Improving Adherence to Public Health Follow-up Care Standards for Underserved Women with Abnormal Cervical Cytology

Ginger Phillips

The University of Alabama

College of Nursing

Faculty Advisor: Dr. Amy Lee

Clinical Advisor: Dr. Krysta Hood

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Abstract

Background and Review of Literature

Although the overall incidence of cervical cancer has declined over the past few decades, this disease persists, particularly among underserved, low-income, minority women. Patient navigators can assist this vulnerable population group to achieve recommended follow-up care after an abnormal screening test by identifying and eliminating barriers associated with social determinants of health (SDOH). "The Protocol for Responding to and Assessing Patient's Assets, Risks, and Experiences"" (PRAPARE) is an evidence-based standardized national social risk assessment tool that can be utilized in patient navigation programs in order to improve health outcomes.

Purpose

The purpose of this quality improvement (QI) project was to implement a patient navigation program utilizing the PRAPARE-guided method to improve adherence to follow-up care standards in women with abnormal screening cervical cytology from rural public health clinics that serve low-income minority women.

Methods

Show rates for four public health colposcopy clinics before and after the implementation of the PRAPARE intervention were measured and compared using Chi-Square analysis. The show rates included those appointments kept under usual follow-up care prior to the COVID-19 pandemic, appointments kept during the height of the COVID-19 pandemic, and those appointments kept after the implementation of PRAPARE-driven patient navigation.

Implementation Plan/Procedure

PRAPARE-guided patient navigation, conducted by the primary investigator via phone calls and mail, allowed the navigator to recognize and respond to SDOH reported by the women that may have prevented them from adhering to public health follow-up care standards by providing them with community referrals and resources. PRAPARE-guided navigation was administered to 37 participants scheduled to received abnormal cervical cytologic follow-up care at four county colposcopy clinic sites over a three-month period.

Results

Pre-COVID and COVID colposcopy clinic show rates under usual follow-up care were measured and compared to the show rates of the clinics after implementation of PRAPARE-driven patient navigation for four county health departments. The show rates for each health clinic were combined and compared for an overall total using Chi-Square analysis. The overall analysis revealed statistical significance ($p<.05$) x^2 (6.182, $p=0.012903$) for pre-COVID show rates (71%) versus post implementation show rates (87%). The overall COVID show rates (71%) versus post implementation show rates (87%), x^2 (5.0173, $p= 0.024301$) were also statistically significant.

Conclusions

Adherence to recommended follow-up was improved in the patient cohort following evidence-based patient navigation. By utilizing a team approach, patient navigation programs in the public health setting have the potential to improve cervical disease outcomes, reduce the incidence and mortality rates of cervical cancer, and reduce costs associated with treatment.

Keywords: abnormal cervical cytology, adherence, barriers to care, cancer cervical cancer, diagnostic resolution, follow-up care, patient navigators, patient navigation, patient navigation program, PRAPARE, public health, social determinants of health

Improving Adherence to Public Health Follow-up Care Standards for Underserved Women with Abnormal Cervical Cytology

While the prevalence of cervical cancer has decreased over the past 25 years, this disease continues to be a significant healthcare concern that disproportionately affects minorities (National

Cancer Institute [NCI], 2017; Nonzee et al., 2015). Many factors can be attributed to the overall decline in the incidence of cervical cancer. These include more effective cervical cancer screening practices by clinicians, changes in screening guidelines, an increased number of women who receive age-based screenings, and the development of the Human papillomavirus vaccine (HPV) vaccine (Saslow et al., 2012; United States Preventive Task Force [USPSTF], 2018). Precancerous lesions detected on cervical cytology can be treated before they develop into invasive cancer, making cervical cancer highly preventable in the United States (U.S.) (USPSTF, 2018). Medical improvements notwithstanding, the failure of women to adhere to recommended follow-up after abnormal cytology is detected can lead to the development of invasive cervical cancer. Despite attempts to expand impartiality in the U.S. healthcare system, not all Americans have equal access to healthcare, nor do they have comparable health outcomes. Low-income individuals, racial and ethnic minorities, and other vulnerable populations often have higher rates of disease, fewer treatment options, and decreased access to care (Nonzee et al., 2015; Stanhope & Lancaster, 2016). Patient navigation programs that work by identifying barriers that impede follow-up care have proven to reduce cervical cancer incidence, mortality, and cost, particularly among underserved women (Bensink et al., 2014; Luckett, Pena, Vitonis, Bernstein, & Feldman, 2015).

Background

The NCI estimated that 291,704 women were living with cervical cancer in the U.S. in 2017. The American Cancer Society [ACS] (2021) estimated that in 2021, 14,480 new cases of invasive cervical cancer would be diagnosed, and 4,290 women would die from this highly preventable disease in the U.S. Despite the availability of cytologic screening, disparities in

cervical cancer mortality and incidence by race persist. According to the latest available data from the NCI (2017), African American women have the highest mortality rate of cervical cancer of all races at 3.4 per 100,000 women, while Hispanic women have the highest incidence of new cases at 9.2 per 100,000 women. Torre et al. (2015) compared the cervical cancer mortality rate of African American women in the U.S. to that of women living in third world countries. Although African American women have the highest cervical cancer mortality rates, they comparatively have higher cytologic screening rates than any other racial or ethnic group (National Center for Health Statistics, 2016). Limited access to care, cost, and other social determinants of health may explain the disproportionate impact of cervical cancer in African American women.

The use of patient navigation can address these barriers to care. Patient navigation is a model of care that aims to reduce an existing health disparity in a community by addressing individual barriers to care by connecting them to existing local and regional resources utilizing a team approach (Freeman & Rodriguez, 2011). According to a meta-analysis by Wells et al (2008), that defined patient navigation as well as the goals and objectives of the Patient Navigation Research Program (PNRP), stated that patient navigation should also be used to reduce delays in accessing care and be delivered for a well-defined period of time that focuses on a limited set of cancer related care services related to that episode until follow-up is complete.

The first patient navigation model, designed by Harold Freeman in the 1990s, demonstrated that patient navigation significantly increased adherence to resolution of abnormal screening mammogram findings by eliminating barriers to care in African American women from Harlem, New York (Freeman, Muth, & Kerner, 1995). Because of the findings from this landmark study, other grant-funded research such as the PNRP emerged and yielded similar results. The PNRP took place between 2007-2010 and was the first and largest multicenter national clinical trial that

examined the benefits of patient navigation, comparing usual care versus patient navigation in regards to time to diagnosis or treatment in patients with breast, cervical, colorectal, and prostate cancer (Freund et al., 2014; NCI, 2015). The PNRP initiative, funded by the NCI with support of the ACS and directed by the Center to Reduce Community Health Disparities (CRCHD), awarded five-year research grants to nine academic institutions across the U.S. The PNRP was developed to reduce or eliminate cancer health disparities while examining the cost-effectiveness and efficacy of the patient navigation program and reaching patients in communities that experienced disproportionate cancer burdens (NCI, 2015, Wells et al., 2008).

Freund et al. (2014) conducted a meta-analysis of the PNRP, finding a statistically significant benefit of navigation on timely cancer care at 91 to 365 days for diagnostic resolution (aHR= 1.51; 95% CI=1.23 to 1.84; $p < .001$) and treatment initiation (aHR =1.43; 95% CI =1.10 to 1.86; $p < .007$). The study concluded that patient navigation had more significant benefits in underserved areas with more delays in follow-up care under usual care practices. Numerous PNRP studies exist that evaluate patient demographics such as race and socioeconomic status, concerning follow-up, barriers to care, cost, clinic type, and adherence to diagnostic resolution following an abnormal cancer screening result, finding similar results (Bensink et al., 2014; Ko et al., 2016; Krok-Schoen, Brewer et al., 2015; Krok-Schoen Kurta et al., 2015; Paskett et al., 2016; Ramachandran et al., 2015, Rodday et al., 2015).

In order for healthcare organizations to implement patient-focused interventions such as patient navigation programs, they must have an understanding of not only the clinical but non-clinical intricacy of their patients. This understanding can be achieved through the use of the Protocol for Responding to and Assessing, Patients' Assets, Risks, and Experiences (PRAPARE) standardized social risk assessment tool (National Association of Community Health Centers

[NACHC], 2016). PRAPARE, an instrument developed by the NACHC and its partners, for use among U.S. community health populations, was designed to align with national social determinants of health initiatives such as Healthy People 2020 (NACHC, 2016). The PRAPARE social risk assessment tool consists of a set of four national core measures as well as a process for addressing the social determinants at both the patient and population level (NACHC, 2016). The core measures included in the survey instrument are; personal characteristics, family and home, money and resources, and social and emotional health (NACHC, 2016). The PRAPARE instrument is used to assist healthcare providers achieve population health goals by acting upon reported social determinants of health, while improving health outcomes and reducing costs related to treatment (NACHC, 2016). Because the PRAPARE survey instrument is freely available to the public; there was no need to seek permission from the NACHC to utilize the tool as a guide for patient navigation services for this project (see Appendix A).

In 2018, the Alabama Department of Public Health (ADPH) leadership staff determined a final list of 5-year strategic goals and objectives for the department in order to address areas of need while influencing existing resources (ADPH, 2020). The objectives for the ADPH strategic plan for 2019-2023 include the following: health outcome improvement, financial sustainability, workforce development, organizational adaptability, and data-driven decision making (ADPH, 2020). Each objective has a specific goal and includes strategies that should be utilized in order to obtain each goal and measures by which to appraise the data. Patient navigation could be an approach in which to meet the ADPH strategic goals and objectives of health outcome improvement, organizational adaptability, and data-driven decision making (see Appendix B).

Problem Statement

Underserved female clients who receive cervical cancer screenings from rural county health departments often fail to adhere to Pap smear follow-up recommendations after an abnormality is found (Alabama Department of Public Health, 2017). Failure to adhere to these recommendations can increase mortality rates for this vulnerable population. Therefore, an area amendable for improvement is increasing adherence rates to follow-up care standards in underserved women with abnormal cervical cytology results. The addition of a patient navigator into the current abnormal Pap smear follow-up process could potentially accomplish this improvement. This evidence-based intervention would allow the patient navigator to recognize and respond to social determinants of health guided by the PRAPARE standardized social risk assessment tool, increasing follow-up adherence rates, and potentially decreasing cervical cancer incidence and mortality in this vulnerable population group. Therefore, the PICOT question for the proposed quality improvement project is as follows: In women in an underserved public health setting with abnormal cervical cytology, does patient navigation guided by the PRAPARE standardized social risk assessment tool improve adherence with recommended follow-up over three months compared to follow-up without navigation?

Organizational "Gap" Analysis of Project Site

According to the latest data from the Centers for Disease Control and Prevention [CDC], in 2017, 238 new cases of cervical cancer were diagnosed in Alabama, while 89 women in the state died from this highly preventable disease (CDC, 2017). Human Rights Watch (2018), declared that women from Alabama are dying from cervical cancer at rates higher than all other states in our nation, particularly in the “black belt" region of the state, which includes 17 counties that extend

across the mid-central area of Alabama (see Appendix C). In this region of the state, there are a limited number of healthcare providers, with the majority of the population consisting of uninsured, low-income minorities (Human Rights Watch, 2018; University of Wisconsin Population Health Institute, 2019). The women described in this vulnerable population group often receive cervical cancer screenings from public health departments within their communities. There are four county health departments within the 17 county "black belt" region of Alabama which serve as locations for ADPH colposcopy services. These health departments are located in Bibb, Butler, Dallas, and Montgomery counties (see Appendices C and E).

In 2019, the ADPH performed a total of 15,916 pap smears while the number of abnormal cytologic findings requiring follow-up; (Atypical Squamous Cells of Undetermined Significance (ASCUS), High-Grade Squamous Intraepithelial Lesion (HGSIL), or higher result was 2,583 or 16.7% (K. Hood, personal communication, November 16, 2020). The ADPH abnormal Pap smear follow-up process is protocol-driven and adopted from clinical practice guidelines from the American Society for Colposcopy and Cervical Pathology (ASCCP), American College of Obstetrics and Gynecology (ACOG), and the Alabama Breast and Cervical Cancer Early Detection Program (ABCCEDP), in regards to the screening, management, and follow-up process for women ages 21-65 (ADPH, 2019). This process, carried out by the nurses in each of the county health departments, has specific steps regarding patient notification of the abnormality based on severity. The current follow-up process does not support the use of patient navigators as a standard of care in assisting not only the clients to follow-up, but also the nurses, in regards to making phone calls and sending letters to the clients.

