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Implementing CenteringPregnancy, a Group Prenatal Care Model, in Hamilton County, Ohio

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CAPSTONE PROJECT PAPER

A paper submitted in partial fulfillment of the
requirements for the degree of
Master of Public Health
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Abstract

Target Population and Need

Hamilton County, Ohio exhibits high rates of poverty, unemployment, and negative health outcomes. Specifically, Hamilton County continues to perform poorly in maternal and child health outcomes such as infant mortality, low birth weight, gestational diabetes, and preterm birth rates. Many people in the community exbibit poor health behaviors such as inadequate prenatal care, drug use during pregnancy, and smoking during pregnancy.

Program Approach

The Hamilton County Health Department intends to implement an evidence based group prenatal care program, CenteringPregnancy, in three health centers around Hamilton County in an effort to reduce poor maternal and child health outcomes. CenteringPregnancy is a program where 10-12 women of similar gestational age come together for 10 sessions of group prenatal care. The three main components of CenteringPregnancy are health assessments, education, and social support. Each of the three health centers where this program will be implemented have a variety of partnering nonprofits that surround them as well as a robust medical system that will lend to the recruitment of women. We will work with hospitals and existing medical systems to seamlessly integrate billing practices so the program can be billed as traditional prenatal care.

Performance Measures and Evaluation

A seven part process evaluation will be implemented in order to monitor the implementation of the program. Participants in the program will be given a survey consisting of five previously validated measures at program entry, the third trimester, and postpartum. This will allow us to monitor short term and intermediate outcomes. Additionally, birth certificate data will be used to compare the birth outcomes of program participants to nonparticipants.

Capacity and Experience of the Applicant Organization

The Hamilton County Health Department serves 481,000 residents, and has been serving the community for over 100 years. In 2017, the health department become PHAB accredited. In addition, the health department currently leads many community wide initiatives and programs that have been very successful.

Partnerships and Collaboration

This program will have key collaboration and implementation partners that include: CHI Inc., eight local nonprofits, the local health centers, and four partnering hospitals. Each of these partners is deeply rooted in the community and has strong ties to many different groups of our target population. In addition, our program stakeholders include: our community advisory group, the boards of our partner hospitals, the state medical board of Ohio, the preschools in the Hamilton County community, the extension office of The University of Cincinnati, and three key national coalitions (NAPW, MCC, Healthy Mother, Health Babies Coalition).

Project Management

The leads of the project staff will include the health department director who will serve as the principle investigator and the project director who will oversee the program implementation and processes. The community engagement coordinator will be tasked with recruitment activities. The biostatistician will be responsible for all data analysis. In addition, the secretary/intern coordinator will be in charge of all paperwork and scheduling. There will also be six nurses or nurse midwives that are leading the groups at each of the three centers (two per center). Two social work interns and two nursing student interns will be assigned to each site to assist with the group sessions. Lastly, there will be a childcare worker at each site.

Target Population and Need

This proposed program will be implemented by the Hamilton County Health Department and will serve residents in Hamilton County, Ohio. Hamilton County is the most southwestern county in Ohio and borders Indiana and Kentucky by the Ohio River [1]. Hamilton County is an urban county with a population of 802,374 [1]. A high percentage of its population are in poverty or unemployed, and large racial disparities exist [2].

Figure 1: Map of Hamilton County

Table 1: Demographics of Hamilton County, Ohio and The United States [2-8]

	Hamilton County	Ohio	United States
Race			
Black	25.7%	13%	13.4%
White	67.9%	81.86%	76.5%
Hispanic	2.8%	3.9%	18.3%
In Poverty			
Black	32.72%	28.8%	20.8%
White	10.21%	11.1%	10.1%
Hispanic	27.42%	26.8%	17.6%
	Total: 17%	Total: 14%	Total: 11.8%
Unemployment			5.6%
Black	13.4%	7.6%	3.4%
White	4.8%	4.1%	4.2%
Hispanic	4.4%	4.2%	Total: 3.7%
	Total: 8.3%	Total: 4.6%	
High School Grad Rate			
Black	85.04%	69%	78%
White	93.03%	88%	89%
Hispanic	72.34%	74%	80%
	Total: 82.04%	Total: 84%	Total: 85%

Hamilton County has a variety of negative health outcomes that are above the average in Ohio, and well above top US performers in many cases [1, 9]. The notable health outcomes, found in Table 2, that are an issue for this community that we hope to address are the infant mortality rate, low birth weight, hypertension, gestational diabetes, and preterm birth rate. There are also a variety of health behaviors that

are exhibited by this community that the curriculum in our program will seek to correct. These health behaviors include inadequate prenatal care, drug exposure during pregnancy, and smoking during Pregnancy which are all known modifiable risk factors for preterm birth.

Table 2: Health Outcomes, Disparities, and Behaviors in Hamilton County (by race), Ohio, US Top Performers.

Health Outcome	Hamilton County				Ohio	US Top Performers
	Total	Black	White	Hispanic		
Infant Mortality (per 1,000)*	8.6	16.7	5.0	3.9	5.0	5.8
Low Birth weight**	10%	14%	7%	8%	9%	6%
Gestational Diabetes*	9.7%	~	~	~	8.3%	~
Hypertension*	15.2%	21.1%	13.3%	7.3%	13.3%	~
Preterm Birth Rate*	10.5%	14.2%	8.7%	9.1%	10.3%	~
Sleep Related Infant Death (per 1000)*	1.4%	~	~	~	.9%	~
No Prenatal Care*	2.2%	3.4%	1.6%	1.1%	3.8%	~
Prenatal Care in 1st Trimester*	66.6%	64.0%	73.2%	56.7%	68.6%	~
Drug Exposure During Pregnancy*	9.5%	~	~	~	7.3%	~
Smoking*	9.1%	~	~	~	14.4%	~
Uninsured**	6%	~	~	~	6%	~
Medicaid*	41%	~	~	~	22%	~
Reported lacking the ability to purchase health foods in neighborhood*	16%	~	~	~	14%	~
Reported always or often feeling unsafe in their neighborhood*	3.2%	~	~	~	2.9%	~
Adequate Access to Care**	910:1	~	~	~	1,050:1	1,300:1
Childhood Developmental Issues	6.2%	~	~	~	5.5%	~
Childhood Obesity***	31.7%	~	~	~	18.6%	~

***Cincinnati C. *Because We Love Her: Fighting for Racial Equity in Maternal and Infant Health 2019.* Cradle Cincinnati 2019.**
****Institute UoWPH. Hamilton (HA). *County Health Rankings and Roadmaps* 2019.**
*****Prevention CfDCa. Community Profile: Hamilton County, Ohio. *NCCDPHP: Community Health* 2019.**
~ Data not available

One notable statistic listed is the ratio regarding adequate access to care. The Hamilton County ratio of providers to patients is significantly lower than the Ohio average and US top performers. However, many of the people in this community that we are hoping to serve do not have the access that this number would suggest. Hamilton County is a large hub for tertiary care centers, teaching hospitals, and boutique clinics, many of which our target population would only have access to if they needed emergency care. To illustrate this, our 2017 Community Health Needs Assessment [CHNA] showed that emergency department visits were the most common source of care among Blacks, Hispanics, people with low income, and families considered at risk [10]. We also found that only 72.7% of the Hamilton County population has an appropriate regular source of care [10]. Furthermore, access and logistics ranked highest among every subset of the population as the biggest barrier to care when compared with skills, expectations, marginalization, knowledge, and beliefs [10].

Research has shown that inadequate prenatal care, low birth weight, and preterm birth lead to higher rates of sleep related infant deaths, childhood developmental issues, and childhood obesity [11-13]. For babies born prematurely or at a low birth weight, their bodies are not fully developed which can lead to breathing and heart complications as well as metabolism and immune system issues. This early stress on the body has detrimental effects on the infant's developing brain [11-12]. The relationship between the lack of prenatal care and obesity is thought to occur as a result of the absence of pregnancy related weight counseling and persisting detrimental health behaviors and parenting practices [13]. As can be seen in Table 2, these are all outcomes that are present in Hamilton County, as are their root causes. It is our belief that by introducing this program, a decrease in the rates of each of these outcomes will follow.

The social determinants of health [SDOH] listed in Table 2, such as access to insurance, access to healthy foods, and access to living in a safe neighborhood are all issues in this community. Each SDOH has a strong impact on the families we will serve and an even stronger additive effect. These SDOH impact the choices families make and the behaviors they engage in. Our program will help give them the skills to recognize their social determinants of health and to navigate them in their unique context. As evidenced in Tables 1 and 2, there are racial disparities in social determinants of health which is further

reflected in health outcomes. Our aim is to make this program accessible to all races with an increased presence in black communities to try and remedy this clear disparity.

