A Diabetes-Free Breathitt County: Implementation of the National Diabetes Prevention Program in Pharmacies

Urvi Patel
University of Kentucky, urvi.patel@uky.edu

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Urvi Patel, Student
Robin Vanderpool, DrPH, CHES, Major Professor
Corrine Williams, ScD, MS, Director of Graduate Studies
A DIABETES-FREE BREATHITT COUNTY

Implementation of the National Diabetes Prevention Program in Pharmacies

URVI PATEL

Dr. Robin Vanderpool
Dr. Kathryn Carderelli
Dr. Mark Swanson

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University of Kentucky College of Public Health
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Abstract

The National Diabetes Prevention Program (NDPP) is a primary prevention program endorsed by the Centers for Disease Control and Prevention (CDC). The program’s purpose is to promote dietary modification and physical activity to reduce the incidence of diabetes. NDPP is currently offered by national organizations such as the Young Men’s Christian Association and Weight Watchers. However, NDPP is not commonly available in geographic areas that are in the most need of such preventive health programming such as rural communities. One such area where NDPP is not widely offered is the Diabetes Belt, an area within the Appalachian region of the United States where adults have a greater likelihood of developing diabetes. Specifically, residents of Breathitt County, Kentucky experience higher than normal diabetes rates and present with elevated risk factors such as obesity, physical inactivity, poor diet, and socioeconomic disparities that influence the development of diabetes. Generally, primary care providers are responsible for chronic disease management and prevention, but rural physicians may be burdened with complex patient cases so their ability to provide preventive care is often minimized. Breathitt County has a prevention need that alternative health care providers such as pharmacists can help fill. Pharmacists are widespread throughout the county and have clinical knowledge, expertise, and community trust necessary to effectively implement NDPP, thereby increasing access to diabetes prevention programming in Breathitt County. In the current proposal, the Breathitt County Health Department is guided by a Community Advisory Board in its implementation of NDPP in nine pharmacies over a three-year period. At each
pharmacy we will enroll 10 participants who will receive year-long educational programming in accordance to the CDC endorsed Prevent T2 curriculum. We plan to assess diabetes management and weight loss outcomes and maintain program sustainability by implementing a strong professional and social referral system along with an adequate reimbursement model.

**Project Narrative**

**Target Population**

Breathitt County is located in rural, Appalachian Kentucky; the 2015 U.S. Census Bureau estimates a population of 13,484.1 Breathitt County is comprised of approximately 492 square miles of land and is surrounded by Wolfe, Magoffin, Knott, Perry, Owsley, and Lee counties. Nearly 33% of the population lives below the poverty level and the median household income is $24,045, which is nearly half of the state's average household income. Additional population data reveals that over 50% of the population is male, approximately 21% of the adult population has an education level below a high school degree, and nearly 16% of the residents are over 65 years of age.1

According to national data, 11.3% of Kentucky's adult population was diagnosed with diabetes in 2014.2 An examination of county-level data reveals that many eastern Kentucky counties are a part of what the Centers for Disease Control and Prevention (CDC) refer to as the “Diabetes Belt” (Figure 1). This is an area that comprises 644 counties in 15 states; adults in these
counties are at greater risk for acquiring type 2 diabetes than adults in other parts of the country. Among eastern Kentucky counties, Breathitt County is identified as having the 12th highest prevalence rate of diabetes in the state. According to 2013 U.S. Census Bureau data, 15.7% of Breathitt County’s population has been diagnosed with diabetes (Figure 2a), which is more than double the national rate for diabetes prevalence (7.0%).

Type 2 diabetes is a condition in which blood glucose levels rise to higher than normal levels due to a variety of causes. It is the most common form of diabetes and is a major cause of blindness, kidney failure, and lower limb amputations. Type 2 diabetes is a gradual onset disease state that comes with various points of intervention prior to a full diagnosis. During this period of decline, referred to as prediabetes, the body’s natural response to glucose is slowed, but not diminished. Unfortunately, once a patient is diagnosed with the condition they can only manage the disease state with medications and lifestyle modifications. There is no curative approach for this condition, but there are ways in which it can be delayed or prevented. Currently, medication is the primary therapy for managing type 2 diabetes, but the respective health and economic burden of the disease have progressed to a point where more upstream approaches are necessary.

Implementation of lifestyle modifications through the prediabetic stage can prevent the complete diagnosis of diabetes. Interventions include physical activity and dietary modifications that lead to weight loss. Specifically, community programs

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a Figure 2 Legend: Yellow – incidence rate of 8.1 to 9.4; Orange – incidence rate of 9.5 to 11.1; Red – incidence rate of 11.2 to 15.1; Bright blue – incidence rate of 15.7+. 
and incentivized initiatives can provide the infrastructure for a population to improve their overall health.

As mentioned earlier, there are various factors that can lead to the diagnosis of type 2 diabetes. Some of these factors include increased weight, physical inactivity, a poor diet that is high in carbohydrates and fat, and increased age. Individuals with any combination of these risk factors are at a greater risk for being diagnosed with type 2 diabetes. The 2015 Kentucky Behavioral Risk Factor Surveillance System (BRFSS) data for Breathitt County reveals that 66% of the county’s adult population is overweight and 42% of the adult population is obese; moreover, 29% report physical inactivity and 16% of the population is over the age of 65. This data, in combination with diabetes prevalence data stated above, indicates there is a need for evidence-based programmatic approaches aimed at preventing type 2 diabetes in Breathitt County.

The development of type 2 diabetes can be due to various risk factors, such as an inactive lifestyle, excessive weight gain, poor diet, and increasing age, that can lead to decreased insulin sensitivity and a slow and steady decline in the body’s natural glycemic response. During this period of decline, referred to as prediabetes, the body’s natural response to glucose is slowed, but not diminished.

The National Diabetes Prevention Program (NDPP), endorsed by the CDC, is currently the only certified prevention program that has been implemented within the county. This is an initiative that involves a yearlong lifestyle change program (LCP) aimed at reducing a person’s body weight through decreased caloric intake and increased physical activity. This program is based on a study reporting that a
reduction of 5%-7% in body weight would minimize the risk of 58% of patients developing type 2 diabetes.\textsuperscript{10} Although this program has proven to be extremely beneficial, its singular location in Jackson, Kentucky is hindering the program’s outreach.

On a national scale, NDPP is offered in a variety of locations such as local health departments, the Young Man’s Christian Association (YMCA), Weight Watchers (WW), and pharmacies. Currently, the county’s only operational NDPP is within the health department, which is located in Jackson, the county seat. Programs cannot be implemented within YMCAs or WWs programs as there are none in the county. These limitations serve as a significant barrier for traditional means of operationalization. Pharmacies, however, are widespread throughout the county and provide an ideal venue for delivery of this LCP.

