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Ercilla Glean Date

Increasing Access to Improve Lives: grant proposal to develop a mobile unit to increase maternal health care for Black women in rural Georgia

By

Ercilla Glean

Master of Public Health

Prevention Science

_____

Iris Smith, PhD

Committee Chair

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Tyra Gross, PhD

Committee Member

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B.S, Xavier University of Louisiana, 2017

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Thesis Committee Chair: Iris Smith, PhD

An abstract of

A thesis submitted to the Faculty of the

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in partial fulfillment of the requirements for the degree Master of Public Health in Prevention Science

2021

Abstract

Increasing Access to Improve Lives: grant proposal to develop a mobile unit to increase maternal health care for Black women in rural Georgia

By: Ercilla Glean

Georgia is one of the worst states for maternal mortality. This disparity is even higher for Black women, especially those who live in rural Georgia counties. Evidence shows a current decrease in access to maternal health care in Georgia due to hospital closures. Traveling great distances to access care can also mean that women are less likely to keep up with scheduled appointments. Globally, mobile health units are regularly utilized for various services, including maternal health. There is an unmet need for increased access to care in rural Georgia counties, where a maternal mobile health unit can alleviate the burden of having to drive great distances for services. This grant proposal aims to fill that gap and in doing so not only improve access to care for Black mothers, but also improve health outcomes which can in turn, improve the Black maternal mortality rate.

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Table of Contents

Chapter 1: Introduction

Introduction

Georgia is one of the most dangerous states in America for a pregnant woman, with the maternal mortality ratio being 40.8 out of 100,000 live births (Yale Law, 2018). In comparison to the current United States maternal mortality rate, Georgia's rate is 2.3 times higher. There is a clear issue in the state of Georgia that needs to be addressed, especially for Black women. The maternal mortality rate for Black women in Georgia is 6 times the rate of White women, nationally (Yale Law, 2018). These statistics make Georgia the worst state in the US for maternal health, with only half of Georgia's counties having OB-GYN care and over 40% of all labor and delivery facilities being closed over the past 20 years (Gurley, 2018). A reduction in labor and delivery facilities and scarcity of OB-GYN creates an issue when it comes to access to care.

Problem Statement

Black maternal mortality and morbidity is an ongoing issue in the United States. There are factors that are not easily controlled, such as the closing of maternal care facilities and hospitals. With these closings, women must travel far distances to receive the care and services they need, putting them under greater stress during an important time of their lives. Residents in rural areas are less likely to have access to not only health care, but health insurance as well (CDC, 2017). Black women in rural areas not only experience these stressors, but also stress around racism and bias from their providers that can further contribute to negative health outcomes (Hall, et al, 2015). However, there is also an opportunity to provide care and services to rural areas that is accessible, low cost and from trust-worthy providers. This is especially pertinent for Black women in rural Georgia, as they have limited access to maternal care due to poor health coverage, access to care and experience racial bias as they receive care.

Purpose Statement

The purpose of this applying for the March of Dimes Innovation Challenge Research Plan is to develop a mobile care unit to provide and expand coverage to Black women in counties in Georgia that currently do not have close access to OB-GYN care to improve equity.

Significance Statement

As Black maternal mortality and morbidity has gained more spotlight over the past few years, there have been many ideas on how to reduce the rate of death and negative health outcomes that Black women may experience due to pregnancy and birthing. One of the ideas that we have seen the most is improving racial bias in healthcare providers. Improving racial bias is an important factor in reducing Black maternal morbidity and mortality, as this means that providers will listen to what their patients need instead of acting on their own assumptions. An example of this would be that Black people have a higher pain tolerance than white people. Factors such as improving racial bias and access to health insurance for rural residents are factors that may be more difficult upfront to achieve, but can improve the Black maternal mortality and morbidity rate in the long run. Access to care is a factor that can have an immediate impact on Black women in rural areas, as now they do not have to drive long distances to get the services and care that they need. The creation of a maternal mobile care unit that services rural Georgia counties provides an opportunity to directly impact a community in need and be a leader in ways to further address this issue on a national level.

Chapter 2: Review of Literature

Introduction

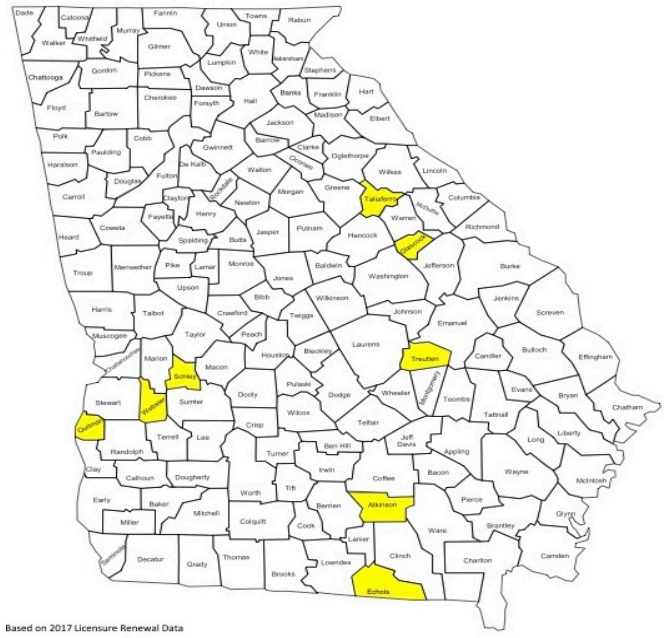
The review of literature for this grant proposal will discuss the current issues as it relates to access to care in Georgia, negative health outcomes that both rural residents and Black mothers experience, similar programs that have been implemented in the US and internationally and how the current global pandemic has impacted this ongoing issue. There are many different forms of literature used for this review of literature. Peer-reviewed journal articles were used because of their validity when it comes to topics addressed. Other non-traditional forms of literature such as new reports, information from consultant groups and government agencies were used to further justify information found from peer-reviewed articles. Some of the topics have not been heavily researched for publication in peer-reviewed articles, so non-traditional forms of literature provide information on certain topics.

Literature Review

Access to care in rural Georgia counties continues to be an ongoing issue. The Georgia Board of Health Care Workforce (2017) released a report that included the current number of physicians in Georgia counties. The report also includes the counties that do not have practicing physicians based on specialties. Eight of the 159 counties do not have a practicing physician; all of which are rural counties. This same report found that 75 counties do not have a practicing Obstetrics and Gynecologist (OB-GYN). Many counties overlap with not having a family medicine doctor or an OB-GYN including Taliaferro, Gaslcock, Truetlen, Talbot, Webster, Quitman, Clay, Atkinson, Echols, Taylor and Schley. This lack of physicians, in part, is due to the closing of hospitals in these areas. In the past 10 years, Georgia has had 7 hospital closures in

rural counties, with 18 more being deemed “vulnerable” for closure (The Chartis Group, 2020). With the closing of hospitals, these rural areas lose physicians, including OB-GYNs.

Figure 1



GA Board of Health Care Workforce, 2017

Loss in access to care means that pregnant women in rural counties must travel greater distances in order to receive the care that they need throughout their pregnancy and after birth. Specialty and sub-specialty healthcare services are less likely to be available in rural areas (Rural Health Info, 2019). Driving great distances for care before, during and after pregnancy is more pronounced in Black communities and disproportionately affects low-income women (Centers for Medicare and Medicaid Services, 2019). Multiple factors contribute to hospital closures, such as uninsured patients, community poverty rates and financial distress, all of which disproportionately impact Black communities (Centers for Medicare and Medicaid Services, 2019). A lack of access to maternal health care can lead non-utilization of services, which can

lead to numerous negative health outcomes, including infertility, birth defects premature birth, low-birth weight, maternal mortality, severe maternal morbidity, and postpartum depression (March of Dimes, 2019). Many of these chronic conditions that affect pregnancy can also be due to chronic health conditions that are prevalent in the Black community such as high blood pressure, obesity, diabetes, asthma and HIV/AIDS (Pfizer, 2020). A study analyzing the Behavioral Risk Factor Surveillance System survey found that 40.3% of Black respondents living in rural areas have multiple chronic illnesses (James et al, 2017). With Black women being 3 times more likely to have a maternal death than white women (Melillo, 2020) it is imperative to address factors that could improve this rate. One of those factors is to increase access to healthcare for Black mothers in rural counties through mobile care units.

Coronavirus Disease 2019 (COVID-19) has exacerbated many of the health issues that Black mothers experience in rural areas. In rural counties where the majority of residents are Black, the COVID-19 death rate is 1.6 times higher than rural counties where the majority of residents are White. Lack of access to care, a higher rate of chronic illnesses and lack of health insurance all lead to more deaths in rural areas than in urban areas (Wright, 2021). Black mothers could benefit from having an increase in access to care as a way to care for both themselves and their baby during this pandemic.

