervention and their data is not included in final data analysis.

Fidelity will be implemented in this program by attempting to make as few adaptations to this intervention as possible. Fidelity monitoring data will be collected by the program director by keeping track of all of the adaptations that take place and keep notes about why that adaptation happened. The program director will also track what is being implemented during each component of the intervention and identify any problems that may arise during the intervention. Fidelity monitoring data will be used to make continuous quality improvements to this program by knowing what does and does not work with this community.

In order to ensure that all program materials are accurate, volunteer medical professionals (medical assistant, nurse, and dietician) will be recruited to work with the program and review all materials. To recruit medical professionals, a volunteer post will be
posted on the website of nursing programs and graduate programs that are aimed at these disciplines. The staff will also consult with the Community Advisory Group to make sure that all components of the program are culturally appropriate and listen to suggestions that they may present that they feel would be better to approach to this community. Since this population has a high number of individuals who have not completed high school, the team plans to make sure that language used throughout this intervention would be something that everyone can understand. In order to make sure that the language used is simple, samples of the material given during the program will be given to residents in the target area in order to get feedback.

In order to ensure that this program is inclusive and non-stigmatizing towards individuals, staff trainings about implicit bias, cultural competency, and diversity will be held. A policy about the expectations and behaviors of all staff members and volunteers for this program will be implemented.

**Sustainability**

A challenge to sustainability after this intervention ends would be participants continuing to monitor their blood pressure. When participants are in the program they have motivation to manage their blood pressure through incentives and encouragement from the staff. One way to combat this challenge would be the closeness and group-nature of the intervention. The behavioral counseling sessions are in a group setting so friendships are bound to form during the duration of the participant’s involvement in the intervention. The team is hopeful that after the intervention ends, the participants will continue to engage with each other to manage their blood pressure, which aligns with the social cognitive theory. The social cognitive theory is a psychological theory that focuses on the interaction between
people (their personal factors), their behavior, and their environments (Bandura, A., 1989). The participants will also have their blood pressure cuffs to continue to manage their blood pressure when the intervention ends. During the implementation of CAATCH, the team plans to distribute a list of physician referrals to the participants. The participants will have this list after the program, so they will be able to utilize their services if a complication arises.

Another challenge to sustainability will be the participants utilizing the skills they learned during their behavioral counseling sessions. The topics covered during the behavioral counseling sessions are things that are important for the participant to get their hypertension controlled. If the participants do not continue to utilize the skills they learn, this could harm the participants’ progression to controlled hypertension. A way to combat this would be encouraging participants to use their support systems and friendships that they gained while in the intervention. Having encouragement and accountability from friends can keep the participant engaged in utilizing their skills after the intervention. It is also believed that once ends, the participants will feel better (physically and mentally) so they will want to continue using the skills that they learned during their counseling sessions.

In order to sustain new participants, the staff of the intervention plans to build a relationship with the three major African American churches (Bates, Canaan, and St. Stephens) and the community centers in this area. Through this relationship, the churches and community centers will receive resources and guidance for them to be able to implement this intervention to those in the community independently. The staff will train those that plan to continue this intervention. By having the support of these African American churches, this will assist with enrolling new participants without incentives since they are viewed highly in the African American community. The churches and community centers can recruit at their local events, health fairs, via word of mouth by old participants, and continue to promote the
intervention in their weekly announcements. The churches and community centers also have their own partnerships and collaborators that they are involved with, so they would be able to use their existing partners to assist with promoting and recruiting participants for this intervention.