Pharmacists have consistently earned top rankings as one of the most trusted health care professionals, offering them the opportunity to serve as the bridge linking the community and health care systems.\textsuperscript{12} Their unique placement allows them to have close ties with the patient base from which they operate and have the potential to build strong connections with health care provider groups in their area. Utilization of this link to engage patients and providers in preventive health programs, such as the NDPP, could reduce the burden of chronic diseases and greatly improve patient health outcomes.\textsuperscript{22}

Recent changes in the pharmacy practice model are encouraging pharmacists to take on a more patient-centered role. Programs such as the NDPP allow pharmacists to provide a pre-packaged curriculum that is rooted in health education
and lifestyle modification. Considering that pharmacists have been providing chronic disease management strategies, such as Diabetes Self-Management Education (DSME), for many years, it is evident that this profession could be a driving force for this nationally recognized prevention program. The NDPP can be used to enhance an existing diabetes education infrastructure. Pharmacists are already recognized as experts on diabetes education and are well-accepted as lifestyle change coaches in this diabetes prevention program. Marrying the pharmacy and public health practice models enhances pharmacists’ ability to impact the community, which they so loyally serve. Through this collaboration, pharmacists are able to increase access to care and reduce the burden of chronic disease within their community. Implementing services such as the NDPP in pharmacies enhances pharmacist outreach, fills a gap within the health care system, expands the reach of the NDPP, and allows for pharmacists to advance their profession beyond traditional roles.

Establishing a Community Advisory Group (CAG) is a key component of the target population identification and assessment steps. In order to convene a group of individuals that is representative of the community and informed about the activities in Breathitt County, a variety of stakeholders need to be contacted. This group will work to provide information, education, and solutions in accordance to the standards of the community. The group will actively conduct its assessments through a coalition that includes local health care providers (pharmacists, one physician, one podiatrist, one optometrist, and one dentist), other health-based support staff (one pharmacy technician and dietician), two county officials, local
church leaders, and individuals who have been diagnosed with type 2 diabetes. This group’s work will be monitored by team members leading the NDPP from the Jackson County Health Department (project lead, funding expert, and epidemiologist).

Breathitt County is fortunate to already have one established NDPP. The staff members of this program will provide the coalition with information about the program’s establishment, outreach, impact, successes, and barriers they have faced in its implementation. These individuals will be consulted for technical assistance in establishing additional programmatic sites across the county.11 Local health care providers and support staff will provide insight into patients’ socio-demographics and health issues as well as community infrastructure that can be used to support diabetes awareness and proactivity towards preventing the disease. These are the individuals we are looking to engage in the process as they can serve our most favorable mode of delivery and support. County officials will oversee and correct for any policy or environmental barriers that may be present when planning for implementation of new programs. These individuals have a unique place in the community to influence change through endorsements. Engaging these individuals in the mission of the project will allow the group to have a strong foundation of support. The general public, represented through the individuals diagnosed with type 2 diabetes, will serve a significant role in this coalition as they will be looked to for answers about community-based needs and assessments. These individuals will provide us with information about whether or not the community sees diabetes as a concern, how to best earn the trust of the community, and how to engage the
community in a sustainable manner. Project staff will oversee the actions of this group, ensure adequate assessment of the community, and provide supportive efforts in the expansion of the NDPP to other areas in the community.

Initially, these community assessments provide information that will guide early programming. The information will be gathered through focus groups, interviews, surveys, questionnaires, and epidemiological studies of the area. This information will be used to prioritize the implementation of programs that will help address the diabetes prevention needs of the community. Once the programs are underway, this group will meet on a monthly basis to assess the current needs of the community and whether or not the current programs are meeting those needs.

Through “A Diabetes-Free Breathitt County” we will aim to reach the maximum number of individuals with specific risk factors for diabetes. The percentage of the population that is overweight (66%) represents a key target group.\(^8\) Based on this figure, we estimate that up to 8,899 individuals can be impacted through the longitudinal implementation of the NDPP in pharmacies across the county, but only 270 individuals will be impacted through this initial 3-year grant program as each of the nine pharmacies are only allowed to enroll 10 participants a year. This cap has been established to ensure that each pharmacy has the optimal opportunity to provide programming that is effective and sustainable. The program will focus on providing individuals with risk factors for type 2 diabetes with information that will help them prevent disease development. The primary focus of the program will be on how to eat healthy without giving up the foods that
they love, how to incorporate physical activity into their daily lives, how to manage stress and cope with challenges, and how to get back on track if they falter.

Regardless of the location of the program, recruitment of individuals will be challenging because prediabetes is not readily recognized as a preventive stage that precedes diabetes. The most effective mode of recruitment will be through a referral system established with local physician and provider groups. These individuals are able to recognize patients who are at risk of developing diabetes and can refer them to NDPP sites in the community. In addition to visit-based recognition of qualified participants, our team will work with clinics who are willing to provide de-identified patient information to identify individuals who qualify to participate based on certain clinical risk factors such as elevated blood glucose readings and increased body mass index (BMI). These individuals will be contacted through postcards, which will provide information about the NDPP and sites where they could attend the counseling program. These postcards will be prepared for mailing by our staff, but the medical clinics will mail the materials. Behaviorally-informed communication strategies, which are communications tactics aimed at presenting information in a manner that coincides with the listener’s needs, will also be implemented to effectively reach the audience. A social referral movement will be initiated, using the peer and familial networks of current enrollees to recruit participants. Health screenings and information sessions that involve interactive activities to help participants recognize their risk and engage them in dialogue about the NDPP will be held at partner sites, such as the Forrest Hill Community Center and local churches within the county. It will be imperative that these
screening efforts are conducted both inside and outside of the county (e.g., in neighboring communities such as Hazard and Perry County) to gain as many participants as possible. Culturally competent marketing strategies will also be used through social media, flyers in frequently visited community locales (e.g., churches, community centers, post office, banks, social service agencies), word of mouth, and developing relationships with large employers and local government to incorporate this prevention program into their employee wellness initiatives.

As the program is based on a 1-year curriculum that focuses on key factors that gradually modify a patient’s health outcomes, the hope is that these modifications will be sustained through personal will, supportive social norms, and environmental supports. Currently, the program is not equipped to extend the intervention past the 1-year curriculum; therefore, changes made may not be sustainable. In an effort to circumvent the regression of lifestyle changes that participants have made throughout the year our group plans to implement a feedback loop mechanism that allows successful participants to continue to participate in the program by helping the next cohorts. In this mechanism a designated pharmacy technician or pharmacist will serve as the lifestyle coach for year one, with the notion that a successful participant (those who have achieved 5-7% weight loss at the end of year one) from that cohort will serve that role for the following year. Through this mechanism we believe that we will have the opportunity to build an informal support system within the cohorts that will allow for stronger uptake of the program and more sustainable results. The hope is to provide motivation and a group structure through this program that is maintained
even after the curriculum is complete. This system will also allow the program to grow to include more than one cohort a year because of the increase in personnel that can provide the program. The hope is to offer the program via varied schedules throughout the year to further accommodate individuals that would like to participate.