Pre- and Post-Natal Services

There is a lot of care that goes into having a healthy baby. Services should cater to the health of the mother and baby both during pregnancy and postpartum (6 weeks after birth). During prenatal visits, providers do a complete physical exam and ask about health history, including previous pregnancies and diseases. Providers will also take blood work to run tests for anemia,

blood type, HIV and other factors that could be important for pregnancy and delivery health such as gestational diabetes. Lastly, providers will calculate the mother's due date. Later prenatal services can include measuring the abdomen to track the baby's growth, measuring weight gain, checking blood pressure, and checking the baby's heart rate. Consistent care is important, and mothers should be seeking care once each month for weeks 4-28, twice a month for weeks 28-36 and weekly for weeks 36-birth (US Department of Health and Human Services, 2019).

Postpartum care provides an opportunity to maximize the health of both mother and baby. Providers can discuss healthy breastfeeding practices, screen for Postpartum Depression, monitor the baby's growth and overall health, treat child-birth related complications, counsel women on family planning and refer out for specialized care. All women should receive postpartum care following delivery, with the first appointment being 48-72 hours post-delivery, the second 7-14 days after delivery and the third at 6 weeks postpartum (American College of Obstetrics & Gynecology, 2018)

It's important for mothers to be supported fully and have access to prenatal and postpartum care. Mothers in rural areas may find it difficult to travel long distances for care, especially with how often they should be receiving services over the 9–10-month period that they are pregnant and 6 weeks following birth. Roughly 27% of maternal deaths occur postpartum (University of Illinois-Chicago, 2019). Increasing access to care via a maternal mobile unit could be one way to catching vital health issues and increasing the likeliness of mothers keeping up with appointments and services. This increase in access to healthcare could also be a life and death difference for many Black women in rural Georgia counties.

Mobile Clinics & Similar Interventions

A couple studies conducted in the United States that show the impact mobile units have on health outcomes of mothers and women in vulnerable populations. O'Connell et al (2010) found that the mobile reproductive health clinic utilized by foreign born mothers in Miami-Dade County increased the number of mothers who initiated maternal care, improving early access to adequate care and birth outcomes. A systematic review found that mobile mammography units can be effective in reaching medically underserved communities. Many factors lead women to choose the mobile unit over the stationary facility including access to medical care and financial constraints (Vang, Margolies & Jandorf, 2018).

Mobile maternal health units are utilized globally, especially in countries that are less developed than the United States. In Haiti (Hosier, Abrams & Godsay, 2018), a maternal care unit provided care to 6000 patients annually since its start to increase access to care that women would usually travel 2-3 hours to receive. This unit provided health education, screening for sexually transmitted infections, pre- and postnatal exams, treatment referrals and emergency transport, if needed. The evaluation team found that the unit utilized task-shifting to employ the unit. Healthcare professionals with fewer years of training than traditional medical providers fill roles of providers with advanced degrees. They are able to do this through additional training on diseases, risks or health outcomes. With there being a shortage of practicing OB-GYNs in rural Georgia, utilizing task-shifting and training nurses and other healthcare professionals can be helpful in increasing access to care.

The mobile unit in Haiti did very well with providing care to its patients. Each month, the unit provided 500-800 pre-natal and post-natal exams to women. If needed, they would refer treatment to a large hospital. Women heard about the mobile clinic from word of mouth, church announcements or at the market. Much of the motivation for seeking care from the mobile unit

was due to the high quality of care from the staffers, knowledge of staffers, clinic proximity, ability to receive medication and affordability of care (Hosier, Abrams & Godsay, 2018). An improvement that was noted in the evaluation of the program was the clinic distance. Many women wanted the clinic to be more centrally located and easily accessed due to distances from their houses, difficulty accessing transportation and other challenges. With many Black women in rural Georgia having to travel great distances to get to metropolitan areas for healthcare, a mobile unit for maternal healthcare could be very welcomed in these areas. Finding a location that is centrally located in the county so that women from all surrounding towns and cities can easily access it should be taken into account during creation of the maternal mobile unit.

In general, mobile clinics are a good investment both monetarily and for communities. Mobile Health Map published their impact report (2021) to show just how effective mobile health clinics are. Mobile clinics are improving access to care with up to 6.5 million visits annually. The return on investment is also a key factor here, with the average being 12:1; for every $1 spent, $12 are saved. They mainly serve the uninsured and publicly insured, operating in low-income communities. By providing accessible care at a cheaper cost, there are, on average, 600 fewer Emergency Department visits each year. With mobile clinics providing cost-effective services, they are able to help people live healthier lives. A review of the mobile clinics in the impact report show that the mobile clinics are reaching the difficult-to-reach groups such as minorities, uninsured and publicly insured. Sixty percent of visitors are uninsured, 31% publicly insured, 30% Black/African American and 57% women. With many rural residents not having insurance, a mobile health clinic could be a low-cost option so that they are getting the services they need.

Healthy People 2030

Healthy People 2030 utilizes data-driven national objectives to improve health and wellbeing over the next decade. In 2020, topics and objectives were set with goals to reach by the year 2030. Some important objectives in relation to maternal health include:

- MICH-04 Reduce maternal deaths
- MICH- 08 Increase the proportion of pregnant women who receive early and adequate prenatal care

The access to services from a maternal health care unit could achieve the objectives listed above for Black women in rural areas. Increase access to care could help in reducing the number of Black women who die due to pregnancy related complications. A 2018 newsletter published by the Georgia Department of Health found that Black women were less likely to receive prenatal care. Access to prenatal care services could make a difference in maternal mortality and morbidity in rural Georgia counties. Lastly, factors associated with not following up with providers for postpartum services include feeling fine and lack of need (DiBari et al, 2014). Having access to a provider that emphasizes overall care, both prenatal and postpartum can increase the proportion of women who give birth that attend a postpartum care visit.

Experiences of Implicit Bias

Implicit bias is a term used to "describe when we have attitudes towards people or associate stereotypes with them without our conscious knowledge" (Perception Institute, 2021). The issue of implicit bias in healthcare has been a relevant topic as Black women have voiced their experiences around how the biases of their providers has led them to having negative experiences and negative health outcomes. The attitudes of healthcare professionals, among

many factors, contributes to the health disparities that Black mothers face (Hall et al, 2015). There are still many people, even those with medical training who subscribe to false beliefs towards Black patients. A study conducted in 2016 found that 11.5% of people who had medical training endorsed false beliefs about Black patients. These beliefs can include ones such as Black people have thicker skin, heal more quickly or have a higher pain tolerance (Hoffman et al, 2016). These false beliefs can contribute to how providers assess and treat pain, which can further shape how they see their Black patients and increase racial health disparities.

There are negative outcomes that are a result of implicit bias. Black patients can pick up on their provider's bias and this can lead to a lack of trust. This can lead to a cap in how much Black patients share with their provider or, the opposite can happen, and providers assume that their Black patients don't have enough healthcare literacy to fully engage and so they do not share as much as they should (Heath, 2020). When information is not shared from either party, either due to lack of trust or implicit bias, Black mothers may find themselves experiencing negative health outcomes.

While simply having a Black healthcare provider may not decrease implicit bias, testing for bias from providers may be helpful in receiving quality and equal care (Mania et al, 2017). However, implicit bias decreased when Black patients have a same-race provider, but there are other improvements as well such as, time spent together, medication adherence, shared-decision waiting, wait times for treatment, and patient perception of treatment decisions (Huerto, 2020). Black women are 234% more likely than White women to die of pregnancy or child-related causes (Martin & Montagne, 2017). A Black provider may be the difference in reducing the likelihood of Black women experiencing negative health outcomes during pregnancy, birth or postpartum. Black women may be more truthful about what they are feeling and experiencing

during their pregnancy, which can be lifesaving; something that may not happen with a provider they believe has implicit bias. Building trust is key, and Black patients feel more comfortable establishing trust with a provider that is of the same race.

Summary of Current Problem and Study Relevance

With Georgia being the worst state for maternal mortality overall and Black mothers being 243% more likely to die from pregnancy and birth-related complications, an intervention is needed to save the lives of many women. A mobile unit that is accessible to many in rural areas of Georgia could make a difference in health outcomes that are experienced due to pregnancy and birth. New mothers would not have to drive long distances for care, decreasing the likeliness that they will experience negative health outcomes due to inaccessible care, and increase the likelihood of them seeking care during and after their pregnancy. Having the unit staffed by Black providers is a factor that could increase the number of patients that seek care from the mobile unit and continue to get their services there due to being more likely to trust their provider.