Information on Hamilton County's community resources and needs were gathered from a variety of sources. There are many nonprofit hospitals in Hamilton County that must conduct a CHNA to maintain their nonprofit status. Most recently, Cincinnati Children's Hospital conducted a CHNA that was completed June 30, 2019. We used this assessment as a reference to better understand the community's needs when writing this grant. Additionally, the nonprofit, Cradle Cincinnati, conducted a detailed CHNA focusing on maternal and child health in 2019 that we also referenced for data on health needs. The Hamilton County Department of Public Health also conducts CHNAs, with the most recent one being in 2017. We are set to complete another assessment in 2020. It is important to our health department that we are changing and adapting to the community's needs, so in addition to completing a CHNA every three years, we also conduct quarterly focus groups with community members to understand their needs better.

In addition to the local nonprofits, discussed in further detail below, that surround each of the three health centers where this program will be implemented, there are other key resources that are of note as they have the potential to affect all women in the program, regardless of health center location. Hamilton County Job and Family Services can help to connect women to healthcare, which is a key player in assisting community members in receiving Medicaid. Our program would be able to refer women to them to get them set up on the assistance that they need which would also broaden this organization's reach. Women Helping Women is a nonprofit that seeks to prevent gender based violence and to empower survivors of gender based violence. This will be an important resource for the women in our program as many women that we will serve in this area have suffered from gender based violence. Additionally, Job Plus, a faith based nonprofit is a well-known organization that is able to assist people with finding and keeping jobs. Lastly, Pregnancy Center East provides women who are pregnant with a variety of resources such as abortion and adoption information, ultrasounds, referrals, and material assistance. This organization would be a great resource for women in our program. Additionally, our

program could enhance their services by partnering with them and accepting referrals from them. This would make them a more well-rounded program as they would be able to offer prenatal care to their clients.

This evidence based program aligns with the needs of the community as it will seek to decrease the current negative health outcomes seen in Hamilton County that are associated with a lack of prenatal care. Hamilton County has worse outcomes and health behaviors than the rest of Ohio in most categories which further demonstrates the need for this program [9]. Our proposed program approach is also appropriate for this community as it will be accessible by using the health centers, held in neighborhoods of lower SES, and located on bus routes. Low SES has been shown to be a fundamental cause of disease, and two proposed ways to combat this are to make programs accessible to everyone regardless of access to resources or to make having those resources insignificant [14]. This program approach seeks to accomplish both proposals. There are a wide variety of community resources available around each health center as will be mentioned in the program approach section that will not only aid in recruitment of women and families, but will be used as partners throughout the implementation and life of the program. Additionally, because there are a number of nursing programs in the area, and because this program can be used for practicums for social work students, qualified sustainable support staff will be ensured.

Around 12,000 women give birth in Hamilton County each year [3]. We know that roughly 35% (4,200) of women do not get prenatal care in the first trimester, and 2.2% (264) do not receive prenatal care at all [9]. We hope to reach 648 women per year. Each site, running at full capacity, will have 18 groups of 12 women come through the program each year (216), and there are three sites (648). We believe that this goal of 648 is feasible and we will recruit plenty of women out of the 4,464 that we have identified in the county as at risk each year. A breakdown of the group cohort schedules for a site can be seen in Appendix 1. CenteringPregnancy is a holistic program that also welcomes the partners of the women in the program. While they will not be calculated into the total sample size we hope to reach, we expect that half of the women in our program will bring a partner [15]. We expect that roughly 75% of

our referrals will be made through existing health care systems and nonprofits in the communities of each of the health center sites, as well as through the health centers themselves. The health centers that we will implement the program in currently offer pregnancy tests and minimal prenatal care counseling. We will work with these sites as well as other non-profits to set up a seamless referral system to our program. The other 25% of our participants will come from word of mouth referrals.

In order to implement CenteringPregnancy to scale we will not only rely on the hospitals and nonprofits for recruitment, but we will also form partnerships in order to collaborate and be a part of existing systems to provide care. Our main medical partners will be The Christ Hospital (a hospital combined with an accelerated nursing program) and The University of Cincinnati. These partners will provide social work and nurse staffing as well as additional resources. Our main nonprofit partner will be Pathway to Hope which will help us to engage with the community and engrain our program in systems already in place in the community.

Program Approach

CenteringPregnancy, which began in the 1990's, seeks to address maternal and child health outcomes by targeting the prenatal and postpartum periods in an effort to improve outcomes such as preterm birth, low birth weight, and birth complications [15-21]. This program secondarily targets provider scheduling issues, patient satisfaction with care, and health care costs [15, 16, 22-25]. CenteringPregnancy is built to work in any community among any population with minimal adaptation required [15, 19, 20, 26-28]. During the program, 10-12 women of similar gestation and mixed parity are brought together starting at 12-16 weeks gestation for 10 sessions of prenatal care, each taking roughly 1.5-2 hours [15]. The session schedule can be seen in Table 3 [29]. The group sessions, referred to as "circles", take place in a room, often in community centers or health departments, that can hold a circle of about 24 chairs and has space for a private examination to occur [15].

Table 3: Schedule of Meetings	
4 Sessions Every 4 Weeks	16, 20, 24, 28 weeks
5 Sessions Every 2 Weeks	30, 32, 34, 36, 38 weeks
Individual follow up as needed with provider	38-39 weeks
Reunion "Baby Shower"	2-6 weeks postpartum

There are three main components to the CenteringPregnancy program: health assessment, education, and support [15]. The health assessment component includes vitals and a belly check [15]. At the beginning of each session, women participate in self-care activities such as taking their own vitals which allow the women to "claim their data" [15]. Women are responsible for weighing themselves, taking their blood pressure, determining their gestational age, and entering all their data into their chart [30]. During this time, each woman has a private exam with their provider where they review their progress, measure the fundus, and listen to the fetal heart beats [30]. A belly check is completed and any specific questions are addressed at this time [15].

The next component, education and interactive learning, is accomplished during circle time [15, 29, 30]. There is a circle opener and a content thread for each session with the overall goal being improved health literacy [15, 30]. Self-assessment sheets are used at each session to facilitate discussion and understand what topics the women would like to see addressed [15]. Education components of the program include: early pregnancy concerns, nutrition, exercise, substance abuse, childbirth preparation, infant feeding, baby care, parenting techniques, postpartum issues, and personal/relationship issues [30]. For example, in session one, where nutrition is introduced, women learn about weight changes and calories, foods to avoid, supplements, serving sizes, and practice with a food log. Another example is in session seven where baby care is introduced and women learn about parent-infant bonding, feeding, oral health, SIDS, and safety techniques. A session outline can be seen in Table 4. CHI Inc. provides all handouts, worksheets, and videos to supplement the discussion [30]. In addition each woman will receive a CenteringPregnancy workbook.

Lastly, the support and community building component is accomplished by ensuring that all members and staff are consistent in the group and time for socializing is built into each session [15, 31]. In addition, the groups are done with women of mixed parity as studies have found that this type of group

produces better maternal and child health outcomes. This is thought to be the result of increased social support for women coming from different backgrounds and wanting to share their stories and experiences. Another important aspect of community building is that childcare will be provided during the sessions. This was seen as a barrier in CenteringPregnancy programs that did not offer childcare [30, 32, 33]. Childcare will decrease the barriers of coming to meeting and allow moms to focus more on themselves [30, 32]. A typical session will usually be structured as follows: 25 minutes of check in and vitals/belly checks, a 25 minute discussion, a 20 minute break and continuation of vitals and belly checks, and a second 25 minute discussion [30]. CenteringPregnancy leads into CenteringParenting, which starts at two weeks postpartum and is six sessions long [15].