Program Approach

The DPP was a multicenter clinical research project that aimed to answer whether or not weight loss through dietary modification and an increase in physical activity could prevent or delay the onset of type 2 diabetes. The 3,234 study participants were recruited from 27 different clinical centers around the U.S. and divided into four groups: (1) a lifestyle intervention group that received intensive training in diet, physical activity, and behavior modification; (2) a group that received metformin 850 mg twice daily, (3) a group that received a metformin placebo pill twice daily, and (4) a group that received troglitazone. The examined participants who were at least 25 years of age, had a body mass index of 24 or higher, fasting plasma glucose concentration of 95 to 125 mg/deciliter, and a post-prandial blood glucose level of 140-199 mg/deciliter. Individuals who had taken any form of an anti-hyperglycemic medication were excluded from participation. Forty-five percent of the participants represented minority groups (African American, Alaska Native, American Indian, Asian American, Hispanic/Latino, or Pacific Islander) that are at an increased risk for developing diabetes. The results from

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b The metformin groups were given information about diet and exercise, but no formal training. The troglitazone arm was terminated due to adverse effects caused by the drug.
The NDPP showed that study participants who lost 5%-7% of their body weight through dietary modifications and physical activity reduced their risk of developing diabetes by 58%, whereas participants taking metformin only reduced their risk by 31%.13

This study served as the basis of a Congress-authorized initiative for CDC to establish the NDPP in communities across America. The NDPP is a yearlong LCP that organizations across the nation can adopt and implement within their communities. The program utilizes a curriculum developed by the CDC that is divided into two 6-month blocks. The first half of the year focuses on healthy eating, physical activity, stress and challenge management, and commitment (getting back on track if a participant falters). The second half of the year focuses on enhancing the skills learned in the first half, tracking progress of dietary and physical activity modifications, overcoming barriers, and receiving support. Each of the objectives are achieved through lessons on specific topics outlined in the curriculum. These topics include Healthy Eating, Take Charge of What’s Around You, The Slippery Slope of Lifestyle Change, Heart Health, and much more.12

Nationwide, the NDPP has already been implemented in a variety of settings such as local gyms, health care provider groups, and pharmacies. Each of the settings are suited to deliver the programs because they are entities that can reach the community as a whole. Local gyms will be able to entice their customer base to utilize a structured LCP to help them meet their health goals. This setting overcomes the barrier that is associated with finding a place to exercise. Health care provider groups can develop support groups directly from their patient base by
actively screening for patients who have prediabetes or have risk factors associated with diabetes. These groups also employ individuals who have expertise to provide the level of care needed for program implementation. Pharmacies are widespread throughout most communities and have the ability to identify patients from their patient base as well as the patient base of referring provider groups. This setting and its employment base have the resources and expertise needed to implement a successful diabetes prevention program. In each setting, a coordinator will need to designate a space and time for each of the sessions, a lifestyle coach will need to be trained to deliver the program, and a patient base will need to be established through marketing and referral systems. Appropriate implementation of these programs will be heavily dependent on whether the organizations delivering the program follow the guidelines provided by CDC.¹²

The organization delivering the NDPP is asked to teach at least 16 modules, usually held weekly, during the first six months. Organizations are allowed up to six months to complete these sessions to allow for flexibility for holidays, vacations, adverse weather, etc. In the last six months, the delivering organization is asked to provide at least one session per month on a topic chosen from 10 moduels. The program can be offered in a variety of settings and can be delivered in-person or online.¹²

When implementing NDPP, certain standards need to be maintained: the participant base must meet the inclusion criteria (pre-diabetic with certain risk factors) and the topics from the curriculum must remain the same. The curriculum has undergone multiple reviews to ensure that is medically accurate, age
appropriate, and inclusive of all groups. Parts of the curriculum, such as language and cultural modifications can be made, but are required to go through the CDC recognition program. Currently, the CDC has produced a Spanish-language curriculum so that specific groups can provide classes in Spanish. This revised curriculum has undergone the same rigorous testing as the initial one.¹²

Based on 2015 U.S. Census Bureau data, 97.8% of Breathitt County’s population is “white alone.” This leaves the remaining 2.2% of the population to include: 0.5% African American, 0.1% American Indian, 0.6% Asian, 0.1% Native Hawaiian, and 0.9% Hispanic.¹ Although the Census data does not explicitly state the primary languages spoken by these racial / ethnic groups, an assumption can be made that little to no language modifications will be needed as the majority of Breathitt County residents primarily speak English. If modifications are needed, the program directors will be able to adopt the CDC’s Spanish-language curriculum for the Hispanic population.

The initial priority for sustainability will be to work with pharmacies to ensure they are meeting the standards set forth by the Centers for Medicare and Medicaid Services (CMS) to allow organizations to bill for the reimbursement of program delivery. CMS recently issued a ruling to support the expansion of diabetes prevention programs across the country. This rule states that organizations that meet the listed criteria will be eligible to bill for the NDPP services they provide; the rule will be effective January 2018.¹⁴

Additional priority will be offered to building partnerships with organizations that support the actions of the NDPP. These partnerships will allow
for the extension of technical support for program implementation and delivery while also offering economic development and financial support to sustain the implemented programs. The partnering organizations have a long-standing relationship with the community and/or the NDPP.

The first partnership to be developed is with the Appalachian Diabetes Control and Translation Project within the Appalachian Diabetes Coalitions. This organization has a well-developed understanding of the obstacles associated with the implementation and delivery of the NDPP. A partnership with them will provide invaluable knowledge that will allow the BCHD diabetes team and program deliverers to be better prepared for any complications that may arise.

The next partnership will be with the Appalachian Regional Commission (ARC) to help build an economic infrastructure. This organization works throughout the Appalachian region to help analyze local economic opportunities to develop relationships between NDPP providers and local employers. The main purpose of the development of this relationship is for employers to take on partial or full financial responsibility of their employee’s health. This connection serves two roles that can help Breathitt County become healthier: 1. Employers are providing their employees with an opportunity to participate in the NDPP and better their health to minimize sick days and boost morale and 2. The relationship offers the developing organization a consistent source of referrals and income to allow for a sustainable program. Overall, this partnership will enhance the community’s capacity to provide programming.
Other partnerships include the American Diabetes Association and American Association of Diabetes Educators. This partnership will not only allow for financial opportunity and programmatic sustainability through grants, but will also serve as a platform to showcase our work.

The primary challenge associated with linking sustainability to regional and national partners is building relationships. This will take time to develop, therefore, starting the process early is the most favorable action. Organizations will have to remain motivated to seek sustainability opportunities through their partners.

Community resources, such as the LCP we are trying to implement in Breathitt County, are varied and numerous. There are myriad resources available to the community to prevent poor health outcomes, but these resources are not always readily available. For this reason, it is extremely important to make a cognizant effort to actively disseminate developed products to reach the largest number of individuals and make the greatest impact. We cannot expect that our program, regardless of how well it meets our community's needs, will diffuse through the population without a strong effort on our part.

With "A Diabetes-Free Breathitt County" we are already making strides to ensure widespread dissemination by collaborating with community partners such as health care providers and county officials. Having our program incorporated into pharmacies, and thus the health care system, ensures that each adult that presents with significant risk factors that puts him or her at risk for developing diabetes will be exposed to the interventions that we are trying to implement. However, this is a formal dissemination system that has its limits. The materials
presented in the pharmacies will most likely only remain within that environment. The LCP will most likely not reach the participants’ homes, which could hinder a complete lifestyle change.

In order to make the long lasting lifestyle modifications that our program seeks, we need to focus our effort on informally disseminating this intervention into the community at large. The first objective is to develop a plan to partner with community agencies such as local churches and community organizations. These agencies generally serve large numbers of people and the word can easily be spread throughout these organizations. It is important that during the dissemination of the program, we present information in a manner that is beneficial to the community. Our primary purpose during the initial stages of developing relationships with these individuals is to have them see the positive impact this program could have on their lives. This would require us to provide factual data in a manner that can be understood. Our next objective lies with partnering with practitioners who are trusted within the community. These individuals can help spread the word about our program through their patient visits. Our third objective must be broad in scope as it is to reach everyone in the community to inform them of the program. This can be done through media announcements, pamphlets, posters, phone calls, social media, etc.

A multistep process will need to be established to reach each of these objectives. The first objective will be the hardest because it is necessary to earn the trust of the community prior to actually attempting to reach them. In order to do this, we will rely on our community partners to educate our community about the
implications of poor health outcomes. The second objective should be easier, unless the practitioners believe that the program will hurt their business. The third objective is a passive approach as we will be using diffusive tactics.

