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Formalizing a High-Risk Obstetrical Initiative: Focus—Hypertensive Disorders

Elena Vulgamott Rodrigue
University of the Incarnate Word, vulgamot@student.uiwtx.edu

FORMALIZING A HIGH-RISK OBSTETRICAL INITIATIVE:

FOCUS – HYPERTENSIVE DISORDERS

ELENA RODRIGUE BSN, RN

DNP PROJECT ADVISOR

Holly DiLeo PhD, APRN, FNP-BC
Ila Faye Miller School of Nursing and Health Professions

CLINICAL MENTOR

Nicole Van de Putte MD, FACOG

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Elena Rodrigue

TABLE OF CONTENTS

TABLE OF CONTENTS—Continued

LIST OF FIGURES

Abstract

Background. Hypertensive disorders during pregnancy have a detrimental effect on maternal and fetal outcomes, causing low birth weights, preterm births, and stillbirths. During pregnancy, hypertensive disorders affect up to 13% of all pregnancies and make up 10% of all maternal mortality in the United States (Centers for Disease Control and Prevention [CDC], 2019). **Purpose.** The purpose of this DNP project was to implement and standardize a high-risk obstetrical initiative for hypertensive mothers. **Summary of Evidence**. Data suggest that increased education and increased surveillance for high-risk obstetric patients decreases the need for obstetric services and decreases the evolution of hypertensive disorders during pregnancy. **Objectives.** This project aimed to decrease mother and infant morbidity and mortality by standardizing an FQHC's high-risk OB initiative, which attempted to provide face-to-face education with weekly telehealth follow-ups by a Registered Nurse in addition to regular obstetrical appointments. **Interventions.** Interventions included implementing a standardized enrollment and referral process, creating an electronic dashboard, and providing standardized in-person education and follow-up monitoring by a Registered Nurse. Increasing education and weekly follow-up monitoring will assist in early recognition of hypertensive disease progression and timely patient-specific interventions. **Outcomes.** The program increased patient program enrollment by 940% and educated fifty-seven pregnant women on the signs and symptoms of preeclampsia and eclampsia. **Implications for Practice.** This program provides a framework to reduce perinatal and maternal mortality related to hypertensive disorders during pregnancy. This program also strives to empower women during their pregnancy to be active participants in their pre- and post- birth health.

Keywords: hypertensive disorders, pregnancy, high-risk pregnancy, telehealth

Formalizing a High-Risk Obstetrical Initiative: Focus—Hypertensive Disorders

Maternal and fetal outcomes have always been at the forefront of healthcare. Improving maternal health is a key priority for the World Health Organization (WHO, 2019), an organization dedicated to improving maternal health worldwide. According to WHO (2019), maternal mortality rates are unacceptable, with data showing that roughly 295,000 women worldwide died during their pregnancy or childbirth in 2017. WHO reports that many of these deaths are preventable with adequate care and services. Unfortunately, in the United States, maternal and fetal mortality and morbidity have continued to rise. The pregnancy-related mortality rate in the United States has increased from 7.2 per 100,000 live births in 1987 to 17.3 in 2017 (Center for Disease Control and Prevention [CDC], 2020b). The rate of 17.3 deaths per 100,000 live births is more than double the rate of other developed countries (CDC, 2020a). In countries like New Zealand, Norway, and the Netherlands, the maternal mortality ratio is 3 or less per 100,000 live births. More specifically, hypertensive disorders during pregnancy make up 6.6% of maternal deaths in the United States. (CDC, 2020b). Hypertensive disorders during pregnancy include gestational hypertension, chronic hypertension (pre-existing), preeclampsia, and eclampsia. Hypertensive disorders affect one out of 17 pregnancies (CDC, 2020a). Hypertensive disorders during pregnancy are known for increased maternal and fetal mortality. Furthermore, hypertensive mothers are at significant risk for developing cardiovascular diseases after their pregnancy and more severe hypertensive disorders with subsequent pregnancies.

Preeclampsia with severe symptoms has been identified as an independent risk factor to developing cardiovascular disease, including coronary artery disease, hypertension,

cerebrovascular accidents, and type 2 diabetes later in life (Paul et al., 2019). Preeclampsia alone has increased by 25% from 1987-2004 (American College of Obstetricians and Gynecologists [ACOG], 2020). Many of these hypertensive disorders can be treated before the disease process evolves into a life-threatening situation for mother and infant. However, for many patients, these disorders are not detected early or managed effectively because women cannot access care. Face-to-face education, telehealth follow-up, increased communication, and surveillance of hypertensive patients during pregnancy are essential for detecting early signs and symptoms of hypertensive disorders and establishing patient-specific interventions.

Statement of the Problem

Hypertensive disorders are increasing every year in the United States. According to the CDC (2019), the rate of hypertensive disorders has almost doubled from 1993 to 2014, affecting 912 women per 10,000 live births. The number of women with pre-existing hypertension has also increased significantly, almost tripling from 1993 to 2014, affecting 167 per 10,000 births (CDC, 2019). Women in lower socioeconomic areas are at increased risk for developing hypertensive disorders due to having more associated risk factors such as obesity, type 2 diabetes, sleep apnea, decreased awareness of signs and symptoms of hypertensive disorders, and lack of access to care. When women develop hypertensive disorders, their overall health is at risk during and after pregnancy. Currently, the only definitive treatment for preeclampsia is giving birth. Different modalities and treatments are needed to combat these alarming increasing rates and devastating maternal and perinatal outcomes.