**Dissemination and Challenges**

The plans for strategic dissemination and communication to raise awareness of the funded intervention and its outcomes would be to present this intervention and the outcomes in the form of infographics, have the outcomes published in a scientific journal, and have a press release in the local newspaper. The staff also plans to assist with the incorporation of a health ministry at three churches (Bates Memorial Baptist Church, Canaan Baptist Church, and St. Stephen’s Church) that the staff plans to collaborate with. The goal of using infographics would be to increase the knowledge of hypertension to those that live in the target community and to inform this community about the outcomes of this intervention program. The objective for this intervention program to be published in a scientific journal would be so people can have more information about the CAATCH program and learn about the outcomes that took place in the target community. The goal of the press release would be to bring awareness about this intervention program and encourage others to take advantage of their health and monitor their hypertension. A health ministry is a ministry within a church that focuses and addresses health issues of those in the church and community. A health ministry will be beneficial in terms of sustainability of this intervention because these ministries can continue the implementation of this intervention of those in their church community.
Communication preferences for key stakeholders (those on the Community Advisory Board and partners) will be assessed by asking them about the best method of communication for them and try to accommodate them with their communication preferences. For example, if a person feels that the best way to communicate with them is in person then the team will try their best to meet with the stakeholder in person and have video chat conference calls. To determine the key stakeholders’ communication preferences, they will be asked at the first stakeholders meeting and their communication preference will be noted. In order to disseminate and communicate information to key stakeholders, infographics, newsletters, brochures, and stakeholder meetings will be used. Infographics will be used to explain the intervention and the outcomes of the program. Newsletters will be emailed to keep the stakeholders updated on the process of the program and what it has achieved thus far in the process. Brochures will be used during the planning stage and the beginning of the implementation stage in order to show/explain to them what hypertension is, what it is that the program is trying to do, and the expected outcomes. The stakeholder meetings will allow all of the stakeholders to be present and give their opinion about different aspects about the intervention program.

There are several potential challenges that the team will have to face throughout the duration of implementing this program. A potential challenge that the team will face is marketing this program in order to recruit participants. Members of the team may not have experience with mass marketing of a program, so this may be a challenge. A way to address this problem would be to actively recruit participants as much as possible. Many of our marketing methods of this intervention are passive, but the staff does plan to implement actively. Another potential challenge that the team will face is retaining participants in the intervention. It can be hard to keep the participants involved in an intervention that lasts 12-
months, so in order to address this challenge the team hopes incentives of gift cards will keep the participants involved.

**Performance Measures and Evaluation**

**Performance Measures**

Throughout the duration of this program, the research team will collect the self-reported blood pressure measures. Each participant is recommended to measure his or her blood pressure twice a day (once in the morning before they have eaten or taken any anti-hypertensive medication and then again in the evening). The participant will complete a log of their blood pressure readings that they will turn in to the program coordinator at each behavior counseling session. According to the American Heart Association, it is best to take two or three measurements with one minute in between each measurement. The staff will analyze and reference the blood pressure readings each month in order to determine if the participant is making progress towards decreasing their blood pressure. In order to determine this, the staff will determine the number of days that month that the participant had a blood pressure measurement under either 140/90 mm Hg for participants without diabetes or kidney disease or under 130/80 mm Hg for participants who have diabetes or kidney disease. The staff member will compare each month’s log to see if the participant is continually increasing the amount of days that they are under the hypertensive measures. A statistical test will be performed for each participant to determine if there was a statistically significant change in his or her blood pressure levels. If a significant amount of participants have a reduction in their blood pressure levels, then the staff would be able to conclude that the program does work.
The program will utilize several surveys throughout the implementation of this program. In order to ensure that the team collects appropriate performance measures from the participants, the team will give out a survey to the participants that will report their demographics when they begin the intervention. Examples of demographics that will be collected are gender, age, income levels, educational levels, occupation, and martial status. A survey will be given to measure the participant’s knowledge of hypertension management via pretests and posttest. The pretest will include questions about what hypertension is, how to effectively manage hypertension, and the measurements of hypertension (what is the SBP and DBP measurements for hypertensive patients). The exact same test will be given to the participants after they complete the computerized hypertension education course in the form of a posttest. The team will review both the pretest and posttest and determine if there is a statistically significant change between the two.