Table 4: Session Outline	
Session 1	Prenatal Testing, Nutrition, Size Your Servings, Food Diary, Health Lifestyle Choices
Session 2	Body Changes in Pregnancy, Common Discomforts, Taking Care of Your Back, Healthy Gums and Teeth
Session 3	Mental Relaxation, Breastfeeding My Baby, The Family I Want to Have
Session 4	Thinking about My Family, Family Planning, Sexuality, Domestic Violence and Abuse, Fetal Brain Development, Preterm Labor
Session 5	Labor, Birth Facility, Breathing, Medications for Labor and Birth, Early Labor-When to Call
Session 6	The Birth Experience
Session 7	The Newborn's First Days, Planning Pediatric Care, Caring for Your Baby, Circumcision, Brothers and Sisters, Newborn-When to Call
Session 8	Pregnancy to Parenting Transition, Kick Counts, Emotional Adjustments, Postpartum Depression, Pregnancy-When to Call
Session 9	Putting it all together, Newborn Safety, Infant Massage
Session 10	Growth and Development, Home Changes and Family Changes, Mom Postpartum-When to Call

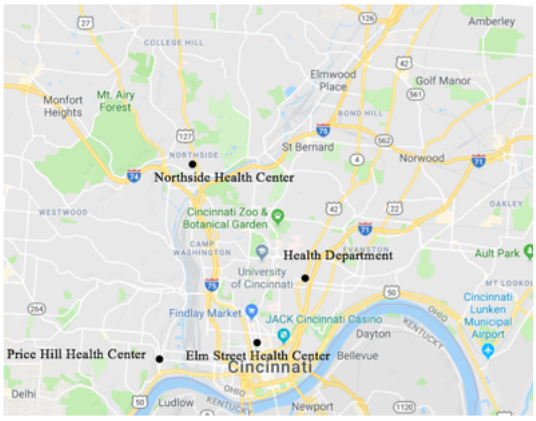
CenteringPregnancy has several theoretical foundations, three of the most prominent being social cognitive theory, social support theory, and adult learning theory [34]. The CenteringPregnancy model is supported by March of Dimes, Strategic Grant Partners, and the Kellogg and Anthem Foundation [15]. There are over 400 sites nationally that use this program and 200 published articles on the model [15]. A 2006 randomized controlled trial of CenteringPregnancy found a 33% drop in preterm birth and 41% reduction for African American women [16]. A retrospective cohort study found lower incidence of preterm birth with group care and a diminished disparity in preterm birth for Black women in comparison

to White and Hispanic women [35]. In a prospective cohort study, CenteringPregnancy participants were found to have increased perceived social support and increased psychological quality of life compared to nonparticipants [31]. A retrospective five-year cohort study of Medicaid women found that CenteringPregnancy reduced the risk of preterm birth 36%, and resulted in a $2.3 million return on a $1.7 million investment [36]. Further, Medicaid has taken steps to invest in CenteringPregnancy as their emphasis on value based payment in maternity care has increased over the years since 2011 [37]. Investment by the federal government further shows the strength of evidence in the high quality and cost efficient care CenteringPregnancy provides.

Effective implementation takes 2 years and is divided into four main stages [15]. The exploration stage is centered on staff trainings and consultations with the Centering Healthcare Institute [15]. The installation stage involves acquiring outside support and resources to be sure that each part of the program can function optimally [15]. The initial implementation stage is marked by the start of the first centering group [15]. The final stage is full implementation and is when fidelity by all staff members and positive outcomes are achieved [15]. We are currently at the end of the second stage, having already obtained IRB approval for this project. This program proposal, if funded, will mark the end of the installation phase and the beginning of our first meeting and the initial implementation stage. We predict that we will be in the full implementation stage by the second year of the grant, meaning our model is becoming a standard of care with high fidelity.

Hamilton County contains eight free and income based health centers. The Hamilton County Health Department plans to implement CenteringPregnancy in three of these community health centers, each reaching a different population within the Hamilton County community. These health centers are: Northside Health Center, Price Hill Health Center, and Elm Street Health Center. These three centers were chosen because they are all around the Hamilton County Health Department which will allow better centrality and will align with the resource assessment. They are also all along major bus routes which will increase accessibility to the families. As outlined above in the community needs assessment, Hamilton County has a clear need for better prenatal care to increase maternal and child health outcomes. The location of these centers will not only fill these needs, but as a result of their location, will target this population's need proportionally as the health disparities between races are different. For example, low birth weight is 7% in White women, 14% in Black women, and 8% in Hispanic women and the location of each center are in communities that are dominated by each one of these races (Northside-White, Price Hill-Hispanic, Elm-Black) [1]. Each of these centers was also chosen because they are in close proximity to local nonprofits which will continue to align with the resource assessment. The Northside Health Center is close to Cincinnati WIC Program and Working in Neighborhoods Inc. The Price Hill Health Center is close to Community Matters, Price Hill Will, and Santa Maria Community Services. Lastly, the Elm Street Health Center is close to Neediest Kids of All, Freestore Foodbank, and Over-the-Rhine Community Housing.

Figure 2: Map of Health Centers and Health Department Locations



Implementation of CenteringPregnancy, as mentioned above, begins with the exploration stage and always starts with a champion that spearheads the program [15]. As the Principle Investigator and Director of the Health Department, I will be in charge of implementation. To begin, a readiness for change assessment tool from centeringhealthcare.org has been completed to ensure that our organization

is ready for this program and has the capacity for change. This assessment included information about our site, staff, community and administrative support for the program, barriers to implementation, projected patient volume, projected patient demographics, and billing. Centering Healthcare Institute, Inc. (CHI) has determined our site to be suitable for implementation and has assigned our site a consultant, to work with us throughout the implementation process [15]. We then identified a steering committee that is made up of our head of scheduling and administration, a key community clinician in Obstetrics, a member of our epidemiology department, a member of our billing department, and three former health department patients from the community. We have decided that the centering group meeting staff will include six nurse midwives or nurse practitioners, 3 social work interns from the University of Cincinnati, and 3 nursing students from Christ College of Nursing. Each group will be led by a nurse and assisted by either a social work intern, nursing student, or both, depending on schedules. It is important to note that group meeting staff will not be altered after the first group meeting as groups function better with the same staff members because the women feel more connected and comfortable to share[15]. Additional program staff will include the project director, biostatistician, intern coordinator, community engagement coordinator, and childcare workers (Appendix 2). All staff will undergo training by the CHI consultant, and the first group will begin once we have enough women for our first circle. Ongoing training will be provided by CHI free of charge to be sure fidelity is maintained [15]. As mentioned, we are currently in the installation stage, where we are acquiring funding and about to begin our meetings. This will lead us to the initial and full implementation stages when fidelity to the model has been achieved.

CenteringPregnancy has been implemented and shown to be successful in many settings [15, 19, 20, 26-28]. CenteringPregnancy has specifically been shown to be very effective in urban settings, similar to Hamilton County [15, 20, 26]. Additionally, the most common setting for CenteringPregnancy implementation is a community health center which is where this program will be implemented [15]. Thus, only two minor adaptations will be made to the program. In previous studies of the program, common issues for the families were accessibility to their group and lack of childcare [15, 20, 32, 33, 38]. As a result, each participant, should they require it, will receive a taxi voucher for each meeting.

Vouchers will only be given one at a time at the previous meeting, and can only be used to get to and from meeting. This adaptation is not expected to change the outcome of the program in any way as it is just providing a means of transportation and will not interfere with the program content. The second adaptation is that meetings will be held in the evening, after normal working hours. This will allow the mothers time to get off work, have dinner, pick up their children, etc. before coming to the meeting. As mentioned above, childcare will be provided at all meetings to decrease barriers in attendance.

We are confident that we will be able to implement this program to scale in this community. The health department is very involved in the community and assists a variety of nonprofits by either holding a position on the board or working directly in the program. This will help us to further cultivate relationships with the nonprofits that we plan to use in order to grow our program. Additionally, with the program being implemented along major bus routes, we are confident that this system will further contribute to the success of our program by decreasing barriers to access. We will also use our relationships with the nurse and social work interns to spread the word of the program as well as to provide peripheral parts of the program such as meals or extra volunteers when they are needed. We also feel confident that we will gain the support of local hospitals and key players in the medical care system of Hamilton County. This is because we feel they will see the overall benefit to the program in promoting health and decreasing costs associated with preventable emergency room visits. In addition we hope to meet with the delivery hospitals to divide the global payment for pregnancy with doctors in each facility. This will increase the sustainability of the program after the grant period ends.