Background

If not well controlled during pregnancy, hypertensive disorders place the mother and the neonate at significant risk for complications that include eclampsia, restriction of fetal uterine

growth, and fetal and maternal demise. Stillbirths are seven times more likely in hypertensive mothers than mothers who are not hypertensive. Hypertensive mothers progressing into preeclampsia is common, affecting 5%-8% of pregnancies in the United States (Bokslag et al., 2016). Preeclampsia is defined as a systolic blood pressure >140 or diastolic blood pressure >90 after 20 weeks gestation, with the presence of one of the following: proteinuria (>300mg/24hrs), maternal organ dysfunction, or uteroplacental dysfunction causing fetal growth restriction (Bokslag et al., 2016). Women with pre-existing (chronic) hypertension are twice as likely to progress into superimposed preeclampsia and be at increased risk for preterm births, perinatal death, miscarriage, and abruption than preeclamptic women without chronic hypertension (Sutton et al., 2018). Preeclampsia can occur quickly and suddenly, without notice. Therefore, constant feedback between the patient and the healthcare team is essential for better patient outcomes. Patients must also be aware of the signs and symptoms of preeclampsia and how to escalate care if preeclamptic symptoms occur.

Significance

Hypertensive disorders are devastating because two individuals' outcomes are affected, not just one. Additionally, the rate of hypertensive disorders is increasing at an alarming rate. According to Stevens et al. (2017), the diagnosis of preeclampsia, in particular, is rising faster than diabetes, Alzheimer's, ischemic heart failure, chronic kidney disease, and obesity. Despite the high disease burden, current treatment options for preeclampsia are limited and the cost and effect of preeclampsia on our healthcare system are staggering. Preeclampsia is associated with a higher cost of birth, no matter the gestational age. Preeclampsia is also associated with premature births, which are significantly more costly for infants born at a lower gestation age (Stevens et al., 2017). In 2012, the total cost associated with preeclampsia in the U.S. healthcare system was

$1.15 billion for infants and $1.03 billion for mothers, a combined cost of $2.18 billion (Stevens et al., 2017).

There is a disparity among women in the United States affected by hypertensive disorders and associated morbidity and mortality. Women with lower socioeconomic backgrounds and from neighborhoods below the poverty line are more likely to be associated with severe maternal mortality (Wang et al., 2020). Wang et al. (2020) also found that being of Hispanic ethnicity or Black race, and having lower education and no insurance were significant factors associated with higher maternal morbidity and mortality. Ethnic and racial minority women with multiple chronic diseases also experience a substantial increase in severe maternal morbidity (Wang et al., 2020). As a result, a gap in care is created; with hypertensive disorders substantially increasing every year, more and more at-risk women could be fatally affected.

Needs Assessment

This high-risk OB quality improvement project took place at two Federally Qualified Health Center (FQHC) women's health clinics. These clinics were located on two campuses in a south-central Texas metropolitan area. In addition to four Obstetrics-Gynecology (Ob-Gyn) physicians and one registered nurse (RN), there were six medical assistants (MAs), two licensed vocational nurses, one receptionist, and one office manager assigned to the two clinics. During a pre-project organization assessment period, it was observed that the Ob-Gyn providers inconsistently referred their high-risk hypertensive patients into the pre-standardized program, with the referral process consisting of the providers messaging the RN regarding eligible patients, when they remembered. It was also noted that because there was only one RN, the education and follow-up of the mothers was sporadic. Lastly, it was determined that the RN

documented the education and encounters in an Excel sheet and not the electronic health record (EHR).

By formalizing this high-risk OB initiative focusing on hypertensive patients, it was determined that the patients would benefit from having an RN provide face-to-face education and frequent telephone follow-up, and this would facilitate the continuation of primary care after delivery. This project aimed to standardize the referral and enrollment process, provide consistent weekly follow-up monitoring and prompt face-to-face patient education after enrollment, and streamline patient documentation for the high-risk hypertensive OB initiative. This team-based OB-GYN project was based at the west campus clinic of the FHQC facility. The care team comprised two of the four Ob-Gyn physicians, the RN, a receptionist, and the practice manager. The two licensed vocational nurses participated in the team but were used by both the east and west campus clinics.

Readiness for Change

The west campus clinic is intimately aware of the poor outcomes associated with elevated blood pressure during pregnancy and the epidemic of hypertensive disorders during pregnancy sweeping the country. Decreasing maternal and perinatal deaths and improving poor outcomes are at the forefront of the clinic's practice. The providers and staff are very engaged and supported refining the program to make it more efficient. Once formalized, the clinic supported expanding this initiative throughout the FQHC healthcare system. The standardization of the hypertensive arm of this high-risk OB initiative provided data to improve the processes before the expansion. Consequently, the clinic was highly motivated to decrease any barriers and assist with implementing this project. Even though the staff, providers, and administration were

motivated to implement this project, change can be challenging, especially on a system and process level, which is the foundation of this project.

Project Identification

Purpose

The purpose of this DNP project was to formalize and standardize a high-risk OB initiative, which included (a) a standardized enrollment and referral process, (b) in-person and telehealth education and follow-up monitoring by an RN, and (c) a standardized documentation process. This project focused on the high-risk hypertensive OB patient population but included other high-risk OB populations. This project aimed to decrease maternal and fetal morbidity and mortality related to hypertensive disorders during pregnancy.

Outcomes

The anticipated outcomes for the project included (a) increasing the ease with which patients were enrolled and how they were surveyed within the program, (b) growth in the number of patients enrolled in the program, and (c) ensuring that the providers and the nurse understood program procedures, education topics, and the documentation process. It was projected that patients would have an increased understanding of overall wellness, including the signs and symptoms of preeclampsia, and an appreciation of the importance of continued care after birth.

Objectives

The objectives for this evidence-based project were:

1. Educate 100% of providers, nurses, and MAs within the FQHC west campus Ob-Gyn clinic regarding the obstetrical Initiative for high-risk hypertensive patients.
2. Enroll 95% of high-risk hypertensive OB patients in the obstetrical initiative for high-risk hypertensive patients during the project implementation period.