Currently, the Alabama Breast and Cervical Cancer Early Detection Program (ABCCEDP) is the only program in Alabama that provides low-income, underinsured, or uninsured women

access to cervical cancer screening and diagnostic services. This federally funded CDC program recognizes patient navigation as an evidence-based intervention (CDC, 2020). This intervention requires that patient navigators perform the following activities: (a) assess barriers to cancer screening or treatment; (b) provide patient education and support; (c) resolve patient barriers; (d) track and follow-up over at least two patient contacts to monitor completion of screening, diagnostic resolution, or treatment; (e) collect outcomes data in regards to patient navigation such as adherence; and (f) collect patient-reported outcomes related to cancer screening, diagnosis or treatment (Barrington et al., 2019). Despite this recommendation, patient navigation through the ABCCEDP as defined by the CDC is currently not being formally utilized by grantees within the state of Alabama due to fear of exceeding funds needed for breast and cervical screening and diagnostic services such as colposcopy (N. Wright, personal communication, March 24, 2019). The CDC provides funding for Registered Nurses (RN's) who are employed by the ABCCEDP as regional coordinators who work to provide community linkage services which does include navigation efforts mainly related to screening at the state level (C. Hayhurst, personal communication. January 6, 2021).

The ADPH currently receives Title X supplemental grant funding for the community advisor care coordination program. The goal of this program is to increase the number of low-income individuals in underserved areas who receive quality family planning and related health services within the ADPH with the use of care coordination (ADPH, 2021). The community health advisors (CHA's) provide assistance to those individuals who receive family planning and other related health services in 13 Alabama counties (see Appendix D), some of which make up make of the impoverished black belt region of the state (ADPH, 2020), However, the CHA's are available to assist ADPH patients at any county health department who are in need of care

coordination (R. Smay, personal communication, January 6, 2021). The CHA's can provide navigation services through care coordination to those patients who are in need of diagnostic resolution of their abnormal cervical cytology (ADPH, 2021). However, there are currently only 2 CHA's available to provide care coordination services for the state public health system as a whole. The CHA's are not routinely utilized in those counties in which they are not assigned possibly due to the lack of presence of the CHA in all county clinics and a lack awareness of the extent of the care coordination program by the staff at the local level (R. Smay, personal communication, January 6, 2021).

Therefore, patient navigation efforts are not being formally applied at the local level or within county health departments. The RN's and Nurse Practitioners (NP's) who manage the breast and cervical follow-up in Alabama county public health departments are responsible for these activities per ADPH protocol, which includes practice guidelines from the ABCCEDP (ADPH, 2019). Due to time constraints and limited staff, patient navigation activities such as identification and resolution of barriers to abnormal cytologic follow-up care, as recommended by the CDC, are not being carried out by the nursing staff who are responsible for abnormal breast and cervical findings at the county level. By conducting an evidence-based quality improvement project that includes the addition of a patient navigator into the current abnormal Pap follow-up process, this strategy could potentially support policy requirements of the NBCCEDP, raise awareness of the community health advisor program, while meeting objectives of the ADPH's strategic plan for 2019-2023 found in Appendix B, such as improving health outcomes, organizational adaptability, and data-driven decision making (ADPH, 2020).

The Review of Literature

PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and MEDLINE were the three databases utilized in the search for relevant studies regarding patient navigation programs in women with cervical abnormalities. The following search terms were used in each database: patient navigation program, patient navigator, cervical cancer, cancer, barriers to care, PRAPARE, public health, and social determinants of health. Boolean operators such as AND and OR were also used to connect the search terms. Inclusion criteria included literature from 2014-2020, full text, and English language. Studies that did not include at least one of the four cancer sites (breast, cervical, colon, prostate) studied in the Patient Navigation Research Project (PNRP) were excluded. However, the primary investigator focused on studies which included patient navigation in regards to cervical cancer over the other three cancer sites. Studies in which patient navigation focused on screening efforts rather than follow-up were excluded. This search yielded 19 research articles that met the inclusion criteria. The studies were then evaluated using the Melnyk model of critical appraisal and assigned a level of evidence (Melnyk, 2015). Of the 19 studies reviewed, the majority of them were grant funded clinical trials from the PNRP initiative (Bensink et al., 2014, Ko et al., 2016; Krok-Schoen, Brewer et al., 2015; Krok-Schoen, Kurta et al., 2015; Paskett et al., 2016; Ramachandran et al., 2015; and Rodday et al., 2015). There was one hallmark pilot study (Freeman et al., 1995), two randomized controlled trials (Molina et al., 2018; Percac-Lima., 2015) two cost-consequence analyses (Allaire et al., 2019; Li et al., 2017), one nonrandomized control trial (Chavarri et al., 2019), two program evaluation analyses (Brown et al., 2019 and DeGroff et al., 2016), three cross-sectional correlational studies (Hui et al.; Kusnoor et al., 2018; and Weir et al., 2020), and one prospective observational cohort study (Luckett et al., 2015).

In order to evaluate the effectiveness of the utilization of patient navigation, the history of patient navigation was reviewed while factors associated with follow-up of abnormal findings were identified and compared in the literature. These factors include the following: (a) barriers to care; (b) social determinants of health; (c) time to diagnostic resolution; (d) clinic type; and (e) cost. The literature was reviewed based on these factors in order to succinctly describe the need to establish a PRAPARE-guided patient navigation program for underserved women with abnormal cervical cytology within the public health setting in order to increase adherence to recommended follow-up care or diagnostic resolution.

Barriers to Care

Because patient navigation can be considered a "barrier-related" care intervention, the majority of research related to patient navigation centers on the participants' reported barriers to care. Patient navigators are trained to recognize potential barriers to care and assist participants in overcoming these barriers in order to obtain diagnostic resolution of abnormal screening tests. By recognizing the prevalence and types of barriers to follow-up care within the literature, this provided critical information to the primary investigator who implemented a PRAPARE-guided patient navigation program in a public health agency for underserved women with abnormal cervical cytology.

In Freeman's landmark effort to decrease barriers to cancer care in low-income African American women, the participants reported common barriers which included the following: (a) financial burdens, (b) medical system barriers, (c) communication barriers, and (d) emotional barriers (Freeman, et al., 1995). Krok-Schoen, Brewer, et al. (2015) examined demographic and psychosocial predictors of barriers to diagnostic resolution among individuals with a cancer screening abnormality enrolled in one of nine Ohio Patient Navigation Research Program

intervention clinics. Of the 424 participants in the patient navigation clinics, 151 reported a barrier to follow-up care within the first 90 days of the study (Krok-Schoen, Brewer, et al., 2015). Similar to other studies reviewed, the most frequently reported barriers in the study by Krok-Schoen, Brewer, et al. (2015) were as follows: (a) mistaken views about a test or treatment (b) communication problems with their provider, and (c) difficulties with scheduling (Freeman et al., 1995; Hui et al., 2014; Ramachandran et al., 2015).

In a study examining barriers to follow-up among low-income, inner-city women scheduled for an initial colposcopy following an abnormal Pap smear, Hui et al. (2014) found that 81.4% of 2010 women reported having at least one barrier to adherence and almost half reported two or more barriers. The three most common barriers reported in the Hui et al. (2014) study were knowledge/risk perception, distress, and coping skills, similar to the most commonly reported psychosocial barriers as noted in similar research (Freeman et al., 1995; Krok-Schoen, Brewer, et al., 2015, Ramachandran et al., 2015).

Ramachandran et al (2015) examined the effect that the presence of barriers had on time to diagnostic resolution of abnormal breast or cervical cancer screening tests finding that, similar to other studies reviewed, the most common barriers were language, system problems with scheduling, and fear (Freeman, et al., 1995; Krok-Schoen, Brewer, et al., 2015). The presence of these barriers negatively influenced time to resolution of the screening abnormalities as found in other studies reviewed (Krok-Schoen, Brewer, et al., 2015; Ramachandran et al., 2015; Rodday et al., 2015). The literature reviewed provided evidence of similarities in reported barriers to follow-up care and heightened the primary investigator's knowledge of the significance of assessing for barriers to care in this project using PRAPARE-guided navigation as the intervention.

Social Determinants of Health

Social determinants of health (SDOH) are conditions in the environment in which people are born, grow up in, live, work, and age that affect their health outcomes and risks (Office of Disease Prevention & Health Promotion, 2019). It is important for healthcare providers to address SDOH in order to be cognizant of health inequities that exist among population groups in order to improve health outcomes. Health equity is achieved when there are no health disparities among people of different social backgrounds (CDC, 2018). There are five key elements of SDOH: economic stability, education, social and community context, health and healthcare, and neighborhood and environment (Office of Disease Prevention & Health Promotion, 2020).

The committee for the Institute of Medicine's landmark report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* (Nelson, 2002), presented a model for examining health disparities that demonstrates how SDOH impact the patient's interaction with providers and other resources within the health system, and how these factors ultimately influence health outcomes. Health outcomes are significantly influenced by structures and systems, including social factors (socioeconomic status, educational and job opportunities, social support mechanisms), health system factors (insurance coverage, access to a usual source of care provider, ease of access to health care services determined by availability of health professionals, hospitals, and other providers), and environmental factors (housing, segregation, neighborhood violence, food) and are well documented in the literature examining social determinants of health (Office of Disease Prevention & Health Promotion, 2020; Stanhope & Lancaster, 2016). Despite the importance of adopting a model for examining SDOH, no national standardized screening survey existed until the PRAPARE social risk assessment Toolkit was launched in 2016 (Weir et al., 2020). Since this time, PRARPARE has become a prevailing screening tool for community health centers (Weir et al., 2020). The literature reviewed assessed the social determinants of health in

clients with abnormal cancer screening results in order to present and document the characteristics of the navigated participants. Additionally, the use of the PRAPARE survey was reviewed in the literature.

In a recent cross-sectional study, Weir et al. (2020) described the findings from the national PRAPARE implementation. The researchers found through the use of the PRAPARE survey across three health centers that the mean number of SDOH risks per patient in three cohorts was 7.2 out of 22 social risks. The most common SDOH reported in this study included limited English proficiency, less than high school education, lack of insurance, high stress levels, and unemployment. These findings suggest that PRAPARE intervention strategies are essential to promote change at the provider, county and state level in order to assist patients who face socioeconomic barriers to gain improved health outcomes such as decreased cervical cancer incidence and mortality rates.

In a cross-sectional pilot study by Kusnoor et al (2018), all items of the PRAPARE survey along with items from the National Academy of Medicine (NAM) questionnaire and the Federal Reserve Board's Survey of Household Economics and Decision-making (SHED) were used in a community health center that provides care for low-income medically underserved populations in order to provide a better understanding of the execution of a questionnaire that assessed SDH and behavior. Of the 100 participants who completed the hybrid questionnaire, 96 of them had at least one unmet need (Kusnoor et al., 2018). The findings from this study support the need for assessing SDOH through the use of PRAPARE intervention strategies in community health settings such as public health in order for providers be aware of social risk factors that affect health outcomes in vulnerable population groups.

Similar to the other studies reviewed, the women in the Ramachandran et al. (2015) study who reported barriers were racial or ethnic subgroups, did not speak English, and held public health insurance (Freeman et al., 1995; Krok-Schoen, Brewer, et al., 2015; Hui et al., 2015; Luckett et al., 2015). Education, race, income, employment, clinic type, and insurance were considerable predictors of admitting a barrier to care (Krok-Schoen, Brewer, et al., 2015). Specifically, those participants who were non-white, had lower education, were unemployed or retired, had wages of less than 50,000 per year, or were uninsured, were largely expected to report a barrier to follow-up care (Krok-Schoen, Brewer, et al., 2015).

Luckett et al. (2015) recognized factors associated with missed appointments, finding that women who failed to attend an appointment were African American women with public insurance. This finding was consistent with other studies reviewed regarding barriers such as race and type of insurance (Freeman et al., 1995; Ko et al., 2016; Krok-Schoen, Brewer, et al., 2015). The women in the Hui et al study (2014) was inner-city African American, single, never married, unemployed, and reported an educational level of high school, trade, or GED such as those women in the landmark study by Freeman et al (1995). The significant sociodemographic similarities noted throughout the literature reviewed further validates the need for assistance in the form of PRAPARE-guided patient navigation for minority women with socioeconomic barriers.