For recruitment of individuals to be successful, a critical component is provider buy in. With provider buy in secured, more women can have access to the program and providers can directly schedule women into the groups. Providers and administrative staff are often convinced of the positives of the program when they understand that billing works the same as a normal prenatal care visit and the program is actually cost effective [30, 39]. CenteringPregnancy has consistently been shown to reduce Medicaid costs, total costs associated with preventable complications, and also to increase revenue per pregnancy for the provider [22, 23, 36, 39]. Our community engagement coordinator will reach out to a number of

identified settings to meet about partnering for recruitment. These settings will include all eight of the health centers in Hamilton County, local nonprofits mentioned above that serve this population, and the Case Managers at local hospitals. The main hospitals that we will reach out to will be the Mercy Health Hospital Women's Center, Good Samaritan, The Christ Hospital, and Tri Health Hospital. Each recruitment location will be personally visited and all applicable providers and administrative staff will be met with by our community engagement coordinator. In addition, each location will be trained on how to talk to women about the program, the referral process, and the next steps for the women. We will also provide each location with informational handouts for the women they come in contact with. Additionally, we will have posters at each of the health center locations advertising the program. We believe that these strategies will provide our program with the broadest reach as each of these locations will come into contact with a large portion of the target population on a regular basis. Lastly, we expect participants to refer people they know to the program which will increase our reach through social ties. It is important to note that recruitment is open to all women who are pregnant regardless of parity status and age, two common criteria that often exclude women from similar programs.

A key component of a successful CenteringPregnancy program and group is that the members remain consistent throughout all of the sessions [15, 30]. As a result, retaining individuals will be very important. This will be done first by ensuring that each individual understands the importance of consistency in the group which we hope will make them feel more responsible for coming so they can be seen as a good group member as their absence will affect others. Second, the built-in childcare and time for socializing will be a draw for the women to come to each session as it will provide moms with a break from their children and expecting mothers with social interaction and support they may not otherwise receive. Next, providing taxi vouchers to women who cannot take the bus or drive themselves, as well as ensuring all locations are near bus stops, and having evening session times will make the groups more accessible and decrease barriers for the women. We will also provide incentives for the women at most meetings which will be provided by our nonprofit partners. Examples include a cleaning supply basket (which SNAP cannot be used to buy) and gift cards to local restaurants. Lastly, highlighting the

importance of prenatal care for their health and their baby's health will increase the mother's perceived benefit and need for the program.

We have worked with our CHI consultant to establish a Community Advisory Group (CAG). The members that make up the CAG are listen in Table 5.

Table 5: Community Advisory Group	
Name	Position
John Cross	Director of Children, Youth, and Families
Chris Finley	Board Chair of The Greater Cincinnati Foundation
Dan Benner	President of Greater Hamilton Chamber of Commerce
Karen McAdams	President of Hamilton County Education Foundation
Tamara Vine	Head of the Commission on Women and Girls
Tim Engelwood	Hamilton County Health Commissioner
Jessica Dawn	Local Community Champion of Non Profits
James Tuck	Director of Health Centers in Cincinnati
Mary Nguyen	CFO Hospital

These individuals were all chosen because they represent the many different facets of the Hamilton County community, and will have a deep understanding of the resources, barriers and risk factors common in this population. Notable members include Mr. Benner and Mrs. McAdams. Mr. Benner was chosen because he has strong skills in strategic planning, policy development, and staff management, all of which will be important in running this program. He will be able to provide a more business centered model which will allow the program to be more structured. Mrs. McAdams was chosen because she is very involved in promoting the importance of education in the community, especially as it relates to health. She will be able to provide valuable insight on the importance of education for the program.

The responsibilities of the CAG will be to lead mobilization of the community around this program. As the principal investigator, I will have meetings once a quarter with the CAG to ensure that everything is running smoothly and to come up with strategies for challenges that may arise. Another main responsibility of the CAG will be to review all program materials before they are implemented to

ensure that they are medically accurate, age appropriate, culturally and linguistically appropriate, and inclusive. In addition, they will also be responsible for ensuring that the program is inclusive and non-stigmatizing. This review will be done through the staff trainings before implementation and throughout the program. Furthermore, there will be a clear discussion on the policies of the inclusive nature of the program as well as a protocol for how an issue should be addressed should one arise. We will measure the effects of these trainings and policies in performance evaluations, completed by the CAG, throughout the program.

Sustainability of the program will be ensured through building in specific deadlines for applying for additional funding and through our strategic dissemination and communication plans. In the third year of this grant, we will begin applying for additional funding through state and national organizations. Our project director has 15 years of experience in grant writing and in securing funding for programs. In addition, we hope to gain community support for the sustainability of our program as a result of our dissemination and communication plans. These include presenting key results to stakeholder and our CAG. In addition, we have built in deadlines for writing manuscripts of the results of our program. We also intend to present at local and national conferences. The project director will work closely with the biostatistician to develop these manuscripts and presentations. In addition, the community engagement coordinator, who will have strong relationships with our stakeholder and community partners, will be charged with disseminating program results. We also hope to include the women who have completed our program in our dissemination efforts. They will be able to participate in stakeholder presentations and recruitment activities should they choose to stay involved. As mentioned above, billing for this program can work the same as traditional prenatal care. Thus, after three years of working with our community partners, we would expect them to see the benefit in the program and thus continue to support the program through the same reimbursement pathways.

There are two potential challenges that have been identified for the implementation of CenteringPregnancy: funding and competing programs. Funding will be important to make the program sustainable. In addition to the actions mentioned above, CHI Inc. is very active in payment advocacy and

coalition building, two ways that we can ensure continuation of funding after this grant [15]. For competing programs, there are a few programs that are already in existence in Hamilton County that target at risk pregnant women as well as the traditional prenatal care offered by physicians. Getting women to try a new program may be difficult, however many of the current nonprofit programs are not evidenced based and prenatal care can be expensive. These reasons combined with the outstanding results from past CenteringPregnancy groups will be highlighted when recruiting women to participate.

Performance Measures and Evaluation

In order to track performance measures we will collect information on the sex, age, and race/ethnicity of our program participants during their completion of the intake survey described in further detail below. In addition, there will be seven parts to the ongoing process evaluation that will monitor the implementation of the program [Table 6].

Table 6: Parts of the Process Evaluation	
Part 1	Program Wide Activity Log (Project Director)
Part 2	Client Record (Interns)
Part 3	Session Observations (CHI Consultant & Project Director)
Part 4	Session Log (Interns)
Part 5	Interns and NP/Midwife Interviews (Project Director & Principal Investigator)
Part 6	Third Trimester Surveys (Interns, Nurses, & Project Director)
Part 7	Recruitment Tracking (Community Engagement Coordinator)

The first will be a program wide activity log. The activity log will keep track of the number of sessions, the number of complete groups, and the number of recruitment meetings completed. This method will help to identify dose delivered of the intervention and will be completed by the project director. Next, there will be a client record which will track program attendance of all participants and also help to measure dose delivered. These records will be completed by the interns. The third part of the process evaluation will be observation of the sessions by the CHI consultant and project director. They will observe the use of materials, timeliness, and the quality of interactions in the sessions. This observation will help to identify the theory in use and ensure it aligns with the effect theory. This part of the evaluation will also be key in measuring fidelity. Next, a session log will be kept at each meeting. The

log will differ based on which meeting number is occurring. The interns will be in charge of tracking which topics are covered and in what amount of time. This log will measure fidelity and dose delivered. The fifth part of the evaluation will be interviews with the interns and NP/Midwives leading the groups. These interviews will help us gain an understanding of the effect theory versus the espoused theory (effect theory being the true theory in of the program as it was written and espoused theory being what staff members believe the theory of the program to be), identify any challenges, and to measure dose received. This will be completed by the Principle Investigator and Project Director. Next, the surveys given to the women in the third trimester and postpartum will allow us to understand dose received. The last part of the process evaluation will include keeping track of recruitment to assess reach. We will keep track of who we talked to at which partner locations and the number of participants that were referred from each location. This part of the evaluation will be completed by the community engagement coordinator.

We will model our impact/outcome evaluation of the program to assess change based on three strong, well known studies on the CenteringPregnancy model. Similar to the study done by Ickovics et. al., participants will complete structured interviews at the entry of the program, during the third trimester, and postpartum [16]. Computer assisted self-interviewing (audio-CASI) will be utilized with program staff helping to facilitate the interview. This will decrease bias and minimize effects due to low literacy levels as there is audio and visuals [16]. Participants will be paid 10 dollars per survey. We expect each survey to take 45 minutes and they will be completed during scheduled session times. The questionnaires we will use are based on the Chae and Ickovics studies, and will differ based on which interview the participant is taking as outlined in Table 7.