This program will also utilize paper health surveys to determine if the participants are making the lifestyle modifications needed in order to continue to manage their hypertension. Questions that would be included on this survey would be the amount of times that they exercise for at least 20 minutes per week, the average amount of fruits and vegetables they consume daily, and their opinion of their overall physical health. This survey will be given out to participants every 2 months, including the initial month they begin their participation and their final month of participation. The initial month will serve as a baseline for the individual and each survey will be compared to both the baseline and the previous months in order to determine improvements. The staff will use the Cardiac Self-Efficacy Scale (Drozda, M. et al., 2011)\textsuperscript{17} in order to determine the self-efficacy of the participants. Examples of questionnaire items are located in the appendix (Figure 8). The performance measures used during the implementation of this program will be used to make continuous quality
improvements. The staff will analyze the data in order to determine how well the intervention program is working, note areas of improvement, and monitor the effectiveness of the components of the intervention. These performance measures will assist with the development of the CAATCH program and future implementations of the CAATCH program.

**Outcome Evaluation**

The goal of the CAATCH intervention is to improve blood pressure control of hypertensive African American adults in the northwest portion of Jefferson County in Louisville, KY. Through implementation of the CAATCH intervention, the team hopes to address the racial and ethnic inequities of hypertension seen in Jefferson County.

In order to determine that there was a decrease in the number of participants who suffer from uncontrolled hypertension, the team will request that the participants to let staff know when their physician either takes them off of their blood pressure medication and/or determines they no longer have uncontrolled hypertension. Participants will be encouraged to visit their primary care physician or a referral physician while they are participating in this intervention. The staff will also compare the participant’s readings on their logs to the American Heart Association’s blood pressure guidelines to interpret the blood pressure readings. This comparison will be done after each behavioral counseling session. As stated earlier, participants will be given a pretest and posttest before and after their computerized hypertension education component of the intervention. In order to determine that this goal has been met, a program coordinator will compare the pretest and posttest and determine if there was a statistically significant change between the two tests. The team will know that there is an increase in the number of participants who can correctly self-measure their blood
pressure by using the teach-back method on how to correctly use self-measure blood pressure equipment. The staff will also provide a handout (can be seen in appendix as Figure 7) on how to correctly measure their blood pressure at home. Twenty-five participants will be randomly selected to show the team how to correctly measure their blood pressure during each of the six behavioral counseling sessions. This random selection will only happen once during each session. This will allow the team to correct the participant on technique.

In order to determine if the number of participants who engage in healthy lifestyle behaviors have increased, the staff will refer to the health surveys that will be given to them during their time in the intervention. The program coordinator will compare the health surveys for each participant. The program coordinator can ask the participant why they are not meeting certain health goals and if there are any barriers they face that prevents them from reaching the target goals. If there are barriers, the program coordinator can provide assistance or find other resources and/or services they may be able to help.

**Capacity of Organization**

The LMPHW was established in 1866 and aims to create a healthier Louisville where everyone has the opportunity to lead a healthy and productive life. Figure 9 shows the core functions of Public Health and how the LMPHW aligns with those core functions. The LMPHW is under the leadership of Dr. Vanessa Great and delivers their programs and services through three main divisions: Clinical Services, Community Health, and Environmental Health and Preparedness. The LMPHW is also the home of the Center for Health Equity. From these divisions, the LMPHW is able to address an array of issues including childhood lead poisoning, addiction, diabetes, tobacco cessation, maternal health, and etc. The LMPHW has multiple experiences with implementing evidence-based programs
on a large scale. The staff for LMPHW has experience with reaching over 500 individuals per year for each department. The LMPHW has a sector that is dedicated to diabetes prevention. The diabetes prevention department offers diabetes classes for those who live with diabetes or are at risk for developing diabetes. Currently these classes have reached 1,278 individuals.

The vision of the LMPHW is for there to be a healthy Louisville where everyone and every community thrives. The mission of the LMPHW is to achieve health equity and improve the health and well-being of all Louisville residents and visitors. The values of the LMPHW are to collaborate and innovate; grit, integrity, and quality. The Louisville Metro Government has policies in place that prohibit unlawful discrimination in regards to race, color, religion, national origin, sex, age 40 and older, disability, pregnancy, gender identity, sexual orientation, and smoker or nonsmoker status. The LMPHW is a branch under the Louisville Metro Government and we are required to follow these policies.