Time to Diagnostic Resolution

It was found in the landmark study by Freeman et al. (1995), that those women who had a patient navigator to assist them in overcoming barriers completed recommended breast biopsies at a rate of 87.5% as compared with a rate of 56.6% among the women who did not have the help of a patient navigator. Brown, Kaufman, Ariail, and Williams (2019) found in a recent study of the Louisiana Breast and Cervical Health Program that > 95% of underserved women with breast and

cervical abnormalities achieved timely diagnostic resolution of their abnormality with the use of a patient navigation program. Similarly, Chavarri et al. (2019), evaluated a patient navigation program in Mexico, finding that 91% of underserved cancer patients obtained appointments at a cancer care center within 3 months.

Patient navigation also eliminated delays in diagnostic resolution to <70 days in women with disparities such as employment status, housing style, and marital status in a clinical trial of the PRNP by Rodday et al. (2015). Women with low-risk cervical dysplasia (LGSIL, AGC, or ASCUS +HPV) were found to have improved time to diagnostic follow-up, with statistically significant effects found in non-English speaking Hispanic women (OR 5.88, 95% CI 2.81-12.29) in the PNRP clinical trial by Paskett et al (2016). In the Ko et al. (2016) study patient navigation significantly reduced time to diagnostic resolution in African American breast and cervical cancer care participants as compared to Hispanic and non-Hispanic white participants. Ramachandran et al (2015) concluded that the more barriers to care discovered by a navigator, the slower the time to resolution in women with an abnormal cervical or breast cancer screening test when the researchers examined the correlation between the number of barriers reported among women navigated for abnormal tests and timeliness of follow-up care in the Boston PNRP.

Luckett et al. (2015) and Percac-Lima et al. (2015) evaluated the effect of patient navigation on no-show rates in cancer care finding it improved adherence to follow-up. Luckett et al. (2015) found that colposcopy clinic no-show rates declined from 49.5% to 29.5% after the implementation of a patient navigation program ($p<0.0001$), while Percac-Lima et al. (2015), in a randomized controlled trial, reported the no-show rate for the intervention group to be 10.2% compared with 17.2% in the control group ($p<.001$). The findings of the studies reviewed in regards to the effectiveness of patient navigation on time to diagnostic resolution of cancer

abnormalities and no-show appointments significantly supports the need for patient navigation programs for underserved women who are in need of timely diagnostic resolution of abnormal cervical cytology.

Clinic Type

There is a gap in research regarding how clinic type affects follow-up care in women with abnormal cervical cytology particularly in the public health setting. In a large individual level randomized control trial, Molina et al. (2018), assessed the efficacy of the patient navigation in a medically underserved (PNMUA) study design on breast cancer care uptake conducted from June 2011 through June 2014 in three hospitals in Chicago that were designated as medically underserved areas. The researchers found that navigated women had greater odds of obtaining a mammogram 2 years after receiving a prior benign screening mammogram due to low-intensity navigation such as telephone and mail-based navigation efforts. Krok-Schoen, Kurta, et al., (2015) sought to determine how clinic type and patient characteristics affected time to resolution after an abnormal cancer screening test in patients enrolled in a patient navigation intervention at a Federally Qualified Health Clinic (FQHC) versus an Academic Medical Center (AMC). Although the clients who received care at the FQHC had a slower rate of time to resolution than the AMC patients, and were considerably more likely to state at least one barrier to follow-up, it was concluded that clinic type was not significantly associated with time to resolution (Krok-Schoen, Kurta, et al., 2015). The findings of this study indicated that time to resolution after an abnormal screening test is influenced by the patient population served rather than the clinic type. The gap in literature regarding how clinic type affects follow-up care in women with abnormal cervical cytology supports the need for further research concerning the use of patient navigation within

public health agencies for underserved women who are in need of diagnostic resolution of their cervical screening abnormality.

Cost

Li, Carlson, Villarreal, Meraz and Pagán (2017) assessed the cost-effectiveness of a community-based patient navigation program finding a per-capita gain of 0.2 years of life expectancy with an additional 0.06 quality-adjusted life year. In the Li et al (2017) study the patient navigation program cost was $748 for each quality-adjusted life year gained with respect to no intervention, indicating that the program was highly cost effective. Bensink et al (2014) estimated the cost of navigation to be $275.00 per patient. A recent study by Allaire et al (2019), estimated the cost-effectiveness of patient navigation for breast cancer screening in the National Breast and Cervical Cancer Early Detection Program (NBCCEDP), finding patient navigation to be a cost-effective way to improve adherence to screening and diagnostic resolution in women with abnormal mammogram results with a greater number of mammograms per woman, lower lifetime mortality from breast cancer, and fewer missed diagnostic resolution appointments. Programs such as the NBCCEDP, funded by the CDC, can assist qualified uninsured women with the cost of recommended follow-up and patient navigation services after an abnormal Pap smear is detected and are available in public health agencies (CDC, 2019). However, the Breast and Cervical Cancer Mortality Prevention Act of 1990, which established the NBCCEDP, currently mandates that at least 60% of NBCCEDP funds be used to support direct clinical services, leaving the remainder of the funds to be allocated for activities such as patient navigation (DeGroff et al., 2015). The Patient Protection and Affordable Care Act of 2010 made provisions for and recognized patient navigation as an important factor for improving the health of underserved populations (Krok-Schoen, Kurta et al., 2015). Nonetheless, there is no single payment source for

patient navigation despite research regarding its effectiveness. Krok-Schoen, Kurta, et al., (2015) described the 2012 statement regarding the cost of patient navigation made by The American College of Surgeon's Commission on Cancer, which asserted that facilities seeking their accreditation should have patient navigation programs in place by January 1, 2015.

Due to the lack of funding for these programs, the Patient Navigation Assistance Act was established in 2014 as a way to provide reimbursement for patient navigation services (Krok-Schoen, Kurta, et al., 2015). Because this reimbursement has not progressed any further, many facilities have been searching for cost-effective strategies to execute patient navigation programs. Bensink et al. (2014) concluded that by identifying only those clients in need of patient navigation, this would lead to a reduction in healthcare costs. By concentrating solely on women who report barriers, patient navigation programs can be more efficient and cost-effective. The impact of national funding issues and the findings of the cost-analysis studies regarding the use of patient navigation validates the need for agencies such as public health who serve low-income populations to develop cost-effective ways in which to establish patient navigation programs.

Evidence-Based Practice: Verification of Chosen Option

This quality improvement project improved patient adherence to follow-up care standards following abnormal cervical cytology in underserved women who sought care from public health departments in Alabama. Therefore, the PICOT question for the quality improvement project was as follows: In women in an underserved public health setting with abnormal cervical cytology, does patient navigation guided by the PRAPARE standardized social risk assessment tool improve adherence with recommended follow-up over three months compared to follow up without navigation?

Theoretical Framework

Because Alabama's high rate of cervical cancer can be attributed to socioeconomic, behavioral, environmental, and policy influences, the Social-Ecological Model (SEM) was the framework that was used to guide the intervention for this public health crisis (see Appendix F). This model guided the intervention of PRAPARE-driven patient navigation in order to evaluate the effectiveness of increased adherence to diagnostic resolution or follow-up after abnormal cervical cytology was detected in underserved women who sought cytologic screenings from Alabama public health departments. The SEM model assumes that interactions between individuals and their environmental influences are mutual (Salihu, King, Marty, & Whiteman, 2015). The SEM can be visualized as a rainbow-like figure of five bands with the individual being at the core (CDC, 2013). Surrounding the individual are four other bands/levels of influence: interpersonal processes, organizational or institutional factors, community features, and public policy levels (CDC, 2013; Salihu et al., 2015).

Application of the SEM in the evaluation of a patient navigation program

Individual or intrapersonal level

The individual or intrapersonal level of the SEM represents knowledge, awareness, beliefs, and perceptions of individuals, influenced by physical and social environments (Salihu et al., 2015). This level of the SEM represents the underserved minority woman who had abnormal cytologic findings. At this level, the patient navigator attempted to influence the vulnerable population's knowledge, attitudes, and beliefs about the benefits of accessing affordable diagnosis and treatment of her abnormal cervical cytology, using the PRAPARE social risk assessment tool. It was at this level of the SEM that the patient navigator began to identify social determinants of health that caused delays in the follow-up process. Barriers to follow-up care, similar to those

reported in the literature review, were identified through an assessment of the core measures of the PRAPARE surveys in this project, included barriers related to personal characteristics, family and home, money and resources, and social and emotional health.

Interpersonal level

At the interpersonal level, the individual's family, friends, patient navigator, and health care provider are essential components of the SEM, representing sources of support for the patient cohort (Salihu et al., 2015). It was at this level of the SEM that the primary investigator assessed the individuals' social and emotional health using the PRAPARE survey tool.

The primary investigator also served as a support system for the women who participated in PRAPARE-driven navigation at this level of the SEM by identifying and responding to barriers to follow-up care.

Organizational or institutional level

A healthcare institution's rules, regulations, and general attitude toward research, shape the organizational or institutional level of the SEM model (Salihu et al., 2015). This level of the SEM represents cervical cancer prevention activities such as the ADPH colposcopy clinics that were developed at the organizational level to assist underserved women with barriers to abnormal cytologic follow-up care. PRAPARE-guided navigation activities, initiated by the primary investigator, also represent organizational level activities through the development of this quality improvement project within the ADPH. These activities are intended to facilitate individual behavior change by influencing organizational systems and policies (CDC, 2013). The development of a patient navigator program within county health departments as a statewide policy would be one way in which this intervention would be appropriate for this level of the SEM.

Community-level

This level of the SEM represents cervical cancer prevention activities implemented at the community level. These activities are intended to facilitate individual behavior change by utilizing community-level institutions for sources of support (CDC, 2013). At this level of the SEM, the patient navigator utilized available community resources, such as transportation and county health department case management services, to ensure that the patient got diagnostic resolution of their abnormality from the ADPH, in response to barriers reported from the PRAPARE social risk assessment tool such as lack of transportation and reports of depression and domestic violence.

Public level

The outermost level of the SEM represents cervical cancer prevention activities at the policy level. These activities involve interpreting and implementing existing policies (CDC, 2013). At this level of the SEM, the utilization of a patient navigation program represents a potential source of support needed within the ADPH to promote evidence-based policy and protocol changes to stakeholders in regards to increasing adherence to abnormal Pap follow-up recommendations for underserved women in Alabama, thereby, potentially decreasing mortality rates of this disease. This policy change could support patient navigation efforts as guided by the NBCCEDP, the Title X CHA program, and the 5-year goals of the ADPH's strategic plan for 2019-2023.

In conclusion, by applying the SEM as the framework to guide the patient navigation intervention within the public health system, adherence to diagnostic resolution was evaluated in terms of behavioral, socioeconomic, environmental, and policy influences. This intervention could be a key factor in efforts to decrease incidence and mortality rates of cervical cancer in underserved, minority, low-income women of Alabama.

Goals, Objectives, and Expected Outcomes

The main goal of this project was to improve patient adherence to follow-up care standards following abnormal cervical cytology in underserved women who were referred to public health colposcopy clinics. The findings of this project support the goal of an established patient navigation program within public health clinics using already available and trained social workers to assist with the abnormal Pap smear follow-up process which is currently performed by nurses in public health clinics within the west-central district. The main objective of this project included not only identifying but responding to SDOH reported by the women who require follow-up care using PRAPARE-guided patient navigation. This objective was achieved by providing resources and referrals as needed to the population group in order to eliminate barriers to follow-up care while providing safety for the women.

The expected outcomes of this project were that there would be an increase in the number of women who kept their appointments at the public health colposcopy clinics with the assistance of PRAPARE-guided patient navigation over 3 months. Another expected outcome from this project is that the findings from this project would increase stakeholder awareness of patient navigation and support for the need for a patient navigation program as a standard of care within the ADPH. By utilizing already available resources such as the ABCCEDP and the Title X community health advisor program, patient navigation could become a vital part of the ADPH abnormal Pap smear protocol.