Chapter 3: Methodology

Agencies that Fund Mobile Clinics

There are many mobile clinics both in the United States and worldwide that provide various services. As discussed in the literature review, there is a maternal mobile clinic operating in Haiti that is funded by foreign donors and foundation grants (Holser, Abrams & Godsay, 2018). The World Health Organization is a large funder of mobile clinics globally that provide services to displaced population (WHO, 2021). Endowments foundations such as The Duke Endowment (2020) fund mobile clinics to reach areas, with the goal of improving access to quality health care. Research shows that there are many different funding agencies that are interested in expanding healthcare access through mobile units. Global organizations such as the World Health Organization utilize mobile clinics on a greater scale and provide more general services to their target populations. Donors and foundation grants, such as the ones used to fund the maternal mobile unit in Haiti are used for a more specific population, such as pregnant women in rural Haiti. Large state-side foundations such as The Duke Endowment have a more general purpose and includes improving access to healthcare via mobile units ran by hospital staff in needed areas in North Carolina and South Carolina.

March of Dimes was chosen for this grant due to their mission on improving health for mothers and babies. March of Dimes (original name National Foundation for Infantile Paralysis) was founded in 1938 by Franklin D. Roosevelt with the goal of uncovering the mysteries of polio. After the polio vaccine was successfully created, the organization shifted its focus to birth defects and healthy pregnancies, becoming what we know it as today. March of Dimes is a leader in providing care to all who need it in order to keep both mothers and their newborns healthy. They have state-side and global programs including research, health equity, professional

education, NICU initiatives, and prenatal education and care (March of Dimes, 2021). March of Dimes is a reputable organization that can bring ideas to life in order to increase access to care for Black mothers in rural Georgia

Description of Grant Announcement

March of Dimes awards grants yearly on various topics, including policy change, clinical and social science challenges, innovation and novel discoveries. Our grant responds to the Clinical and Social Science Challenges Grant. Topics for this grant option include "exploring health equity in order to reduce disparities, opioid dependency in mothers, dad and baby to mitigate the rise in Neonatal Abstinence Syndrome, and premature death and maternal/infant mortality" (March of Dimes, 2021). March of Dimes provides $50,000 - $100,000 for the first 6 months with clear cut deliverables defined. If those deliverables are met, the possibility of a second grant for $100,000 - $500,000 for 12 months. Another 12 months of support is available if progress is being made. Our intervention addresses health equity to reduce disparities and maternal mortality, two of the topics mentioned in the grant.

Criteria

There is no published information on what criteria March of Dimes uses to review grant proposals. We reached out to the contact information provided on the website to ask if they could share what criteria they use when reviewing grants. There was no reply to our email. An internet search was conducted to see if there was any information on the criteria the organization uses that is not published on their website. No new information was gleaned from that search. The following criteria in the table below was developed and modified from the National Institute of Health (2016).

Criteria	Description	Rating (low – high score)
Significance	Is answering the research question important to advancing knowledge or practice?	1-9
Approach	Is the methodology sound and appropriate to answer the research questions proposed?	1-9
Innovation	Does the proposal describe new concepts, approaches, and method?	1-9
Acceptability	Would this intervention be acceptable in the field?	1-9

The rating of each criterion is based on a scale of 1-9, with 1 being "very few strengths and numerous weaknesses" and 9 being "exceptionally strong with essentially no weaknesses".

I believe that my grant proposal meets the criteria for *significance* because access to care is an ongoing issue for rural areas that needs to be addressed. Rural residents face many health disparities that those who live in metropolitan experience to a lesser degree because they have access to care. Those health disparities are exacerbated for Black women with the current Black maternal mortality and morbidity rate. The proposal meets the *approach* criteria because we are aiming to see if participants would use a mobile maternal health clinic instead of traveling for their health care services. We have to assess for need, attitudes and behaviors of the potential areas and residents and adjust our intervention to meet what we find in the needs assessment and focus groups. The proposal would rate high for *innovation* because while this is not a new concept, it is new for the potential providing area. There are not many mobile clinics that are solely for maternal care in the United States. Finally, *acceptability* would rank highly because we are aiming to only do this intervention in areas where attitudes around a mobile clinic are

accepted. This acceptability will be gauged in focus groups that are conducted prior to the intervention in the providing area(s) identified from the needs assessment.

Methodology of Grant Review Process

Reviewers will be emailed the grant proposal on May 28, 2021 for review. Reviewers will be given approximately 2 weeks from the date the grant was received to review with final comments expected for return on June 15, 2021. Reviewers were asked to read the description of the grant from March of Dimes and review criteria before reviewing the grant. After reading the grant, reviewers will use the rating system to rate each criterion. They will also be asked to provide feedback on section two (below) of the reviewer criteria. Reviewers will also be asked to make comments directly in the document regarding improvements. The document will be shared among all reviewers. Once all information is returned to the student, all comments will be analyzed and interpreted by the student and utilized as constructive feedback for the final proposal. All comments will be reported in Chapter 4 of this thesis.

Reviewer Feedback

1. *How could the grant be more responsive to the call for proposals?*
2. *What improvements can be made to the structure of the proposal?*
3. *What changes would improve the feasibility of the intervention?*
4. *What additional comments do you have for the PI?*

An overall average score will be totaled to examine which criteria can be improved for the final proposal. General themes will be noted from open-ended questions to make changes where appropriate. Individual comments in the document will be considered and addressed based on their fit to the overall goal of the intervention. All feedback and comments addressed will be added to the final draft of the proposal before submission.

Reviewers

A total of five grant reviewers were chosen to review and provide feedback on the proposal. Reviewers were chosen based on their expertise in the field, grant writing, evaluation, and health promotion.

1. **Iris Smith, PhD, MPH**

Iris Smith is an Associate Professor in the Behavioral Sciences and Health Education Department at Emory University's Rollins School of Public Health where she teaches graduate courses Program Evaluation, Substance Abuse, Social Determinants of Health, and Mental Health Capstone. Prior to Emory, Dr. Smith was the Director of National Evaluation Services for the American Cancer Society. Dr. Smith was chosen as Thesis Chair and reviewer for this grant proposal based on her expertise in program evaluation.

2. **Tyra Gross, PhD, MPH**

Tyra Gross is an Assistant Professor in the Department of Public Health Sciences at Xavier University of Louisiana, where she teaches classes in Women's Health and Nutrition and Health. Dr. Gross has a passion for maternal and child health and her research centers around how to improve breastfeeding in Black women. Her current research uses PRAMS data to find with-in group similarities and differences for Black women's experience with pregnancy in Louisiana. Dr. Gross was chosen as Field Advisor and reviewer for this grant proposal based on her expertise on Black maternal health.

3. **Shantoyia Jones, PhD**

Shantoyia Jones is an Assistant Professor in the Department of Psychological Sciences at Xavier University of Louisiana where she teaches classes in Cultural Psychology, Psychology of Gender and Human Sexuality. Dr. Jones' research interests surround the health and wellbeing of Black women, and race and gender-based justice. Based on her research interests and expertise in the health and wellbeing of Black women, Shantoyia Jones was chosen as a reviewer.

4. **Laurie Gaydos, PhD**

Laurie Gaydos is an Associate Professor in the Department of Health Policy & Management and the Associate Chair for Academic Affairs for the Executive MPH Program at the Rollins School of Public Health. Her mixed-methods research focuses on reproductive, and maternal and child health. Dr. Gaydos is also an active reviewer for 8 peer-reviewed women's health, and maternal and child health journals. She was chosen as a reviewer based on her expertise in maternal and child health.

5. **Meaghan McCallum, PhD, MA**

Meaghan McCallum is a Grant Writer at Noom, Inc. McCallum has an extensive research history, with an emphasis on well-being and social, and environmental factors associated with health. She has experience with working on studies dealing with perinatal depression and parenting. McCallum's expertise in grant writing and experience with perinatal depression and parenting research are the reasons why she was chosen for a reviewer for this proposal.

Protection of Human Subjects

1. Human Subjects Involvement, Characteristics and Design

a. The subject population is Black women in rural Georgia counties (TBD) between the ages of 18 and 45 years old. The subject population will include women who are pregnant and postpartum (6 weeks after giving birth).

b. Pregnant women and fetuses are special vulnerable populations. Their health and well-being are of the utmost importance. Any woman who decides to participate in the intervention and needs additional assistance will be referred to an external provider. Participation in the intervention should not cause any additional harm than they would experience by not participating in the intervention.

c. The funder must approve of the proposal prior to intervention to be sure that all participants are protected.