3. Close monitoring of 95% of the high-risk hypertensive OB patients during the project implementation period per American College of Obstetricians and Gynecologists (ACOG) guidelines. Criteria will be met if patients are seen or contacted by the RN within 3 days of referral to the obstetrical Initiative for high-risk hypertensive patients and receive at least one follow-up telehealth call per month up to the patient's 6-week postpartum visit.
4. Educate 100% of patients enrolled in the obstetrical Initiative for high-risk hypertensive patients on gestational hypertension and preeclampsia symptoms during the project implementation period.
5. Screen 100% of patients enrolled in the obstetrical initiative for high-risk hypertensive patients using the ACOG Social Determinants of Health (SDoH) tool to identify needs during the project implementation period.
6. Of those patients identified as having a positive SDoH screen, 95% will be provided resources and referral to social/community services.
7. Refer 95% of patients enrolled in the obstetrical initiative for high-risk hypertensive patients for continued care after the 6-week postpartum visit.

Summary and Strength of the Evidence

Significant risk factors are associated with the development of preeclampsia. However, many women affected by preeclampsia are healthy nulliparous women with no known risk factors (ACOG, 2020). According to ACOG (2020), relying on maternal symptoms for preeclampsia can be problematic. Clinical signs and symptoms, such as headaches, are non-specific and unreliable as a diagnostic criterion for preeclampsia with severe features (ACOG, 2020). It is imperative that a diagnostic approach is followed when clinical signs are less severe

or not indicative of preeclampsia, especially if the gestational age is less than 20 weeks (ACOG, 2020). Women diagnosed with preeclampsia (without severe features) and women with hypertension during pregnancy are managed similarly. However, to assume that hypertension during pregnancy is benign or is less relevant than preeclampsia is incorrect (ACOG, 2020). Of the women diagnosed with pregnancy-induced hypertension, 50% will develop a diagnosis that is consistent with preeclampsia (ACOG, 2020). Disease progression occurs more often when the hypertension diagnosis is made before 32 weeks of pregnancy (ACOG, 2020). What is required with both diagnoses is enhanced surveillance to promote good outcomes and decrease maternal and fetal risk. Screening methods, such as using biochemical markers and ultrasound to predict preeclampsia development, are inaccurate and unreliable (ACOG, 2020). Strategies and interventions to prevent preeclampsia have been studied for over 30 years, but no prevention intervention has been noted to decrease the risk of developing preeclampsia (ACOG, 2020). With regard to nutritional interventions, no evidence is noted to demonstrate the effectiveness of vitamin supplementation or sodium restriction for decreasing the risk of preeclampsia (ACOG, 2020).

The nursing profession plays a vital role in the team-based patient-centered care team, especially in a high-risk OB program. The RN enhances education, facilitates patient care coordination, and acts as a liaison between the provider and patient. Swan et al. (2006) suggest that the nurse’s most valuable asset is being the provider's eyes and ears. With a high-risk OB population where an increase in surveillance is needed, an RN providing telephone follow-up will only enhance team-based care, patient satisfaction, and maternal-fetal outcomes. Swan et al. found that in six studies that used RN-led technology-based or telephone interventions to promote education and provide counseling in heart-failure patients, outcomes improved. The

results included a reduction in patient emergency department visits, decreased hospital admissions, improved quality of life, improved self-care, and decreased mortality. In another study, Muender et al. (2000) found that increasing surveillance by telephone calls 1 to 2 days a week from 24 weeks until 37 weeks of gestation improved outcomes for the women and their babies. Weekly calls consisted of health assessments, access to food and meals consumed, and the use of prenatal vitamins. Muender et al. also concluded that women over the age of 18 had a 44% reduction in preterm births (<37 weeks) and significantly showed the cost-benefit of a nursing intervention like telephone contact. Telephone contact is a relatively low cost and has been an effective intervention to complement other interventions, such as home health care and social support (Muender et al., 2000).

Most of the country is still overcoming barriers and decreased access to care related to the COVID-19 pandemic. Mothers who are at risk for hypertensive disorders have had difficulty accessing care at the height of the pandemic. These mothers need to be seen and evaluated in a timely manner. The COVID-19 pandemic has helped open the door to making telemedicine more mainstream. Perrin et al. (2020) states that health systems worldwide are adopting telemedicine platforms and are employing them in new areas such as Ob-Gyn and primary care. The U.S. Centers for Medicare & Medicaid Services (CMS) has significantly increased access to telemedicine services, allowing for a broader range of providers to offer telemedicine services to reach more patients (Perrin et al, 2020). With advancing technology and the overwhelming need for a telemedicine platform, this widespread adoption by healthcare providers and healthcare systems will facilitate healthcare delivery well into the 21st century (Perrin et al, 2020).

Project Intervention Methods

Systems Interventions

Patients in the less formalized hypertensive high-risk OB program did not have a standardized enrollment process; patient data was also not easily accessible within the EHR. Often, high-risk hypertensive patients are overlooked or missed and not enrolled in the program. System project interventions to remedy this include (a) a standardized referral and enrollment process, (b) a standardized screening questionnaire, (c) a centralized dashboard for all patients enrolled in the program, and (d) a nursing template for documentation. The MA was responsible for the patient screening questionnaires, which identified eligible patients. If the MA noted a positive screen, they would notify the patient's provider. The provider would "task" the RN for patient enrollment, and the tasking tab within the EHR alerted the RN of the patient needing to be enrolled. Non-billable dummy codes were developed and implemented to identify high-risk patients and organize them within the dashboard. After applying the non-billable codes to the patient, the codes allowed the RN and provider to survey the patient throughout their pregnancy, identify what high-risk group they were in, and determine if their disease process resolved after delivery. If needed, a patient-centered discussion between the provider and RN occurred to determine patient enrollment. Then, the RN input the patient-specific enrollment and diagnosis codes, adding the patient to the view-only high-risk OB dashboard. The dashboard effectively allowed all staff to identify the enrolled patients quickly. The RN or provider also used the dashboard to assess the key components of care, such as the patient's last visit, gestational age, previous vital signs and weight, and their assigned provider. The view-only dashboard updated automatically once the patient was added.