Project Design

The design for the proposed project included the use of a quality improvement evidence-based practice intervention tool called “Protocol for Responding to and Assessing Patients’ Assets, Risks, and Experiences” (PRAPARE). This 21-item social risk assessment tool was implemented through a patient navigation program among four ADPH colposcopy clinics with the desired outcome

being an improvement in adherence to follow-up care standards in underserved women following abnormal cervical cytology within the ADPH (see Appendix A).

PRAPARE is a stakeholder-driven tool that consists of a set of national core measures as well as a process for addressing the social determinants at both the patient and population levels (NACHC, 2016). The core measures included in the open-access survey instrument are: personal characteristics, family and home, money and resources, and social and emotional health (NACHC, 2016). Identifying and addressing social determinants in the public health setting can represent one strategy for improving health outcomes for this vulnerable population group. Quantitative data, such as show rates before and after the implementation of PRAPARE-driven patient navigation, was utilized to gauge the success of the program (See Table 1 and Figure 1 and Figure 2).

Project Site and Population

The setting of the project took place at the clinical office within the west-central public health district at the Tuscaloosa county health department. This public health district includes the following counties: Lamar, Fayette, Pickens, Tuscaloosa, Greene, Sumter, Hale, Bibb, Perry, Chilton, and Walker. (see Appendix E). Human Rights Watch (2018) reports that there is a high incidence of cervical cancer in the "black belt" region of the state, with four of the 11 counties in the west-central district located in this region of the state (see Appendix C).

The population group that provided data for the quality improvement project included a convenience sample of family planning patients, some of whom were also enrolled in the Alabama Breast and Cervical Cancer Early Detection Program (ABCCEDP) due to their need for diagnostic resolution of their abnormal cytologic finding. The family planning program provides breast and

cervical cancer screening services and contraceptives to women up to age 55 regardless of income or insurance. The ABCCEDP program provides breast and cervical cancer screening and follow-up, including colposcopy, for women who meet eligibility guidelines such as age, income, and insurance.

Inclusion criteria for this project included women ages 21-65 with abnormal findings on a cytologic screening or follow-up Pap smear requiring colposcopy who were scheduled for this procedure at four ADPH colposcopy clinic sites (Bibb, Cullman, Dallas, and Shelby county health departments). Women scheduled for diagnostic resolution of their cervical abnormality with a primary care provider, OB/GYN, or an academic medical center such as University Medical Center (UMC) or The University of Alabama at Birmingham (UAB) were excluded from this quality improvement project to align with the project goals of the ADPH colposcopy program. Those women who did not speak English were also excluded from this project due to the lack of on-site interpreter services.

Once an abnormality that requires colposcopy is detected on a screening or follow-up Pap test, the clients of the west-central district public health area are given options of referral facilities based on their insurance status. Referrals for colposcopy within the west-central public health district may include private gynecologists; public health district colposcopy clinics with the closest sites in Bibb, Cullman, Dallas, and Shelby County; or academic medical centers such as UMC or the UAB colposcopy clinic. However, for this project, only patients who were scheduled at the four ADPH colposcopy clinics within the closest proximity to the west-central district were included (see Appendix E). Since the ADPH colposcopy program's inception three years ago, the goal of the program has been to reduce cervical cancer mortality rates with early detection through

a community-based program, thereby improving patient services. The ADPH colposcopy program seeks to assist the women with barriers to follow-up care, such as financial and transportation issues, as do patient navigation programs. By providing colposcopy within the county health departments, continuity of care is maintained, eliminating the need for outside referrals. There is no fee for the patients who choose to go to the ADPH colposcopy clinic as the ABCCEDP currently provides funding for this service.

Setting Facilitators and Barriers

Setting facilitators included the ease of access to ADPH colposcopy clinic schedules and current and previous colposcopy clinic show rates using the Electronic Health Record (EHR). The primary investigator is already heavily involved in the current abnormal Pap smear follow-up process and is familiar with the process of contacting and scheduling patients as well as the most recent ASCCP guidelines regarding cytologic follow-up (Perkins et al., 2020) utilized by the ADPH. Another setting facilitator includes the presence of a quality improvement department within the ADPH. These staff members are willing to assist employees who wish to perform quality improvement projects and they hold regular training for individual and group contributors. This resource was beneficial during the planning and implementation phase of the project.

One major barrier that occurred during the implementation phase of this project was the COVID-19 pandemic. During the height of the pandemic in Alabama, the ADPH colposcopy clinics did not function at normal capacity. The colposcopists only saw a limited number of women who were at high risk for cervical cancer during this time (April and May 2020) in order to prevent the spread of COVID-19 by maintaining social distancing guidelines recommended by the CDC. This limited clinic capacity greatly impacted the overall number of women who could be navigated

during this time. Another barrier that the primary investigator encountered during the implementation phase of the project was not being able to reach the patient cohort by phone or mail. Of the 70 potential participants scheduled for follow-up across the four county colposcopy clinics during post-COVID implementation, only 37 of them were reachable by phone or mail with notably only 2 of 33 letters returned. However, all 35 of the women who were contacted by phone provided verbal consent for navigation.

Methods

The primary investigator was notified by a family health services staff member of upcoming ADPH colposcopy clinics that would be scheduled in county health departments within the closest proximity to those patients who reside within the west-central public health area (Bibb, Cullman, Dallas, and Shelby). The patients were contacted and given a date and time for their colposcopy clinic appointment at each of the four colposcopy clinic sites by the nurse responsible for abnormal Pap follow-up duties in each of the county health departments. The nurses at each of the four county health departments agreed to ask the clients if they would be willing to receive a phone call from the primary investigator to discuss a project to improve follow-up care when they contacted the women regarding their appointment. The nurse from each county health department then gave the primary investigator a list of potential participants for the project.

After receiving a list of potential participants from the county health department nurses, the primary investigator attempted to contact each of the women individually by phone approximately two weeks before their scheduled colposcopy clinic appointment. If successfully reached by phone, the primary investigator read the recruitment telephone consent script (see Appendix I) to the women, proceeding to the waiver of written consent (see Appendix K) for those women who expressed an interest in moving forward with the project, which included the PRAPARE survey

(see Appendix A). The primary investigator explained to the participants that if, any question on the survey made them feel uncomfortable, the question could be omitted, reassuring them that the interview could be discontinued at any time. The primary investigator also assured the women that if, they declined to participate in the PRAPARE social risk assessment survey, they would receive usual follow-up recommendations based on ADPH protocol. If the primary investigator was unable to reach the potential participants by phone, the recruitment letter found in Appendix J, the PRAPARE survey, and the waiver of written consent (see Appendix K) were mailed to the women along with a self-addressed stamped envelope, to be mailed back to the primary investigator. Completion and return of the paper survey to the primary investigator by mail implied consent of participation in the project.

The primary investigator navigated the patients to their scheduled appointments at the four colposcopy clinic sites using the PRAPARE standardized patient social risk assessment tool over 3 months (see Appendix L). The 21-item social risk assessment tool consists of questions including personal characteristics, family and home, money and resources, and social and emotional health, including four additional questions regarding incarceration status, refugee status, safety, and domestic violence. By utilizing the PRAPARE survey to navigate the women to recommended follow-up of their abnormal cervical cytology, the primary investigator was able to identify barriers to follow-up care and provide them with the resources needed to help eliminate these barriers. Responses from the survey that required immediate intervention, such as domestic violence and depression, were addressed by the primary investigator by notifying the Title X case manager assigned to that county health department to assist in providing immediate resources and referrals for those patients.

The outcome measure for this proposed intervention was adherence to recommended follow-up with patient navigation over a three-month period compared to previous follow-up measures without navigation, comparing show rates to recommended follow-up care of the abnormal cervical cytology as evidenced by the number of women who keep their appointment at the ADPH colposcopy clinic. Therefore, show rates before and after the implementation of the intervention were compared. Demographics, including SDOH, arose from the PRAPARE survey and were included in the analysis and reported as descriptive statistics (see Table 2).

Measurement Instruments

In order to measure the outcomes of this project, two instruments were used; the current ADPH EHR system and the PRAPARE national social risk assessment survey (National Association of Community Health Centers [NACHC], 2016). Patient show rates of the four ADPH colposcopy clinics under usual ADPH follow-up measures (pre-COVID) were obtained from the EHR as were the show rates of the same four ADPH colposcopy clinics during the height of the COVID-19 pandemic pre- and post-implementation of the PRAPARE standardized social risk assessment tool (see Table 1).

Data Collection Procedures

In order to collect data for the quality improvement project, the Plan, Do, Study, Act (PDSA) was the framework used. The Plan, Do, Study, Act model for process improvement provides a framework that is a scientific method for planning a change, trying the change, observing the results, and acting on what was learned from the cycle (Institute for Healthcare Improvement, 2020). By utilizing the PDSA framework for this quality improvement project, the primary investigator was able to gauge the success of and make recommendations for PRAPARE-guided patient navigation efforts within the public health setting.

Plan

Plan is the first step in the PDSA cycle. In this stage of the cycle, the primary investigator addressed the change that was to be implemented by making an aim statement (Institute for Healthcare Improvement, 2020). For this DNP project, the aim statement was to administer the PRAPARE guided navigation tool to a non-random convenience sample of 50 women with abnormal cervical cytology, scheduled to receive diagnostic resolution of their abnormal result at an ADPH colposcopy clinic. The primary investigator planned how the survey would be administered, by whom the survey would be administered, to whom it would be administered, and when it would be administered.

Do

The Do stage of the PDSA cycle includes the first test of change that will occur (Institute for Healthcare Improvement, 2020). In this stage of the PDSA cycle, the primary investigator used the PRAPARE survey tool as a script from which to obtain information via phone call or mail regarding SDOH from each of the women who were on the colposcopy clinic schedule for Bibb county in August of 2020. This was the first post-COVID colposcopy clinic that took place, making the patients on the Bibb county colposcopy schedule the first to be navigated to recommended cytologic follow-up.

Study

The Study stage of the PDSA cycle includes collecting data before and after the change, reflecting on not only the impact of the change, but also, what was learned in order to improve on the next cycle (Institute for Healthcare Improvement, 2020). In this stage of the PDSA cycle, the primary investigator evaluated the data pre- and post-implementation of the PRAPARE guided navigation survey. This was done immediately after the first post-COVID colposcopy clinic in

Bibb county to ensure that the vulnerable population was being reached and that the process of improvement was working (the navigated patients kept their appointments). It was at this stage in the process that changes were made in order to improve the goals and objectives of the project. It was in this stage of the PDSA framework that the primary investigator found that there was better participation with phone calls rather than mailed surveys.

Act

The fourth stage of the PDSA framework is Act (Institute for Healthcare Improvement, 2020). At this stage of the PDSA cycle, the primary investigator planed the next change cycles for the remaining three ADPH colposcopy clinics and began full implementation of the PRAPARE navigation program. Full implementation of the DNP project aimed to provide PRAPARE-guided navigation to all female clients with abnormal cervical cytology in need of follow-up, who were scheduled at one of the four ADPH colposcopy clinics from August 1 to October 31, 2020. The overall goal of the project was to improve adherence to follow-up care recommendations in underserved women within the public health setting who have abnormal cervical cytology as evidenced by appointments kept at the ADPH colposcopy clinics with the addition of the PRAPARE-guided navigation tool compared to usual follow-up measures over a three-month period

Data Analysis

Quantitative data was collected and analyzed to measure the show rates of the four ADPH colposcopy clinics (Bibb, Cullman, Dallas, and Shelby) before and after PRAPARE-driven navigation. The data was grouped into three categories in order to the compare pre- and post-intervention show rates. These categories included the following: Pre-COVID, COVID, and post-

implementation. The primary investigator used Chi Square analysis to determine if there was statistically significant differences between the show rates of women scheduled at each of the individual colposcopy clinics by usual care follow-up standards per ADPH protocol and follow-up care standards during the height of the COVID-19 pandemic, versus the show rates of women scheduled at the ADPH colposcopy clinics with the addition of PRAPARE guided patient navigation (see Table 1). Adherence to follow-up care was measured by the show rates before and after the intervention of PRAPARE guided patient navigation. Descriptive statistics were utilized to analyze demographics and SDOH of the female participants in the QI project. Graphs and charts represent the data collected and analyzed (see Tables 1 and 2 and Figures 1 and 2).