All of the divisions of the LMPHW are conveniently located in the same building, so the staff of the intervention program can easily access other members of the department for advice and resources. The CAATCH intervention aligns with the mission of the LMPHW due to the intervention’s goal of wanting to decrease the amount of uncontrollable hypertension among African American adults. This aligns with not only improving the health of the residents of Louisville, but also contributes to improving health equity. Multiple research articles 18,19,20 have shown that there is a health disparity among African Americans and other races in terms of hypertension. The LMPHW has received multiple grants over the years in order to address multiple issues. In 2017, the LMPHW received $12,036,400 in federal and state grants to support the activities of LMPHW. Figure 10 shows an overview of funding for LMPHW. The turnover rate for the LMPHW is 12%, which is under their goal turnover rate (13%)21. Over half of those who left LMPHW either retired or were terminated involuntary.
Staff members are evaluated on a yearly basis in order for staff members to make improvements.

The LMPHW has collaborated with multiple community partners and has various partnerships. In order to maintain relationships with community partners, the LMPHW provides resources and support for the organizations past the collaboration period. In 2017, LMPHW collaborated with 30 community partners to address adverse childhood experiences, improve the youth justice system, prevent violence, revitalize neighborhoods, and assure Louisville’s Resilience. The LMPHW continuously does performance measures in order to improve their programs.

**Partnerships/Collaborations**

This intervention provides multiple opportunities for the LMPHW to collaborate and partner with various organizations across Louisville Metro. As stated earlier, the members of the community advisory group are also the key stakeholders for this intervention program. The members of the community advisory group are committed to serving those in this target community and improving the health of those in Louisville. The community advisory group will not only provide advice on how to work with this target community, but they will also assist with ensuring the implementation of this intervention goes smoothly. One organization that we plan to partner with is the Louisville branch of the American Heart Association. Staff of the CAATCH intervention plans to have the American Heart Association to provide pamphlets and informational material for the sites of the intervention and to provide to the participants. The staff for the American Heart Association can also be present for the initial session for the intervention in order to show the participants the correct way to take their blood pressure. After the end of the intervention, the American Heart Association can
continue to provide informational material to these sites in order to increase awareness of those who visit these places. The American Heart Association has experience with implementing multiple programs in this community. Some examples of the American Heart Association programs are Jump Rope for Heart, Hoops for Heart, and Heart Walks. In these communities, the American Heart Association hosts multiple Heart Walks, free health screenings at health fairs, and CPR training. Another partnership that the CAATCH intervention plans to have is with the Chronic Disease Self-Management Program that the Kentucky Cabinet for Health and Family Services offers. This is a good partnership to have because the staff is very knowledgeable about various chronic diseases, including hypertension. The Chronic Disease Self-Management Program can assist the staff with reviewing material presented to the participants and two components of the intervention (the computerized modules and the behavioral counseling sessions). The site for the Chronic Disease Self-Management Program is in this target community, so the staff for this program already has years of experience with working in this community and implementing a large scale and successful program. One last partnership the staff plans to have is with the Department of Parks and Recreation. Two of the settings for the CAATCH intervention are in community centers, which are operated by the Department of Parks and Recreation. This partnership can play a role in sustainability of this intervention. The Department of Parks and Recreation has experience implementing prevention programs via their community centers and exercise classes. The community centers hold various nutrition education and fitness classes in this community. The Department of Parks and Recreation also hold various special events that are geared towards being physically active. The Department of Parks and Recreation has experience with working with this target community via their parks and community centers. The Department of Parks and Recreation has the ability to implement programs to scale due to them being responsible for 18 community centers and all of the
parks in the Louisville Metro. They have the funding and resources needed in order to provide their multiple programming to those in the target community.

