ADVERSE CHILDHOOD EXPERIENCES (ACES) IN PREGNANCY: SCREENING, IDENTIFICATION AND REFERRAL

by

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Dedication

This paper is dedicated to those individuals whose lives have been affected by ACEs. May you find the strength to heal from the past, live in the present, and hope for the future.

Abstract

Adverse childhood experiences (ACEs) are traumatic events that occur between birth and eighteen years of age (Radcliffe, Crouch, & Strompolis, 2018). The ACEs questionnaire consists of ten "yes" or "no" questions that address abuse, neglect, parental conflict, parental substance abuse, and parental mental illness (Hughes et al., 2017). Each "yes" answer is worth one point. A score ≥ four ACEs is associated with increased risk for maladaptive behaviors, poor physical health, and poor mental health. This quality improvement (QI) project developed a successful plan of screening, identification, and referral for ACEs with women receiving care at a community health department. Results included 311 women were screened for ACEs. Forty had a score of ≥ four and were offered referral information. This QI project helped to start a conversation about ACEs in a rural community affected by substance abuse, mental health, and chronic health conditions. Further work should include screening for ACEs in other settings, providing trauma-informed care, and focus on reducing the impact of ACEs.

Keywords: adverse childhood experiences (ACEs), trauma-informed care

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Chapter One: Overview of the Problem of Interest

Adverse childhood experiences (ACEs) are traumatic events that occur between birth and eighteen years of age (Radcliffe, Crouch, & Strompolis, 2018). ACEs include harms that affect children such as abuse, neglect, parental conflict, parental substance abuse, or parental mental illness (Hughes et al., 2017). Exposure to one or more ACEs is associated with risk-taking behaviors and chronic health conditions in adulthood (Radcliffe et al., 2018). According to Campbell, Walker, & Egede (2016), an ACE score ≥ four was associated with increased odds for "binge drinking, heavy drinking, smoking, risky HIV behavior, diabetes, myocardial infarction, coronary heart disease, stroke, depression, disability caused by health, and the use of special equipment because of disability" (p. 344). The purpose of this chapter is to discuss the effect of ACEs on the target population of pregnant and postpartum women served at a rural health department.

Background Information

The ACEs screening tool was developed in 1998 by the Centers for Disease Control and Kaiser Permanente (American Academy of Pediatrics [AAP], 2014). The study asked 17,000 Americans about ACE exposure and negative physical and mental health outcomes. Results indicated that more than 60% of participating adults were affected by ACEs (AAP, 2014).

The questionnaire consists of ten "yes" or "no" questions to retrospectively assess abuse, neglect, and household dysfunction (Oral et al., 2015) (See Appendix A-B). "Yes" answers determine the score. A score ≥ four ACEs is associated with increased risk for maladaptive behavior, poor physical health, and poor mental health. Permission to use the ACEs screening tool for this project was obtained by the Centers for Disease Control and Prevention (See Appendix C).

A review of the psychometric properties of the ACEs questionnaire demonstrated adequate internal consistency with a Cronbach's alpha of 0.88 i.e., good reliability (Florida State University College of Medicine, 2018). Cronbach's alpha scores range from zero to one, with a number closer to one indicating that "items are consistently measuring the same variable" (Kim & Mallory, 2017, p. 46). Microsoft® Word was used to assess the reading level of the ACEs questionnaire. The ACEs questionnaire was calculated to be a Flesch-Kincaid grade level of 7.6, which aligns with the average American reading level of seventh to eighth grade (Clear Language Group, 2018).

ACEs predict higher rates of negative health outcomes such as risk-taking behaviors, chronic health problems, and poor mental health (Oral et al., 2015). Risk-taking behavior incidence increases with ≥ four ACEs. Risk-taking behaviors specifically include: (1) 2.2 times higher smoking rate; (2) 7.4 times higher alcoholism rate; (3) 4.2 times higher substance abuse rate and 11.3 times higher I.V. substance abuse rate; (4) 1.6 times higher obesity rate and (5) 3.2 times higher promiscuity rate (Oral et al., 2015). ACEs may lead to chronic health conditions including heart disease, stroke, liver disease, lung cancer, and chronic obstructive pulmonary disease if exposure to ≥ four ACEs (Oral et al., 2015). In addition, compared to those with zero ACEs, those with ≥ four ACEs are at a 172% increased risk for developing comorbid conditions secondary to increased biobehavioral stress (Campbell et al., 2016). ACEs can create mental health challenges such as childhood learning and behavioral problems, somatic disorders, hallucinations, and anxiety and obsessive-compulsive disorders (Oral et al., 2015). Finally, ≥ four ACEs are associated with a 4.5 times higher risk of depression and a 12.2 to 15.3 times higher rate of suicide (Oral et al., 2015).

Significance of Clinical Problem

Globally, one in five women have a childhood history of maltreatment. Such experiences may negatively impact women who are creating families of their own (Sperlich, Seng, Li, Taylor, & Bradbury-Jones, 2017). For example, if a mother experienced ACEs, she may be unable to offer a safe, stable, and nurturing relationship to her child. This dysfunctional relationship will renew the cycle of maladaptive behavior and poor health outcomes (Randell, O'Malley, & Dowd, 2015). Identification of ACEs in early pregnancy helps women develop better coping skills and may improve pregnancy outcomes. Women who have experienced ACEs are more likely to engage in high-risk behaviors, i.e., smoking, which negatively affects pregnancy resulting in preterm or neonatal low birth weight (Smith, Gotman, & Yonkers, 2016).

Those who have experienced ACEs are at high risk for physical and psychological problems (Madigan, Wade, Plamondon, Maguire, & Jenkins, 2017). Screening pregnant women for ACEs helps break the abuse cycle and support mothers who have experienced ACEs (Bellis, Lowey, Leckenby, Hughes, & Harrison, 2013; Plant, Jones, Pariante, & Pawlby, 2017). Although identifying ACEs in pregnant women cannot change the past, it can decrease the chance that women will expose their children to ACEs.

Trauma-informed care is the intervention of choice for individuals exposed to ACEs. According to Sperlich et al. (2017), trauma-informed care is a special type of intervention that identifies triggers among people who have survived ACEs. This type of intervention (1) helps patients to understand trauma impact, (2) aims to prevent adverse outcomes, (3) breaks intergenerational cycles of ACEs, and (4) increases the life-span of the patients and their children (Sperlich et al., 2017). Individuals trained to provide trauma-informed care are licensed professional mental health counselors.

According to the 2017 State of the County Health Report, priority issues in this project's rural county study site were substance abuse, heart disease, and suicide [redacted]. Higher ACE scores are associated with increased risk of substance abuse, chronic diseases, and mental health problems (Oral et al., 2015). By identifying ACEs within a small subset of the county and by providing appropriate referrals for treatment, this QI project can help pregnant and postpartum women. It can also influence future community work in screening and identifying ACEs before maladaptive behaviors occur.