After enrollment, the RN had 3 days to initiate a telephone follow-up with the patient, if the patient was not evaluated in the clinic. A manual for high-risk OB patients was also created to use as a reference guide for the RN and staff. The manual included information on the referral and enrollment process, patient education, documentation, weekly follow-up calls, and community resources. This manual will assist with project sustainment.

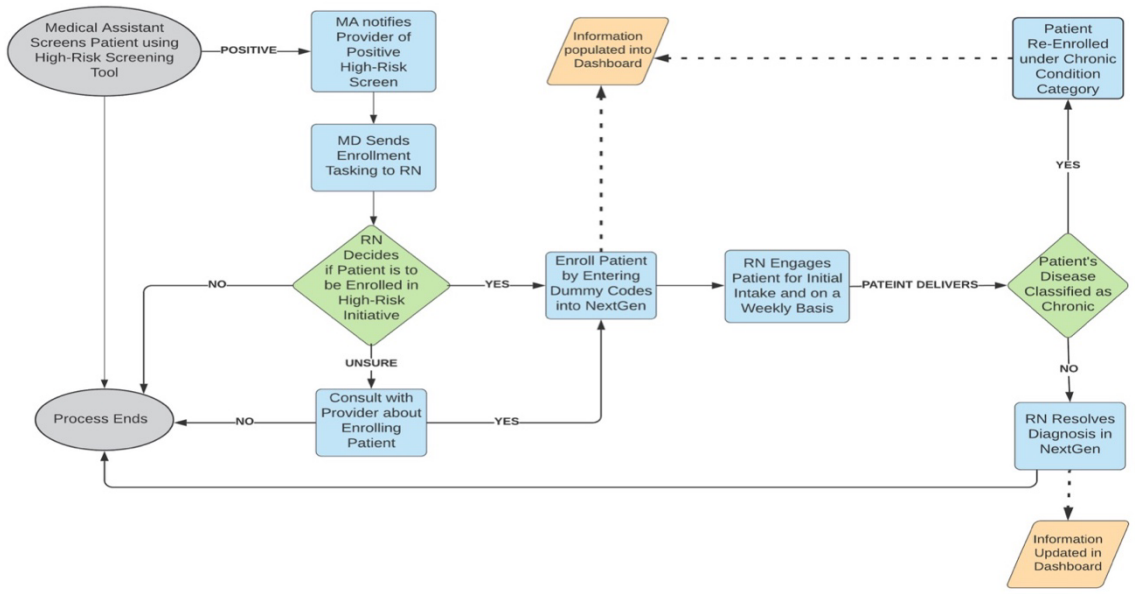
Patient Interventions

Patient interventions included (a) face-to-face education regarding the signs and symptoms of preeclampsia, eclampsia, stroke, and overall wellness; (b) pre-and post-education questionnaires; (c) weekly follow-up telephone calls; (d) an SDoH screening with referral to services when indicated; (e) periodic evaluation of the patient for normotensive blood pressure until the 6-week postpartum appointment; and (f) facilitation of continued care after delivery through a primary care referral, if needed. The formalizing of the OB program for high-risk patients will assist with program expansion to all the FQHC women's health clinics and assist new personnel for project sustainment.

High-risk hypertensive patient face-to-face appointments were scheduled at the west campus. Weekly follow-up calls were conducted to assess new or continued SDoH needs and hypertensive disease progression signs and symptoms, and to reinforce education. Enrolled patients were evaluated by periodic chart audits. The RN offered continued care, additional resources, and further education at the 6-week postpartum follow-up appointment, if indicated. If a patient missed the 6-week postpartum appointment, the RN initiated a telephone follow-up call. Figure 1 outlines the system and patient interventions.

Figure 1

High-Risk OB Initiative Flow Chart



Theoretical Framework

The Plan-Do-Study-Act framework was utilized for implementing this project, as this was a systems and patient intervention process. Adjustments were necessary throughout project implementation to meet patient and program objectives concisely and efficiently.

Setting and Population

The project was set at a FQHC system women's health clinic on the west side of a south-central Texas metropolis. Women enrolled in the program were diverse in ethnicity, socioeconomic status and background; all enrolled women met the criteria and were considered high-risk hypertensive patients.

Barriers and Facilitators

Barriers to the project's success included (a) limited staffing, RN vacancy, and patients at multiple clinic sites; (b) facilitating change in a large organization; and (c) staff resistance to

change and provider hesitancy. Having one RN during the project implementation created a significant barrier. A nurse at each site would have facilitated face-to-face education, increased patient surveillance, and decreased lag in enrolling patients. The organization's RN vacancy decreased the ability to reach all enrolled patients promptly. The primary nurse position at the clinic became vacant during the implementation period, and a newly graduated nurse took her place. While this was initially a barrier, the newly hired nurse became a facilitator for this project and quickly became a project champion.

The second barrier included working in a large organization. Interventions and changes to implementation strategies needed approval from the administration, which created lag time and delays in the project timeline.

A third barrier was the staff's resistance to change and provider hesitancy. The RN was primarily affected by the changes, and increased education was needed to initiate these changes. Provider hesitancy in referring patients and tasking the RN for enrollment was another barrier.