A potential collaboration that the staff of CAATCH intends to pursue is with the Division of Nephrology and Hypertension at the University of Louisville Hospital. This would be a good collaboration to have, as this hospital is located near the target area of outreach. The Division of Nephrology and Hypertension can also assist the staff of CAATCH by providing educational information to participants of the intervention and to the sites that the intervention will be taking place. The staff of the Division of Nephrology and Hypertension can also assist the staff with their expertise on hypertension. Another collaboration that CAATCH plans to pursue is with the three major churches (Bates, Canaan, and St. Stephen’s Baptist Church). The churches listed have a predominately African American congregation. Having a partnership with these churches will be very important since faith plays a huge role in most African Americans’ lives. CAATCH plans to use these churches as a way to reach African Americans in this community for promotion of this intervention, but also as a way to educate African Americans who attend these churches. CAATCH plans to have educational material about hypertension and managing their blood pressure at the churches.

Program Management

In order to manage this intervention, there will be one principal investigator, one program director, and two program coordinators. The principal investigator will be the leader of this program and oversee the staff of this program. The principal investigator will hire staff for the program, form the Community Advisory Group, conduct meetings with the Community Advisory Group, and host all of the trainings of staff necessary for the
implementation of this intervention. The program director will be actively involved in the
day-to-day tasks of the intervention. The program director will assist the principal
investigator with overseeing the intervention, training the participants on using an at-home
blood pressure cuff, and reviewing educational material for accuracy and simplicity. The
program director will also construct and finalize a work plan for the program, visit program
sites before and during implementation, conduct the behavioral counseling sessions, and
oversee the program coordinators. The program coordinators will be part-time staff that will
assist with the implementation of this intervention. The program coordinators will be present
during the behavioral counseling, conduct follow-ups with the participants, assist with
designing and posting marketing materials for the intervention, recruit volunteers, oversee the
volunteers, and create and email newsletters for the Community Advisory Group. These were
just a few of the key responsibilities that the principal investigator, program directors, and
program coordinators will be completing during the program implementation.

The principal investigator will have a terminal degree and will have experience with
implementing large-scale public health programs. The principal investigator will also have
experience working as a principal investigator in at least two other public health programs.
The lowest level of education for the program director will be a Masters in Public Health.
He/she will have experience with implementing and working with large-scale public health
programs and have served in a key role in the implementation of at least two large-scale
public health programs. The program coordinators will be students (either undergraduate or
graduate) that are pursuing their degree in public health. They will be expected to have
excellent communication skills and be self-motivated. This will be assessed during the
interview process by asking questions about self-motivation and determining their
communication skills during the interview. The program coordinators will not be expected to have any experience working with a public health program.

The collection of the data will be performed by the program director and program coordinators. The program director will oversee the blood pressure readings and the participant’s knowledge of hypertension. The program director will assess if there has been improvement from their initial blood pressure reading, which will be taken on the first day of the intervention. The participants will have sheets where they record their blood pressure and this will be handed to the program directors at each behavior counseling session. The program director will analyze the blood pressure sheet and compare it to previous months and the initial blood pressure. The program director will keep track of the sheets by inserting them into an excel spreadsheet for each participant. The program director will assess the participant’s knowledge of hypertension by having the participant complete a test before completing the computerized educational material and then again afterwards. The program coordinators will be collecting data on their behavior in regards to hypertension management.

In order to reduce staff turnover, the principal investigator will allow the staff members to voice their concerns about any issues that they may have with the program or their position. The principal investigator will meet with staff members individually at least once a month (depending on position) and will allow staff to take on more responsibility if they would like. The principal investigator will also host monthly staff meetings. The staff meetings will be a time where everyone can learn about the progression of the program and ask other staff members for advice for any issues they may have. The staff meetings will have food and there will be time allowed for fellowship. There will also be monthly prizes given to a randomly selected staff member.
## Budget Justification