Patients seeking prenatal and postnatal care at the rural health department are more likely to be socioeconomically disadvantaged because it serves individuals on Medicaid or are uninsured. If patients have low socioeconomic status and have a high ACE score, it can be difficult for them to provide a "supportive, nurturing environment for their children, which can lead to an intergenerational cycle of ACEs and chronic stress" (Woods-Jaeger, Cho, Sexton, Slagel, & Goggin, 2018, p. 1). By not addressing and treating ACEs, families can become trapped in cycles of adversity, deprivation, and poor health (Hughes et al., 2017).

Question Guiding Inquiry (PICO)

Population. The population of interest consisted of pregnant and postpartum women served through a rural health department. This was an ideal population to assess ACEs as the rural health department typically serves underserved and low-income women and children. Pregnant women who have experienced ACEs are likely to expose their children to ACEs. While treating a pregnant woman's previous ACE exposure, it may be possible to help the mother and her children.

Intervention. The ACEs questionnaire was given to patients to complete before a pregnancy or postpartum appointment at the health department. Patients were informed about the

questionnaire and were instructed to exclude identifying information (See Appendix D-E). The ACEs questionnaire was available in both English and Spanish. A certified Spanish interpreter verified accuracy of the translated documents. Once completed, either the patient or the health care worker added the score. The health care worker informed patients of the results. If the score was ≥ four, referral information was given. Staff explained the association of ACEs with poor physical health, mental health, and maladaptive behaviors. Counseling services could help them begin the process of overcoming past trauma (See Appendix F-H).

Comparison. There was no comparison group because a screening process for ACEs was unavailable in this population. No previous study of ACEs in this county had been performed to compare this site's data to. In review of existing literature, there have been similar projects of screening and referral for ACEs in different care settings. Previous projects have indicated the importance of having a referral plan in place for positive screenings.

Outcomes. The main project outcome: if a patient scored ≥ 4 were they referred? Outcomes will be measured by identifying number of women screened and number of women given appropriate referral information, if indicated.

Summary

Mothers who have experienced ACEs show increased parenting stress, disruption in maternal-child interactions, and impairments in how their bodies perceive stress (Sexton, Hamilton, McGinnis, Rosenblum, & Muzik, 2015). Identifying ACEs in this population creates opportunity for education on how past experiences affect all aspects of maternal and child health. Evidence indicates that women in their childbearing years can be inspired to improve their health behaviors (Sexton et al., 2015). Referrals to mental health professionals can assist the woman over past trauma with trauma-informed care. Overcoming trauma can help a woman create a

healthy environment for herself and her future children. Although past experiences cannot be undone, a mother can become empowered by transcending past trauma which may protect her children from experiencing ACEs.

Chapter Two: Review of the Literature Evidence

Chapter two describes a literature review on the significance of identifying and treating ACEs in pregnant and postpartum women. For project purposes, *ACEs is defined* as "psychological, physical, and sexual forms of abuse as well as household dysfunction such as substance abuse, mental illness, violence, and incarceration" occurring within the first eighteen years of life (Campbell et al., 2016, p. 344). *Trauma-informed care is defined* as "a theoretical framework that emphasizes family self-determination, working from a strengths-based perspective, and the importance of engagement and rapport," which shifts perceptions from "what is wrong with you?" to "what has happened to you?" (Counts, Gillam, Perico, & Eggers, 2017, p. 228).

Methodology

Sampling strategies. PubMed, CINAHL, and PsychINFO were the search databases. PubMed was first searched from 2013 to present for *adverse childhood events*, yielding 1183 articles. To narrow down the search, the following terms were used to search all within the last five years: (1) *adverse* + *childhood* + *experiences* (820 hits); (2) *adverse childhood experiences* + *rural health* (77 hits); (3) *adverse childhood experiences* + *poverty* (104 hits); (4) *adverse childhood outcomes* + *maternal health* (306 hits); (5) *adverse childhood experiences* + *maternal health* (202 hits) and (6) *adverse childhood experiences* + *interventions* (194 hits). CINAHL was used to search *adverse childhood experiences* from 2014 to 2018 in academic journals (324 hits). PsychINFO was used to search: (1) *adverse childhood experiences* (863 hits); (2) *adverse*

childhood experiences + pregnancy (56 hits) and (3) *trauma informed care + adverse childhood experiences* (27 hits), from 2014 to present (See Appendix I).

Evaluation criteria. Inclusion criteria included articles with adverse childhood experiences or events as a main theme. Exclusion criteria applied included: (1) articles in which ACEs populations were too specific for this project, i.e. college students, military, or geriatric populations; (2) duplicate articles; and (3) articles in languages other than English.

After inclusion and exclusion criteria were applied, articles were hand-searched by title. After an article was selected for potential use, the abstract and results sections were assessed for relevancy. If the article had relevant information on ACEs screening, identification, or referral, it was kept for potential use as a reference. Forty-six articles were selected and reviewed in the QI project. Twenty-three articles were kept for use and a literature matrix was created to summarize each article's findings (See Appendix J).

Literature Review Findings

Literature review findings described ACEs. ACEs were discussed as screening, treatment with trauma-informed care, and physical and mental illness side effects. Populations screened for ACEs consisted of adults, parents, expecting mothers, and even children. Most articles discussed the potential for using the ACEs questionnaire to assess a patient's social determinants of health, with a focus on identifying ACEs early before maladaptive behaviors occurred.

ACE assessment in pregnancy described identifying and treating ACEs to help decrease infant physical and mental health risks. An infant's autonomic nervous system development can be affected by a mother's prenatal stress and previous ACEs (Gray, Jones, Theall, Glackin, & Drury, 2017). Exposure to ACEs during fetal development can alter the function of the placenta,

affecting the child's development on the molecular level, and negatively impact the child's brain, immune system, and endocrine system (Leckman, 2017).

In a study completed by Gray et al. (2017), pregnant women in a Women, Infants, and Children (WIC) clinic were screened for ACEs during a visit with a score ≥ four considered high risk. The mothers returned when their infants were four months old to complete the Still Face Paradigm (SFP), a well-established dyadic stressor validated to assess behavioral and physiological regulatory capacities of infants (Gray et al., 2017). There were three separate parts to the study for each dyad including Play Period 1 (PP1), Still Face (SF), and Play Period 2 (PP2); all lasting 2.5 minutes with a research assistant present but out of sight (Gray et al., 2017). PP1 involved the mothers playing freely with their infant (Gray et al., 2017). SF involved mothers keeping a neutral face and avoiding interaction with their infant (Gray et al., 2017). In PP2, mothers resumed play with their infant (Gray et al., 2017). The infant's peripheral nervous system was assessed by the respiratory sinus arrhythmia (RSA) method, with the infant wearing an electrocardiography (ECG) monitor (Gray et al., 2017). Results of the study indicated that mothers with high ACE scores had infants with "lower overall RSA, indicating a lower physiological starting point", which was associated with lack of recovery following a stressor (Gray et al., 2017, p. 925). Intergenerational stress such as ACEs dampens peripheral nervous system activity and affects how the body responds to stress in infancy (Gray et al., 2017).