Facilitators for the project included the Ob-Gyn director and the organization administration, who had a commitment to have this program succeed and provide high-risk women with quality team-based patient-centered care. Other facilitators included the partnership between UIW and the organization. This partnership facilitated the formalization and standardization of the organization's program, enabling it to fulfil its mission of providing comprehensive high-quality healthcare to the San Antonio area..

Evaluation Plan

To evaluate the percentage of eligible hypertensive high-risk OB patients enrolled in the program, the number of eligible positive screens versus the number of patients enrolled in the program were assessed during the project implementation period. Evaluating patient's blood

pressure trends was reviewed through patient chart audits and the patient's dashboard data. A chart audit was done to assess the number of enrolled patients who received face-to-face education and weekly follow-ups. Pre- and post-questionnaires were collected to evaluate the effectiveness of patient teaching. The SDoH screening questionnaire was also assessed to determine the need for referrals to social or community services, followed by a chart audit to determine if the patient received resources. A chart audit also evaluated for nursing template documentation adherence and if the patients received education and referral to primary care postpartum.

Ethical Consideration

The ethical considerations for this project included voluntary participation and confidentiality. Patients involved with the project were informed that they could decline participation in education and follow-up monitoring and that doing so would not impact their eligibility for care. Personal and health-related information was needed to contact and assess high-risk patients. The concern for confidentiality regarding this sensitive information was mitigated by following HIPAA rules and regulations. The staff ensured that patient information was kept safe and not shared within the healthcare team in an unsecured manner.

Results

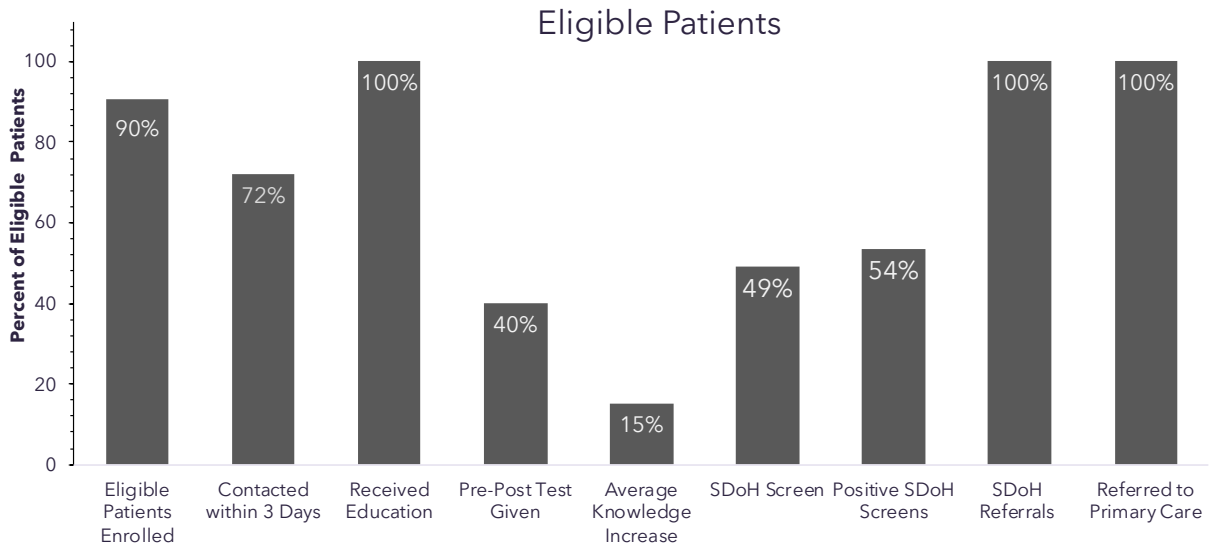
The implementation of this project took place between March 19 and June 14, 2021. The results for each of the objectives is shown in Figure 2.

The first objective was to educate 100% of providers, nurses, and MAs within the two Ob-Gyn clinics. Project education was provided to 100% of the staff at each location, meeting this objective. Education was provided during the morning huddle, 1 week before the project implementation start date. One-on-one, in-person education to medical assistants, the RN, and

providers was also offered as needed throughout project implementation. All participating staff were receptive to program education. An educational email was sent to the providers and RN related to enrollment codes and program processes, in conjunction with the in-person education. This educational email provided a visual reference on how to enroll patients and the associated non-billable dummy codes. All providers and the RN acknowledged the educational email.

Figure 2

OB High-Risk Initiative Result



Note. This figure shows the results of program initiative objectives.

Enrolling 95% of eligible patients was the second objective. Eligible patients were defined as the number of positive patient screens that met the program criteria. Hypertension during pregnancy ICD-10 (International Classification of Diseases, Tenth Revision) code search was performed during the 11-week project implementation period for the two clinical sites. The search found that 90% of eligible women were enrolled in the program. The MAs were receptive to screening and alerting the nurse and providers of positive screens. The nurse was able to enroll

each patient who met the program criteria with positive screens daily. This objective was almost successful due to the efforts of the patient-centered healthcare team.

The third objective was to have 95% of enrolled high-risk hypertensive OB patients have increased surveillance, defined by the RN making initial contact within 3 days of patient enrollment, either face-to-face or by phone call. Subsequently, the patient was to be contacted at least once a month up to the patient's 6-week postpartum visit. This objective was partially met. A chart audit revealed that 100% of the enrolled patients received follow-up education at least once during the implementation period. However, the criteria of initial contact within 3 days was met by only 72% of the enrolled patients. Rapid enrollment of patients during the implementation period, multiple referring providers, two clinic sites, and only one RN were some of the factors that affected initial contact time. Even though this objective fell short, it did provide evidence to support this project, positive patient outcomes, and the need for a facilitating RN at each location.