**Performance Measures and Evaluation**

Measurement and evaluation of the NDPP are integral to understanding the community’s receptiveness to the program as well as the program’s feasibility and outcomes. Throughout the duration of this 3-year grant, data will be collected via paper surveys, weekly weigh-ins, and open-ended feedback between participants and lifestyle coaches. The information gleaned through these mechanisms will allow us to measure the performance of the cohorts and evaluate the process and the outcomes of the program. The data will be collected through a longitudinal study design that will utilize a quantitative prospective analysis. This prospective study design will be effective for this program because it is a cohort-based program in which eligible participants are provided with incremental lifestyle modifications that will allow them progressively lose weight and ultimately prevent disease outcomes. This study design will prove to be beneficial in the sense that it provides the evaluators with a structured means of collecting, analyzing, and disseminating data. Another benefit of the study design is that it allows for data to be compared within the group and among individuals. Challenges with this study design lie in the unpredictability of participant retention. As the program asks for a year-long commitment, there is a strong chance that many of the initial participants will drop out, leaving evaluators with a decreased sample size.
Performance Measures

Initial data will be collected upon the participant’s start of the program via a paper survey that include the following items: participant’s prediabetes status (blood test, gestational diabetes, or screening test), sex, race/ethnicity, height, weight, and physical activity status. Each participant will be assigned a unique identification number at this time. Participants will be monitored for weight changes as the research that led to the program is based on the following hypothesis: a 5%-7% reduction in body weight will result in a minimization of the development of diabetes among at risk or pre-diabetic individuals. This information will provide program coordinators with baseline information to which follow-up data can be compared. Follow-up data on weight and physical activity status will be collected at every attended session. The intent of the program is for participants to attend weekly sessions over the first six months and at least monthly sessions over the next six months. Data will be analyzed quarterly to determine if the participant is losing weight. If weight loss of 1%-3% by the end of quarter 1, 3%-5% by the end of quarter 2, 5%-7% by the end of quarter 3 is achieved, the program will be deemed as effective, and participants will be provided with weight loss continuation and maintenance education in quarter 4. These targets have been set as an incremental point guidance as the initial research states the outcome of program should be for each participant to have had lost 5%-7% of their body weight by the end of the year.

We understand that there may be participants that do not meet the end goal of 5%-7% weight loss, but have made gradual improvements to their health
throughout the year. We believe it is important to recognize their efforts and offer them an opportunity to continue along the path of lifestyle modifications that can enhance their health for years to come. These individuals will be offered the opportunity to participate in an additional year of the program to help them reach their goal. In analysis of the measurement outcomes of cohorts with repeat participants we will have to document who are truly new participants versus who are not. This designation will allow us to apply appropriate measurement analyses to each group.

**Process Evaluation**

Process evaluation is a necessary component of implementation as it allows us to gain insight into whether or not the intervention is actively serving the community members and whether the intervention is accepted as a viable resource to improve one’s health. In order to implement an accountable process, each program will be managed by a program coordinator and overseen by a project manager throughout the first year. The program coordinator will be the individual in charge of the program at the pharmacy (most likely a pharmacist) and the project manager will be the Diabetes Program Director at BCHD. Year 1 evaluation will include quarterly focus groups, a mid-point survey, and a year-end survey. The quarterly focus groups will be held to discuss the community’s overall feelings about if and how this program is influencing the health status of the community. The two surveys will glean information about the participant and project team’s perceptions about how the program is delivered, where the program is offered, the materials (both tangible and intangible) that the program offers, and their
satisfaction with the program. These evaluations will allow us to determine both participant and practitioner response to the intervention and will provide insight regarding any modifications that need to be made from a delivery standpoint.

The project manager will also visit three sessions at three separate pharmacies every month to monitor the delivery of the program. During these visits the project manager will be analyzing the methods that the LCPs are using to deliver the program and comparing them to the initial program training.

Additionally, the intervention materials will be assessed on a quarterly basis to determine how many sessions were delivered, which of the lessons were delivered, and how many lessons each individual participant attended. This assessment will provide insight on how well the program is being executed, if there are any shortcomings to the delivery process and if any decisions, or if changes need to be made in regards to large scale implementation.

**Outcome Evaluation**

Evaluation of this program will include four outcome measures: weight loss, prediabetes status, physical activity levels, and caloric intake. Weight loss will be measured through private weekly weigh-ins that will be conducted at the pharmacy prior to lessons. Prediabetes status will be measured through annual oral glucose-tolerance and hemoglobin A1c testing that will be conducted by the patient’s primary care provider and semi-annual fasting blood glucose testing that will be conducted by pharmacist providing the NDPP. The following values will indicate that the participant has been diagnosed with diabetes and their treatment will be referred to their primary care provider: ≥ 200 mg/dL for the oral-glucose tolerance
test, \( \geq 6.5\% \) for the hemoglobin A1c, \( \geq 126 \text{ mg/dL} \) for the fasting blood glucose test.\(^{18}\) Physical activity will be assessed through a Modifiable Activity Questionnaire. The duration and frequency of the physical activity level will be calculated and then be standardized to be an estimate of the metabolic equivalent (MET) of that activity.\(^{17,19}\) Results will be expressed as the average MET-hours per week. Caloric intake will be measured through a modified version of the Block Food-Frequency Questionnaire.\(^{17,20}\)

The data collected from the blood glucose testing, physical activity questionnaire, and caloric intake questionnaire will then be compared to the overall weight loss of the each individual patient. Participants that have an overall decrease in blood glucose levels and caloric intake and increase in physical activity should have a decrease in percentage of body weight. The goal for each participant in the intensive lifestyle modification program is to have a reduction in weight by at least 7\% by the end of the 12-month LCP.\(^{21}\) If this goal is met, the participant will have had successfully completed the program. If they have decreased body weight, reported a decrease in caloric intake, and shown an increase in physical activity, their decreased risk for a diabetes diagnosis will be attributed to the program and not to the general decline in the incidence of diabetes. In order for a general decline in diabetes to occur, the community as a whole will need to implement significant lifestyle changes to curb current trends. These lifestyle changes would mirror those of the LCP, but without a structured process any major changes will not be sustainable. The only likely way for the incidence of type 2 diabetes to decrease in the community will be to implement a structured program such as the NDPP.
As this LCP is meant to serve a cohort for a 1-year period, it is estimated that there will be three full cohorts throughout the grant period. At the end of the grant period, the data collected for each of these cohorts will be compared to the diabetes incidence data collected through the CDC BRFSS to determine if the LCP has truly decreased the incidence of diabetes within the community. If the LCP is true to its mission, each cohort will contribute to the decrease in incidences rates of type 2 diabetes in Breathitt County.