Another study by Madigan et al. (2017) recruited mothers and their newborns to assess maternal ACEs and infant's physical and emotional health. The mothers described their past ACE exposures. Mothers that had a score ≥ four on the ACEs questionnaire had an increased incidence of perinatal complications such as (1) gestational diabetes, (2) preeclampsia, (3) preterm birth, and (4) delivery of low birth weight infants (Madigan et al., 2017). These perinatal

complications increased the risk for neonatal poor health outcomes. Four or more ACEs were also associated with psychosocial complications including: (1) teenage pregnancy, (2) socioeconomic problems, (3) family issues, and (4) marital discord, all of which are associated with childhood emotional and behavioral disorders (Madigan et al., 2017). Mothers with higher ACEs reported poorer infant physical and emotional health compared to those with fewer ACEs (Madigan et al., 2017). When mothers are burdened with stressors, they are less able to attend to the needs of their infants which has an impact on the infant's ability to regulate their emotions (Madigan et al., 2017). This study demonstrated the need to incorporate the ACEs screening tool into practice to improve maternal and child health.

Trauma-informed care is one intervention for ACE exposure. It helps clients (1) discuss ACEs, (2) reduce anxiety associated with ACEs memories, and (3) increase their ability to control their emotions and behaviors (Levenson, 2017). Trauma-informed care creates a safe environment that helps clients develop coping strategies for past abuse and cope with current relationships (Levenson, 2017). Trauma-informed care addresses problems associated with ACEs by integrating knowledge of trauma and addressing the discomforts that come with the vulnerability of past trauma exposure (Sperlich et al., 2017).

Limitations of Literature Review Process

Limitations of the literature review process fell into several categories: study design, limited sample size, study locale and study methods. This QI study is a descriptive study; thus, it does not need a randomized control trial (RCT) design. Because it is a descriptive study, sample size will be limited to patients seen at the clinic during the study duration. Additionally, this project was conducted in a rural area instead of an urban locale. Also, study methods did not address all aspects of ACEs from screening to identification to treatment. Finally, because the

ACEs screening tool provides a retrospective view on past experiences, there is potential for inaccurate reporting of ACEs (Madigan et al., 2017). This is due to individual experiences that "may bias the recall of these reports", i.e. a depressed patient may be more likely to report negative experiences such as ACEs (Colman et al., 2016, para. 1). On the other hand, some individuals may choose to not disclose their past negative experiences for a variety of reasons.

Discussion

Conclusion of findings. Literature review findings supported the need to assess ACEs to understand a patient's past experiences. Literature also supported using ACEs in pregnant women and women with young children to assist in (1) primary prevention by decreasing exposure to ACEs among children, (2) secondary prevention by limiting pathology from maternal past experiences and (3) tertiary prevention by helping mothers exposed to ACEs by providing treatment (Berens, Jensen, & Nelson, 2017).

Advantages and disadvantages of findings. Advantages of findings included support of the QI project by screening for and identification of ACEs in pregnancy and in the postpartum period. Disadvantages included lack of studies that assessed if there was improvement in maternal and child outcomes by identification and treatment of ACEs.

Utilization of findings in practice. Literature findings support using the ACEs questionnaire in routine, community health practice. Administering the questionnaire takes minimal time to acquire valuable information. ACEs cause physical and psychological distress and should be addressed to promote health (Freeman, 2017).

Summary

The literature review demonstrated the clinical relevance of screening for ACEs in pregnant and postpartum women. Specifically, literature indicates that ACEs have a wide variety

of effects including the neural, endocrine, immune, and metabolic pathways of both women and their developing fetus (Berens et al., 2017). Literature supports that by screening and identifying ACEs in pregnancy and the postpartum period, treatment with trauma-informed care can begin to help a patient recover from earlier experiences and decrease the chance of intergenerational ACE transmission.

Chapter Three: Theory and Concept Model for Evidence-based Practice

Advanced practice nurses use theory and evidence to guide nursing practice and as they do so, the quality of the care they provide improves (Alligood, 2014). The theory selected for this project is Nola Pender's Health Promotion Model. The change model selected is the Change Theory by Kurt Lewin. The purpose of this chapter is to discuss the use of Pender's Health Promotion Model and Lewin's Change Theory in the development and implementation of this QI project.

Concept Analysis

The concept of *ACEs is defined* as events a child experiences before eighteen years of age that include (1) exposure to violence, (2) emotional, physical, or sexual abuse, (3) deprivation or neglect, (4) divorce, (5) parental substance abuse and mental illness, (6) parental incarceration or death, and (7) social discrimination (Bethell, Newacheck, Hawes, & Halfon, 2014). When children are faced with chronic stress such as ACEs, an overproduction of the fight-or-flight hormones cortisol, epinephrine, and norepinephrine occur and disrupt the normal brain to adrenal gland activity (Conn et al., 2017). Chronic elevation of these stress hormones can damage the area of the brain that is associated with executive function skills such as self-regulation (Conn et al., 2017). For children, ACEs and elevated levels of stress hormones can result in poor physical,

social-emotional, and educational outcomes as well as a disruption in their emotional regulation that can lead to risky health behaviors in adolescence and adulthood (Conn et al., 2017).

Theoretical Framework

The theoretical framework used for this QI project is Nola Pender's Health Promotion Model. Major concepts of this model include: (1) health promotion; (2) illness prevention; (3) individual characteristics or experiences; (4) behavior-specific cognitions and affect; and (5) behavioral outcomes (Alligood, 2014). By identifying ACEs in this population, Pender's model is addressed to focus on promoting health to those exposed to ACEs and providing treatment. Overall, this project attempted to promote health for pregnant and postpartum women and their children.

Major factors in Pender's model include: (1) importance of health; (2) perceived control of health; (3) perceived self-efficacy; (4) definition of health; (5) perceived health status; (6) perceived benefits of action; and (7) perceived barriers to action (Alligood, 2014). The two factors of interest for the QI project are perceived benefits of action and perceived barriers to action. Perceived benefits of action are the anticipated positive outcomes that will result from a health behavior (Alligood, 2014). Perceived barriers to action are blocks that are considered personal costs of a particular behavior (Alligood, 2014).