<table>
<thead>
<tr>
<th>Position Title</th>
<th>Annual Salary</th>
<th>Time</th>
<th>Months</th>
<th>1st Year Salary With Fringe</th>
<th>2nd Year Salary With Fringe</th>
<th>3rd Year Salary With Fringe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator</td>
<td>$80,000</td>
<td>60%</td>
<td>12</td>
<td>$64,647</td>
<td>$71,690</td>
<td>$73,840</td>
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<tr>
<td>Program Director</td>
<td>$60,000</td>
<td>75%</td>
<td>12</td>
<td>$62,621</td>
<td>$65,301</td>
<td>$67,261</td>
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<tr>
<td>Program Coordinator #1</td>
<td>$20,000</td>
<td>100%</td>
<td>12</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Program Coordinator #2</td>
<td>$20,000</td>
<td>100%</td>
<td>12</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$167,268</strong></td>
<td><strong>$176,991</strong></td>
<td><strong>$181,101</strong></td>
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</tbody>
</table>

### Equipment and Supplies

<table>
<thead>
<tr>
<th>Item Requested</th>
<th>Type</th>
<th>Amount Requested Year 1</th>
<th>Amount Requested Year 2</th>
<th>Amount Requested Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Supplies</td>
<td>Educational Pamphlets, Surveys, Blood Pressure Logs, Flyers, Brochures, etc.</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Blood Pressure Monitoring Tools</td>
<td>Blood Pressure Cuffs</td>
<td>$11,250</td>
<td>$11,250</td>
<td>$0</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$21,250</strong></td>
<td><strong>$21,250</strong></td>
<td><strong>$5,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
Many equipment and supplies are needed for this intervention to operate. The allotted amount of the general office supplies are for creation and printing of educational pamphlets given to participants, blood pressure logs, flyers, brochures, and etc. The staff will also be providing each participant a blood pressure cuff so that they can monitor their blood pressure from home. The amount allotted is enough to buy a blood pressure for all 750 participants.

<table>
<thead>
<tr>
<th>Type</th>
<th>Amount Requested Year 1</th>
<th>Amount Requested Year 2</th>
<th>Amount Requested Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training for Staff</td>
<td>$2,000</td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td>Mileage</td>
<td>$1,000</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Overnight Hotel Stay</td>
<td>$400</td>
<td>$750</td>
<td>$750</td>
</tr>
<tr>
<td>Meals</td>
<td>$300</td>
<td>$600</td>
<td>$600</td>
</tr>
<tr>
<td>Conference/ Regional Training</td>
<td>$2,500</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Evaluation/Performance Measures</td>
<td>$10,000</td>
<td>$0</td>
<td>$7,000</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$16,200</strong></td>
<td><strong>$8,850</strong></td>
<td><strong>$15,850</strong></td>
</tr>
</tbody>
</table>

The travel portion of the budget is for all staff members to attend an annual program director's meeting and an annual regional training. The mileage is the cost of air travel round-trip for each person. The overnight amount for year 2 & 3 are the cost of a hotel for five nights at $150 per night. The overnight amount for year 1 is the cost of a shared hotel at a rate of $150 for the principal investigator. The meals that are budgeted for are breakfast, lunch, and dinner for $20 per meal per day for five days. The conference/regional training site visit is the budgeted amount for the how much it would cost to participate in the conference/regional training. The amount allotted for staff training will be used to purchase supplies and other things needed for the staff training. The amount allotted for performance
measures/evaluations are needed in order to buy the supplies needed to conduct these evaluations.

<table>
<thead>
<tr>
<th>Type</th>
<th>Amount Requested Year 1</th>
<th>Amount Requested Year 2</th>
<th>Amount Requested Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentives</td>
<td>$100,000</td>
<td>$192,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>Rooms for Sessions</td>
<td>$14,000</td>
<td>$0</td>
<td>$7,000</td>
</tr>
<tr>
<td>Food</td>
<td>$20,000</td>
<td>$0</td>
<td>$5,000</td>
</tr>
<tr>
<td>Travel</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$139,000</strong></td>
<td><strong>$197,000</strong></td>
<td><strong>$117,000</strong></td>
</tr>
</tbody>
</table>