<table>
<thead>
<tr>
<th>Short-Term Outcomes</th>
<th>Short-Term Outcome Evaluations</th>
<th>Long-Term Outcomes</th>
<th>Long-term Outcome Evaluations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase physical activity</td>
<td>Self-report surveys at baseline then quarterly</td>
<td>Decrease the diagnosis of diabetes</td>
<td>Compare county level diabetes data to before intervention was started</td>
</tr>
<tr>
<td>Decrease caloric intake</td>
<td>Self-report surveys at baseline then quarterly</td>
<td>Improve awareness of diabetes prevention</td>
<td>Assess attitudes and believes via focus groups.</td>
</tr>
<tr>
<td>Decrease percentage body weight</td>
<td>Weekly weigh-ins at sessions</td>
<td>Have each of the delivering programs earn CDC-recognition</td>
<td>Render report from the CDC’s Diabetes Prevention and Recognition Program</td>
</tr>
</tbody>
</table>

NDPP participant data will be collected by the program coordinator at each site and then sent to the project manager who will populate the data into an Excel spreadsheet using the specific variable names for each of the data components. The participant information will be de-identified to maintain confidentiality. As this

\[\text{The information generated from this data comparison will be skewed because the BRFSS data is population-based and the participant sample is convenience-based.}\]
project is not considered research, a unique identification number that is assigned to each patient will suffice as a mechanism for longitudinal collection of data. This document will be maintained for one year and then submitted to the Diabetes Prevention and Recognition Program (DPRP) for review. This same data will be analyzed using SPSS statistical software by the team biostatistician to compile participant performance reports.

The primary obstacle that will be faced during the data collection phase involves the retention of participants throughout the duration of the LCP. Because this program is aimed at making incremental changes to a lifestyle to induce health behaviors, participants may not immediately see or feel the return on investment and thus, quit the program. In order to prevent this from occurring, it is the program coordinators’ duty to employ lifestyle change coaches who can relate to the participants and motivate them throughout the process. Another foreseeable obstacle involves the timely collection of data to provide appropriate quarterly summaries of the participant trends to the DPRP. In order to assure the program coordinators are actively collecting the appropriate data throughout the year, they will first be trained on the most efficient mechanism for data collection prior to collection process, then they will be given reminders to disseminate and collect surveys, and the project manager will provide the infrastructure for the focus groups. Another hope is that the project manager will develop strong relationships rooted in accountability with each of the program coordinators. These relationships should help foster an environment that will encourage the program coordinators to stay on target with their tasks.
Capacity and Experience of the Applicant Organization

BCHD’s Diabetes Management Team’s primary mission aligns with that of the NDPP as they aim to reduce the burden of diabetes within the community by providing evidence-based programming that prevents the development of the chronic disease state. The team has previously worked to implement evidence-based programs that work with diabetic patients to help reduce the implications of their disease through education and intervention sessions with nationally certified diabetes educators. The team consists of staff members and collaborators who have 5-15 years of experience in diabetes prevention. These individuals are extremely knowledgeable, capable, and connected with internal and external partners. This group has a long history of working collaboratively with other BCHD organizational units such as the Heart Disease and Stroke Prevention team, Office of Rural Health, Office of Physical Activity and Health Education as well as external organizations such as the Breathitt County Cooperative Extension (BCCE) and the ARC.

The team has received significant CDC funding to promote diabetes wellness within the community. The funding gained through various grants allows for BCHD to allocate resources and ensure that each participating organization is able to build and sustain their programs for an increased duration of time. The funding is managed through an internal grant team that monitors the usage of funds based on the budget that was submitted with the grant application and modified budgets that may arise.
BCHD is actively involved in an off-campus extension network with the state’s two land-grant institutions: University of Kentucky and Kentucky State University. This network is referred to as the BCCE. The purpose of this group is to deliver information, education, and solutions to grow ideas into better communities, stronger local economies, and healthier lives. The group works together to provide 4-H Youth Development events, agriculture and natural resources, community and economic development programming, and services to enhance family and consumer needs.

Acting alongside the BCCE, BCHD has had the opportunity to provide countless community enhancement programs. These programs were developed after determining the needs of the community through objective conversations with community stakeholders and key decision makers. The number of previously hosted stakeholder meetings have resulted in providing BCHD with understanding of what the community truly needs to feel and be healthy. Through this information BCHD is able to implement evidence-based programming that is both needed and wanted in the community to ensure initial success and longevity of the programs.

Along with the community and economic development sector of the BCCE, BCHD has had the opportunity to identify key individuals within the community that can coordinate programs and collect the necessary information. BCHD works with the tools provided through the community and economic development sector to train the coordinators to prepare for and provide sustainable community programs. This partnership has allowed BCHD to develop a well-structured system by which
they coach, provide technical assistance, and support the hosting organization through any means necessary.

BCHD has a surveillance staff of two epidemiologists who have in-depth knowledge of diabetes indicators from multiple data sources. With combined experience of over 10 years, our surveillance staff is well positioned to use surveillance data for a countywide picture of diabetes risk factors addressed in our application. We will support program evaluation with countywide outcomes as measured by established surveillance data sources and assist in the development of localized data sources providing the details needed to assess local program outcomes.

BCHD has proven capacity and demonstrated support for implementation of our work plan as described in our application. We are confident our experiences and capacity, integrated with state efforts and coordinated with other CDC programs, will lead to improvements in physical activity, healthy eating, clinical system improvements, and diabetes management. We are also confident that our successes are transferable to other counties. We welcome any and all support provided by CDC and state and national experts, and are committed to an open exchange of lessons learned in helping all of us work in partnership to improve the health of all communities.

**Partnerships and Collaboration**

For “A Diabetes-Free Breathitt County,” BCHD believes that community partnerships, are and will be, vital to our success. Our project team has gained support from community partners through non-profit organizations, coalitions and
groups, pharmacists, physicians and paraprofessionals, and other contributors that will be key to our success.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Expertise</th>
<th>Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breathitt County Cooperative Extension (BCCE)</td>
<td>Connecting community members to services and gaining support</td>
<td>BCCE has longstanding connections to the community through their many years of programming and training of program coordinators. The BCHD has an existing relationship with the BCCE that has resulted in the successful implementation of other evidence-based programs. For the “Diabetes-Free Breathitt County” project they have agreed to serve the roll of facilitator and support mechanism for the 9 pharmacies that are to be implementing the program.</td>
</tr>
<tr>
<td>Breathitt County Community Pharmacists Coalition</td>
<td>Advancement of pharmacy through programmatic means</td>
<td>This group of pharmacists will work together to implement and provide the NDPP to the communities that they serve. The organization will serve as a communication link among the pharmacists so they have a forum through which they are able to internally trouble-shoot and overcome obstacles.</td>
</tr>
<tr>
<td>Forrest Hill Community Center</td>
<td>Understand the needs of the community based on consistent interaction</td>
<td>Community members have indicated that the Forrest Hill Community Center plays a large role in the social lives of residents of Breathitt County. This organization has agreed to endorse the NDPP among its members during each of its events to provide additional marketing and a possible source of recruitment of additional participants.</td>
</tr>
<tr>
<td>Employers</td>
<td>Workplace wellness and incentives to employees</td>
<td>Employers require their employees to be healthy and active to provide the best productivity and decrease absences. Local employers have agreed to promote and incentivize the NDPP among their employees in an effort to encourage them to seek measures to improve their health outcomes. The employers will promote the program through emails, flyers, and word of mouth.</td>
</tr>
<tr>
<td>Local Church Leaders</td>
<td>Knowledge of faith-based community and engaging partners</td>
<td>BCHD has successfully partnered with churches within the county to promote the programming efforts of our pharmacies. They will serve as a vital source for recruiting members to participate in the NDPP program.</td>
</tr>
<tr>
<td>Appalachian Diabetes Coalitions</td>
<td>Training and expertise associated with the NDPP</td>
<td>Partnership network with Marshall University that works to prevent diabetes by developing coalitions in rural poor counties across Appalachia. The project helps coalitions organize around the problem of diabetes including planning, implementing, and evaluating their specific projects.</td>
</tr>
</tbody>
</table>
### Secondary Partners