Application to practice change. Using Pender's model, the ultimate goal is health promotion with an interest in perceived benefits and perceived barriers to action with ACEs. Patients may not understand or may not see the benefit in screening for ACEs and receiving help. They may also feel they do not have the time or resources to seek counseling services. With Pender's perceived benefits, helping patients to see the positive outcomes of ACEs identification, such as healing from past trauma or helping to prevent exposure to their own children, may make

them more motivated to accept the intervention. Perceived barriers such as not being aware of community resources for ACE treatment were reduced by providing referral information after a positive screening with options for those with and without insurance. The ultimate goal of Pender's model is to encourage patients to practice health-promoting behavior with end goals of optimal well-being and personal life fulfillment (Petiprin, 2016a).

Evidence-Based Practice Change Theory

The Change Theory developed by Kurt Lewin was used to describe the QI project in relation to the health department staff. Major concepts of this theory include driving forces, restraining forces, and equilibrium (Petiprin, 2016b). Driving forces are those that push one in a direction that precipitates change (Petiprin, 2016b). Restraining forces work against driving forces, and hinder change (Petiprin, 2016b). Equilibrium is a state where there is equality between driving forces and restraining forces where no change occurs (Petiprin, 2016b).

Application to practice change. The stages in this theory include unfreezing, change, and refreezing (Petiprin, 2016b). Unfreezing involves letting go of an old pattern, such as staff not administering the ACEs questionnaire. The next step, change, involves the process of altering thoughts, such as staff understanding why it is important to incorporate ACEs into routine screening practice (Petiprin, 2016b). The last step is refreezing, where the original change such as screening for ACEs becomes a habit or part of the standard practice of care (Petiprin, 2016b) (See Figure 1 below).

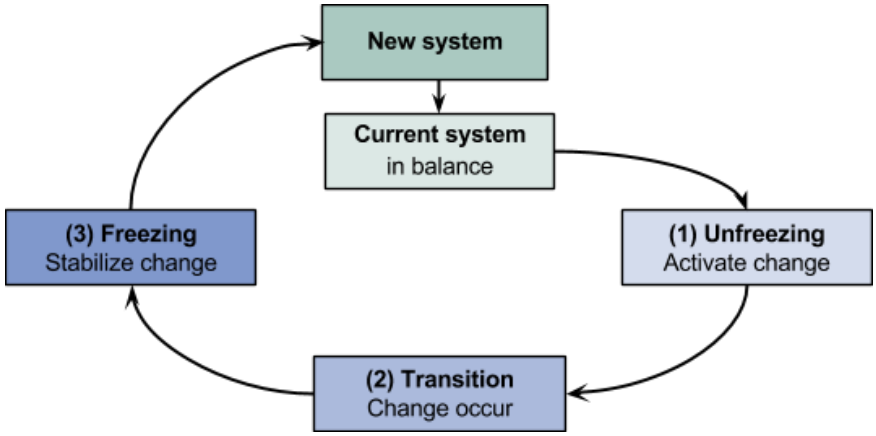

Figure 1. Lewin's change model as continuous improvement process (Schottle, 2016).

Summary

By incorporating the concept of ACEs with the Health Promotion Model and the Change Theory, it provides a foundation for the QI project in terms of patients the project seeks to help and changing the mindset of staff involved in the project. Pender's model seeks to promote health and wellness. Lewin's model provides a framework for change. Both provided theoretical framework for this QI project.

Chapter Four: Pre-implementation Plan

There were numerous steps involved in planning before the QI project could be initiated. First, the project purpose had to be determined. Organizing project management, cost analysis, obtainment of Institutional Review Board (IRB) approval, and project evaluation development followed. This chapter will discuss the steps in the pre-implementation plan of the QI project.

Project Purpose

The purpose of the QI project was to initiate a program of screening and referral for ACEs in pregnant and postpartum women served by the health department in a rural community. This entailed developing a plan for ACEs screening and providing appropriate interventions for positive results. Although research supports the strong association between ACEs and poor adult

health and social outcomes, the ACEs screening tool is underutilized nationwide (Bellis et al., 2013). This project served as a starting point for community members to recognize the potential of incorporating ACEs screening and the importance of developing resiliency programs in a community that is affected by substance abuse, mental health, and chronic health conditions.

Project Management

Organizational readiness for change. Readiness for change involves altering the thinking of employees so they understand the need for and the positive effects of change (Haque, TitiAmayah, & Liu, 2016). By providing staff with education on ACEs and the potential impact on women as well as their future children, the hope was to improve the organization's readiness for the intervention and obtain the staff's support of the project.

Inter-professional collaboration. Inter-professional collaboration occurs when "two or more professions work together to achieve common goals" (Green & Johnson, 2015, p. 1). Benefits of inter-professional collaboration include synergistic achievement and increased growth on both an individual and organizational level (Green & Johnson, 2015). For this project, there was a great influence of inter-professional collaboration.

The project team consisted of (1) a DNP student, (2) DNP faculty, (3) a health education specialist, (4) a health department employee, and (5) a community mental health therapist (See Appendix K). The DNP faculty member served as a key resource for the DNP student and provided clinical expertise in public health. The health education specialist contributed a wealth of knowledge about the current issues in the rural community which was further supported by her passion for the ACEs study and resiliency development. The health department employee worked directly with patients assessing the results of the screening tool and providing referral information. Her participation was invaluable because of the trusting relationship she had with

her clients. Finally, the community mental health therapist had knowledge in trauma-informed care with a strong desire to help those affected by childhood trauma. The expertise of each team member assisted in developing a project that incorporated the knowledge of each specialty to form the greatest impact.

Risk management assessment. The risks associated with this project were minimal. Completion of the questionnaire was voluntary. There is a risk of precipitating a traumatic reaction when discussing ACEs; however, in research to date this has not been an issue with using the questionnaire, and many find its' use empowering as they begin to address past trauma (Bethell et al., 2017). If the administration of the questionnaire produced a traumatic reaction, the patient was cared for according to the mental health emergency plan. The plan entailed walking the patient to the mental health counseling service located within the same building as the health department for emergency mental health counseling (See Appendix K).

Organizational approval process. Approval within the organization began with contacting the director of the health department for approval. The QI project proposal was sent to the director explaining the purpose of the project and the clinical question. A follow-up phone conversation was conducted to further explain the project. Additionally, a personal meeting between the director and the site champion to discuss project feasibility further assisted with obtainment of organizational approval. This organization did not have their own IRB and was made aware of the project submitted to ECU's IRB for approval (See Appendix L). Approval for the QI project was also granted by ECU's DNP Program director.

Information technology. Technology used for this project included Microsoft® Excel to store and display data. No personal health information was collected so the electronic medical record at the health department was not accessed by the DNP student nor utilized for this project.

Microsoft® PowerPoint was used for initial staff education and for creation of a poster presentation to display project results upon completion.

Cost Analysis of Materials Needed for Project

The cost of the project included paper and ink for the letters, questionnaire, staff script, and referral information. These tools were printed from the DNP student's home. Additional cost included the lunch provided during the staff education session before project initiation (See Figure 2 below).