2. Human Subjects Materials Collected

a. Medical data will be collected directly from the subjects. Subjects will be asked about their medical history prior to beginning the intervention. Medical history includes age, weight, height, blood pressure, heart rate, chronic diseases, and family history.

b. All medical data will be kept on an encrypted computer that is secured by a password that is changed every 3 months. The PI, graduate assistants and medical unit staff are the only personnel that will have access to medical data.

3. Recruitment and Informing Subjects of Program

a. Subjects for focus groups and the program will be recruited from local health clinics, hospitals, grocery stores, community centers, churches, and word of mouth. Flyers will be posted in these areas for subjects to respond to by scanning a QR code, which takes

them to a SurveyMonkey sign up or by calling a phone number and speaking with the PI or graduate students to record their information for the focus group. Once the focus group fills, all other subjects will be encouraged to visit the mobile unit or call for an appointment. Upon the initial visit of the mobile unit, subjects will be told that the mobile unit is a program and if they consent to their data being used to further research access to care. No subject will be turned away from services of the program if the opt-out of their data being used.

b. Subjects will be asked to fill out a consent for service form upon their initial visit by the Medical Assistant. That form will allow the subjects to opt-out of any service or their data being used for research purposes. A copy of the consent form will be emailed to all subjects for their records.

4. Potential Risks to Human Subjects

a. Risks to participating in this program include some psychological and physical risks. We are providing a service to a special vulnerable population. Loss of pregnancy and negative health outcomes may be experienced by subjects at any point during the intervention.

b. Subjects will be protected as much as possible from these risks by monitoring pregnancy and postpartum health. For any health outcomes that cannot be cared for on the mobile unit, subjects will be referred to another provider or specialist. All subjects will be provided with information on where they can receive counseling or psychological care for the duration of the intervention.

5. Benefits of Program to Human Subjects and Society

a. Benefits of participating in this program include increasing access to care, less travel, lower cost of care, increased trust in provider and management of health. Findings at the end of year 1 of the program will be shared with subjects once data is analyzed. It is important that we are transparent with subjects about our intentions of the program and what we find since they entrusted us at such a sensitive time in their lives and health.

b. The risks described in the preceding section will not be experienced at a higher rate due to this intervention. The benefits will exceed the risks experienced.

Chapter IV: Incorporation of Reviewer Comments

I am extremely thankful to each of the reviewers of this grant proposal for their time and effort to provide feedback. Their thoroughness in providing feedback has made this grant proposal much stronger and providing a learning opportunity in grant writing.

Reviewer 1 comments:

Comment 1: more information on what gestation the target audience should be at and other eligibility criteria

Response 1: As shown on page 10, paragraph 1, lines 4-6, additional criteria was added in regards to gestation of target audience.

Comment 2: Does literature support mobile units for high-risk patients?

Response 2: No literature was found on mobile unit support for high-risk patients. No response made.

Comment 3: Research question is somewhat vague, maybe rephrase on measuring outcomes

Response 3: As shown on page 1, paragraph 2, line 1-2, change was made to research question to reflect measuring outcomes.

Comment 4: Qualitative methods usually suggest 3 or more groups, and I think a focus group would be needed in each area. I would also engage area health providers in interviews or focus groups.

Response 4: As shown on page 11, paragraph 2, lines 2-4, additional focus groups were added with engagement of area health providers.

Comment 5: Identifying partners, healthcare systems in these areas to work in tandem with.

Response 5: As shown on page 14, paragraph 3, and page 15 paragraph 1, partners and healthcare systems in the area were identified.

Comment 6: What is the plan in case of emergencies, such as a woman who needs to be transported to hospital

Response 6: As shown on page 15, paragraph 1, lines 1-3, a plan in case of emergencies was established.

Reviewer 2 comments:

Comment 1: Maybe add, services desired, location, provider preferences etc.- the characteristics and services you are proposing to provide.

Response 1: As shown on page 12, paragraph 1, lines 5-6, additional information was included on services desired, location and provider preferences.

Comment 2: You need to indicate how your data collection will comply with HIPAA requirements and research consent procedures.

Response 2: As shown on page 15, paragraph 3, information on how data collection will comply with HIPPA requirements and research consent procedures was included.

Comment 3: At what point would the midpoint measure be taken?

Response 3: As shown in Table 1, column 1, row 4, information on when midpoint measure will be taken wad included.

Comment 4: You may also want to compare the outcomes of pregnancies and the prenatal risk factors in the sample vs. the community population.

Response 4: As shown in Table 1, column 2, row 5, an additional evaluation question was added to compare outcomes of pregnancy and prenatal risk factors in the sample vs community

Comment 5: A better measure might be to look at both compliance with scheduled appointments and recommended health plan.

Response 5: As shown in Table 1, column 2, row 5, additional evaluation questions were added to assess for compliance with scheduled appointments and recommended health plan

Reviewer 3 comments:

Comment 1: You need to rewrite the objective so that I can read just the first sentence and know what the proposal is about. Something like: The goal of this intervention is to increase perinatal access to healthcare in rural GA counties by....

Response 1: As shown on page 1, paragraph 1, line 1-2, objective sentence was rewritten to include proposal in its entirety.

Comment 2: This will show satisfaction, but it won't show utilization and it won't show anything about outcomes. Can you track those somehow?

Response 2: As shown on page 1, paragraph 1, lines 3-6, additional information was added to show how outcomes will be measured.

Comment 3: This isn't really true. They may not have any obstetric providers but there is SOME form of care (EMTs, community doctors/clinics, etc). Be more specific in your writing.

Response 3: As shown on page 1, paragraph 2, line 2-3, vocabulary was changed to reflect that the population did have some forms of care

Comment 4: Lack of access doesn't lead to these outcomes

Response 4: As shown on page 3, line 2, vocabulary was changed to reflect that lack of access leads to underutilization.

Comment 5: COVID deaths? All deaths? Perinatal deaths? This is unclear.

Response 5: As shown on page 3, paragraph 1, line 2-4, changes were made to make sentence clearer.

Comment 6: Since we are in 2021, you should be using 2030 goals.

Response 6: As shown on page 7, paragraph 1, changes were made to reflect Healthy People 2030 goals.

Reviewer 4 comments:

Comment 1: What other outcomes will be evaluated besides patient satisfaction?

Response 1: As shown on page 1, paragraph 1, line 3-6, additional outcomes were included.

Comment 2: This should be presented almost immediately at the start of the background section to justify conducting this study in Georgia

Response 2: As shown on page 9, paragraph 1, line 1-3, section in question was moved up to beginning of paragraph.

Comment 3: what prevalent diseases are being referred to?

Response 3: As shown on page 10, paragraph 3, lines 9-10, prevalent diseases were included in description.

Comment 4: does not seem to be driven by data/pt willingness to travel, consider changing this so that it is not predetermined?

Response 4: Predetermined mile-range was deleted from intervention.

Comment 5: grant application should really highlight the strengths of your approach. If there are weaknesses, only point them out to reviewers/readers with concrete plans to mitigate weaknesses/justify your approach despite weaknesses

Response 5: Potential weakness of evaluation was deleted from proposal.

Reviewer 5 comments:

Comment 1: Perhaps a bit more discussion here about why the focus on Black women

Response 1: As shown on page 1, paragraph 2, line 4-5, additional information was included to discuss why the focus is on Black women

Comment 2: More discussion around why this is more pronounced in Black communities

Response 2: As shown on page 3, paragraph 1, 4-6, information was added to discuss why hospital closures occur in Black communities.

Comment 3: It appears that you are doing participatory action research (PAR), community-based participatory research (CBPR), or emancipatory. It may be helpful to mention this framework in your grant and what it means for the efficacy of your research.

Response 3: Ash shown on page 10, paragraph 2, lines 5-9, information on community-based participatory research was included.

Comment 4: I am wondering about those days, and especially initially as you are getting things going and the reputation of the mobile clinic is being established, the high number of walk-ins that you may have, as well as no-shows/reschedules.

Response 4: As shown on page 14, paragraph 1, lines 2-3, changes were made to reflect walk in appointments being more acceptable in beginning of intervention.

Chapter 5: Final Version of Proposal

Innovative Challenge Grant Research Plan

Statement of Objective and Hypotheses:

Objective:

The goal of this intervention is to increase access to maternal care of Black women in rural Georgia counties by the end of year one of implementation of the mobile unit. To evaluate the mobile unit, we will utilize benchmarking and compare utilization of the mobile unit for services to visits to local hospitals and clinics. Evaluation will include survey information from participants, data from the mobile unit including compliance of scheduled visits and data from local hospitals and clinics.