Cost-Benefit Analysis Budget

There were no costs involved for this project as no new staff were hired to assist the primary investigator with implementation or data analysis. The PRAPARE Toolkit was available at no cost to the primary investigator. The PRAPARE surveys were used as a script by the primary investigator in order to navigate the already scheduled patients to abnormal Pap follow-up recommendations within the four ADPH colposcopy clinics. Once the information from the PRAPARE survey was received on paper, this de-identified information was entered into the an Excel software program that was set up on the project manager's office password-protected computer and stored in UA box. The primary investigator incurred the cost of paper, ink, stamps and envelopes for surveys that were mailed to the participants. The benefit of the patient navigation effort was improved adherence to abnormal cervical cytology follow-up recommendations as evidenced by an overall improvement in show rates. When vulnerable populations, such as this patient cohort, adhere to follow-up recommendations and achieve early diagnostic resolution of

their abnormal result with the addition of PRAPARE-guided patient navigation, there could be a decrease in the incidence of cervical cancer for the underserved women of the state of Alabama. Therefore, the cost-benefit analysis for this project lies in the early detection of cervical dysplasia with colposcopy, which could consequently decrease the overall costs of cervical cancer treatment (see Appendix H). The ADPH colposcopy clinics are free of charge to our clients, as this service is currently being funded by the ABCCEDP unless the patient has insurance. The cost of early detection and prevention of cervical cancer, such as early screening and treatment, far outweighs the cost of treating cervical cancer.

Timeline

Refer to the chart in Appendix L for an outline of the timeline for the project. The project began with approval of the quality improvement project by the Institutional Review Board (IRB) and the ADPH. Implementation of the project began with notification from an ADPH Family Health Services staff member that the first ADPH colposcopy clinic schedule since the height of the COVID-19 pandemic had been processed in the EHR. The primary investigator then received a list of potential participants from the nursing supervisor of the county health department approximately two weeks prior to the date of the colposcopy clinic. Data collection occurred over a three-month period and was obtained from participants though the use of phone and mailed surveys. The participants were those women who were scheduled for recommended cytologic follow-up care at four county health departments. Data analysis took placed over a time period of one month in which historical and current data were analyzed to measure and compare the pre- and post-implementation show rates of each of the four ADPH colposcopy clinics. Over a period of

two months, the primary investigator interpreted the outcomes of the project in written form, with the inclusion of tables and graphs. These findings were compiled and presented in the form of a project presentation to stakeholders and staff members of the ADPH after completion of the project. The total timeline for the QI project was a period of 9 months.

Ethical Considerations/Protection of Human Subject

The University of Alabama IRB and the ADPH IRB approval was obtained prior to initiating this quality improvement project. The risk of patients participating in this project was no different from the risks of patients receiving standard abnormal Pap smear follow-up care. If the patient did not wish to participate in the project, they received standard abnormal Pap smear follow-up care per ADPH protocol (see Appendices J and K). The primary investigator reassured the women that if any of the questions from the PRAPARE social risk assessment tool made them feel uncomfortable, those questions could be omitted and the interview could be stopped at any time. Participant confidentiality was assured by coding the participants using individual identification numbers. The list of participants and their identifying numbers were kept in a locked box where the current ADPH follow-up system is kept. All electronic files containing identifiable information were password-protected to prevent access by unauthorized users and only the primary investigator had access to the passwords. This information was also stored in UA box.

Results

Adherence to ADPH abnormal cytologic follow-up recommendations in underserved women was measured as clinic show rates of the four ADPH colposcopy clinic sites. The clinic show rates were measured and compared at three intervals and labeled as pre-COVID show rates, COVID show rates, and post-implementation show rates (see Table 1). The characteristics of the participants from each clinic determined from the PRAPARE survey are presented as descriptive

statistics (see Table 2). The pre-COVID and COVID show rates were compared to the post-implementation show rates for each county clinic and as an overall total for all four clinics using Chi-Square analysis ($p<.05$). The results for the overall show rates of all four clinics were statistically significant at the pre-COVID interval (71%) compared at the post-implementation interval (87%), x^2 (6.182; p=0.012903). Statistical significance was also found at the COVID interval (71%) compared to post-implementation interval (87%), x^2 (5.073; p=0.024301) for overall show rates (see Table 1).

Adherence to ADPH cytologic follow-up recommendations for this vulnerable population who sought care from four county health departments was examined by measuring and comparing show rates before and after the PRAPARE-guided patient navigation implementation. Responses from the PRAPARE social risk assessment tool were also recognized and reported for each county health county department. The results for the individual county health departments were not statistically significant with the exception of Bibb County, COVID to post-implementation x^2 (4; p=0.0455). The individual clinic numbers were small and therefore not powered enough to be statistically significant. However, the individual county show rates were clinically significant in that there was improvement noted in the percentage of the post-implementation show rates for each of the four county health departments after the implementation of the PRAPARE-guided patient navigation (see Figures 1 and 2).

Bibb

Bibb county health department, located in the west-central public health district, was the only county among the individual counties in which a statistically significant difference in show rates was noted (see Table 1). This statistically significant result was noted at the COVID (50%) to the post-implementation interval (88%), x2, 4, p=0.0455.

The majority of the participants (n=7) who attended this clinic were Black (86%) and white (14%) with an average age of 32. The women reported working either full-time or part-time (43%) and having a high school diploma or GED (71%) with an average income of $13,908 annually. The type of insurance that the women reported having was private insurance (57%) and Medicaid (43%), Transportation was not an overall issue for this patient cohort although (14%) reported that they had transportation issues. The women reported being somewhat stressed (43%), but also reported having good social support systems (71%), indicating that they talked to friends and family that they care about five or more times per week. There were no survey responses from the women who attended Bibb county health department for diagnostic resolution of their abnormal cytologic finding that required an immediate referral.

Cullman

Cullman county did not have a colposcopy clinic during the height of the COVID-19 pandemic in Alabama that began in March of 2020. The last clinic for this county before the implementation of patient navigation by the primary investigator under usual follow-up care occurred during mid-February 2020 but was still labeled as a (COVID) show rate since there were no other colposcopy clinics scheduled after February until post-implementation which occurred on October 27, 2020. There were no statistically significant differences in pre-COVID show rates (73%) compared to post-implementation show rates in Cullman county (90 %), ($x2=2.027$, $p=0.154525$) or COVID show rates (82%) compared to post-implementation show rates (90%), ($x2=0.578$, $p=0.447019$) due to the sample size not being powered (See Table 1). However, the results do show clinical significance as evidenced by an increase in the percentage of show rates from 73% pre-COVID to 90% following the implementation of the PRAPARE-guided patient navigation QI effort (see Figures 1 and 2).

All of the participants (n=13) who sought follow-up care at this county health department were white (100%). The average age of the women was 35.8 and their average annual income was $14, 924.45. The educational level of the participants was as follows: less than high school (31%), high school diploma or GED (31%), and more than high school (38%). The majority of the women reported working full-time (38%), while (23%) reported being unemployed, not seeking work, and (15%) reported being unemployed, seeking work. The majority of these participants were uninsured (62%). There were concerns in regards to housing in this patient cohort as (85%) reported having no housing. However, these women were not homeless, as they reported living with others such as family. There were no significant concerns in regards to transportation among these women, as only (8%) of the respondents reported that a lack of transportation kept them from getting healthcare or medications. There was one woman in this group of navigated patients who reported fear of an ex-partner within the past year. However, when the primary investigator questioned her further about this social risk, the patient stated that this was no longer a problem and that she was not in danger. Referral sources were still given to the patient but she declined a referral to the Title X CHA. The women in this patient cohort reported having a level of stress that was categorized as somewhat (46%) but did express having an adequate social support system (62%), signifying that they talked to friends and/or family that they care about five or more times per week. One patient reported spending more than two nights in jail over the past year but denied this being a barrier to follow-up care.

Dallas

Dallas county is considered to be one of the “black belt” counties within the west-central region of the state of Alabama in which according to the literature, the mortality rates of cervical

cancer are disproportionately high (Human Rights Watch, 2018). Women with cytologic abnormalities screened within the west-central public health district who were navigated to their colposcopy clinic appointment (n=13) often reside in Sumter and Greene county, two counties in the "black belt" region of the west-central public health district (see Appendices C and E). Because of the small numbers of patients scheduled at this clinic, there were no statistically significant results when pre-COVID show rates (65%), ($x2=1.742$; $p=0.18684$) and COVID show rates (60%), ($x2=1.94$; $p=0.163687$) were compared to post-implementation show rates (83%) for this county colposcopy clinic site (see Table 1). However, clinical significance was determined as the patient show rates increased at the pre-COVID, COVID, the pre-COVID show rates compared to post-implementation show rates (see Figures 1 and 2).

The majority of the navigated patients were Black (85%),with whites making up the remainder of the population group (15%). An average annual income of $5,696.83 was reported by the women who had an average age of 34.7. The majority of the women indicated that they were unemployed, seeking work (46%). The primary insurance for this patient cohort was Medicaid (85%) with the remaining (15%) being uninsured. The majority of the women reported having more education than high school (46%). In regards to housing, only (8%) of the women reported that they did not have their own housing, while (15%) of the women reported that they worried about losing their housing. Of the 13 women navigated, (15%) reported that they did not feel safe in their neighborhood, while (8%) reported being unsure of the safety of their neighborhood. Transportation was an issue for this group of women, although (54%) reported having no issues with transportation, (46%) of them reported that lack of transportation kept them from getting to appointments both medical and non-medical. The primary investigator was able to assist these women by providing them with information about the nearest transportation service available to

them There was one patient who revealed fear of her current partner in which immediate referral resources were given to her at the time of the interview and a referral to the Title X CHA was made. This patient received further counseling and resources regarding this social risk at her colposcopy appointment. The majority of the women who were navigated to Dallas county health department reported being quite a bit stressed (31%) when asked about their level of stress, but they also reported having adequate support systems (46%). There was one patient who reported depression and spending more than two nights in jail to the primary investigator. She denied any suicidal thoughts, but the primary investigator gave the patient immediate referral sources at the time of the interview and referred this patient to the Title X CHA who met with the patient at the Dallas county health department on the day of her visit. The patient reported that the reported social risks did not have any bearing on her ability to keep her colposcopy appointment.

Shelby

Shelby county health department often serves women from the west-central public health district who may reside in Chilton county and is located in the north-eastern public health district. Although there were no statistically significant results noted in the comparison of pre-COVID show rates (x2=0.56; p=0.454107) to post-implementation rates or COVID show rates (x2=1.818; p=0.17753) to post-implementation rates, the results were clinically significant (see Table 1).There was an increase from 81% to 91% in the pre-COVID to post-implementation show rates as well as an increase from 67% to 91% when comparing COVID show rates to post-implementation show rates (see Table 1 and Figures 1 and 2). With the addition of PRAPARE-guided patient navigation, there was only one patient who did not keep her appointment at this particular clinic. However, during the intervention phase of the project the colposcopy schedule was changed to accommodate the new ASCCP guidelines for treatment of abnormal cytologic

findings (Perkins et al., 2020). Therefore, many of those patients who had appointments for colposcopy at the Shelby county clinic were canceled and rescheduled for a follow-up cytologic cotest in one year, causing a decrease in the number of patients scheduled.

Only 4 of the 11 patients scheduled for the Shelby county colposcopy were navigated by the primary investigator. This was not only because less clients were scheduled due to changes in abnormal cytologic management but also because many of the women who were scheduled at this clinic did not speak English and were excluded from the project. The majority of the women navigated were Black (75%) and white (25%) with an average age of 32. The average annual income reported by the participants was $15,114.00. Educational levels were as follows: less than high school (25%), high school or GED (50%), and more than high school (25%). There were no significant issues related to housing or transportation reported by the women who responded to the PRAPARE survey. The women reported having Medicaid (50%), private insurance (25%), and no insurance (25%). Stress levels were reported as being a little bit (50%), not at all (25%), and very much (25%). As the other participants reported, the women who were navigated to Shelby county health department reported having good social support systems (50%), as they talked to friends and family five or more times per week. There were no other significant data from the PRAPARE social risk assessment tool reported by the women in Shelby county.