Cost of DNP QI Project

Item	*Cost per item*	*Number of items*	*Total*
Ink	$13.99 per cartridge	2 cartridges needed	$27.98
Paper	$7.29 per pack	2 packs (500 sheets/pack)	$14.58
Pocket folder	$0.35 each	4 folders	$1.40
Pocket folder (w/ prongs)	$0.35 each	5 folders	$1.75
Staff lunch	$10.50 per person	10 people	$105.00
		Total cost:	$150.71

Figure 2. DNP QI Project Budget

Plans for Institutional Review Board Approval

All items to be given to patients and staff were included in the IRB review process. Once approved, these items were not modified. Approval was granted, and it was determined this QI project was not human research and was therefore exempt from further IRB review (See Appendix M).

Plan for Project Evaluation

Demographics. There were no additional demographics collected from patients involved in the QI project. It was known that participants were women of childbearing age of low socioeconomic status served at the rural health department. The goal of the project was not to say

a particular group was more affected by ACEs, but to show a need for ACEs screening communitywide. Obtaining more demographic information would have provided no additional benefit or changed outcomes.

Outcomes measurement. In performing any type of QI work, it is essential to assess outcomes. Outcomes for this QI project included if a patient had a positive screening, were they offered referral information. Creating an evaluation tool, performing a data analysis, and having proper storage of data allowed for an organized process of project data collection and interpretation.

Evaluation tool. The evaluation tool included was a sheet that health department staff filled out after each appointment that included five questions (See Appendix N). The first question asked if the patient completed the screening tool with "yes" and "no" answers. The second question asked, if the screening was not completed, to explain why. The next question asked the patient's score with a range of zero to ten. Question four asked if referral information was given with "yes" or "no" answers. The final question asked if emergency counseling was needed with "yes" or "no" answers. With a "yes" to the former question, an additional question prompted if counseling was provided with "yes" or "no" answers. Finally, there was a place where staff could put additional comments if they deemed necessary. Staff members were reminded to not place any patient identifiers on this information sheet. Completed sheets were placed in a pocket folder. These sheets were collected and reviewed weekly and data was placed into a Microsoft® Excel spreadsheet on a personal computer.

Data analysis. Data analysis was done with use of Microsoft® Excel. Data collected was quantitative at nominal and ordinal levels. Data presented included how many

women were screened, how many screened positive with a score of ≥ four, and how many were referred based off of a positive screening.

Data management. The data collection tool was on paper. The DNP student entered data into a personal computer on a Microsoft® Excel spreadsheet with no identifying patient information. Accuracy of data depended on staff compliance with the project and ease of use of the data collection tool, requiring minimal interruption in their daily workflow.

Summary

This project sought to understand the impact of ACEs in a rural North Carolina community and aid those who have been affected by ACEs to promote healing. Determining organizational readiness for change occurred before initiation of the project to identify present barriers. Inter-professional collaboration with multiple disciplines created a more well-rounded project. The risk of the project on patient wellbeing was assessed and was determined to be minimal to no risk. Approval by the health department and through ECU's IRB was done to ensure patient safety. Cost was minimal compared to the potential benefit of this DNP project to those in the community. Data collected provided evidence that supports screening for ACEs community and even statewide as substance abuse, mental health, and chronic conditions are becoming more prevalent throughout North Carolina.

Chapter Five: Implementation Process

Once the process of pre-implementation was complete, the process of QI project implementation took place. The total time of project implementation was eight weeks, from August 27th to October 19th. A staff education session with lunch was provided one week prior to implementation to review project goals, staff roles, and answer questions regarding the project. This chapter will (1) discuss the setting for the project, (2) describe participants, (3) mention the

recruitment process, (4) discuss the implementation process, and (5) identify variations of the project plan during initiation.

Setting

This project took place at an accredited health department in the southern Piedmont region of North Carolina. This health department has been operating since the [redacted] with a mission to serve the citizens of the community [redacted]. There is an estimated 60,000 people living in this county, with a majority of people, or 67.7%, living in the rural areas versus urban areas of the county (North Carolina Department of Commerce, 2018). In 2016, the estimated median household income was < $50,000 with > 7,000 people living below the poverty level (North Carolina Department of Commerce, 2018).

Key areas of focus within the county included substance abuse, chronic disease, and mental health [redacted]. In 2017, in a span of eight months, there were 243 visits to the local emergency department for drug overdoses [redacted]. Death by suicide was higher than comparable counties in North Carolina [redacted]. Likewise, the incidence of heart disease was significantly higher compared to peer counties [redacted]. As stated before, despite substantial evidence that exposure to ACEs is related to substance abuse, poor mental health, and poor physical health, the ACE study information has still not been widely integrated into clinical practice or in public health initiatives (Berens et al., 2017).

Participants

Participants in the QI project were women of childbearing age, either pregnant, in the postpartum period, or those with young children. This health department typically serves Medicaid or the uninsured, and participants were either English or Spanish speaking. There was

a letter attached to the questionnaire explaining it and completion was voluntary. The only participants that were excluded were those who chose not to complete the questionnaire. Because clients are seen every three months, the chance of a repeat screen was unlikely.

Recruitment

Participants were recruited on a voluntary basis. No patient was excluded from receiving the questionnaire, but they did have the option to complete it or not. The questionnaire was given to patients in either in English or Spanish, depending on their preference. It was given to the patient to complete along with paperwork they would normally complete before their scheduled appointment.

Implementation Process

The project was implemented in August 2018, a week after the staff education luncheon with a Microsoft® PowerPoint presentation (See Appendix O). The week before initiation, screening tools divided into English and Spanish were given to office staff in pocket folders to give to patients once they checked in for their appointments. No additional dialogue was needed for the front desk staff as the questionnaire was explained by the letter attached to it.

Once the patient was back for their appointment, staff reviewed their paperwork, including the questionnaire, and assessed if follow-up was needed based on the staff script provided. If referral was indicated or the patient was interested in referral information, staff provided the referral form with information about local mental health agencies. A crisis hotline was also provided for mental health emergencies, available twenty-four hours a day, seven days a week. A detailed mental health emergency plan was in place in case the screening tool produced a traumatic reaction and the patient had thoughts of harming themselves or others.

The DNP student did not have direct patient contact during project initiation. Staff at the health department carried out the project screening and provided referral information as necessary based off of screening results. The DNP student visited the site weekly to collect data and communicate with staff.

Plan Variation

There were limited changes to the project during initiation due to required pre-implementation IRB approval. However, with each visit a plan, do, study, act (PDSA) cycle was completed (See Figure 3 below).