The cost of the education materials will pay for printing and creating brochures that the participants can keep. It will also cover the cost of the computerized education that participants have to complete. The cost of the rooms is to pay for rooms that will be rented for the behavioral counseling sessions. Food is a budgeted line item because at each session, there will be a healthy meal served. This cost is the estimated cost of feeding the participants at each behavior counseling session. Incentives will be given to those who complete each component and behavioral counseling session. As stated earlier, the participants will receive a $30 gift card for completion of each component, $15 gift card for completion of each behavioral counseling session, and a $75 gift card for completion of the study. The amount allotted for each year is to cover the cost of 750 participants total. Travel for the participants is to cover any costs that may be associated with getting the participants to the program site. This may include a staff member picking them up or paying for the participant to use public transportation.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1 Grand Total</strong></td>
<td><strong>$343,718</strong></td>
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<td><strong>Year 2 Grand Total</strong></td>
<td><strong>$404,091</strong></td>
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<td><strong>Year 3 Grand Total</strong></td>
<td><strong>$318,951</strong></td>
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<tr>
<td><strong>Total Amount Requested</strong></td>
<td><strong>$1,066,760</strong></td>
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</tbody>
</table>
Figure 3

Figure 4
Figure 5

Figure 6
How to measure your blood pressure at home

Follow these steps for an accurate blood pressure reading

1. PREPARE
   - Avoid caffeine, cigarettes and other stimulants 30 minutes before you measure your blood pressure.
   - Wait at least 30 minutes after a meal.
   - If you’re on blood pressure medication, measure your BP before you take your medication.
   - Empty your bladder beforehand.
   - Find a quiet space where you can sit comfortably without distraction.

2. POSITION
   - Position arm square at heart level.
   - Keep arm supported, palm up with elbow relaxed.
   - Sit with legs uncrossed.
   - Keep feet flat on the floor.
   - Keep back flat, supported.

3. MEASURE
   - Rest for five minutes while in position before starting.
   - Take two or three measurements, one minute apart.
   - Keep your body relaxed and in position during measurements.
   - Sit quietly with no distractions during measurements—avoid conversations, TV, phones and other devices.
   - Record your measurements when finished.

TARGET: BP

This Prepare, position, measure handout was adapted with permission of the American Medical Association and The Johns Hopkins University. The original copyrighted content can be found at https://www.americanma.org/johns-hopkins-blood-pressure-resources.

Figure 7
Self Efficacy Questionnaire Items

How confident are you that you know or can:
- Control your chest pain by changing your activity levels
- Control your breathlessness by changing your activity levels
- Control your chest pain by taking your medications
- Control your breathlessness by taking your medications
- When you should call or visit your doctor about your heart disease
- How to make your doctor understand your concerns about your heart
- How to take your cardiac medications
- How much physical activity is good for you
- Maintain your usual social activities
- Maintain your usual activities at home with your family
- Maintain your usual activities at work
- Maintain your sexual relationship with your spouse
- Get regular aerobic exercise (work up a sweat and increase your heart rate)

Figure 8

![Core Functions of Public Health]

Source: Core Public Health Functions Steering Committee, Fall 1994

Figure 9
Figure 10

FY17 BUDGET

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Amount</th>
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<tbody>
<tr>
<td>General Funds</td>
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<tr>
<td>Carry Forward &amp; Designated</td>
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<tr>
<td>Agency Receipts</td>
<td>$1,651,900</td>
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<tr>
<td>Federal Grants</td>
<td>$5,625,200</td>
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<tr>
<td>State Grants</td>
<td>$2,411,200</td>
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<tr>
<td><strong>Total Revenue</strong></td>
<td><strong>$ 23,195,600</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenditures</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel Services</td>
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<tr>
<td>Contractual Services</td>
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<tr>
<td>Supplies</td>
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<tr>
<td>Equipment/Capital Outlay</td>
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<td>Direct Reimbursements</td>
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<tr>
<td>Interdepartment Charges</td>
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<tr>
<td>Restricted &amp; Other Prg. Exp.</td>
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<tr>
<td><strong>Total Expenditures</strong></td>
<td><strong>$23,195,600</strong></td>
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</table>
References:
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