Overall Sample characteristics

The core and additional measures of the 37 total participants who were navigated to their colposcopy clinic appointment using the 21-item PRAPARE social risk assessment tool are shown in Table 2. The mean age of the participants was 34.6 years, and the participants were Black (54%) and white (46%). The participants reported having an income between 10,000-20,000 (32%),

obtaining a high school diploma or GED (41%), having Medicaid as their primary insurance (51%), working full time (32%), having adequate housing (92%), having transportation (79%), lack of transportation that kept them from medical appointments (16%), having somewhat or a little bit of stress (27%), and talking to friends and family five or more times a week (57%). Most of the participants did not worry about losing their housing (89%) and reported that they felt safe in their neighborhoods (84%). No navigated participants reported being migrant farmworkers or refugees and no participants reported being discharged from the armed forces of the U.S. Of the participants, only 5% of them reported being incarcerated for more than two nights over the past year and reported fear of partner or ex-partner. Two immediate referrals were made by the primary investigator for reports of depression and domestic violence to community outreach services. The women were also referred to an ADPH Title X CHA who met with them on the day of their appointment at the colposcopy clinics.

Interpretation/Discussion

The findings of this project support the need for patient navigation efforts within public health clinics, particularly for underserved women who have abnormal cervical cytologic findings. Although the individual clinic numbers alone were not powered enough to show statistical significance, these numbers did reveal clinical significance because there was considerable improvement in the show rates for each clinic after the implementation of PRAPARE-driven patient navigation. When the overall numbers for the four clinics were analyzed together, the results of the comparison of pre-COVID to post-implementation show rates and COVID to post-implementation show rates were found to be statistically significant (See Table 1 and Figures 1 and 2). The overall increase in adherence to follow-up recommendations with the use of patient

navigation was similar to the results of the literature reviewed (Brown et al., 2019, Chavez et al., 2019; Luckett et al., 2015; Percac-Lima et al., 2015).

Barriers to follow-up care were identified at the individual or intrapersonal level of the SEM with the use of PRAPARE patient navigation and were similar to those barriers such as race, education, income, insurance and employment status reported in the Krok-Schoen, Brewer et al. (2015) study as well as emotional barriers such as stress as found in the study by Freeman et al. (1995) and Hui et al., (2017). The majority of the women who participated in this project were low-income, state-insured minorites, who work full time jobs and have no more than a high school diploma or GED. Not only did the PRAPARE-guided quality improvement effort increase adherence to recommended public health follow-up standards in women with abnormal cytologic findings, but the patient navigator was also able to provide resources and referrals, through the community level of the SEM, to the women as needed based on their reported SDOH as found in the literature reviewed (Kusnoor et al., 2018; Weir et al., 2020). With the use of the PRAPARE survey, the primary investigator was able to identify the participants social support systems at the interpersonal level of the SEM, finding that overall, the women reported having good social support systems.

In addition to providing funds for screening and diagnostic services for eligible women, the NBCCEDP, directed by the CDC, concentrates on factors at the interpersonal, organizational, community and policy levels that impact these services, utilizing the SEM as a theoretical framework (CDC, 2020). The NBCCEDP supports the use of population-based approaches to improve the value of breast and cervical cancer screening and diagnostic services (CDC, 2020). One approach includes implementing evidence-based intervention strategies such as patient navigation efforts, exemplified in this QI project. NBCCEDP grantees such as the ADPH are in a

perfect position to present the findings from this QI project as an evidence-based patient intervention strategy in order to receive additional funding for navigation services from the CDC and/or it's partners.

In order to provide patient navigation services within the ADPH that would identify and address barriers, while facilitating access to recommended follow-up standards in underserved women with abnormal cytologic findings, a social work position would need to be written into the already existing ABCCEDP. The ABCCEDP protocol would then need to be revised to include navigator responsibilities. The salary for the social worker would need to be budgeted into the funds already allocated for this program which include screening and diagnostic services. The ADPH currently employs social workers who work in grant-funded programs who could be trained as patient navigators in each public health district. Therefore, no new staff would need to be hired for this position, as one of the current social work staff members could be reassigned to this program in each public health district. The patient navigation program could, however, be piloted in one or two public health districts prior to initiating this program statewide. The ability to provide funding for a patient navigator will be dependent upon available funds allocated for the grant year. Program funds are provided by the CDC, the state of Alabama, and two non-profit organizations in Alabama; Susan G. Koman for the Cure and the Joy to Life Foundation (ADPH, 2019).

A second approach to providing patient navigation services to the vulnerable population group is increased utilization of the Title X CHA care coordination program. The CHA's are trained and available to assist underserved women in the public health setting to diagnostic resolution of their abnormal cervical cytology. In order for them to provide navigation services to this patient cohort, the patients must be referred to them by the nursing staff. By educating the ADPH staff on the program's goals and objectives, while expanding their availability to all county

health departments, increased utilization of the CHA's could be achieved and patient navigation efforts could potentially become a standard of care.

Patient navigation is defined by Freeman & Rodriguez (2011) as a team effort. If a team approach could be used in navigating clients to follow-up care by utilizing available staff who could work within the existing ABCCEDP or making the Title X community health advisor program a standard of care statewide, there would potentially be an increase in adherence rates and lower cervical cancer incidence and mortality rates within the state of Alabama. In order to reduce the burden of breast and cervical cancer, the NBCCEDP has expanded its scope to include evidence-based strategies in order to increase access to care (Wong & Miller, 2019). Therefore, the findings of the QI project could possibly serve as an evidence-based intervention strategy for the ABCCEDP which could meet CDC policy requirements. The QI patient navigation effort also provided evidence at the organizational/institutional level of the SEM that cost is not a factor when using the PRAPARE social risk assessment tool which could easily be embedded into the ADPH's current EHR program or used only for those patients who are at high risk for cervical cancer as suggested by Bensink et al (2014). The QI navigation effort could also necessitate ta more available CHA presence within the Title X community health advisor program at the county level.

This is the first QI project from the ADPH that examined follow-up adherence rates of patient navigation within the public health setting for underserved women with abnormal cervical cytology. The results of this project were found to be both clinically and statically significant as evidenced by an improvement in show rates with the use of PRAPARE-driven patient navigation. This demonstrates that patient navigation efforts can increase recommended follow-up adherence rates within the public health setting with a change in workflow. Future projects could be conducted using public health social workers or CHA's as patient navigators for those women who

seek diagnostic resolution of their abnormal Pap smear result at an ADPH colposcopy clinic. Conducting future projects within county health departments in which colposcopy services are held in order to assess the clients SDOH in person rather than by phone or mail may also be beneficial when determining barriers to follow-up care and providing needed referrals. Additionally, a future project could involve the ADPH staff's awareness of the community health advisor program.

Project Limitations

The limitations of the QI project are primarily related to the small sample size of participants due to reasons which were out of the primary investigator's control. The first major limitation of this study includes the COVID-19 pandemic which occurred throughout the entire time period that the QI project was being conducted. The pandemic had a considerable impact on the overall number of patients who were seen for diagnostic resolution of their abnormal cytology finding and the patients who attended these clinics were not seen under normal follow-up care circumstances. Bibb county health department was the site in which the first ADPH colposcopy clinic was held during the height of the COVID-19 pandemic on April 21, 2020. Only those women who were at highest risk for cervical cancer were scheduled for the pre-implementation COVID clinic in order to abide by social distancing guidelines set forth by the CDC for the colposcopists and the clients. However, of the eight women scheduled for this clinic, only four of them kept their appointment. The decreased adherence to recommended cytologic follow-up standards during this time could be contributed to actual patient fear of the COVID pandemic at the time that the clinic was held. During the most recent clinic in Bibb county held after the implementation of PRAPARE-guided patient navigation in August 2020, the show rate increased from 50% to 88% ($x2=4$; $p=0.0455$). While it can be assumed that the show rates found in Table 1 were statistically significant for Bibb county at the COVID to post-implementation interval based

on the implementation of PRAPARE-driven patient navigation, the fact that the women were more comfortable with pandemic restrictions in August and were more willing to attend clinic, may have played a role in their attendance to their follow-up care appointment.

Another limitation of this study includes the inability of the primary investigator to reach the participants by phone in order to navigate them to their follow-up appointment for their abnormal cervical cytology findings. While all 35 of the 70 women reached by phone were successfully navigated to their appointment, the remainder of attempts for navigation occurred by mail. The primary investigator sent out 35 letters to those women who could not be reached by phone and only 2 of the letters were returned (n=37). Therefore, the limited sample size played a major part in the findings from the navigation effort making all but one of the individual county results not statistically significant because the numbers were not powered (see Table 1). However, this limitation did not mitigate the significance of the overall show rates as depicted in Table 1. This limitation did clarify that phone calls are the preferred method in which to reach patients for follow-up and should be exhausted through all attempts such as emergency contacts and text messages.

The last limitation in regards to the small sample size of this QI project includes the fact that the new ASCCP risk-based management guidelines came out just days prior to the navigation intervention for those women scheduled for colposcopy at the Shelby county health department (Perkins et al., 2020). Because of the changes in Pap follow-up guidelines, many of the women who were scheduled for colposcopy no longer needed this procedure and their appointments were cancelled and they were rescheduled at a later time for a Pap smear along with an HPV test (Perkins et al., 2020). Although the new ASCCP risk-based guidelines are positively advancing cervical screening and management of abnormal finding, allowing some of the women to be able

to have a cytologic cotest at a later time rather than a colposcopy, the change in guidelines did have a substantial impact on the number of women at the Shelby county clinic who could be navigated.

Conclusion

Underserved women who receive cervical cancer screenings from public health departments often fail to adhere to recommended diagnostic resolution of their abnormal cervical cytology, increasing incidence and mortality rates for this vulnerable population (ADPH, 2017). Limited access to care, cost, and other social determinants of health may explain the disproportionate impact of cervical cancer on this vulnerable population group (Nonzee et al., 2015, Stanhope & Lancaster, 2016). The use of patient navigation is one evidence-based strategy to addressing and responding to these barriers (Freeman & Rodriguez, 2011; Wells et al., 2008).

Patient navigation is most successful in areas with greater delays to follow-up care such as underserved areas by reducing barriers to care by examining social determinants of health that may impede follow-up care (NACHC, 2016; Ko, 2016; Kusnoor, 2018). Patient navigation programs are federally funded through the ABCCEDP and could be cost-effective when used in the public health setting (CDC, 2019). However, the ADPH does not currently formally utilize patient navigation services due to the risk of exhausting funds that are allocated for breast and cervical cancer screening and treatment (N.Wright, personal communication, March 24, 2019). While the Title X community health advisor program is available for care coordination services in relation to abnormal Pap follow-up, this program is not being utilized to its maximum potential by the staff. This quality improvement effort to introduce a patient navigation program in the public health setting adds to the gap of evidence in the literature regarding the use of patient navigators in this setting.

The goal of this evidence-based quality improvement project within the west-central district of the Alabama Department of Public Health (ADPH) was to add a patient navigator program to increase adherence rates to follow-up care standards in underserved women with abnormal cervical cytology results as evidenced by appointments kept at ADPH colposcopy clinics. The PRAPARE standardized social risk assessment tool, allowed the primary investigator to not only identify barriers to follow-up care for the women but also respond to their individual needs by providing them with resources that could assist them in adhering to abnormal Pap smear follow-up recommendations such as colposcopy. Women who gave responses to the PRAPARE survey that required intervention were provided with resources and referrals within their communities as well as care coordination by the CHA's. By implementing this quality improvement project, the primary investigator was able to provide evidence to ADPH stakeholders regarding the need for a patient navigation program as an early cancer detection strategy within the public health setting.

The comparison of show rates demonstrated improvement in adherence to public health follow-up care recommendations with the addition of a patient navigator. Although the show rates for the individual counties were not statistically significant due to the numbers not being powered, the overall show rates were statistically significant as they increased after the implementation of patient navigation. The addition of a patient navigation program into the existing ABCCEDP program or the expansion of the Title X community health advisor program as a standard of care could potentially decrease the incidence of cervical cancer and the cost of cervical cancer treatment for the underserved women of Alabama.