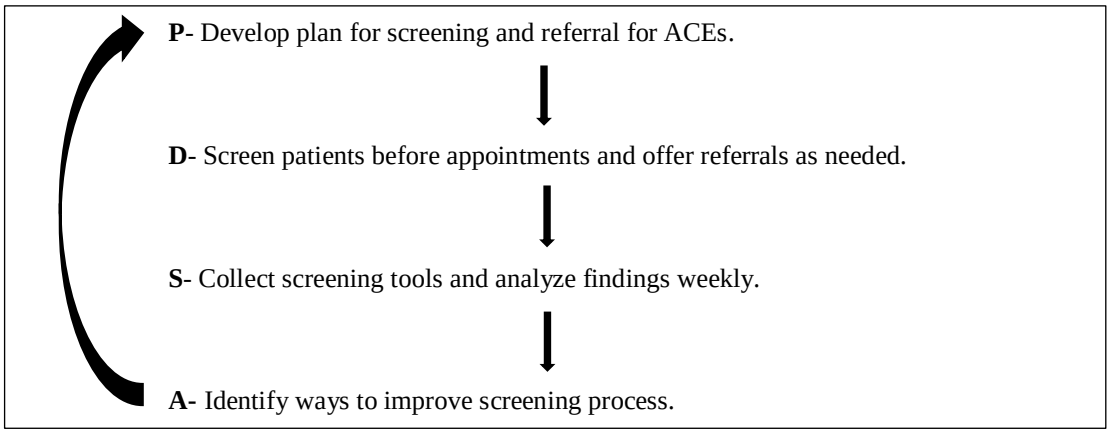

Figure 3. Project PDSA Cycle

An addition to the project included determining the average cost of mental health visits. A staff member suggested this during staff training as she stated patients would be interested to know about costs for mental health services. After contacting the mental health referral agencies, information on average cost and insurance coverage for mental health services was provided to staff. Also, during the first week of project initiation, "yes" and "no" answers were missing from question four of the English copies of the ACEs screening tool, so correct copies had to be made and distributed. Finally, there were more screenings performed than expected, so additional copies of the letters and screening tools had to be made twice during project initiation.

Summary

The process of initiation of the QI project was smooth thanks to a great project team, supportive staff, and adequate planning. The setting was ideal as there was an adequate population size and all patients chose to participate in the screening. PDSA cycles were completed during the project to help with project improvement. There were minor changes made during project implementation to ensure successful QI project completion.

Chapter Six: Evaluation of the Practice Change Initiative

After QI project initiation, it was then necessary to evaluate project outcomes. Evaluation of a QI project is important to see how the practice change will impact healthcare. This chapter will describe patient demographics, discuss outcomes, and review project findings to determine project impact and direct future work using ACEs.

Participant Demographics

For this project, no additional demographic data was obtained. Women at the rural clinic were of childbearing age and were pregnant, postpartum, or had young children. As previously stated, because this project was not designed to say a certain demographic was more affected by ACEs, this information was not relevant and not obtained.

Intended Outcome(s)

Intended outcomes for this project included both short, intermediate, and long-term outcomes. First, the short-term outcome was developing a plan for screening and referral of ACEs in a rural health department. This outcome was met and there were 311 screenings performed and all patients that scored ≥ four were offered referral information by staff.

Next, the intermediate goal included increasing community awareness of ACEs. Although the ACEs study was done over twenty years ago, there is still lack of utilization of

ACEs information in the public health realm. This QI project included sharing project information with community leaders. Neighboring counties of this project site are screening for ACEs in pediatric offices as well as training teachers about ACEs and offering trauma and resiliency training. Increasing awareness of ACEs and their impact can help community leaders to see the importance of preventing ACEs and decreasing the effects of ACEs.

Third, long-term goals of this QI project include promoting awareness of ACEs into the health science community. ACEs are not routinely taught in health science curriculum even though ACEs can have a profound effect on overall health. The first step of this long-term goal was presenting this QI project at East Carolina's Redesigning Education to Accelerate Change in Healthcare (REACH) QI symposium to expose others in the health science field to the impact of ACEs.

Findings

All 311 women who met criteria for screening at the clinic, were screened using ACEs. Each question regardless of ACE score was broken down to determine the frequency of each "yes" answer. Out of the ten questions: (1) question one had 41 "yes" answers; (2) question two had 25 "yes" answers; (3) question three had 20 "yes" answers; (4) question four had 44 "yes" answers; (5) question five had 20 "yes" answers; (6) question six had 174 "yes" answers; (7) question seven had 27 "yes" answers; (8) question eight had 43 "yes" answers; (9) question nine had 41 "yes" answers; and (10) question ten had 21 "yes" answers (See Figure 4 below).

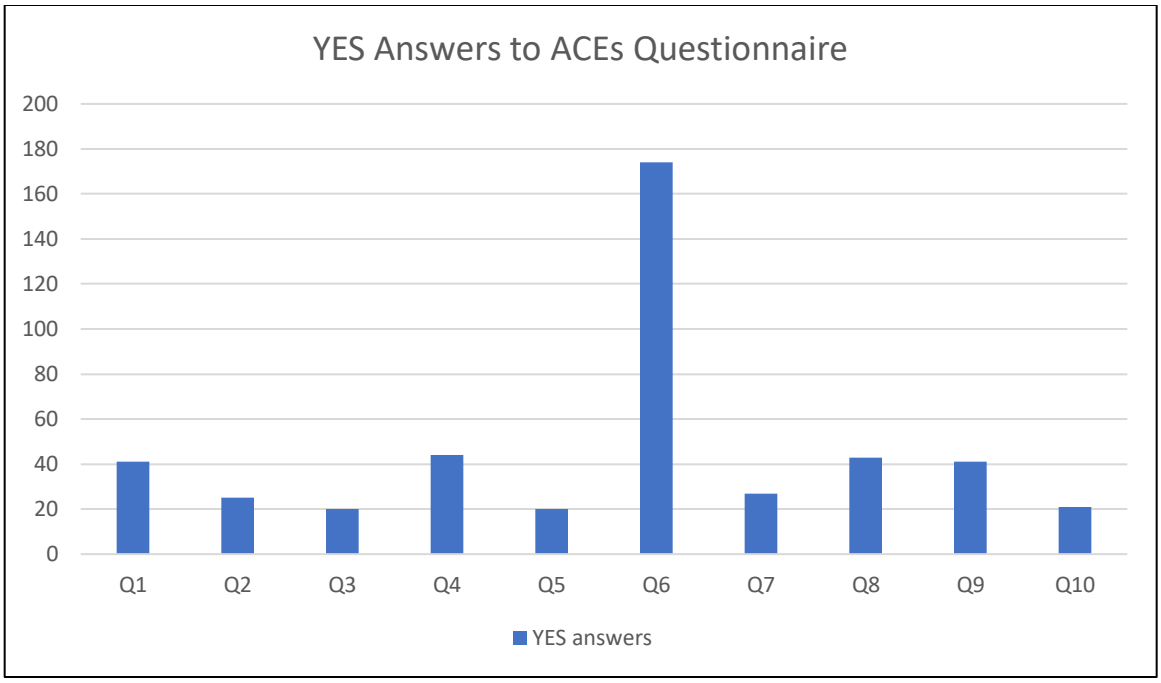

Figure 4. Breakdown of "yes" Answers to ACEs Questionnaire

Additionally, out of 311 screened, 40 screened positive (13%) with a score of ≥ four. All 40 women who screened positive with a score of ≥ four were offered referral information. Positive scores were separated to determine the frequency of each positive score. Out of the 40 positive scores: (1) eight patients had an ACE score of four; (2) twelve patients had an ACE score of five; (3) three patients had an ACE score of six; (4) five patients had an ACE score of seven; (5) eight patients had an ACE score of eight; (6) two patients had an ACE score of nine; and (7) two patients had an ACE score of ten (See Figure 5 below).