The fourth objective was to educate 100% of enrolled high-risk hypertensive patients on the signs and symptoms of preeclampsia and gestation or superimposed hypertension during pregnancy. Chart audits were used to assess if the enrolled patients received this education. The results found that 100% of the patients enrolled were educated not only on disease warning signs and progression but also when to call 911, seek healthcare services, and where the hospital was located. The pre and post-education questionnaires were audited to evaluate the impact of patient education. Of the eligible patients enrolled in the program, 40% received a pre-and-post questionnaire, and the average increase of knowledge was 15%.

The fifth objective stated that all enrolled patients would be screened with the ACOG SDoH questionnaire. Due to the use of the PDSA cycle, this questionnaire was one of the last

implementation intervention cycles. For the total implementation period, only 50% of the patients enrolled in the program were screened.

The sixth objective was to provide services to those patients with a positive SDoH questionnaire. A patient chart audit showed that, of the 29 patients screened, 15 patients were identified as having a positive screen. All 15 patients were provided with the identified needed resources.

The seventh objective stated that 95% of the patients enrolled would be referred to primary care, if indicated at their 6-week postpartum visit. A chart audit showed that 100% of patients who kept their 6-week postpartum visit appointment identified as needing primary care services were referred.

Discussions

Overall, this project was a success—the program assisted in empowering mothers to be active participants in their health during and after pregnancy. Formalizing and standardizing the program's processes and the associated patient interventions were used to reach and educate the women to the fullest capacity. Specific strengths of this quality improvement project were formalizing and standardizing the clinic's initial attempt at a program. New hires and the administration have access to the devised program manual to help them understand how the clinics educate and provide services to high-risk hypertensive mothers. A standardized RN documentation template is also available, readily found within the EHR, facilitating data mining. This data will assist in providing evidence on how effective this method of increased surveillance is in assisting the patients, how effective patient education is, and what other interventions are needed.

The most significant addition resulting from this project was the development and implementation of the patient dashboard. This electronic dashboard allowed the providers, nurses, and other involved staff to evaluate trends and patient-specific data, such as the patient's vitals, last appointment, next appointment, and when the previous RN visit occurred. The dashboard and associated enrollment codes allow this program to work in conjunction with the current EHR and provide sustainable, transparent monitoring for the staff and administration. This dashboard was transformational in ensuring that the health status of this at-risk population was closely observed during and after their pregnancy.

Associate changes seen were the rapid increase of patients enrolled in the program and how receptive the patients were to participate in this program. It was noted that patients enjoyed having access to an RN, discussing their questions and concerns about their pregnancy, and

associated education. However, having two clinics with one RN managing both made implementing the patient interventions difficult. Creating the patient-nurse bond was found to be significantly more effective if done in person at initial contact. A trusting relationship is an essential component when forming the patient health care team. It can be postulated that when patients trust the RN and their healthcare team, they are more receptive to the education provided and more likely to sustain lifestyle changes. While literature specific to formalizing and standardizing a high-risk OB program focused on hypertensive OB patients was not found, increased patient satisfaction when RNs are active members of the patient care team in primary care is well documented (Swan, et al., 2006).

Limitations

Many limitations in project development and implementation were recognized. Working with a large organization can be challenging, especially when a systems change is needed. Large organizations require more time to access their system and arrange meetings with the appropriate people regarding specific system interventions like the dashboard. Even though the IT department was highly supportive and committed to this project, translating the needed patient information into a unified dashboard was challenging. Multiple revisions and re-evaluations were required to develop an effective patient dashboard, and the time required for each modification was significant. The time necessary for development and revision of the dashboard was not allocated in the project's timeline, thus delaying some aspects of program implementation. A free flow of exchanges with IT during development would have facilitated a timely program start date and increased program clarity for staff and administration.

Another limitation was having only one RN to initiate this program. Having two RNs, one at each site, would have increased the program's reach and increased face-to-face patient

education. Also, having an RN at both clinics would assist in championing the program, being an ever-present reminder for staff to continue screening patients, and for the provider to task eligible patients to the RN.

A third limitation was having the program snowball once the screening method was implemented. The program grew significantly in a short amount of time, and the associated workload was significant for one RN. Due to the increase in patients, the RN meeting project objectives, like making initial contact within 3 days of enrollment and weekly follow-up calls, was challenging.

Recommendations

Recommendations to improve project sustainability and growth to reach as many high-risk OB women include:

1. Implement an RN at each clinic. Having an RN at each site will facilitate prompt face-to-face education and real-time patient enrollment. With multiple locations, the providers have to task the RN, and they, in turn, must resolve the tasking, enroll the patient, and make contact within 3 days. This process is delayed if the RN is at a different location than the patient. If there was an RN at each location, the patient could be seen the day they are enrolled. Also, the patient can have their questions answered in person and be provided with educational handouts. This initial in-person contact will also facilitate the patient's trust in their health care team.
2. Provide an area where the RN can educate the patient. Currently, a patient flow issue exists at both locations. After the provider sees the patient, the room must be cleaned and prepared for the next patient. If the RN needs to educate the patient, then room turnover is delayed. If the RN goes in before the provider, the provider must wait to

see the patient, causing them to run behind. A designated area would allow the RN to take their time when educating the patient and increase patient satisfaction. Also, having a designated area avoids interference with patient flow and ensures that the provider is not delayed and will continue to refer their patients to the program.

3. Continue with IT developers to make changes as needed to the enrollment process and dashboard. As the program grows, changes will be needed to keep the enrollment processes and dashboard current and user-friendly.