Table 7: Schedule of Measures during Interviews

Program Entry	Third Trimester	Postpartum
Social Support Appraisal Scale (SS-A) WHO-QOL-BVm Patient Health Questionnaire (PHQ-2) Pregnancy Knowledge (PK) Prenatal Distress Questionnaire (PDQ)	Social Support Appraisal Scale (SS-A) WHO-QOL-BVm Patient Health Questionnaire (PHQ-2) Pregnancy Knowledge (PK) Prenatal Distress Questionnaire (PDQ)	Social Support Appraisal Scale (SS-A) WHO-QOL-BVm Patient Health Questionnaire (PHQ-2) Edinburgh Postnatal Depression Scale (EPDS) Short Assessment of Patient Satisfaction (SAPS)

Each measure, as described in Table 8, is psychometrically strong and important in understanding changes in the population. The outcomes they address can also be seen in the logic model as well as which inputs and activities are believed to lead to the outcomes (Appendix 3). In addition to the surveys, we will use medical record data from delivery hospitals as it was used in the Picklesimer study, which includes data on gestational age, birthweight, smoking, breastfeeding and STDs [35].

Table 8: Description and Psychometric Properties of Measures		
Short Term Outcome on Logic Model	Measure	Description/Psychometric Properties
Increased Perceived Social Support	SS-A	-This measure was used in the Chae article and is a 23 item instrument, which uses a four point Likert scale to assess perceived social support [31]. -This measure has good reliability and good convergent, divergent, and concurrent validity tested among college, community, and inpatient settings[40, 41].
Increased Quality of Life	WHO-QOL-BVm	-This measure was used in the Chae article. -It is a validated measure by The World Health Organization and is used to assess quality of life using 36 items [31]. -This measure has good discriminant, content, and construct validity and is appropriate for use among different cultures [42-45].
Decreased rates of depression during pregnancy and postnatal depression	PHQ-2	-This measure was used in the Chae article. -It is the first two questions of its longer counterpart, the PHQ-9, and measures depression and anhedonia [31]. -An answer of yes to either of the two questions indicates a positive result [31]. -The PHQ-2 has been validated in primary care and obstetrics-gynecology clinic samples [46-48].
Decreased rates of depression during pregnancy and postnatal depression	EPDS	-This measure was used in the Chae article. -This measure is a 10 item questionnaire that uses a four point Likert scale to assess symptoms of postnatal depression in the past week[49]. -It has been validated in cross cultural samples [50-52].
Improve knowledge and self-efficacy -Increased awareness of and connection to important local resources	PK	In the Ickovics article, the researchers created a questionnaire of Pregnancy Knowledge based off of their curriculum and the main learning outcomes that they hoped the women would be confident in [16]. The measure was not validated. We plan to take a similar approach, but we will use the Pregnancy Review Sheet, provided by CHI, that measures women's knowledge, their readiness for labor and delivery, as well as readiness for infant care[30].
Decreased Prenatal Distress	PDQ	-This measure was used in the Ickovics article. -This measure is a 12-item instrument that uses a five point Likert scale to assess a variety of common worries during pregnancy[53]. -Many studies have confirmed that items load well on the instruments three factors[53]. -Cronbach's alpha was .743 for the scale[53]. -The questionnaire also showed good convergent validity[53]. -Lastly, this scale has been validated in many different cultures[53].
High patient satisfaction with prenatal care	(SAPS)	-The Ickovics article used a similar patient satisfaction scale, but as we were unable to find the exact scale used, and due to this scales strong properties, we chose the SAPS. -This measure is a 7 item instrument that uses a Likert scale[54]. -This measure is reliable and valid with a Cronbach's alpha of .85 and high correlation with other measures of patient satisfaction and treatment outcomes[54]. -It has been validated in a variety of medical settings[55].

Short term and long term outcomes can be found in the Logic Model (Appendix 3). Each outcome will be measured either by birth certificate data (denoted BC) or by the surveys that the women will be completing during the program (denoted by their abbreviations given in Table 7). Table 9 outlines which outcome is associated with each survey measure. Short term outcome goals to be met by the end of the grant period of three years are listed in Table 9. In order to ensure that our outcomes are the result of our program and not due to general trends in Hamilton County, we will also compare medical record data of the women in our program to other women giving birth at the same locations during the same time period. Comparisons will be matched by age, race, income and education. Goals were outlined by previous changes seen in studies on the CenteringPregnancy program [16, 31]

Table 9: Three Year Outcome Goal	
Outcome	Three Year Goal
High patient satisfaction with prenatal care (SAPS)	90% of women will score above 25.
Improved knowledge and self-efficacy (PK)	50% increase in scores from program entry to third trimester.
Increased awareness of and connection to important local resources (PK)	50% increase in scores from program entry to third trimester.
Improved birth outcomes (BC)	5% low birth weight and pre term birth rate (current averages are 10% and 10.5%)
Decrease in maternal complications (BC)	15% or lower cesarean section rate [56].
Increased Quality of Life (WHO-QOL-BVm)	30% increase in QOL from program entry to postpartum, with an increase seen from program entry to third trimester as well.
Decreased rates of depression during pregnancy and postnatal depression (PHQ-2 & EPDS)	20% lower rates of depression from program entry to third trimester. Lower rates of postnatal depression compared to the national average and Hamilton County Average.
Increased Perceived Social Support (SS-A)	30% increase in social support from program entry to postpartum, with an increase seen from program entry to third trimester as well.
Decreased Prenatal Distress (PDQ)	50% decrease in prenatal distress from program entry to the third trimester.

Capacity and Experience of the Applicant Organization

We feel confident that The Hamilton County Health Department has the capacity to successfully follow this implementation plan. We serve more than 481,000 residents living in and around Hamilton County each year with a staff of over 100 people. Our health department has been able to consistently provide more programs than other urban health departments since our opening in 1919 as a result of our regular grants, community support, and other funding sources. Our health department has been accredited by the Public Health Accreditation Board (PHAB), since 2017 and recently celebrated 100 years of service in August of 2019.

We currently provide a number of important services for individuals, communities, and businesses. We are well versed in the community in which this program will be implemented. For example, WeTHRIVE, a county wide initiative to make healthy living easier, has put representatives of our health department in almost every neighborhood in Hamilton County. Some of our most successful and popular programs are the Exchange Project, a syringe exchange program, and our emergency preparedness program. Our health department holds educational events multiple times a week for all members of our community. These include awareness days and weeks over topics such as HIV/AIDS, CVD, reproductive health, and eating disorders. In addition to being well versed in implementing evidence based programs on a large scale, we have partnerships and research occurring in over eighteen areas including reproductive health, substance use and abuse, maternal and child health, and genetics and genomics.

Our Health Commissioner, Bryan Stanley, and Board of Health members are very committed to the health department and the programs it produces. Our Board of Health members are appointed to five year, overlapping terms and one member is always a physician. They have been vital in ensuring proper funding and appropriate use of finances. Hamilton County Public Health currently has an operating budget of $17 million

At our Health Department we understand the importance of data and measurement. Our data that we collect and receive from our partners is what drives all of our decisions. We conduct annual reports as well as community health assessments at regular intervals. Our health equity reports assist us in program placement as do our more focused reports such as the reports for maternal and child health, HIV/STD reports, and injury surveillance reports. Our Health Department has a long standing policy that prohibits discrimination in the provision of services on the basis of age, disability, sex, race, color, national origin, religion, sexual orientation, or gender identity. We strive to be an inclusive place that celebrates diversity while upholding our mission; to educate, serve, and protect our community for a healthier future.

Partnerships and Collaboration

This program will have key collaborators and implementation partners as well as key stakeholders that we consider other partners. Key collaboration and implementation partners include: CHI Inc., eight local nonprofits, the health centers, and our hospital referral sites. Our site consultant from CHI Inc. will work closely with us throughout the program implementation. CHI Inc. has successfully assisted in program implementation and adaptation all over the country, and many program successes have been in communities similar to Hamilton County. As indicated in the program approach section, each of the three health center program sites is surrounded by non-profit partners, eight in total. The health department already works with each of these non-profits which will contribute to their engagement. The first role of these non-profits will be to assist with recruitment activities. They will have flyers to pass out to eligible women. Our community engagement coordinator will also visit each one to explain the recruitment process. Additionally, the nonprofits will switch off in providing food and snacks at the meetings for the women. They will also help with donations for attendance incentives for the women. Lastly, all program staff will have a working knowledge of the nonprofits so that they can refer women to outside services and programs as needed.

Our partnering nonprofits not only provide our program with resources and access to a deep connection with community members, but they are all strong organizations that have the capacity to play

vital roles in our program. Examples of this strong capacity include the following: Working in Neighborhoods Inc. has been operating for 40 years and has invested $20 million in local neighborhoods, saved 1,906 homes from foreclosure, and boasts a 95% homeowner retention rate. Price Hill Will, a community development corporation, has been in existence since 2004 and has intentional focuses in the areas of community building and economic development. Santa Maria Community Services currently provides 4,000 individuals with access to education and other resources to promote neighborhood revitalization. Freestore Foodbank, established in 1971, currently houses nine community programs that all seek to promote a hunger free community and lift people out of crisis situations.