<table>
<thead>
<tr>
<th>Organization</th>
<th>Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appalachian Regional Commission (ARC)</td>
<td>ARC is a regional economic development agency that represents a partnership of federal, state, and local government. Established by an act of Congress in 1965, ARC is composed of the governors of the 13 Appalachian states and a federal co-chair, who is appointed by the president. Local participation is provided through multi-county local development districts. ARC invests in activities that address economic opportunities, ready workforce, critical infrastructure natural and cultural assets, and leadership and community capacity.</td>
</tr>
<tr>
<td>Foundation for a Healthy Kentucky</td>
<td>The Foundation for a Healthy Kentucky has established the mission of &quot;addressing the unmet health care needs of Kentuckians by developing and influencing health policy, improving access to care, reducing health risks and disparities, and promoting health equity.&quot; They have pledged their support to the &quot;A Diabetes-Free Breathitt County&quot; initiative by lending any requested expertise to our CAG.</td>
</tr>
<tr>
<td>Middle Kentucky Community Action Partnership</td>
<td>Provide direct social services to Kentuckians with low and moderate incomes. The agencies located in each of the Kentucky counties collectively manage a budget of $150 million and employ nearly 4,000 people, all engaged in the administration of programs to fight poverty and health disparities in a comprehensive nature. The range of services these agencies provide varies with the needs of the individual communities as identified by a comprehensive community needs assessment process.</td>
</tr>
</tbody>
</table>

### Project Management

The individuals listed below will serve as the core project management team for “A Diabetes-Free Breathitt County.” The organization chart (Figure 3) shown below highlights the organizational units managed by each individual. This group will meet monthly and as needed to address concerns related to: management, administration, staffing, and budgetary factors associated with implementation of our program. In addition, two collaborative teams will be formed to address: 1) evaluation, surveillance, and epidemiology and 2) strategic communications. Other teams will be formed as needed. Consideration has been given to the formulation of
Urvi Patel

a work team that brings together existing workgroups that address health disparities, health equity, and health literacy.

**Principal Investigator: Urvi Patel, PharmD/MPH** Dr. Patel will oversee the completion of all project components such as overall implementation, data collection, outcomes evaluation, budgetary considerations, and personnel management. She will also serve as the primary contact for all communications related to oversight of this application with the CDC. She will build strong working relationships with stakeholders to ensure their engagement, support and continual community outreach in regards to the uptake of the NDPP.

**Diabetes Program Director: Patti Newsome, FNP/CDE** Ms. Newsome will oversee the implementation of the NDPP in pharmacies within Breathitt County by working closely with each Program Coordinator to ensure that they have been trained upon the program delivery, that their staff has been trained on the program delivery, that they are equipped with the appropriate resources to provide the program, and that they are on track to receive CDC recognition status. Ms. Newsome will also work closely with the Evaluation/Surveillance Supervisor ensure that the program is meeting goals.

**NDPP Coordinators: (TBD)** These individuals will be pharmacists who work at or own any of the pharmacies within Breathitt County. These individuals will be required to conduct all administrative efforts associated with the delivery of the NDPP at their site. These efforts include recruitment and
retention of participants, collection of evaluation data for participants, and submission of data to the appropriate sources. They will oversee the delivery of the program by the lifestyle coach, the screening of individuals who will participate in the program, as well as conduct clinical/inter-professional tasks that may be necessary to keep the program running.

**NDPP Lifestyle Change Coaches: (TBD)** These individuals may be pharmacists who work at or own any of the pharmacies within Breathitt County, but would preferably be pharmacy technicians who work at these facilities. These individuals will deliver the program on a designated schedule to the participants in the group.

**Evaluation/Surveillance Supervisor: Melody Ryan, RD/MPH** Ms. Ryan will manage the Evaluation and Surveillance work team and oversee the collection of appropriate data from each of the NDPP sites within Breathitt County. She will also serve as the lead contact person to the CDC for all evaluation and surveillance needs.

**Communications Supervisor: Jeff Cain, MSC** Mr. Cain will manage the Communications team whose primary mission is to develop marketing strategies and materials to increase awareness and recognition of the program within the county and surrounding communities. This team will build best practice mechanisms to optimize referral systems and enhance the overall program. They are also charged with ensuring: 1) each NDPP organization within the county is communicating effectively with participants and physicians, 2) each supervisor is informed of the
occurrences at the delivery level, and 3) the principal investigator has concise reports that provide detailed information and action items that need to be completed to sustain the program. He will also manage the Public Relations official who will ensure that the “face” of the program remains positive.

Each individual listed above will be required to attend one CDC training of NDPP delivery, one DPRP webinar session on evaluation and recognition status, and will be suggested to attend the grantee orientation training scheduled for March 2018. These training sessions will ensure that each member is proficient in the implementation, delivery, and evaluation of the program that we wish to implement.

In addition to content training, we will offer sessions on strategies to overcome programmatic barriers and obstacles. Each individual will also be required to conduct a StrengthsFinder assessment so we can build teams that are able to balance each other. We believe that cohesive units built on individual strengths can help teams complete tasks with fluidity and overcome obstacles with minimal conflict.

In order to ensure retention of staff members, we will work to actively provide support and resources to ensure they are able to successfully complete tasks, we will maintain active communications with each member and ensure that we are meeting their concerns, and we will acknowledge and showcase the impact of the work that they are doing. Required weekly “ThinkTank” meetings will occur via in-person and teleconference means throughout all three years of the grant. During these meetings all members will have the opportunity to discuss the work
that they have completed, state any successes and obstacles they may have experienced, and have a means to receive or provide support to other members of the team. The purpose of the ThinkTank sessions is two-fold: 1) make sure each team member is aware of the work that others are doing and 2) build a sense of unity among the group as a whole so that they are able to use each other as resources to complete the task at hand. In addition to the ThinkTank sessions, each team member will also meet with Ms. Newsome for 15 minutes each week to address any issues that they were not able to discuss in the large group meeting.

**Budget Justification: $250,000**

Our goal for implementing the NDPP within Breathitt County is to minimize the number of individuals who are at risk of developing type 2 diabetes by introducing an early lifestyle modification intervention. The program is meant to target a subset of individuals who meet specific criteria (listed above), introduce the intervention to them, and help them make lasting modifications that can improve their health, decrease their personal health care costs, and decrease the county’s health care costs. In order to meet this objective, a team has been built to oversee key components of the project. Below is a justification of the funding allocated to each of those individuals.

**Personnel Salaries and Wages**

Urvi Patel, PharmD/MPH will serve as the principal investigator for “A Diabetes-Free Breathitt County.” Dr. Patel has served as the director of pharmacy for Appalachian Regional Healthcare (ARH) since 2007, while also serving as a Regional Liaison for Diabetes Prevention with ARC. Prior to serving these roles she was a
staff pharmacist at an inner city Kroger Pharmacy in Louisville, KY. She played an integral role in the implementation of the NDPP within this store. She has a deep-rooted understanding of the impact the program can have upon the community as well as the technicalities of program initiation, implementation, and delivery. She graduated from the University of Kentucky (UK) Colleges of Pharmacy and Public Health with a Doctor of Pharmacy and Master of Public Health (MPH) focusing on health behavior. Dr. Patel is a member of the National Community Pharmacists Association (NCPA) and has served on many regional advisory boards for that organization. Dr. Patel’s many years of experience as a pharmacist has allowed her to develop a repertoire within the community that lead to building relationships with key partners that can help “A Diabetes-Free Breathitt County” come to life. Her communication and activation skills will allow for broad based engagement from multiple parties; their support and resources will be essential to the sustainability of this program. Dr. Patel will oversee project management, program implementation, and evaluation through communication with the directors in charge of each of those components. She will also be responsible for the oversight of the budget.