Sustainability

The sustainability of this program looks very promising. The medical director of the Ob-Gyn clinics is invested in ensuring the program is sustainable, and her devotion will empower the staff to sustain this project by answering questions, providing feedback, and being available for unexpected issues. The medical director is also leading by example by advocating for project implementation and sustainment. Her leadership will empower the staff to take the time necessary to continue implementation and expand the program, even after project completion. The staff is also aware of how important this project is to the medical director and to patients and the avenues to take if any barriers arise during the sustainment phase. The medical director is readily available and has an open-door policy for any questions or issues related to this project.

Having the medical director heavily invested also allows the administration and board of directors to realize the project's impact and benefit to patients, while also meeting organizational goals, which include providing quality health care to an underserved population, providing preventative health, and keeping patients healthy. Having the administration's supports provides an avenue for assistance if any barriers require administrative intervention. The administration is

very interested in expanding the program; their goal is to broaden the OB initiative to all clinics within the organization.

Addition support for sustainability is evident in that project barriers are quickly identified, and suggestions from ancillary staff are well received. This project is heavily systems-based and will need continuing modifications to the dashboard, enrollment codes, and processes in the future. The interprofessional relationship that has been built during the project will be a factor in its sustainability. The IT staff has been very receptive to assisting the medical director and ensuring the system interventions are running smoothly. Any questions related to IT are answered promptly.

Implications for Practice

A significant broad implication for practice is the importance of having a formalized high-risk OB initiative that increases the surveillance of mothers at risk for harmful outcomes due to hypertension during pregnancy and other high-risk conditions. This OB initiative increased surveillance and education and promoted active patient participation in their pregnancy. High-risk hypertensive mothers are more likely to have adverse outcomes than non-hypertensive moms. This program empowered the patient by enhancing patient education on signs and symptoms of disease progression, having an RN available for questions, and providing applicable avenues for resources. This program will assist in recognizing disease progression earlier and improve mother and baby outcomes.

A second more practical implication is the standardization of processes for a local initiative envisioned by the Ob-Gyn medical director for effective screening, enrollment, education, and monitoring of patients at high risk for maternal and infant morbidity and mortality. Upon starting the project, only 13 patients were enrolled in the high-risk OB initiative

encompassing three different high-risk groups. After implementing appropriate screening and enrollment strategies, enrollment expanded significantly. Specifically, high-risk hypertensive patient enrollment increased by 940% during the project implementation period. Success was possible due to the standardization and clear admission criteria defined in the high-risk program. The patient-centered care team was able to identify, assess, and enroll patients successfully. The participation of all members allowed for maximum enrollment, which optimized education, utilization, and implementation of resources.

A third implication was the utilization of a patient-centered team-based approach. The clinic is recognized as an FQHC, which endorses a patient-centered model. The patient-centered approach has been recognized to assist with interprofessional communication, teamwork, decreased patient wait times, the provision of more patient education, self-management support, and the empowering of the patient to be an active member of their care team (Schottenfeld et al., 2016). An essential first step is the clinic's commitment to providing patient-centered team-based care, which involves viewing the patient as a knowledgeable and equal partner in their care (Schottenfeld et al., 2016). This project implementation used this framework which encouraged the patients to become active in their care and empower them through education to enact and make sustainable lifestyle changes. Lifestyle changes will continue with their current pregnancy and after delivery and provide optimal health for future pregnancies. The American Nurses Association (2016) also endorses a patient-based team care approach and recognizes that the team's most important member is the patient. As a result, the team member who guides patient care and related decision-making is the patient (American Nurses Associadtion, 2016). This quality improvement project focused on actively listening to the patient and on patient education, enabling the patient to make informed decisions during and after their pregnancy.

The Essentials of Doctoral Education for Advanced Nursing Practice fully outlines the role, scope, and leadership qualities of the doctoral-prepared nurse practitioner, regardless of specialty or primary focus (American Association of Colleges of Nursing [AACN], 2006). This quality improvement project fully enacted specific parts of the eight DNP Essentials, but two DNP Essentials were the cornerstone and basis for development and successful project implementation. These were Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking, and Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes.

DNP Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking allowed the conceptualization of new care delivery models which were feasible, promoted safety, and were deeply rooted in nursing sciences (AACN, 2006). Focusing on a target population allowed for an individualized patient education and care delivery model that kept the patient's cultural and economic perspectives in mind (AACN, 2006). System improvements were made at a clinic level, enhancing sustainability and improving patient safety and healthcare outcomes (AACN, 2006).

DNP Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes was instrumental in providing patient-specific care. The development of the dashboard would not have been possible without the IT department listening to the needs identified during this project. Also, the ongoing collaboration between the providers and nurse was essential to decipher patient goals, provide education, and resolve any barriers or potential barriers.

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Appendix A

Statement of Non-Research

1/6/2021

Project Lead: Elena Vulgamott
Project title: Formalizing an Obstetrical Program for High-Risk Patients: Focus - Hypertensive Disorders in Pregnancy.

Elena:

Your project titled Formalizing an Obstetrical Program for High-Risk Patients: Focus - Hypertensive Disorders in Pregnancy was deemed to be **Not Regulated Research**.

Your proposed project was reviewed and found to not meet federal regulatory requirements for human subject research and does not require approval via the IRB process. Please use the IRB number **NRR [21-001** when inquiring about or referencing this determination.

No further review of the project as proposed is required. Should you determine at any point you wish to add additional elements to the project, please contact us before initiating those components, as this may impact the determination.

For information regarding the IRB or the review process, please contact me at (210) 805-5885.