Research Question:

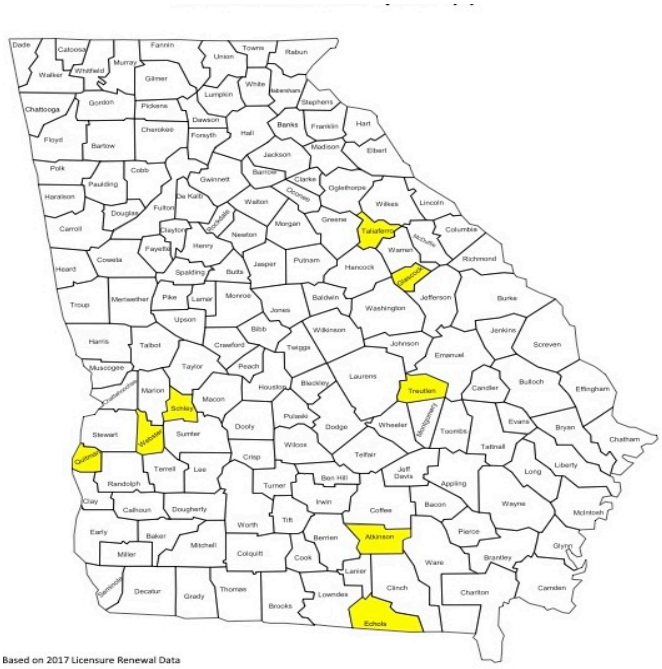
The research question that we are aiming to answer is: Will increasing access to care for Black women in rural areas improve their health outcomes? Due to the closure of hospitals and clinics in rural Georgia counties, women are losing access to immediate or close care, making pregnancy more dangerous for the health of mother and child. Black women are 234% more likely than White women to die of pregnancy or child-related causes (Martin & Montagne, 2017). Improving access to healthcare would allow for healthier pregnancies and a reduction in the maternal mortality and morbidity rate.

Summary of Relevant Background Studies:

Access to Care

Access to care in rural Georgia counties continues to be an ongoing issue. The Georgia Board of Health Care Workforce (2017) released a report that included the current number of physicians in Georgia counties. The report also includes the counties that do not have practicing physicians based on specialties. Eight of the 159 counties do not have a practicing physician; all of which are rural counties. This same report found that 75 counties do not have a practicing Obstetrics and Gynecologist (OB-GYN). Many counties overlap with not having a family medicine doctor or an OB-GYN including Taliaferro, Gaslcock, Truetlen, Talbot, Webster, Quitman, Clay, Atkinson, Echols, Taylor and Schley. This lack of physicians, in part, is due to the closing of hospitals in these areas. In the past 10 years, Georgia has had 7 hospital closures in rural counties, with 18 more being deemed "vulnerable" for closure (The Chartis Group, 2020). With the closing of hospitals, these rural areas lose physicians, including OB-GYNs.

Figure 1



GA Board of Health Care Workforce, 2017

Loss in access to care means that pregnant women in rural counties must travel greater distances in order to receive the care that they need throughout their pregnancy and after birth. Specialty and sub-specialty healthcare services are less likely to be available in rural areas (Rural Health Info, 2019). Driving great distances for care before, during and after pregnancy is more pronounced in Black communities and disproportionately affects low-income women (Centers for Medicare and Medicaid Services, 2019). Multiple factors contribute to hospital closures, such as uninsured patients, community poverty rates and financial distress, all of which disproportionately impact Black communities (Centers for Medicare and Medicaid Services, 2019). A lack of access to maternal health care can lead non-utilization of services, which can lead to numerous negative health outcomes, including infertility, birth defects premature birth, low-birth weight, maternal mortality, severe maternal morbidity, and postpartum depression (March of Dimes, 2019). Many of these chronic conditions that affect pregnancy can also be due to chronic health conditions that are prevalent in the Black community such as high blood pressure, obesity, diabetes, asthma and HIV/AIDS (Pfizer, 2020). A study analyzing the Behavioral Risk Factor Surveillance System survey found that 40.3% of Black respondents living in rural areas have multiple chronic illnesses (James et al, 2017). With Black women being 3 times more likely to have a maternal death than white women (Melillo, 2020) it is imperative to address factors that could improve this rate. One of those factors is to increase access to healthcare for Black mothers in rural counties through mobile care units.

Coronavirus Disease 2019 (COVID-19) has exacerbated many of the health issues that Black mothers experience in rural areas. In rural counties where the majority of residents are Black, the COVID-19 death rate is 1.6 times higher than rural counties where the majority of residents are White. Lack of access to care, a higher rate of chronic illnesses and lack of health insurance all

lead to more deaths in rural areas than in urban areas (Wright, 2021). Black mothers could benefit from having an increase in access to care as a way to care for both themselves and their baby during this pandemic.

Pre- and Post-Natal Services

There is a lot of care that goes into having a healthy baby. Services should cater to the health of the mother and baby both during pregnancy and postpartum (6 weeks after birth). During prenatal visits, providers do a complete physical exam and ask about health history, including previous pregnancies and diseases. Providers will also take blood work to run tests for anemia, blood type, HIV and other factors that could be important for pregnancy and delivery health such as gestational diabetes. Lastly, providers will calculate the mother's due date. Later prenatal services can include measuring the abdomen to track the baby's growth, measuring weight gain, checking blood pressure, and checking the baby's heart rate. Consistent care is important, and mothers should be seeking care once each month for weeks 4-28, twice a month for weeks 28-36 and weekly for weeks 36-birth (US Department of Health and Human Services, 2019).

Postpartum care provides an opportunity to maximize the health of both mother and baby. Providers can discuss healthy breastfeeding practices, screen for Postpartum Depression, monitor the baby's growth and overall health, treat child-birth related complications, counsel women on family planning and refer out for specialized care. All women should receive postpartum care following delivery, with the first appointment being 48-72 hours post-delivery, the second 7-14 days after delivery and the third at 6 weeks postpartum (American College of Obstetrics & Gynecology, 2018)

It's important for mothers to be supported fully and have access to prenatal and postpartum care. Mothers in rural areas may find it difficult to travel long distances for care, especially with how often they should be receiving services over the 9–10-month period that they are pregnant and 6 weeks following birth. Roughly 27% of maternal deaths occur postpartum (University of Illinois-Chicago, 2019). Increasing access to care via a maternal mobile unit could be one way to catching vital health issues and increasing the likeliness of mothers keeping up with appointments and services. This increase in access to healthcare could also be a life and death difference for many Black women in rural Georgia counties.

Mobile Clinics & Similar Interventions

A couple studies conducted in the United States that show the impact mobile units have on health outcomes of mothers and women in vulnerable populations. O'Connell et al (2010) found that the mobile reproductive health clinic utilized by foreign born mothers in Miami-Dade County increased the number of mothers who initiated maternal care, improving early access to adequate care and birth outcomes. A systematic review found that mobile mammography units can be effective in reaching medically underserved communities. Many factors lead women to choose the mobile unit over the stationary facility including access to medical care and financial constraints (Vang, Margolies & Jandorf, 2018).

Mobile maternal health units are utilized globally, especially in countries that are less developed than the United States. In Haiti (Hosier, Abrams & Godsay, 2018), a maternal care unit provided care to 6000 patients annually since its start to increase access to care that women would usually travel 2-3 hours to receive. This unit provided health education, screening for sexually transmitted infections, pre- and postnatal exams, treatment referrals and emergency

transport, if needed. The evaluation team found that the unit utilized task-shifting to employ the unit. Healthcare professionals with fewer years of training than traditional medical providers fill roles of providers with advanced degrees. They are able to do this through additional training on diseases, risks or health outcomes. With there being a shortage of practicing OB-GYNs in rural Georgia, utilizing task-shifting and training nurses and other healthcare professionals can be helpful in increasing access to care.

The mobile unit in Haiti did very well with providing care to its patients. Each month, the unit provided 500-800 pre-natal and post-natal exams to women. If needed, they would refer treatment to a large hospital. Women heard about the mobile clinic from word of mouth, church announcements or at the market. Much of the motivation for seeking care from the mobile unit was due to the high quality of care from the staffers, knowledge of staffers, clinic proximity, ability to receive medication and affordability of care (Hosier, Abrams & Godsay, 2018). An improvement that was noted in the evaluation of the program was the clinic distance. Many women wanted the clinic to be more centrally located and easily accessed due to distances from their houses, difficulty accessing transportation and other challenges. With many Black women in rural Georgia having to travel great distances to get to metropolitan areas for healthcare, a mobile unit for maternal healthcare could be very welcomed in these areas. Finding a location that is centrally located in the county so that women from all surrounding towns and cities can easily access it should be taken into account during creation of the maternal mobile unit.