Other key implementation partners will be the remaining five health centers and the local hospitals: Mercy Health Hospital Women's Center, Good Samaritan, The Christ Hospital, and Tri Health Hospital. We will primarily be working with the case managers at these hospitals to facilitate recruitment. Many of our program women will also deliver at these locations and it will be important that a strong relationship is maintained so transferring women to these locations is efficient and no information is lost.

As with our partnership nonprofits, we believe that each of our partnering hospitals shows deep community involvement and a strong capacity that would be able to support our program. Not only is Mercy Health Hospital Women's Center a part of one of the largest healthcare systems in the county, but they also operate 244 community programs that serve over 250,000 people. Good Samaritan has over 150 years of community service and recently completed a modernization project as well as a 10 story patient care tower expansion. The Christ Hospital was named among America's 50 best hospitals and not only runs 100 outpatient clinics, but provides extensive community outreach and service programs. Lastly, Tri Health Hospital is one of the top integrated health systems in greater Cincinnati and is the exclusive sponsor of the Healthy Harvest Mobile Market, a community program to bring fresh fruits and vegetables to food deserts in Hamilton County.

Our other partners that we consider stakeholders in this program include: the community advisory group, the boards of our referral hospitals, the state medical board, preschools in the Hamilton county community, the extension office of UC, and three important national coalitions. As described above, the

community advisory group offers a diverse perspective on the community and health concerns of Hamilton County. They each also represent an organization with a vested interest in our programs and the outcomes it hopes to produce. The boards at each of our partner hospitals as well as the state medical board have shown interest in our findings as a way to decrease costs due to preventable emergencies and maternal and child health complications. Furthering these partnerships could be an avenue for future funding and program continuation. Preschools in our local Hamilton County school district also have a vested interest in the health of the community's children. Partnering with them could encourage moms to send their children to preschools and provide an important educational support system. The extension office at the University of Cincinnati will be an important stakeholder for our program and excellent resource for the women we are serving. They will be providing food one session per cohort and speaking to the moms about continuing their education and other resources they provide. The national coalitions: National Advocates for Pregnant Women (NAPW), Maternity Care Coalition (MCC), and National Healthy Mother, Healthy Babies Coalition all seek to promote health an equity among pregnant, low income, minority women. They support programs like CenteringPregnancy and will be interested in our findings and other support efforts for this program.

Project Management

As a result of the complexity of the CenteringPregnancy program and our commitment to fidelity, in addition to implementing a strict timeline and process evaluation, each member of the team will have a clear job description and responsibilities. The principle investigator will be in charge of monitoring the overall program and the timeline of implementation using the Gantt chart (Appendix 5). They will work closely with the project director and CAG to ensure that program implementation is on track and to solve issues if implementation is behind schedule. The principle investigator will also be tasked with the interview portion of the process evaluation mentioned above. The project director will be in charge of all day to day operations of the program and will keep the program wide activity log in accordance with the process evaluation plan. They will also assist in the interview portion of the process evaluation and be present each time the surveys are given and assist the biostatistician when necessary. Lastly, the project

director will participate in observation sessions with the CHI consultant as a part of the process evaluation.

The Community Engagement Coordinator will be in charge of building and maintaining relationships with our partnering nonprofits. They will also be tasked with meeting with each of the referral centers and hospitals that we have identified. They will keep a log of their recruitment activities to uphold their portion of the process evaluation and to ensure that our referral services are reaching all of the women in our target populations. Lastly, they will be in charge of communicating preliminary findings to stakeholders and other organizations that provide assistance to the program. The biostatistician will be tasked with entering and cleaning all of the data that will be collected from the three sites with the three surveys that will be given. They will also run all analyses, prepare reports, and share their results with the project director, PI, and community engagement coordinator. The secretary/intern coordinator will be in charge of all of the intern and nurse schedules as well as the paperwork for the participants. In addition, they will schedule the staff meetings. They will need to have a good knowledge of the program and be able to answer any logistical questions from participants and staff, should they arise. The nurse midwives will be in charge of leading and facilitating all group meetings. They will also be the leads for survey collection. The social work and nurse student interns will be in charge of co-facilitating the group meetings, assisting with surveys, and carrying out the session logs and client record logs from the process evaluation. Lastly, there will be one childcare worker per site. They will be tasked with providing care to the children of participants at each group meeting.

A meeting schedule will be implemented in order to maximize communication and increase the success of the program. All program staff and interns will meet once a month. Nurses from all three sites will meet once a week to debrief the sessions and share experiences and advice. The interns and nurses will meet together once a month and the interns will have reflections due during these meetings. The principal investigator and project director will meet one to two times a week to ensure that the program is on track and key tasks are being completed. The lead five staff members including the PI, PD, secretary,

community engagement coordinator, and biostatistician will meet once a month to ensure that data collection is on track and the process evaluation is showing positive results. We feel that this meeting schedule, along with our rigorous process evaluation will provide ample opportunities to address challenges, lessons learn, and key successes. In addition, these meetings will allow for corrective action to take place if poor fidelity by staff members occurs.

Professional development opportunities will occur for staff throughout the length of the program. One staff member will travel to Washington, DC to attend a national conference and two will travel to Chicago to attend a regional conference. In addition, staff are encouraged to attend any of the educational events hosted by our health department. Community partners will also be invited to these events, held twice a month, in order to build capacity and strengthen the community. Our health department has very low staff turnover rates as well as a policy on the standard of work we expect from any staff member. Many of the staff on this project have been with our health department for over ten years and have produced high quality work. We do not expect turnover or work engagement to be an issue in this project.

Conclusion

Hamilton County, Ohio has fallen behind in maternal and child health measures for many years, and is in clear need of an intervention to improve the health disparities seen in the community. CenteringPregnancy is a strong evidence based program that has proven effective in reducing adverse maternal and child health outcomes such as preterm birth, low birth weight, and birth complications [15-21]. As a result of this program targeting the prenatal and postpartum periods, lasting strides can be made in the way of primary and secondary prevention for adverse maternal and child health outcomes. Further, because CenteringPregnancy is built to work in any community, among any population ,with minimal adaptation required, we believe that this program will be successful in producing our long term outcome goals including decreased maternal complications, improved birth outcomes, and increased perceived social support and connection to local resources [15, 19, 20, 26-28]. The Hamilton County Health

Department, with over 100 years of service to the community ,and a history of successful, long lasting programs and interventions, has the capacity to carry out this three year plan and build a foundation that will allow for the sustainability of the program long after the life of the grant.