Patti Newsome, FNP/CDE will serve as the Diabetes Program Director for “A Diabetes-Free Breathitt County.” Patti earned her Master in Nursing degree from Vanderbilt University's School of Nursing in Nashville, TN. Patti spent the beginning of her career serving as a Family Nurse Practitioner (FNP) for various departments with the ARH system. She has extensive inpatient and outpatient experience that has allowed her to earn advisory roles in organizations such as the American Association of Nurse Practitioners (AANP). Through these roles she has been able
to serve as a role model for many young nurse practitioners who wish to improve their community's health through enhanced programmatic mechanisms. During her time as an ambulatory care FNP, Patti realized that she required a greater knowledge of diabetes education as many of her patients were suffering from this disease state so she pursued a Certificate of Diabetes Education from the National Certification Board of Diabetes Educators (NCBDE). Patti currently serves as the clinic manager for the Diabetes Clinic within the ARH system. Her many years of experience within the disease state, her constant link to the community, and her knowledge of programmatic approaches to population health will be key to the oversight of all implementation and management components of this program.

**Jeff Cain, MSC** will serve as the Communications Director for “A Diabetes-Free Breathitt County.” Jeff earned his bachelor of science in communication from Boston University's College of Communication. Upon graduation, he started working for a local news outlet where he was able to work with reporters to build effective communication mechanisms for the stories they wished to present. After three years of working with this system he decided to go back to school to earn a Master of Arts in Communication with a Certificate in Nonprofit Management from Johns Hopkins University. Upon earning this degree he received a position with the communications team at the American Diabetes Association. His primary responsibilities with “A Diabetes-Free Breathitt County” will include 1) direct oversight of the team of communications consultants, 2) oversee the actions of the public relations official, and 3) develop and implement plans to build effective communication mechanisms within the teams working on this project.
Melody Ryan, MPH will serve as the Evaluation and Surveillance Supervisor for “A Diabetes-Free Breathitt County”. Melody earned her MPH degree from the UK College of Public Health and has been working for local health departments as an epidemiologist. She has extensive experience working with various evaluation mechanisms and brings essential insight to the team through those experiences. Her duties will include: 1) direct oversight of a team of evaluation and surveillance consultants, 2) enhancement of evaluation mechanisms, and 3) communication with the DPRP in regards to all evaluation and surveillance concerns.

**In-State Travel**

We request funding for the project manager to travel to three pharmacies per month to conduct site visits to check for the fidelity of session delivery. 1,893.6 total miles at $0.54 federal mileage reimbursement rate; total $1,022.54 per year for three years = $3,067.63.

**Out of State Travel**

2 nights lodging X $250/night = $500

Travel 832 miles at $0.54 federal mileage reimbursement rate; total $449.28

3 days per diem X $33/day/person X 3 people = $300

Registration = $250/group

Total = $1,499.28 x 3 years = $4,497.84

We are request funding for the project team (i.e., Dr. Patel, Ms. Newsome, and Ms. Ryan) to travel to the annual grantee training meeting held in Atlanta, GA. This meeting will provide annual updates on the NDPP data across the country, offer
support for evaluation and data collection mechanisms, and serve as an avenue to
distribute new and innovative delivery techniques.

**Research Incentives**

**Pharmacy Participation Stipend** $29,700 total

Year 1: $2,200/pharmacy X 9 pharmacies = $19,800

Year 2: $1,100/pharmacy X 9 pharmacies = $9,900

We are requesting funding to supplement the costs of the nine pharmacies
providing the NDPP in an effort to encourage these organizations to uptake and
sustain the program. The same nine pharmacies will receive the allotted stipends
for year 1 and year 2. The stipend for year 2 decreases due to the initiation of a
Medicare and Medicaid reimbursement mechanism on January 1 of that year. This
reimbursement will provide adequate and sustainable financial support to the
participating pharmacies. Pharmacies have the freedom to utilize this funding to
provide incentives for their participants in the form of gift cards or gifts that can
enhance their progression through the program (i.e., travel vouchers, reusable
water bottles, recipe books).

As part of their participation in the program, the pharmacies will pledge to use the
CDC materials and training to provide the NDPP. Additionally, the pharmacies will
agree to the continual collection of participant data, conduction of process and
outcome evaluation, participation in focus groups and feedback sessions with
project staff. Based on the information collected, our goal is to refine and enhance
the NDPP to meet the needs of the community. The pharmacies may use the stipend
to support the cost (to them and the participants) of providing the NDPP at their
site, but may not use the funding to supplement the salaries of those overseeing or providing the program.

**Participant Focus Group Incentives** $25 gift cards/participant X 10 participants/session X 2 sessions = $500; totaling $1,500 for 3 years.

We are requesting funding to provide incentives for focus groups that will be conducted at the 3-month mark as well as at the end of the program with individuals who have participated in the program. The information gleaned through these groups will be integral in evaluation and modification of this program to allow for its sustainability within this community.

**Expert Focus Group Incentives** $75 gift card/participant X 5 participants/session X 2 sessions = $750/year; totaling $2,250 for 3 years.

We are requesting funding to provide incentives for focus groups that are to be conducted with the pharmacists offering the NDPP at month 3 and at the end of the program. The information gleaned during these sessions will provide valuable information about the functionality and impact of the program for an expert standpoint.

**Food Costs for Focus Groups** $125/session X 2 sessions/year = $250/year, totaling $750 for 3 years.

We are requesting funding for each focus group to have food and beverages provided.
Supplies

Audio-recorder $75

In support of our formative research goals, we are requesting funds to purchase a digital audio-recorder to help provide transcription of the in-depth, qualitative interviews.

Computer Laptop $1,200

We are requesting funding for the purchase of a laptop computer as the project manager requires the device to manage off-site data collection and technical support. This computer will be purchased and prepared for use in implementing and maintaining the NDPP. It will be dedicated to exclusive use by the project manager throughout the 3-year project. The project manager will be “mobile,” meaning that he or she will not have an office and will instead be based from her private home office and work in public indoor venues. Working entirely off-site and in the field, the project manager will collect and store confidential participant data on her mobile computing devices. Thus, she will need a reliable and durable laptop computer configured to receive 4G Internet signals.