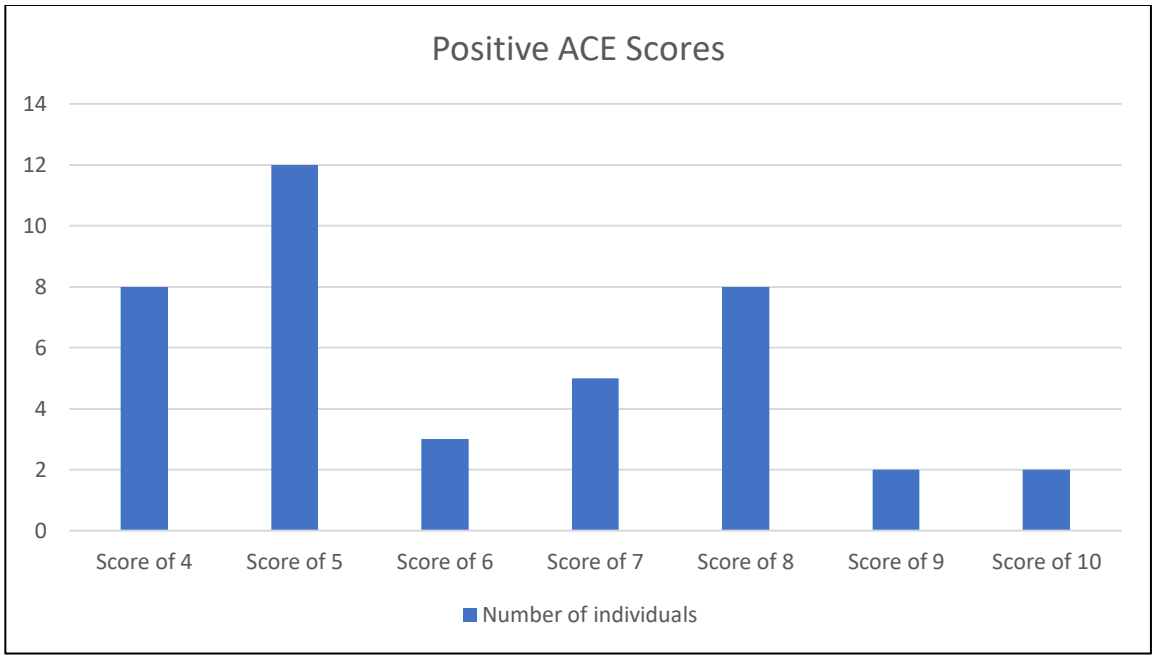

Figure 5. Breakdown of Positive ACE scores

Out of the 40 women who were offered referral information for positive scores, thirteen refused referral information. On the data collection tool, staff could indicate why a patient refused referral information. Eight of the patients who refused referral information told staff they were already receiving counseling services. The remaining five who refused referral information did not indicate why they did so. Of the 271 patients with negative screens, 31 requested or accepted referral information.

Summary

This project had short, intermediate, and long-term outcomes. Short-term project outcomes were met and highlighted the importance of community awareness of ACEs with 40 positive screenings. Intermediate and long-term goals of increasing community awareness of ACEs and including ACE information into health science curriculum respectively are part of the dissemination plan for this project. ACEs can have an impact on the health of the nation and should be addressed to provide better patient-centered healthcare.

Chapter Seven: Implications for Nursing Practice

The American Association of Colleges of Nursing (AACN) have established eight essentials for all graduates of DNP programs. Each essential includes competencies that are vital to advanced practice nursing roles (AACN, 2006). This chapter will describe the eight essentials in relation to this QI project.

Practice Implications

Essential I: Scientific underpinnings for practice. This first essential highlights the "complexity of practice at the doctoral level and the rich heritage that is the conceptual foundation of nursing" (AACN, 2006, p. 9). It involves being able to integrate nursing knowledge, translate knowledge into practice, and integrate research and theory to improve patient outcomes (AACN, 2006). This QI project involved taking the knowledge of the ACEs study and implementing it into nursing practice. Using the ACEs curriculum in nursing practice allows for the clinician to obtain a more complete view of the patient's life and past experiences. It can help providers to better understand a patient's risk for maladaptive behaviors, mental health problems, and chronic health conditions. Most importantly, it can help advanced practice nurses provide better care for their patients and help patients heal from past traumatic experiences.

This QI project integrated two nursing theories, Pender's Health Promotion Model and Lewin's Change Theory, to help guide project planning and initiation. Pender's Health Promotion Model was used to identify patient's perceived benefits of action and perceived barriers of action. Lewin's change theory was used to identify practice change in staff with key steps of unfreezing, changing, and refreezing.

Essential II: Organization and systems leadership for quality improvement and systems thinking. Essential II focuses on the DNPs practice to not only include direct patient care, but also to improve the health of the community. Leadership of a DNP should include an emphasis of practice, improvement of health outcomes, and promoting patient safety (AACN, 2006). This QI project focused on a small subset of the population of a rural community. In this rural community, key issues of concern were substance abuse, heart disease, and suicide, all of which are related to high ACE scores. The overall goal of this project was to increase community awareness of ACEs. Awareness of ACEs can lead to programs focused on prevention of ACEs as well as resiliency programs to combat ACEs, which will lead to a healthier community.

Essential III: Clinical scholarship and analytical methods for EBP. This essential has a focus on analyzing literature to determine best practices, collaborating in nursing research, and the dissemination of findings (AACN, 2006). This project began with a literature review and determining an appropriate avenue to include ACEs screening. Collaboration came from developing an interdisciplinary project group before project design. Dissemination of the QI project took place (1) among an interdisciplinary group at the REACH QI symposium, (2) within the project site with other community leaders, and (3) during DNP poster presentation day at ECU's College of Nursing. Further work will include educating those in the healthcare field about ACEs and their impact, which will in turn improve patient care.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare. Essential IV discusses using information systems to improve quality of care (AACN, 2006). This QI project used information systems to perform a literature review, plan and design the QI project, store data, and analyze findings. Information systems were also used to display and disseminate results. This QI project used

technology to develop presentations to educate others about ACEs and their effects, which can help improve outcomes.