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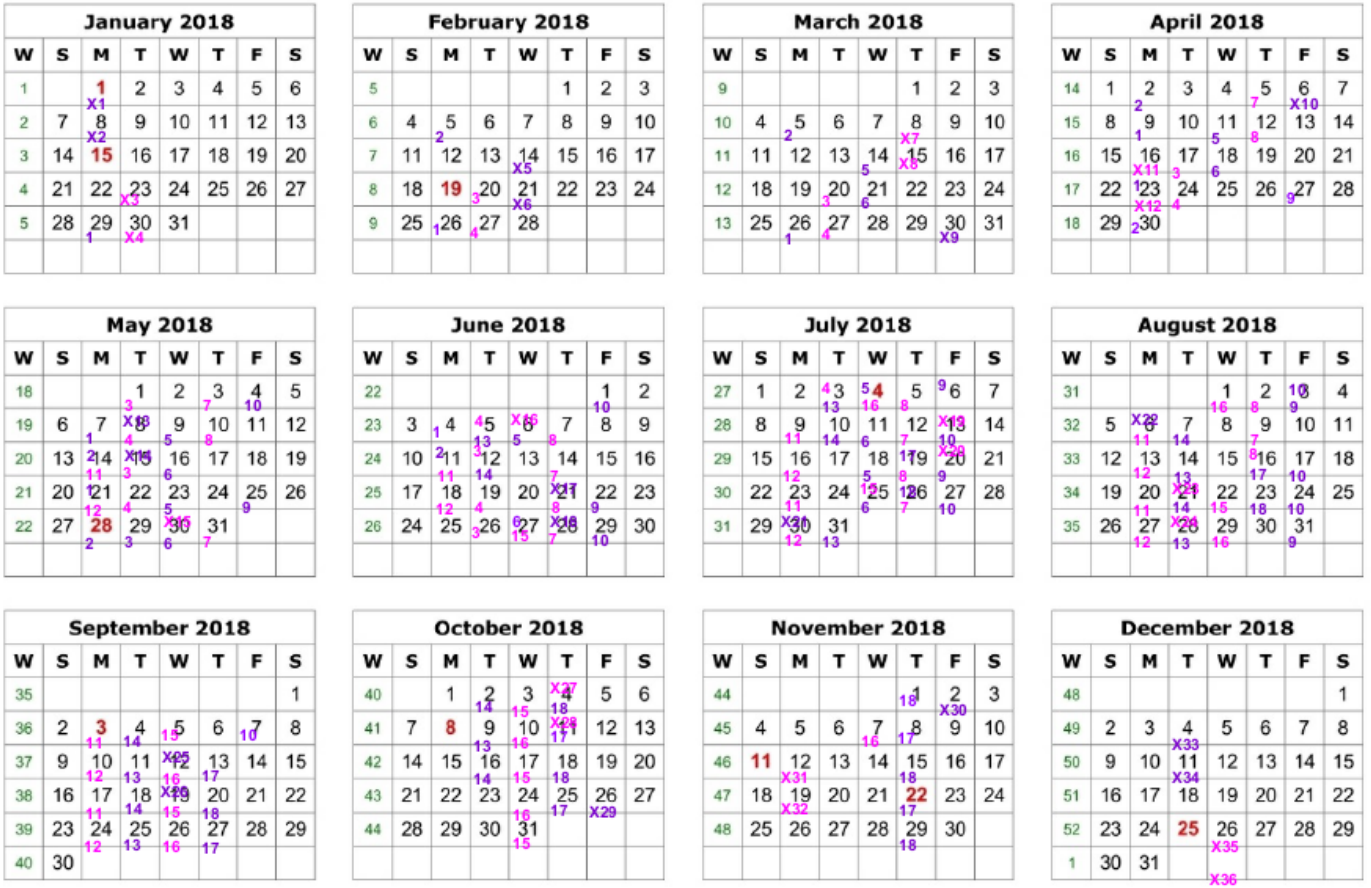
Appendix 1: Example Cohort Calendar for One Health Center

Example Cohort Calendar

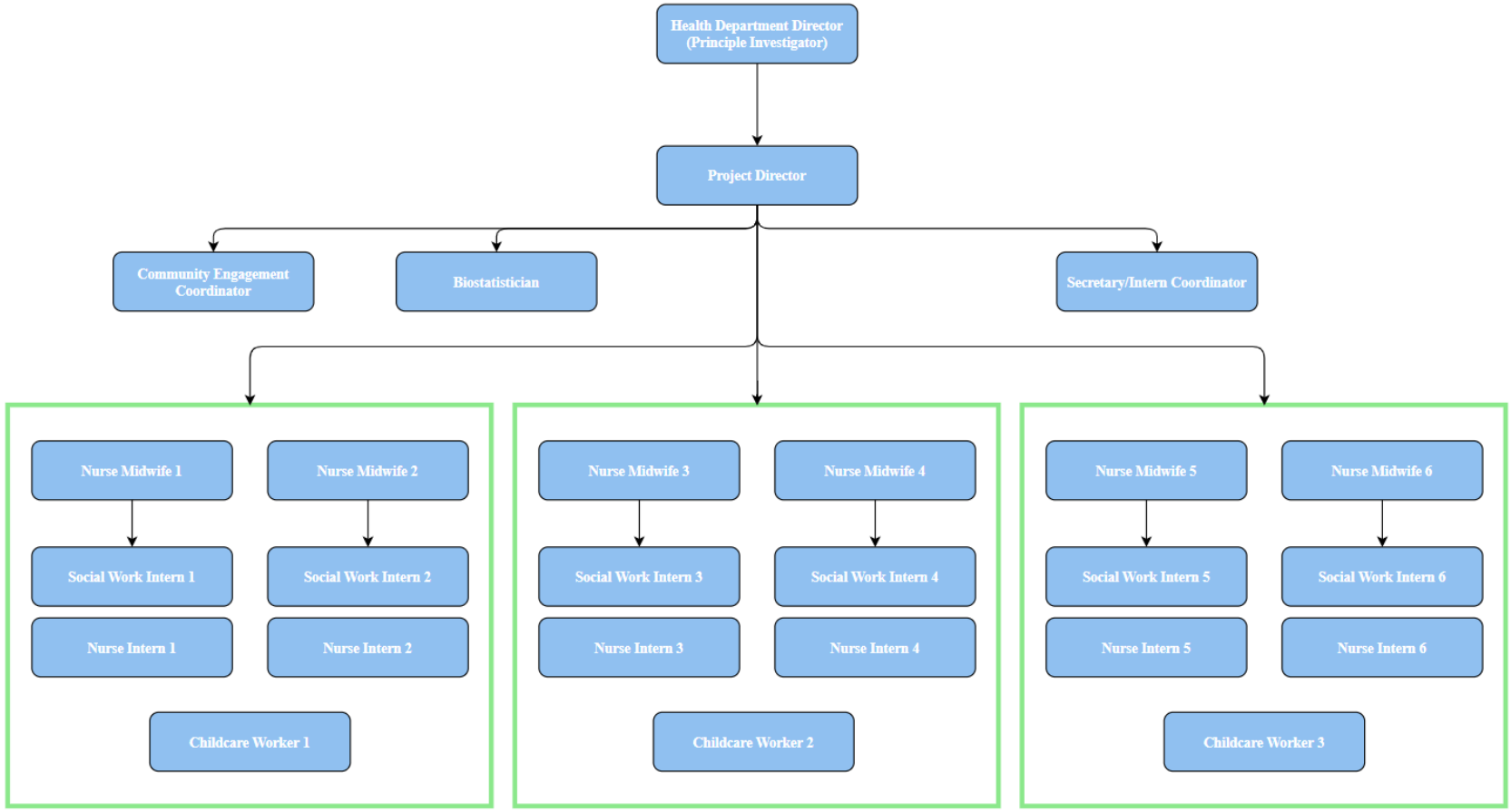
2018 Calendar

Key:
Nurse 1
Nurse 2



*Built out for 18 Groups
*Meetings at 16, 20, 24, 28, 30, 32, 34, 36, 38 weeks
prn after 38 weeks

Appendix 2: Organization Chart



Appendix 3: Logic Model

Program: CenteringPregnancy Model					
Inputs	Activities	Outputs	Short Term Outcomes	Intermediate Outcomes	Long Term Outcomes
-Facilities for Group Care (Price Hill, Northside, and Elm Street Health Centers) -Partners for recruitment (Mercy Health Hospital Women's Center, Good Samaritan, and Tri Health Hospital) -Transportation (taxi vouchers, bus route) -Data from CHNA (Children's Hospital, Cradle Cincinnati, Hamilton County Health Department) -Evidence base for group prenatal care for reducing negative maternal and child health outcomes -Existing supportive services (SNAP, WIC, Pregnancy Center East, HCJFS) -Community Partnerships (Christ Hospital & University of Cincinnati)-interns -BRFSS Data	-Hire and train nurse midwives/NPs and interns -Complete CHI Inc Training for all Staff - Create a Community Advisory Group -Contact HC Providers to assist in referrals -Establish Voucher System -Recruit participants -Implement group prenatal care and initiate circles.	-Staff for sustainability -Quality-trained staff members -Overseeing community focused committee to guide decisions and advise -Partnerships established to recruit women and gain HC system support -Reliable transportation is provided -Engaged participants -Increase in knowledge in, patient satisfaction, decrease in complications -10 sessions held for each circle, following schedules	-High patient satisfaction with prenatal care -Improved knowledge and self-efficacy -Increased awareness of and connection to important local resources -Improved birth outcomes -Decrease in maternal complications -Increased Quality of Life -Decreased rates of depression during pregnancy and postnatal depression -Increased Perceived Social Support -Decreased Prenatal Distress	-Increased Quality of Life -Decreased rates of depression during pregnancy and postnatal depression -Improved birth outcomes -Decrease in maternal complications	-Decreased maternal mortality rates -Decreased infant mortality rates -Decreased costs associated with poor maternal and child health outcomes -Improved long term child health outcomes related to increased rates of breastfeeding, better infant care practices, and positive parenting practices.
Contextual Conditions: Socioeconomic Context, Built Environment, Service Gaps, Neighborhood Conditions					