In general, mobile clinics are a good investment both monetarily and for communities. Mobile Health Map published their impact report (2021) to show just how effective mobile health clinics are. Mobile clinics are improving access to care with up to 6.5 million visits annually. The return on investment is also a key factor here, with the average being 12:1; for

every $1 spent, $12 are saved. They mainly serve the uninsured and publicly insured, operating in low-income communities. By providing accessible care at a cheaper cost, there are, on average, 600 fewer Emergency Department visits each year. With mobile clinics providing cost-effective services, they are able to help people live healthier lives. A review of the mobile clinics in the impact report show that the mobile clinics are reaching the difficult-to-reach groups such as minorities, uninsured and publicly insured. Sixty percent of visitors are uninsured, 31% publicly insured, 30% Black/African American and 57% women. With many rural residents not having insurance, a mobile health clinic could be a low-cost option so that they are getting the services they need.

Healthy People 2030

Healthy People 2030 utilizes data-driven national objectives to improve health and wellbeing over the next decade. In 2020, topics and objectives were set with goals to reach by the year 2030. Some important objectives in relation to maternal health include:

- MICH-04 Reduce maternal deaths
- MICH- 08 Increase the proportion of pregnant women who receive early and adequate prenatal care

The access to services from a maternal health care unit could achieve the objectives listed above for Black women in rural areas. Increase access to care could help in reducing the number of Black women who die due to pregnancy related complications. A 2018 newsletter published by the Georgia Department of Health found that Black women were less likely to receive prenatal care. Access to prenatal care services could make a difference in maternal mortality and morbidity in rural Georgia counties. Lastly, factors associated with not following up with

providers for postpartum services include feeling fine and lack of need (DiBari et al, 2014). Having access to a provider that emphasizes overall care, both prenatal and postpartum can increase the proportion of women who give birth that attend a postpartum care visit.

Experiences of Implicit Bias

Implicit bias is a term used to "describe when we have attitudes towards people or associate stereotypes with them without our conscious knowledge" (Perception Institute, 2021). The issue of implicit bias in healthcare has been a relevant topic as Black women have voiced their experiences around how the biases of their providers has led them to having negative experiences and negative health outcomes. The attitudes of healthcare professionals, among many factors, contributes to the health disparities that Black mothers face (Hall et al, 2015). There are still many people, even those with medical training who subscribe to false beliefs towards Black patients. A study conducted in 2016 found that 11.5% of people who had medical training endorsed false beliefs about Black patients. These beliefs can include ones such as Black people have thicker skin, heal more quickly or have a higher pain tolerance (Hoffman et al, 2016). These false beliefs can contribute to how providers assess and treat pain, which can further shape how they see their Black patients and increase racial health disparities.

There are negative outcomes that are a result of implicit bias. Black patients can pick up on their provider's bias and this can lead to a lack of trust. This can lead to a cap in how much Black patients share with their provider or, the opposite can happen, and providers assume that their Black patients don't have enough healthcare literacy to fully engage and so they do not share as much as they should (Heath, 2020). When information is not shared from either party,

either due to lack of trust or implicit bias, Black mothers may find themselves experiencing negative health outcomes.

While simply having a Black healthcare provider may not decrease implicit bias, testing for bias from providers may be helpful in receiving quality and equal care (Mania et al, 2017). However, implicit bias decreased when Black patients have a same-race provider, but there are other improvements as well such as, time spent together, medication adherence, shared-decision waiting, wait times for treatment, and patient perception of treatment decisions (Huerto, 2020). Black women are 234% more likely than White women to die of pregnancy or child-related causes (Martin & Montagne, 2017). A Black provider may be the difference in reducing the likelihood of Black women experiencing negative health outcomes during pregnancy, birth or postpartum. Black women may be more truthful about what they are feeling and experiencing during their pregnancy, which can be lifesaving; something that may not happen with a provider they believe has implicit bias. Building trust is key, and Black patients feel more comfortable establishing trust with a provider that is of the same race.

Summary of Current Problem and Study Relevance

With Georgia being the worst state for maternal mortality overall and Black mothers being 234% more likely to die from pregnancy and birth-related complications, an intervention is needed to save the lives of many women. A mobile unit that is accessible to many in rural areas of Georgia could make a difference in health outcomes that are experienced due to pregnancy and birth. New mothers would not have to drive long distances for care, decreasing the likeliness that they will experience negative health outcomes due to inaccessible care, and increase the likelihood of them seeking care during and after their pregnancy. Having the unit staffed by

Black providers is a factor that could increase the number of patients that seek care from the mobile unit and continue to get their services there due to being more likely to trust their provider.

Intervention Approach:

Methodology

Our target population for this intervention is Black women, ages 18-45. This age range was chosen because it is roughly the range of reproductive age for women, with 18 being the minimum age for eligibility so mothers can participate without having to gain parental/guardian consent. Women should also be between their first and second trimester, regardless of how many pregnancies they have had. This eligibility criteria are important as women further along in pregnancy have already established care with a provider and should continue to see that provider for the duration of their pregnancy and postpartum. Flyers for recruitment to use the mobile unit will be posted in community center bulletin areas, local health clinics, churches, grocery stores and the closest hospitals to the town/city.

We will utilize a mixed-methods approach to gain a better understanding of past experiences, current experiences and thoughts on what our target audience is looking for when it comes to a mobile clinic. These measures will be taken after the needs assessment is conducted. In addition, we will utilize focus groups and surveys to collect data on our target population. By utilizing Community-Based Participatory Research framework (National Institute on Minority Health and Health Disparities, 2018), our target audience/community can have a say in the development of the intervention. This will improve the efficacy of our research because we are working with those we intend to serve and collaborating on finding the best ways to provide the intervention.

Needs Assessment

In order to create a maternal mobile unit and provide access to its services to Black mothers in rural Georgia, a needs assessment will be conducted for multiple factors. The needs assessment will be for the potential providing area(s) of the mobile unit. With many counties in Georgia not having access to a medical provider and/or an OB-GYN, the need for a provider may be higher than the mobile unit can accommodate. This assessment would answer questions about where the need for the maternal mobile unit is greatest based on population of Black women of reproductive age, closest hospital and/or clinic (in miles), and if available, any information on the number of women that have any prevalent diseases that may be an issue during pregnancy or birth. Prenatal risk factors in the area will also be assessed, such as high blood pressure, diabetes, obesity, and polycystic ovary syndrome (National Institute of Child Health and Development, 2018). Data will also be collected on pregnancy outcome and compliance with recommended or scheduled prenatal and post-natal appointments. This will help to determine the provider area, as it may show that participants have a more challenging time with showing up to their appointments. The provider area will be chosen based on the comparison of the area in need with location of services and resources. Areas that have a higher percentage of Black women of reproductive age and, less access to care and resources will be chosen as the provider areas for the intervention. With there being several counties that may fit the criteria for the intervention, and with this being the pilot of this intervention, 2-3 counties close together will be chosen with the plan of expansion to other Georgia counties if successful.

Certified Nurse Midwives and Staffing

The unit will be staffed by at least two (2) Certified Nurse Midwives (CNMs) and two (2) Medical Assistants who will rotate shifts. Certified Nurse Midwives were chosen to staff the

mobile unit instead of an OB-GYN because they are still considered to be primary care providers, can prescribe medication, have extensive knowledge about pregnancy and birth but do not cost as much to employ as an OB-GYN (Jacobson, n.d). We intend to test for implicit bias for all of our potential staff prior to offering the positions on the mobile unit. It's important that we test for implicit bias since we are providing service to a marginalized group that has experienced negative health outcomes due to bias (Hall, 2015).

Focus Group

Focus groups with 10 participants will be conducted once the provider areas are chosen. Three focus groups will be conducted in each of the providing areas. We will also reach out to area providers to participate in the focus groups as well. This is important as they may be the main source of care for many of these women and their opinion and experiences matter as well. The goal of the focus group is to better understand the wants and needs of the community in regard to maternal care and a mobile unit. We want to conduct the focus group online via Zoom due to the COVID-19 pandemic. Understanding the target population may not have access to a computer and/or internet to join the focus group online, we will allow 2 weeks after the initial positing of flyers for the focus group to see if all 10 slots of the focus group are filled. If the online focus group does not fill up, we will reach out to a local community center or church to rent space for the focus group to be conducted socially distanced, in-person.

A discussion will be facilitated on past and current experiences with their provider and their thoughts on Certified Nurse Midwives.There will also be questions about challenges they face with having to travel long distances for care and racial bias from hospital/clinic staff or their direct provider. Data will also be collected around the general thoughts and feelings of mobile units for health care in their community, services desired, location of mobile unit, characteristics

and/or preferences in providers. A copy of semi-structured interview questions are available in Appendix 1.