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Appendix A

PRAPARE®: Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences

Paper Version of PRAPARE® for Implementation as of September 2, 2016

Personal Characteristics

1. Are you Hispanic or Latino?

	Yes		No		I choose not to answer this question

2. Which race(s) are you? Check all that apply

	Asian		Native Hawaiian
	Pacific Islander		Black/African American
	White		American Indian/Alaskan Native
	Other (please write):		
	I choose not to answer this question		

3. At any point in the past 2 years, has season or migrant farm work been your or your family's main source of income?

	Yes		No		I choose not to answer this question

4. Have you been discharged from the armed forces of the United States?

	Yes		No		I choose not to answer this question

5. What language are you most comfortable speaking?

Family & Home

6. How many family members, including yourself, do you currently live with? _____

	I choose not to answer this question

7. What is your housing situation today?

	I have housing
	I do not have housing (staying with others, in a hotel, in a shelter, living outside on the street, on a beach, in a car, or in a park)
	I choose not to answer this question

8. Are you worried about losing your housing?

	Yes		No		I choose not to answer this question

9. What address do you live at?
Street:_____
City, State, Zip code: _____

Money & Resources

10. What is the highest level of school that you have finished?

	Less than high school degree		High school diploma or GED
	More than high school		I choose not to answer this question

11. What is your current work situation?

	Unemployed		Part-time or temporary work		Full-time work
	Otherwise unemployed but not seeking work (ex: student, retired, disabled, unpaid primary care giver) Please write:				
	I choose not to answer this question				

12. What is your main insurance?

	None/uninsured		Medicaid
	CHIP Medicaid		Medicare
	Other public insurance (not CHIP)		Other Public Insurance (CHIP)
	Private Insurance		

13. During the past year, what was the total combined income for you and the family members you live with? This information will help us determine if you are eligible for any benefits.

	I choose not to answer this question

Retrieved from www.nachc.org/prapare

Appendix A

Retrieved from www.nachc.org/prapare

Appendix B

Alabama Department of Public Health
STRATEGIC PLAN 2019-2023

ALABAMA PUBLIC HEALTH

HEALTHY
PEOPLE • COMMUNITIES • ALABAMA

MISSION:
To Promote, Protect, and Improve Alabama's Health

HEALTH OUTCOME IMPROVEMENT

GOAL:
Improve specific health outcomes or health disparities so that Alabama is a healthier place to live and work

STRATEGIES:
1. Improve access to care.
2. Reduce obesity and chronic disease through nutrition and physical activity initiatives.
3. Strengthen the partnership with mental health (MH) stakeholders so that a safety net for MH services is developed.
4. Improve poor pregnancy outcomes so that infant mortality rates decrease.

MEASURES:
1. Uninsured population
2. Obesity rates
3. Chronic disease prevalence
4. Naloxone utilization
5. Telehealth utilization
6. Infant mortality
7. Emergency deliveries

SPONSORS:
Scott Harris, M.D., M.P.H.
Mary McIntyre, M.D., M.P.H.
Ricky Elliott, M.P.H.

FINANCIAL SUSTAINABILITY

GOAL:
Increase available funds in order to continue to promote, protect, and improve the health of Alabama

STRATEGIES:
1. Receive payment for existing services provided.
2. Improve grant writing time and quality.
3. Decrease operating cost.

MEASURES:
1. Claims paid
2. Grant writing cycle time
3. Cost per unit

SPONSORS:
Mary McIntyre, M.D., M.P.H.
Cathy Donald

WORKFORCE DEVELOPMENT

GOAL:
Strengthen the performance and capacity of the ADPH workforce so that the ability to serve our customers increases

STRATEGIES:
1. Improve recruitment of public health professionals.
2. Improve employee retention.
3. Work as one team.
4. Improve knowledge, skills, and abilities (KSAs) through training and communication.

MEASURES:
1. Employee satisfaction
2. Turnover rate
3. Customer satisfaction

SPONSORS:
Michele Jones
Brent Hatcher

ORGANIZATIONAL ADAPTABILITY

GOAL:
Adapt to changes in the health care environment so that programs and processes are increasingly effective and efficient

STRATEGIES:
1. Scan and evaluate programs provided by ADPH.
2. Innovate, adapt, and respond to changes.
3. Create effective and efficient processes, programs, and services.

MEASURES:
1. Quality improvement (QI) projects completed

SPONSOR:
Michele Jones

DATA DRIVEN DECISION MAKING

GOAL:
Become data-driven in analysis and decision making so that leaders and programs make informed decisions

STRATEGIES:
1. Improve analytical capabilities.
2. Use data to create efficient processes.
3. Use data to increase grant funding.

MEASURES:
1. Disparities database
2. Data summaries available for use during decision making

SPONSORS:
Cathy Donald
Michele Jones

5 Alabama Public Health Strategic Plan 2019-2023

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Retrieved from www.alabamapublichealth.gov

Appendix C

Retrieved from: https://www.al.com/wire/2012/04/program_to_focus_on_health_car.html

Appendix D

13 Alabama counties in Community Health Advisor Program

December 13, 2019

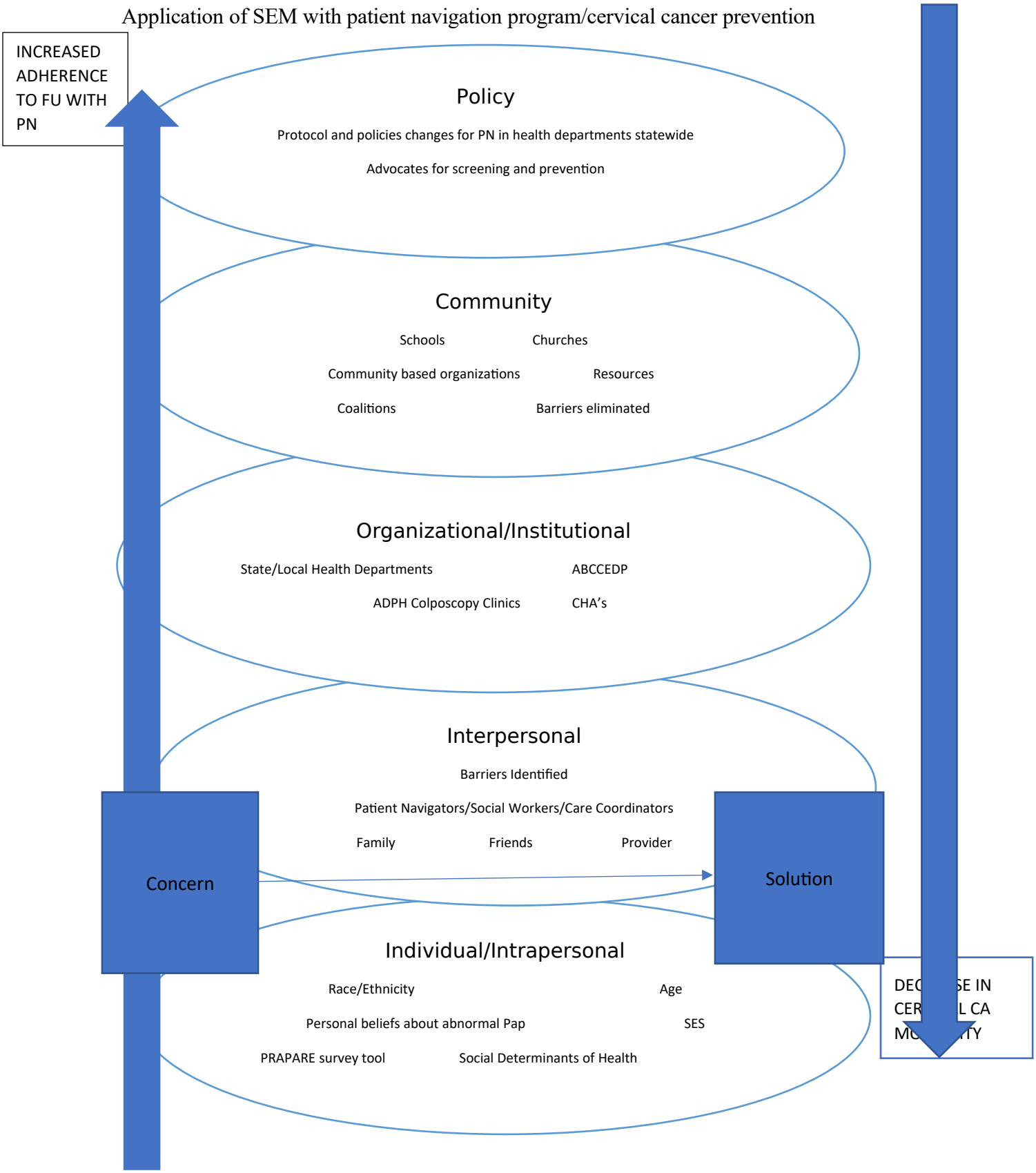
Retrieved from www.alabamapublichealth.gov

Appendix E

Retrieved from www.alabamapublichealth.gov

Appendix F

Application of SEM with patient navigation program/cervical cancer prevention



Appendix G

Goals	Objectives	Expected Outcomes
• Improved patient adherence to follow-up care standards following abnormal cervical cytology. • An established patient navigation program within the ADPH using already available social workers to assist with the abnormal Pap follow-up process which is currently done only by nurses in the public health clinics.	• Identify social determinants of health reported by the women that interfere with adherence to follow-up care standards in the population group using PRAPARE guided patient navigation. • Provide resources and referrals as needed in order to eliminate barriers to follow-up care, while providing safety for the population group using PRAPARE guided patient navigation.	• An increase in the number of women who keep their appointments at the colposcopy clinic with the assistance of PRAPARE-guided patient navigation over a 3-month period.

Appendix H

Cost-Benefit Analysis	
COST OF CERVICAL CANCER	
Expense/Treatment	**Costs**
Cold Knife Cone	$ 928
LAVH	$ 8,969
Abdominal Hysterectomy	$ 13,104
TOTAL	**$ 23,001**
COST OF EARLY DETECTION	
Expense/Treatment	**Costs**
Patient Navigation (ABCCEDP)	$ -
Pap Smear (ADPH)	$ -
Colposcopy (UAB)	$ 200
Leep perfomed in office (UAB)	$ 500
Leep performed in hospital	$ 1,450
TOTAL	**$ 2,150**

Data source; MDSave.com and UAB colposcopy clinic

Appendix I

TELEPHONE RECRUITMENT & CONSENT SCRIPT FOR PARTICIPANTS

INTRODUCE SURVEY AND ASK IF INTERESTED IN PARTICIPATING
Hello, my name is Ginger Phillips and I am a Nurse Practitioner with the West Central District Alabama Department of Public Health. I am contacting you as part of the follow-up process regarding your abnormal Pap smear result which you are scheduled for an appointment at the _____ county health department for colposcopy clinic on _____. Aside from the abnormal Pap smear follow-up process, I am also conducting a research study involving a survey that will help us as a department know what barriers you may have to getting to this appointment and what services and resources, we can offer to help you to get to this appointment. The survey that you will be asked to participate in, is a social risk assessment tool that can be utilized in patient navigation programs in order to improve health outcomes such as decreasing the incidence of cervical cancer in women, like you who reside within the west-central region of the state of Alabama. The only risk to you in participating in this type of survey is that some of the questions may make you feel uncomfortable. The survey will only take about 20 minutes of your time and answering these questions is voluntary. That means you may refuse to take part in this study or, if you decide to participate in the survey, you may decide not to answer any questions that make you feel uncomfortable or to stop the interview at any time. Some of the questions are personal, however, all of your answers will be kept confidential. May I ask the first question?

IF NO: Thank you for your time. You will still receive the same follow-up process for your abnormal Pap smear per ADPH protocol.

IF YES: Great! Do you have any questions before we get started?

[ASK/GIVE SURVEY QUESTIONS]

[IF PATIENT GIVES AN ANSWER THAT THE PRIMARY INVESTIGATOR SHOULD ADDRESS]
If you answered yes to any of the questions or if we touched on something that was uncomfortable or that worries you, we can help.

[IF THE SURVEY PARTICIPANT ANSWERS YES TO THE DV AND/OR HOUSING QUESTIONS]
Provide the patient resources such as the National Domestic Violence Hotline and Turning Point, and refer participants who indicate that they have an immediate safety need. For those participants who may report that they are homeless, provide them with resources such as local shelters. Notify one of the public health social workers who can assist the participant accordingly in regards to housing issues and domestic violence.