Appendix 4: Budget Justification

A. Personnel

***Salaries increase 3% per year**

Position	Annual Salary	%FTE	Salary	Fringe	Salary Requested	Total Requested
Principle Investigator	$100,000 $103,000 $106,090	15% 30% 30%	$15,000 $30,900 $31,827	$4,115 $8,476 $8,730	$19,115 $39,376 $40,557	$99,048
Project Director	$50,000 $51,500 $53,045	75% 70% 90%	$37,500 $36,050 $47,741	$12,604 $12,116 $16,064	$50,104 $48,166 $63,786	$162,056
Biostatistician	$70,000 $72,100 $74,263	15% 50% 50%	$10,500 $36,050 $37,132	$3,158 $10,843 $11,169	$13,658 $46,893 $48,300	$108,851
Community Engagement Coordinator	$25,000 $25,750 $26,523	75% 50% 40%	$18,750 $12,875 $10,609	$8,619 $5,919 $4,877	$27,369 $18,794 $15,486	$61,649
Secretary/Intern Coordinator	$25,000 $25,750 $26,523	50% 50% 50%	$12,500 $12,875 $13,261	$5,746 $5,919 $6,096	$18,246 $18,794 $19,357	$56,397
Nurse Staff (6)	$65,000 $66,950 $68,959	50% 50% 50%	$32,500 $33,475 $34,479	$9,996 $10,296 $10,605	$42,496 $43,771 $45,084	$788,106
Childcare Workers (3)	$5,000 $5,150 $5,305	25% 25% 25%	$1,250 $1,288 $1,326	N/A	$1,250 $1,288 $1,326	$11,592
Social Work and Nurse Student Interns	N/A	N/A	N/A	N/A	N/A	No Cost

Morgan Avery, MPH, Principal Investigator (15%/30%/30%)

Ms. Avery is the director of the Hamilton County Health Department. She will contribute 15% FTE during year 1 and then 30% for years 2 and 3. Ms. Avery has served as director for 15 years and her many roles in the department as well as her connection with the community will allow her to effectively oversee implementation of the CenteringPregnancy program. She will be responsible for meeting with all staff members, meeting with the CAG, and interviewing the nurses and interns as part of the process evaluation. She will also assist the project director in monitoring the overall timeline of the intervention and finances.

Emily Novak, MPH, Project Director (75%/70%/90%)
Ms. Novak will contribute 75% FTE in the first year, 70% in the second, and 90% in the third. She will be responsible for keeping the program wide activity log, doing session observations with the CHI consultant, and assisting in the interviews of the participants. Ms. Novak has overseen many of our successful programs at the health department and recently began the WeTHRIVE initiative mentioned in this grant.

Hunter Nguyen, MPH, Biostatistician (15%/50%/50%)
Ms. Nguyen is a biostatistician from the University of Cincinnati and will be in charge of data analysis of the program. She will contribute 15% FTE in the first year and 50% in the second and third year. She will work closely with the project director to develop manuscripts after the data analysis.

Delaney Kirbabas, BS, Community Engagement Coordinator (75%/50%/40%)
Ms. Kirbabas will contribute 75% FTE in the first year, when the program is starting up and recruitment is very important. She will then contribute 50% in the second year and 40% in the third year. Ms. Kirbabas's main responsibilities will be to work with all of our nonprofit and healthcare partners in training them on how to recruit women. She will also present findings to our partners and stakeholders. Ms. Kirbabas will keep a recruitment log as part of the process evaluation to track recruitment processes.

Maggie Piron, GED, Secretary/Intern Coordinator (50%/50%/50%)
Ms. Piron will contribute 50% FTE for all three years. She will be in charge of the paperwork for all participants and interns for the program. She will also keep track and run the taxi voucher system. In addition, she will be in charge of communicating with the interns and nurses about their schedule. Lastly, she will be in charge of coordinating and scheduling all staff meetings and all CAG and stakeholder meetings.

Nurses (6), BSN/NP/NM (50%/50%/50%)
The nurses will contribute 50% FTE for the life of the program. Their primary responsibility will be to lead the sessions for the CenteringPregnancy intervention. They will also be the main people in charge for the survey administration to the participants. Each nurse that will be leading the sessions are currently employed by the Hamilton County Department of Health and have shown exemplary work in their field.

Childcare Workers (3), GED (25%/25%/25%)
The childcare workers will contribute 25% FTE for the life of the program. Their primary responsibility will be to take care of the kids of the participants during the sessions.

Social Work Interns & Nurse Student Interns
The social work interns will be students from the University of Cincinnati that are completing their practicum for their Master of Social Work degree. The nursing student interns will be nursing students that are on their public health rotation from the Christ College of Nursing in Cincinnati. The interns will have the primary responsibilities of keeping the client records (attendance), the session logs, and assisting with the survey administration.

B. Supplies

Item Requested	Number Needed	Unit Cost	Amount Requested
iPads	9	$400	$3600
Participant Incentives	5,832	$10	$58,320
Nurse Facilitator Guide	6	$75	$450
Participant Workbooks	1944	$22	$42,768
Taxi Vouchers	10,000	$7	$80,000

The iPads will be used for administering the surveys to the participants. Each site will have three iPads to assist with completing the surveys in a timely manner. We believe that providing participants $10 per survey will be an incentive for participation and attendance to the program. Each nurse will be given and CHI Inc. Facilitator Guide for CenteringPregnancy. This will outline each session in depth as well as provide additional training. Each participant in the program will receive a workbook. This workbook will

be where they track their vitals and will also outline each session. Lastly, for women who request them, taxi vouchers will be available to decrease the barrier of transportation to and from the meetings.

C. Travel

	Expense	Y1	Y2	Y3
Annual Program Director Meeting in Washington, DC	Airfare Lodging Per Diem Number of Attendees Total	$300 $400 $71 X 3 Days=$213 1 $913	$300 $400 $71 X 3 Days=$213 1 $913	$300 $400 $71 X 3 Days=$213 1 $913
Annual Regional Meeting in Chicago	Airfare Lodging Per Diem Number of Attendees Total	n/a n/a n/a n/a n/a	$300 $400 $71 X 3 Days=$213 2 $1826	$300 $400 $71 X 3 Days=$213 2 $1826
Community Engagement Coordinator	Travel to Recruitment Sites Total:	$600	$600	$600

We will be sending the project director to an annual meeting in Washington, DC in the second year of the program. This will serve as an opportunity to learn more about programs similar to ours and to present preliminary findings of our program implementation. We will also be sending two staff members to an annual regional meeting in Chicago. This will allow for further professional development and increased dissemination of our results. Lastly, the community engagement coordinator, who is tasked with forming and maintaining relationships with our partners and training them in recruitment, will be given a gas stipend for their travel expenses throughout the year.

D. Consultant costs

Consultant	
CHI Consultant One-time licensing fees	$1,000
Audio-CASI Programming	$1,000

E. In Kind Contributions

We have over ten nonprofit partners that we will rely on for snacks for the participants at each meeting. We will also provide incentives for our participants at most meetings that will also be provided by our partners or by other nonprofits in the community that are looking for a project. These incentives will include things such as cleaning supplies (which food stamps cannot buy), travel size item goodie bags, and gift card raffles.

F. Supplies in Health Department for Program Use

The Hamilton County Health Department, as well as the Health Center sites, have a few supplies that will be utilized for the program. These are chairs for the meeting circle, a mat for the exams, and a privacy curtain for the exam space. We will also use additional tables as they are needed.

Category	Cost
A. Personnel	$1,287,699
B. Supplies	$185,138
C. Travel	$8, 191
D. Consultant	$2,000
Three Year Total: 1,499,997	$1, 483, 028

Appendix 5: Gantt Chart

GANTT Chart

		Timeline											
		Year 1				Year 2				Year 3			
Task	Description	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1	**Formative**												
1.1	Finalize IRB and Program Measures												
1.2	Staff Training												
1.3	Finalize Voucher System												
1.4	Partner Visits with Nonprofits												
1.5	Partner Visits with Hospitals												
1.6	Recruitment												
2	**Program Implementation**												
2.1	Hold Circles (See Cohort Calendar)												
3	**Evaluation**												
3.1	Seven Part Process Evaluation												
3.2	Surveys at Entry, 3rd Trimester, & Postpartum												
3.3	Data Collection from Medical Records												
3.4	Data Cleaning												
3.5	Data Analysis												
3.6	Report Creation												
4	**Dissemination**												
4.1	Partner Meetings												
4.2	Manuscripts by PD & PI on Program												
4.3	Funding for Program Sustainability												