Data Analysis of Focus Group

The focus group data will be analyzed using qualitative analysis by the Principal Investigator and two graduate students. After the transcription, an initial reading of the transcript will be done, and major themes will be noted. Major themes will be developed into a codebook. Transcripts from the focus group will be coded by the PI and graduate students to check for agreement. Any discrepancies will be discussed, and a code will be agreed upon and applied. After each person has completed transcription, we will identify major themes and identify how to address them during the intervention.

Intervention

The implementation of the maternal health care unit will begin after the needs assessment and focus group are conducted. The care unit will be in the form of a medical mobile unit. A medical mobile unit will make it easier and more efficient to provide services throughout rural Georgia as the staff will be able to drive it to various sites. Based on the needs assessment, the unit will develop a rotational schedule, taking into account the number of cities that need services. The unit will provide services during non-traditional business hours on certain days to be sure that they are reaching those who may not be able to get to their services during traditional 8AM – 6PM business hours. This will give mothers who are working the ability to get the services they need without traveling long distances. Once a week at each stop, services will continue until 7:30 PM. A sample schedule for the intervention shown below, although the specific dates/times will be determined based on the preferences established in the focus group:

Tuesday: Stop 1 (12PM – 7:30 PM)

- Wednesday: Stop 2 (12PM – 6 PM)
- Thursday: Stop 3 (12PM – 7:30 PM)
- Friday: Stop 1 (8AM – 6PM)
- Saturday: Stop 2 (8AM – 3PM)
- Sunday: Stop 3 (8AM - 3PM)

Those interested in getting services from the mobile unit will be able to go online or call to schedule appointments. Walk-in services will also be available, especially in the beginning of the intervention as reputation is being established.

CNMs will be able to provide the services needed to give expectant and new mothers the care that they need. They will also refer out to other providers and specialist when needed, such as for high-risk pregnancies. The care that high-risk pregnancies may need may be beyond what the staff and mobile unit can provide. Services available on the mobile unit include performing tests for sexually transmitted disease, anemia, blood type and other factors important for pregnancy and delivery such as gestational diabetes. Mobile unit staffers will also track the baby's growth, measure weight gain, and check blood pressure of mother and baby, and monitor baby's heart rate. Any test that cannot be analyzed on the mobile unit will be delivered to a lab for results.

Due to the recent Coronavirus 2019 pandemic, the mobile unit will also offer telehealth services for women who do not yet feel safe to have in-person services. Virtual appointments have become more accessible due to the pandemic and would be an option for anyone who opts for that instead.

After each visit, a survey will be given to participants to collect data on their thoughts on receiving care from the mobile unit, safety, knowledge of the medical staff and services received

that day. Since many participants may continue to come back to get their health care services from the mobile unit, all surveys will be dated. The dates will be part of the analysis to show change over time.

Partnerships and Collaborations

Due to the lack of access to care in our providing area, we establish partnerships with organizations to help us provide services to the participants. We want to partner with organizations such as March of Dimes, Black Mamas Matter and Center for Black Women's Wellness. March of Dimes is well known nationally and has utilized mobile units to provide care before (University of Maryland, 2021). Organizations like Black Mamas Matter and Center for Black Women's Wellness are local to the greater Atlanta area. These organizations could be of use to not only establish trust in the community, but also assist with being sure that participants needs are met based on previous experiences and published data.

We also aim to work with local clinics and larger hospital networks around the provider area. In case of referrals for high-risk pregnancies or in case of emergencies, we want to have established relationships so that our participants are kept safe. We will partner with Memorial Health University Medical Center in Savannah, St. Francis Hospital is Columbus, and South Georgia Medical Center in Valdosta. These partnerships will also allow us to provide laboratory tests from the services and specimen collected from participants.

Evaluation

To evaluate the effectiveness of the maternal mobile care unit we will externally benchmark the unit by comparing our data at the end of the first year to the closest hospital or clinic in the providing area region. The aim is to compare our intervention against similar programs. We will take the data collected on the unit's participants including age, residential

area, pregnancy status, services, and medical history and compare it to the same or similar data obtained from the closest providing area hospital or clinic. No identifiable data will be used in this evaluation. This evaluation will allow us to see how well the mobile clinic is performing in comparison to a traditional hospital for maternal care. Permission to use data will be needed from the hospital or clinic that will be part of the evaluation.

All participants will be given a consent form to read and sign the first time they visit the mobile unit. The consent form will include information for the participant to know how their data is used and what data is being used. Under HIPAA, we can utilize limited data sets for research. We will not need identifiable data from the hospitals or clinics, but do require data such as services and number of visits.

Table 1: Evaluation Objectives and Questions

Objectives	Questions
Baseline Measurement Prior to implementation of intervention, the needs assessment and focus groups will be conducted to collect demographic information, information on access to care, and attitudes and behaviors around mobile unit care	• What is the current level of access to care that is available to residents of providing areas? • What is the level of acceptability of a mobile maternal health care unit? • How much prenatal, pregnancy and postpartum care do participants currently receive?
Midpoint Measurement (~6 months) At the midpoint, surveys collected after services will be analyzed to better understand how to improve services, access and attitudes and behaviors around care on a mobile unit	• How would they rate their experience on a mobile unit? • What factors or services made the mobile unit appealing? • What improvements can be made to the mobile unit and/or services?
Impact Measurement Assess possible impact the mobile unit has made on the community and access to care	• How many women utilized the mobile unit for services? • How many women complied with scheduled visits based on recommendations from provider and health plan? • What outcomes were experienced for those in the sample with pregnancy risk factors in comparison to the

	community? • How many women completed care with the mobile unit? • How sustainable is a mobile unit in the providing areas?

The surveys given at the end of the appointments that are completed by the participants will also be included in evaluation. The aim of the evaluation of surveys is to see if the maternal mobile unit is making a difference in women choosing to get their services at the unit, what the unit is doing well and what changes need to be made. Key measurements of our evaluation include (1) the number of participants that complied with scheduled visits based on recommendation from their provider and/or health plan, (2) the number of women who completed care with the mobile unit in comparison to the number of women who did not complete care, and (3) rates of compliance with community clinics or hospitals in comparison to rates of compliance with the mobile unit.

Deliverables:

Below are the deliverables that we will aim to achieve by the end of the grant term. Each deliverable has a full description and amount of time that will be needed in order to achieve them.

Table 2: Deliverables Timeline

Deliverable	Description	Time Needed to Achieve
Needs Assessment Findings	Findings from the needs assessment will allow us to determine the providing area(s) and accompanying schedule for the mobile unit in each city	2 months
Focus Group Findings	Findings from the focus group will allow us to better understand the experience of	1 month

	target audience with current maternal care and their attitudes on a mobile maternal unit	
Mobile Unit	A mobile unit will need to be obtained for this intervention	2 months
Staffing	The mobile unit will be staffed by Certified Nurse Midwives and Medical Assistants on a rotational schedule	2 months

1. **Abbreviated Commercialization Plan (Limited to 3 pages)**:

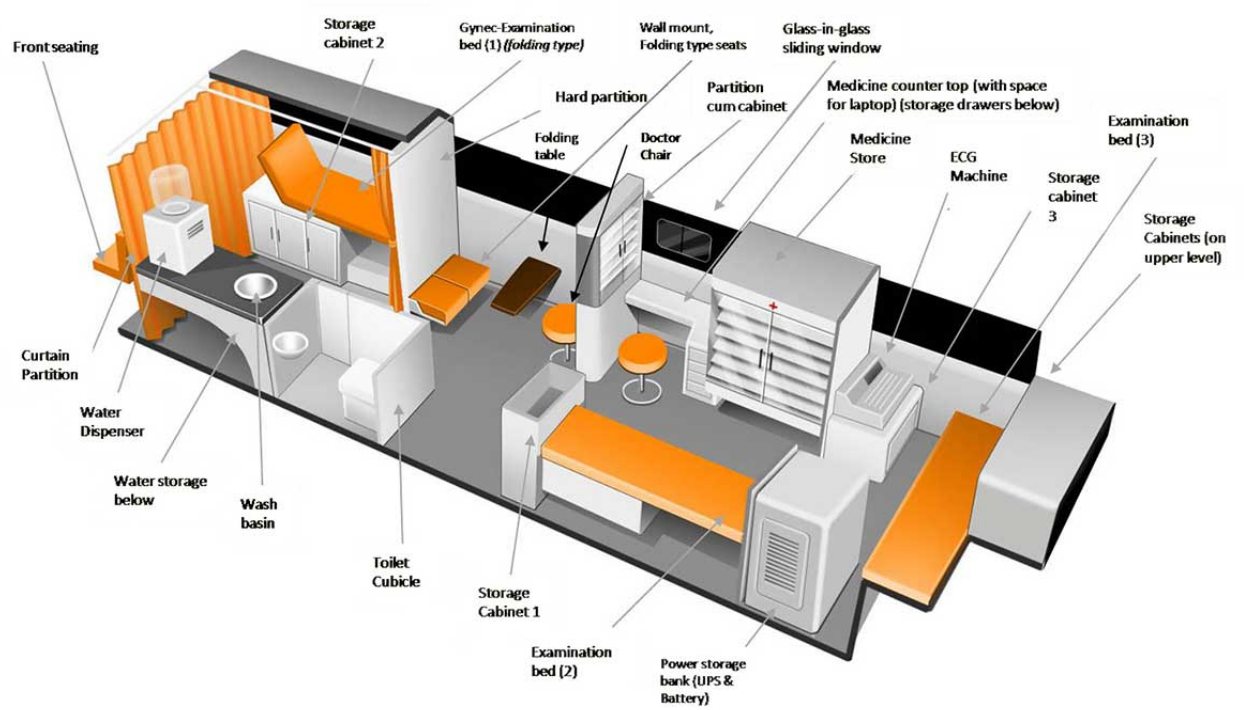
The cost of the project in total is $527,110, with the return on investment being 12:1. This means that the monetary value of the project is roughly $6,325,320. The impact this intervention would have on the communities at large and specifically Black mothers is high. The mobile maternal unit would reduce the number of women that would have to travel far distances for care, improve access to care for mothers in the first trimester and reduce health disparities due to limited access to care.

There is currently a need for mobile maternal care units. With hospitals and clinics being few and far between in rural areas, or not having the services needed for new mothers, a mobile unit that provides prenatal, pregnancy and postpartum care is needed in these areas of rural Georgia. Competitors could also include other mobile care units that provide a wide-range of services that are not specific to maternal health.

Our mobile unit will be modeled similarly to the model in Figure 3. The unit will have three examination beds, with hard partitions or curtains for privacy. It will also be equipped with medicine storage, water storage and dispenser, a toilet cubicle and power storage bank. The storage will allow for staffers to store all medical supplies that are needed for the unit.

Water dispenser and storage, along with a wash basin are for sanitation purposes. With the unit being able to hold three patients in each examination, the CNMs and Medical Assistants should be able to get through each patient quickly and efficiently.

Figure 3



Pinnacle Specialty Vehicles, 2021

Competitors

There are many mobile health care units in operation, but none that seem to be operating in southern Georgia counties. Better Stars for All is providing maternal care to women via a mobile bus in Washington, DC and Ohio, where many counties have been designated as maternal care deserts (Moroney, 2021). If they chose to expand to other areas in need, such as rural counties in southern Georgia, could make them a competitor.

The Georgia Department of Public Health as recently established Evidence-Based Home Visiting programs as an early intervention strategy to improve the health and wellbeing of infants and parents. Their goal for the program includes increasing healthy pregnancies (Georgia Department of Public Health, 2021). Based on their report from the 2017-2018 funding year, their counties served did not include the counties stated above that did not have any practicing physician. If they chose to expand their service to include those counties, they would be considered competitors.

Budget

Grant #:

PI Last Name: Glean

Grant Period: 1/1/2022 - 1/1/2023

Institution:

BUDGET

MARCH OF DIMES

Purple boxes are auto-calculated and may not be altered

A. SALARIED PERSONNEL					
Name/Degree	**% of Time**	**Title / Position**	**Salary**	**Fringe**	**Total Amount**
Jane Doe	100%	Certified Nurse Midwife	#####		**$90,000**
Amy Apple	100%	Certified Nurse Midwife	#####		**$90,000**
Sarah Jones	100%	Medical Assistant	#####		**$32,000**
Drew Baker	100%	Medical Assistant	#####		**$32,000**
					$0
					$0
Total for Salary					**$244,000**
B. PERMANENT EQUIPMENT ~ List individually each item and amount over $300					
Mobile Unit Bus					$250,000
Total for Permanent Equipment					**$250,000**
C. EXPENDABLE SUPPLIES ~ List individually each item and amount over $300					
Medical Supplies					$20,000
Total for Expendable Supplies					**$20,000**
D. OTHER EXPENSES ~ List individually each item and amount over $300					
Laptop (2)					$1,300
Gas					$5,000
Cell phone (2)					$600
Zoom					$150
Total for Other Expenses					**$7,050**
E. TRAVEL ~ By Principal Investigator, not to exceed $1,000 per year					
Total for Travel					**$0**
TOTAL DIRECT COST					**$521,050**
INDIRECT COST (not to exceed 10% of total direct costs)					$52,105
TOTAL AMOUNT					**$573,155**

Budget Justification

Certified Nurse Midwife (2) – Certified Midwife Nurses are needed to provide services to participants of the bus. They will provide services such performing tests for sexually transmitted disease, anemia, blood type and other factors important for pregnancy and delivery such as gestational diabetes. They will also track the baby's growth, measure weight gain, and check blood pressure of mother and baby, and monitor baby's heart rate.

Medical Assistant (2) – Medical Assistants will assist the Certified Nurse Midwives with intake, scheduling appointments, and clinical tasks

Mobile Bus – a mobile bus is needed in order to provide services to mothers. A refurbished mobile bus will be purchased from a trusted vendor.

Medical Supplies – medical supplies are needed to safely and effectively provide services. Medical supplies include syringes, gloves, scale, heart rate monitor and blood pressure monitor, scale, sharp instrument container and measuring tape.

Laptop (2) – a laptop is needed to store patient data, schedule appointments and communicate with participants and other providers. Each provider will have their own laptop.

Cell phone (2) – a cell phone will allow for Medical Assistants and Certified Nurse Midwives to communicate with participants and other providers. Each provider will have their own cell phone.

Gas – the mobile unit will need to travel to the areas they will park to administer services for the week. Exact amount will be available once the needs assessment is complete.

Zoom – Zoom will be needed to conduct the focus group and any other meetings between PI, graduate students and staffers of the mobile unit.

Principal Investigator Biographical Sketch

NAME: Ercilla Glean		POSITION TITLE: Principal Investigator	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)			
INSTITUTION AND LOCATION	DEGREE (If applicable)	Completion Date MM/YY	FIELD OF STUDY
Xavier University of Louisiana New Orleans, Louisiana	B.S.	05/17	Psychology
Chatham University Pittsburgh, Pennsylvania	M.A	12/18	Psychology
Emory University Atlanta, Georgia	M.P.H	08/21	Public Health

A. Personal Statement

Ercilla Glean is well-suited for this role as Principal Investigator because of her previous work on related topics and past performance in the field. Her research interests include the overall health and wellness of Black women and Black maternal health. Previous work includes research utilizing Pregnancy Risk Assessment and Monitoring System data to find themes Black women experience during and after pregnancy. Other works include acting as a mentor, advisor, and research collaborator in the Social- Justice Participatory Action Research Collective (SPARC), where she advises and mentors undergraduate students with their research projects, and collaborates, co-writes, and consults on a number of research and community-based endeavors focused on the psychological, emotional, and behavioral health promotion emancipation of Black women in the United States and Global South. She also has experience co-facilitating groups of Black women discussing sensitive topics. Glean has created spaces for Black women based on need before, and this intervention is a step forward in that field of change.

B. Positions and Honors

Researcher of the Year, *Chatham University* 2018

Adjunct Instructor, *Durham Technical Community College*	2019
Health Coach, *Noom, Inc*	2020
Health Coach Manager, *Noom, Inc*	2020-Present

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Appendix

1A. Focus Group Questions

Focus Group Questions

1. What kind of provider do you currently go to for maternity care?
2. What are some barriers you experience to receiving care?
3. What factors would make it easier to receiving care?
4. What are your thoughts on a mobile unit that would come a couple days of week to provide maternal services?

1B. Post Survey Questions

Post-service Questions

1. How satisfied were you with your services today?

   Strongly Dissatisfied Dissatisfied Neutral Satisfied Strongly Satisfied

2. What services did you receive today?

   _____

3. How knowledgeable was your provider with information related to you and your health?

   1= not knowledgeable 10= very knowledgeable

   1 2 3 4 5 6 7 8 9 10

4. How safe did you feel on the mobile unit and with providers?

   1 = not safe 5= very safe

   1 2 3 4 5

5. How long did you have to travel to receive care from the mobile unit?