Postcards and Shipping Materials $4,200

We are requesting funding for the acquisition of informational and promotional materials to be sent out to eligible participants. These materials are an integral component of the referral system structure mentioned above and will allow us to gain significant numbers of participants.
Bibliography


APPENDIX

A Diabetes-Free Breathitt County
### Appendix A: Logic Model

<table>
<thead>
<tr>
<th><strong>Inputs</strong></th>
<th><strong>Outputs</strong></th>
<th><strong>Participation</strong></th>
<th><strong>Outcomes -- Impact</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activities</strong></td>
<td></td>
<td></td>
<td><strong>Short</strong></td>
</tr>
<tr>
<td>National Diabetes Prevention Program</td>
<td>Eligible participants</td>
<td>Gain awareness of program</td>
<td>Regular attendance of program session</td>
</tr>
<tr>
<td>• Year-long lifestyle change program implemented in pharmacy settings across the county</td>
<td></td>
<td>Increased participation in the program</td>
<td>Implementation of program lessons into everyday lives</td>
</tr>
<tr>
<td></td>
<td>Health care providers and pharmacists</td>
<td>Modification in diet</td>
<td>Reduction in body weight by 5-7%</td>
</tr>
<tr>
<td></td>
<td>Community leaders and pharmacists</td>
<td>Increased uptake of exercise</td>
<td>Improved HgA1c, FBG, OGTT</td>
</tr>
<tr>
<td>Referral system</td>
<td>State legislation and third party payers</td>
<td>Gain awareness of the program</td>
<td>Increase program participation throughout the community</td>
</tr>
<tr>
<td>• A system in which providers and community leaders refer prediabetic patients to the NDPP.</td>
<td></td>
<td>Form interprofessional relationships between community partners</td>
<td>Reduction in body weight by 5%-7%</td>
</tr>
<tr>
<td></td>
<td>Community advisory board, nutrition and exercise specialists, diabetes specialists, community officials</td>
<td>Recognize the impact that program can have on the long-term population health outcomes</td>
<td>Adoption of program into the everyday lives of the participants</td>
</tr>
<tr>
<td>Reimbursement Structure</td>
<td></td>
<td>Provide a tiered payment structure for organizations delivering the program</td>
<td>Increase program access to the population as a whole</td>
</tr>
<tr>
<td>Community engagement</td>
<td></td>
<td>Identify and define areas in which community activities can complement the lessons of the NDPP</td>
<td>Provide organization with full reimbursement for the services they provide</td>
</tr>
</tbody>
</table>

**Networks/Partnerships**
- Community advisory group
- Public Health department
- Local healthcare providers
- Nutrition and exercise specialists
- CDC
- Diabetes specialist

**Financial Resources**
- CDC
- Federal
- State
- Private

**Program Materials**
- Space
- Time
- Instructor/coordinator
- Testing/monitoring equipment
- CDC-Developed curriculum, lessons, and handouts

**Eligible participants**
- ≥ 18 years
- BMI ≥ 24 kg/m² (22 if Asian)
- Pre-diabetic
## Appendix B: Work Plan

**Grantee Name:** A Diabetes-Free Breathitt County

<table>
<thead>
<tr>
<th>Funds Requested: $250,000</th>
</tr>
</thead>
</table>

### Goal 1: Reduce the number of adults age 18 years or older who develop type 2 diabetes across Breathitt County by implementing the CDC recognized National Diabetes Prevention Program (NDPP).

### Objective 1: By June 2017, establish a CAG in Breathitt County that will develop and implement a plan to promote awareness about the NDPP through mass media campaigns and health care professional support.

### Objective 2: By December 2017, identify and train personnel at nine pharmacies in Breathitt County to deliver the NDPP.

### Objective 3: By December 2017, establish collaborative practice agreements between the nine identified pharmacies and local provider groups to ensure a structured and continuous referral system for the NDPP.

### Objective 4: By January 2018, initiate the delivery of the NDPP to at least one cohort of pre-diabetic patients at each of the nine identified and trained pharmacies across Breathitt County.

### Objective 5: By January 2018, each of the pharmacies will have completed the application for recognition from the CDC.

### Objective 7: By June 2018, the first six months of CDC required data should be submitted to the Diabetes Prevention Recognition Program (DPRP).

### Objective 6: By January 2019, the first year of CDC required data should be submitted to the DPRP.

### Objective 8: By June 2019, the first year and half of CDC required data should be submitted to the DPRP.

### Rationale for Objective 1: Up to 66% of adults in Breathitt county are at risk of developing diabetes based on the prevalence of risk factors within the community.

### Measures of Accomplishment for Objective 1: Determine the engagement of the community through surveys.

### Measures of Accomplishment for Objective 2: Determine the number of individuals who have been adequately trained to deliver the NDPP.

### Measures of Accomplishment for Objective 3: Determine the proportion of provider(s) who have developed Collaborative Practice Agreements with local pharmacists.

### Measures of Accomplishment for Objective 4: Determine the proportion of pre-diabetics who are actively participating in a NDPP.

### Measures of Accomplishment for Objectives 5 and 6: Earning a pending level of recognition criteria.
<table>
<thead>
<tr>
<th>Activities in support of Goal 1:</th>
<th>Person/agency responsible for Accomplishing Activities</th>
<th>Activity Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Publish grant awarded across pharmacies</td>
<td>Health Department</td>
<td>July 2016</td>
</tr>
<tr>
<td>2. Hire Staff</td>
<td>Health Department (HD) Staff Community Health Workers</td>
<td>July 2016 – September 2016</td>
</tr>
<tr>
<td>3. Engage community partners and specified individuals to participate in the CAG</td>
<td>HD</td>
<td>September 2016 – December 2016</td>
</tr>
<tr>
<td>4. Work with CAG to develop a plan to implement the NDPP within the community.</td>
<td>HD staff, extension staff, local health care providers, personal trainers, dieticians, county officials</td>
<td>January 2017 – June 2017</td>
</tr>
<tr>
<td>5. Meet with already established NDPP at the HD to determine challenges, barriers and facilitators to success. Then ask the group to assist in developing strategies/activities to implement the NDPP.</td>
<td>HD’s Division of Diabetes Translation</td>
<td>January 2017 – June 2017</td>
</tr>
<tr>
<td>6. Train staff for NDPP implementation *Diabetes Today for Community Leaders training *Tools for building clinic-community partnerships to support chronic disease prevention and control *Evidence-based program and skill building training in the NDPP *Technical assistance site visits, emails, social media and conference *Ongoing professional development for program implementation staff, community partners and school staff</td>
<td>HD staff Pharmacists Pharmacy Technicians Appalachian Diabetes Coalition</td>
<td>June 2017 – January 2018</td>
</tr>
<tr>
<td>7. Facilitate the formation of collaborative practice agreements between physicians/nurse practitioners/physician’s assistants and pharmacist with the use of CDC-AMA Collaborative Practice Toolkit, direct communication between the two professionals, and favorable legislative framework</td>
<td>Healthcare providers Pharmacists Local council men and women, state legislators, Senators, Representatives.</td>
<td>January 2017- ongoing</td>
</tr>
</tbody>
</table>
## Appendix C: Budget Per Year

<table>
<thead>
<tr>
<th>Effort</th>
<th>Salary</th>
<th>Fringe</th>
<th>Total</th>
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<tbody>
<tr>
<td>Patel</td>
<td>29.00%</td>
<td>$50,000</td>
<td>$14,500</td>
</tr>
<tr>
<td>Newsome</td>
<td>60.00%</td>
<td>$45,000</td>
<td>$27,000</td>
</tr>
<tr>
<td>Cain</td>
<td>50.00%</td>
<td>$45,000</td>
<td>$22,500</td>
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<tr>
<td>Ryan</td>
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<td>$40,000</td>
<td>$32,000</td>
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- Travel: $2,520
- Research Incentives: $21,300
- Supplies: $1,275

**Total Direct:** $166,616

**F&A:** $84,141

**Total Direct and Indirect:** $250,756
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<tr>
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<tr>
<td>Patel</td>
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<tr>
<td>Travel</td>
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<td>F&amp;A</td>
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<td>Total Direct and Indirect</td>
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<td></td>
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Travel  
$2,520

Research Incentives  
$1,500

Supplies  
$2,000

Total Direct  
$165,530

F&A  
$83,593

Total Direct and Indirect  
$249,122