Appendix J

Ginger Phillips, Nurse Practitioner

Tuscaloosa County Health
Department
2350 Hargrove Road East
Tuscaloosa, Al 35405
Phone: 205-562-6900

Date

Recipient Name
Street Address
City, ST ZIP Code

Dear Recipient Name:

My name is Ginger Phillips. I am a Nurse Practitioner with the Alabama Department of Public Health. I am writing you about your abnormal Pap smear. You have a colposcopy clinic appointment at the _____county health department on __date/time_____.

I am working on a project to help us know what may keep you from getting to this appointment and how we can help you to keep this appointment. If you are willing to take part in this project, please read the enclosed consent form which explains the project in more detail and then complete the enclosed survey.

Some of the questions on the survey are personal and you do not have to answer them if you do not want to. If you answer yes to the questions about housing and/or domestic violence, you will get a follow-up phone call from me. All of the survey information is private. Once you have finished the survey, please mail it back to me in the self-addressed stamped envelope that is enclosed by __date_____.

If you have any questions, please call me at 205-562-6900 at the Tuscaloosa County Health Department. I do not work in this clinic every day. Please leave your name and number with the operator and I will return your call.

Thank you for being a part of this project. If you choose not to participate, you will still receive the same follow-up process for your abnormal Pap smear result as recommended by the health department.

Sincerely,

Appendix K

Project Title: Improving Adherence to Public Health Follow-up Care Standards for Underserved Women with Abnormal Cervical Cytology

Please read this informed consent carefully before you decide to participate in the study.

Consent Form Key Information:

- Participate in a survey called Protocol for Responding to and Assessing Patient's Assets, Risks, and Experiences (PRAPARE).
- The survey will take place by phone as part of Alabama Department of Public Health (ADPH) abnormal Pap smear follow-up. If you cannot be reached by phone, the survey will be mailed to you.
- No information collected will connect your identity with your responses to the survey.
- The benefit is to help you get to your clinic appointment.

Purpose of the research study: This study will help us know what problems prevent you from keeping your appointment for follow-up care and how we can help you.

What you will do in the study: You are being asked to answer a survey by phone. By agreeing to complete the survey by phone, you are agreeing to participate in this project. However, if you were unable to be reached by phone, the survey has been mailed to you. A self-addressed stamped envelope is provided for you to mail the survey back. Completing the survey and mailing it back means that you agree to participate.

Description of study: The PRAPARE survey includes personal questions about your family and home, your money and resources, and your social and emotional health. You can skip any question on the survey that makes you feel uncomfortable and you can stop the interview at any time.

Time required: The survey will take about 20 minutes of your time.

Risks: There are no more than minimal risks to you by participating in this survey.

Benefits: You will benefit by participating in this project by getting assistance in accessing available resources that can help you get to your clinic appointment.

Confidentiality: The information that you give in the survey will be private. Your information will be assigned a code number. The list connecting your name to this code number will be stored on a password-protected computer software program. When the study is completed, this list will be deleted. Your name will not be used in any report. All electronic files containing your information will be password-protected. Only the primary investigator will have access to the password-protected information that will be kept on a secure online storage system.

Voluntary participation: Your participation in the study is voluntary. If you do not wish to participate in the project, you will receive standard follow-up care for your abnormal Pap smear.

Right to withdraw from the study: You have the right to withdraw from the study at any time without penalty.

How to withdraw from the study: If you want to withdraw from the study while it is being conducted, request to stop the interview. All information will be destroyed. There is no penalty for withdrawing. You will still receive standard abnormal Pap smear follow-up care.

Compensation/Reimbursement: You will receive no payment for participating in the study.

If you have questions about the study or need to report a study related issue please contact:
Principal Investigator: Ginger Phillips, MSN, CRNP
Title: Nurse Practitioner
Department Name: Tuscaloosa County Health Department
Telephone: 205-562-6900
Email address: grgriffin1@crimson.ua.edu

Faculty Advisor's Name: Amy S. D. Lee, DNP, ARNP, WHNP-BC
Department Name: Capstone College of Nursing, The University of Alabama
Telephone: 205-348-6798
Email address: adlee5@ua.edu

If you have questions about your rights as a participant in a research study, would like to make suggestions or file complaints and concerns about the research study, please contact:
Ms. Tanta Myles, the University of Alabama Research Compliance Officer at (205)-348-8461 or toll-free at 1-877-820-3066. You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach Website at http://ovpred.ua.edu/research-compliance/prco/. You may email the Office for Research Compliance at rscompliance@research.ua.edu.

Appendix L

DNP Scholarly Project Timeline

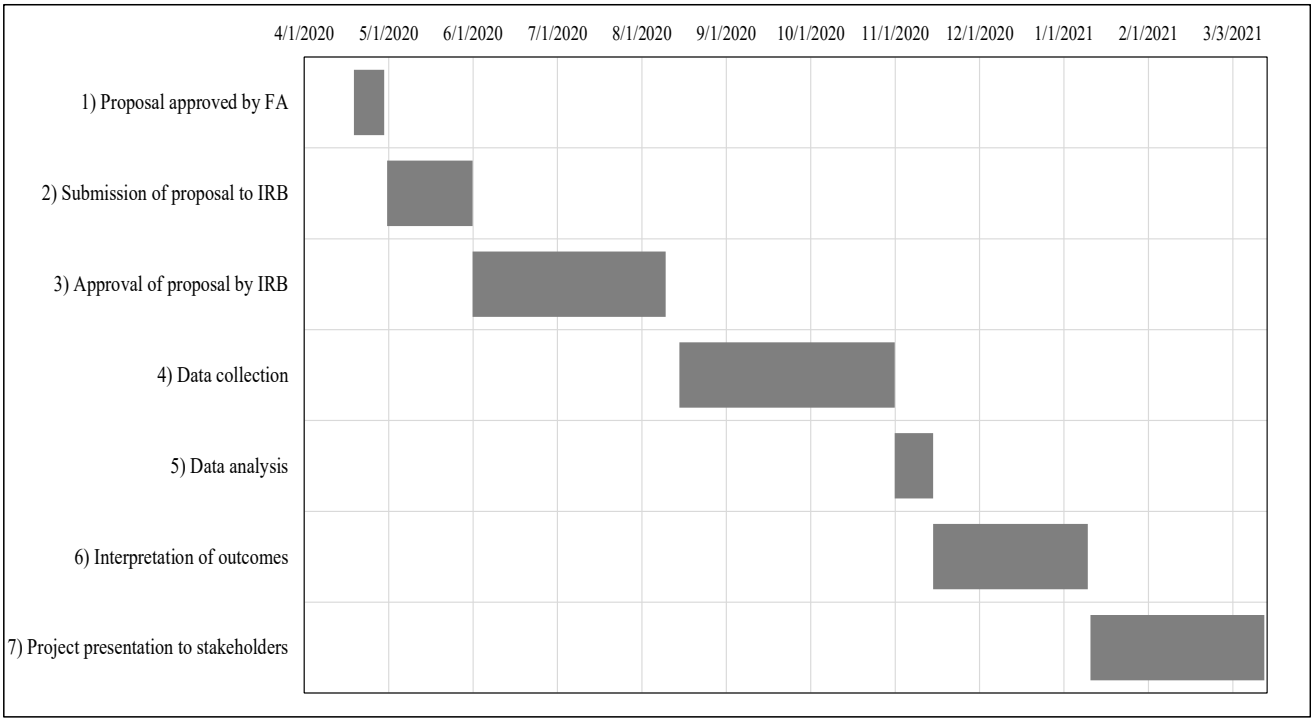


Table 1

Show rates with data analysis.

County	Pre-Covid			Covid			Post-implementation			Pre:Post		Covid:Post	
	S	K	SR	S	K	SR	S	K	SR	χ^2	*p*	χ^2	*p*
Bibb	26	16	62%	8	4	50%	16	14	88%	3.271	*0.070508	4	0.0455
Cullman	22	16	73%	28	23	82%	20	18	90%	2.027	0.1545	0.5782	0.447
Dallas	20	13	65%	10	6	60%	23	19	83%	1.7424	0.1868	1.9398	0.1637
Shelby	32	26	81%	9	6	67%	11	10	91%	0.56	0.454107	1.818	0.17753
All counties	100	71	71%	55	39	71%	70	61	87%	6.1823	0.0129	5.0731	0.0243

**Note*. *p*< .05. S = Scheduled, K=Kept, SR=Show rate.

Table 2

PRAPARE survey data.

Overall sample characteristics	**Full sample**	
	n = 37	%
Personal characteristics		
Ethnicity		
Hispanic	1	3%
Non-Hispanic	36	97%
Race		
Black/African American	20	54%
White	17	46%
Farm work		
No	37	100%
Military		
No	37	100%
Language		
English	37	100%
Age		
18-24	3	8%
25-34	21	57%
35-44	8	22%
45-54	2	5%
55-64	3	8%
Median age	32	
Average age	34.6	
SD	9.5	
Family and home		

Number of people in household		
1	9	24%
2	8	22%
3	8	22%
4	7	19%
5	2	5%
6	2	5%
8	1	3%
Housing		
No	3	8%
Yes	34	92%
Worried about losing housing		
No	33	89%
Yes	4	11%
Money and resources		
Education		
Less than high school	8	22%
High school or GED	15	41%
More than high school	14	38%
Employment		
Unemployed, seeking work	10	27%
Part-time or temporary work	9	24%
Full-time work	12	32%
Unemployed, not seeking work	6	16%
Insurance Coverage		
Medicaid	19	51%
Private Insurance	7	19%

Uninsured	11		30%
Income			
No response	5		14%
$0 - $5,000	11		30%
$5,000 - $10,000	3		8%
$10,000 - $20,000	12		32%
$20,000 and above	6		16%
Median income		$11,400.00	
Average income		$11,329.31	
SD		8642.2	
Necessities			
Food	1		3%
Food, Medicine/Healthcare	1		3%
Food, Utilities, Medicine/Healthcare	1		3%
Food, Utilities, Medicine/Healthcare, Phone, Clothing, Childcare	1		3%
Food, Utilities, Phone, Clothing	1		3%
Medicine/Healthcare	6		16%
Medicine/Healthcare, Phone	1		3%
No response	24		65%
Utilities	1		3%
Worried about transportation			
No	27		73%
Lack, medical appointments	1		3%
Lack, non-medical appointments	1		3%
Both of the above	8		22%
Talk to people you care about			
Less than once a week	3		8%
1 -2 times a week	7		19%
3 - 5 times a week	6		16%

5 or more times a week	21	57%
Stressed		
Not at all	5	14%
A little bit	10	27%
Somewhat	10	27%
Quite a bit	8	22%
Very much	4	11%
Optional additional questions		
Incarceration status		
No	35	95%
Yes	2	5%
Refugee		
No	37	100%
Safety		
No	4	11%
Unsure	2	5%
Yes	31	84%
Fear of partner		
No	35	95%
Yes	2	5%

Figure 1

Overall county show rates at each interval

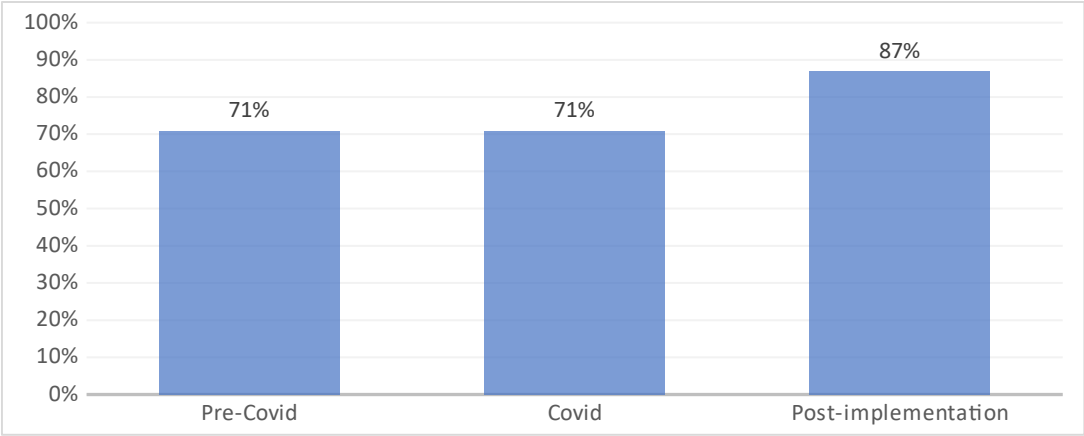


Figure 2

County and overall show rates at each interval