Sincerely,

Ana Hagendorf, PhD, CPRA

Ana Hagendorf, PhD, CPRA
Director, Office of Research and Sponsored Projects Operations
Office of Research and Graduate Studies
University of the Incarnate Word
4301 Broadway, CPO 1216
San Antonio, Texas 78209
(210) 805-3036
wandless@uiwtx.edu

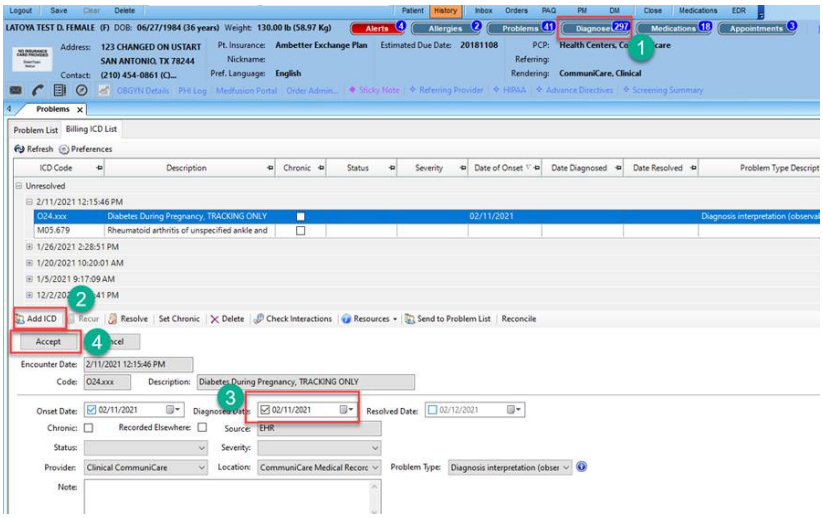
Appendix B

High-Risk OB Screening Questionnaire

Have you ever been told you have diabetes by a doctor?	Yes	No
Have you ever been told you have high blood pressure?	Yes	No
Have you ever had a baby before 20 weeks, used Makena (progestin) injections or had a cerclage?	Yes	No
Is BMI greater than 40?	Yes	No

Appendix C

Nonbillable Dummy Codes



AVAILABLE CODES

Diabetes During Pregnancy:
O24.XXX Nonbillable Dx, Diabetes During Pregnancy, TRACKING ONLY
Hypertension Disorders During Pregnancy:
O10.XXX Nonbillable Dx, Hypertension During Pregnancy, TRACKING ONLY
Risk for Pre-Term Labor:
O09.21X Nonbillable Dx, Risk For Pre-Term Labor, TRACKING ONLY
Management of Chronic Health Conditions- Interpregnancy Interval:
O90.XXX Nonbillable Dx, Mgmt Chronic Health Cond, Interpregnancy TRACKING ONLY

HOW TO ADD THE CODES?

1. In the patient's chart select Diagnoses.
2. Click Add ICD. A search box will popup, input the ICD code to search and select.
3. Add the diagnosed date.
4. Click Accept.

Appendix D

SDoH Screening Questionnaire

Table 1. Sample Screening Tool for Social Determinants of Health ⇦

Domain	Question
Food	In the last 12 months, did you ever eat less than you felt you should because there was not enough money for food?
Utility	In the last 12 months, has your utility company shut off your service for not paying your bills?
Housing	Are you worried that in the next 2 months, you may not have stable housing?
Child care	Do problems getting childcare make it difficult for you to work, study, or get to health care appointments?
Financial resources	In the last 12 months, have you needed to see a doctor but could not because of cost?
Transportation	In the last 12 months, have you ever had to go without health care because you did not have a way to get there?
Exposure to violence	Are you afraid you might be hurt in your apartment building, home, or neighborhood?
Education/health literacy	Do you ever need help reading materials you get from your doctor, clinic, or the hospital?
Legal status	Are you scared of getting in trouble because of your legal status? Have you ever been arrested or incarcerated?
Next steps	If you answered yes to any of these questions, would you like to receive assistance with any of those needs?

Modified from Health Leads. Social needs screening toolkit. Boston (MA): Health Leads; 2016; *and* Bourgois P, Holmes SM, Sue K, Quesada J. Structural vulnerability: operationalizing the concept to address health disparities in clinical care. Acad Med 2017;92:299–307.

Appendix E

Hypertension during Pregnancy Pre-Post Questionnaire

1. A blood pressure over 140/90 is considered hypertension

   True False

2. High blood pressure may potentially cause harm to me or my baby.

   True False

3. Having high blood pressure increases my chance of developing preeclampsia.

   True False

4. Shortness of breath, a headache that won't go away, and sudden swelling of face or hands are all signs of preeclampsia.

   True False

5. I should call my doctor or 911 if I experience any of the above symptoms.

   True False

Appendix F

Letter of Support

To whom it may concern,

This letter is to provide notification and confirmation of our support for Valeria Jimenez and Elena Vulgamott's Doctor of Nursing Practice (DNP) project. The providers and support staff of Communicare grant permission to Valeria Jimenez and Elena Vulgamott to complete their DNP project within the clinic. The purpose of the project is to implement a standardized enrollment process, follow-up monitoring, education, and documentation process for the OB high risk program initiative for gestational diabetes and pregnancy induced hypertension. The goal is to decrease the complication from gestation diabetes and hypertension and increase overall mother and baby outcomes by standardizing the clinic's high-risk OB initiative and provide telehealth monitoring and education in addition to regular OB visits. We give Valeria Jimenez and Elena Vulgamott access to patient charts through completion of the DNP project. Obstetrician-gynecologist, Dr. Nicole Van De Putte has approved and is aware of the project purpose. Patricia Gutierrez, BSN, RN is overseeing the project in which the components have been discussed and agreed upon.

Sincerely,

Nichole Van De Putte, MD F.A.C.O.G
Director of Obstetrics and Gynecology
Communicare Health Centers
3066 E. Commerce St.
San Antonio, Tx, 78220

Patricia Gutierrez BSN, RN
Communicare Health Centers
3066 E. Commerce St.
San Antonio, Tx, 78220