Essential V: Healthcare policy for advocacy in healthcare. This essential focuses on the role of the DNP in the influence of healthcare policy and advocating for vulnerable populations (AACN, 2006). This QI project started a community conversation about the effects of ACEs. Individuals who have experienced ACEs are vulnerable and programs aimed to prevent or reduce the effects of ACEs will improve the health of the community.

Often those who have experienced ACEs do not talk about their experiences. Most providers do not even ask patients about past life experiences. Starting a discussion about ACEs and making ACEs a part of common knowledge within the healthcare field can create a culture of more open communication between providers and patients about past trauma such as ACEs.

Future work from this QI project can include policy development related to ACEs. Policymakers are beginning to understand the impact of ACEs and trauma on emotional, physical, and social health (Maul, 2017). Policies that have been or are being developed target a reduction in childhood trauma and aim to promote resilience and trauma-informed care, which is key for addressing ACEs (Maul, 2017). In 2017, eighteen states had bills in legislation that included specific references to ACEs (Prewitt, 2017). In addition to legislation, ACEs have also been incorporated into clinical guidelines by both state and national organizations including the AAP, Substance Abuse and Mental Health Services Administration (SAMHSA), and the North Carolina Institute of Medicine (NCIOM). More work is needed to create a trauma-informed nation.

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. Essential VI includes effectively collaborating to develop standards of care,

providing leadership in interprofessional teams, and developing systems of care in complex healthcare settings (AACN, 2006). Engaging in interprofessional collaboration is imperative to improving the quality of healthcare. This QI project had a great deal of interprofessional collaboration. This allowed the addition of each member's expertise to create a more well-rounded multidisciplinary approach to QI to form a greater impact.

Interprofessional collaboration can be improved by first acknowledging one's own strengths and weaknesses. Successful interprofessional collaboration leads to improved outcomes, reduced healthcare costs, and increased knowledge (Jakubowski & Perron, 2018). Advanced practice nurses are in an excellent position to engage in and provide leadership in interprofessional collaboration.

Essential VII: Clinical prevention and population health for improving the nation's health. This essential aims to (1) facilitate individual and population health delivery with the use of epidemiology and biostatistics, (2) synthesize information and cultural competency to address gaps in care, and (3) evaluate and implement change strategies to address diversity (AACN, 2006). This QI project met this essential by identifying those affected by ACEs and connecting them with the care they need. Prevention of ACEs should also be considered as preventative healthcare, and screening for ACEs should be considered just as other screenings are performed.

Prevention of ACEs could lead to reduced health care costs. Early identification and resiliency training for those exposed to ACEs would allow for healing from the past trauma and the development of more resilient children. This could lead to a population of adults with fewer high-risk behaviors, mental health conditions, and chronic health problems.

Essential VIII: Advanced nursing practice. The final DNP essential includes: (1) conducing a systematic assessment of health parameters; (2) creating nursing interventions to

promote quality; (3) demonstrating advanced clinical judgement to improve patient outcomes; (4) mentoring and supporting other nurses; and (5) supporting systems during times of change (AACN, 2006). Future work with ACEs includes making ACEs information well-known in the healthcare field and implementing ACEs screenings in other clinical settings such as primary care. Advanced practice nurses are in a position to bring about change such as including ACEs screening into practice.

Summary

Each DNP essential supports the doctorly prepared nurse practitioner in providing the best evidence-based care for improvement of the health of the populations they serve. Today's complex healthcare environment requires a high level of knowledge and expertise to ensure quality (AACN, 2018). This QI project met the eight DNP essentials that are vital to the role of the advanced practice nurse.

Chapter Eight: Final Conclusions

Findings of this QI project were significant to nursing practice. This chapter will discuss project findings, review project strengths and limitations, and consider project benefits. Finally, recommendations for advanced nursing practice will be offered.

Significance of Findings

This QI project demonstrated the need for community awareness of ACEs. ACEs were prevalent in this rural community as are high risk behaviors, mental health issues, and chronic health problems. Advanced practice nurses are in an optimal position to increase community awareness of ACEs as they serve patients in a variety of roles and are members of many different interdisciplinary teams.

Project Strengths and Limitations

Project strengths include a QI project that was performed in a brief eight-week period using an already developed screening tool that was downloadable free of charge. Having full site buy-in of the project helped with a successful screening program of ACEs. Also having a clinic that saw around forty patients a week allowed for an adequate population size for the project.

Project limitations were identified after completion of the project. First, during screening for ACEs, concurrently screening for resiliency factors would have provided benefit. Assessing for resiliency factors such as an individual's strengths and support systems would have allowed a more thorough view on "the power of experience to affect health, behavior, and well-being" (Leitch, 2017, p. 10). Second, after giving the patients referral information for positive scores, it would have added to the project to determine if patients received counseling services. Additionally, because there were no prior ACE studies completed in the county, there was nothing to compare the clinic's ACEs scores to. Finally, the population of only women of childbearing age did not adequately represent the frequency of ACEs in the diverse rural community where this QI project was performed.

Project Benefits

Project benefits included screening women for ACEs, offering referrals, and potentially acknowledging past experiences and recognizing how these may impact their life as well as their children's life. This QI project also demonstrated that screening for ACEs takes minimal cost to provide substantial information about a patient and their past experience. Additionally, there is potential for financial savings. ACEs not only lead to negative effects that last a lifetime, but also lead to (1) increased healthcare costs, (2) increased incarceration rates, (3) lost work time, and (4) negative mental health outcomes that affect an individual's ability to work productively (Prevent Child Abuse America, 2019).

Recommendations for Practice

Recommendations for practice include routine screening for ACEs. ACEs have profound effects on physical and mental health. Clinicians should be aware and utilize ACEs information to better care for their patients, their community, and the nation. As stated by Glowa, Olson, and Johnson (2016), primary care providers should address childhood trauma such as ACEs and develop interventions focused on treatment of trauma.

Final Summary

The biologic response to stress such as ACEs can cause toxic effects that last for a lifetime (AAP, 2014). This QI project developed a successful screening, identification, and referral process for women impacted by ACEs. This QI project was the starting point to heighten knowledge of ACEs in a rural community. Further work should include screening in other settings, recognition of trauma-informed care, and focus on reducing the impact of ACEs.

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Smith, M. V., Gotman, N., & Yonkers, K. A. (2016). Early childhood adversity and pregnancy outcomes. *Maternal and Child Health Journal*, *20*(4), 790-798. doi: 10.1007/s10995-015-1909-5

Sperlich, M., Seng, J. S., Li, Y., Taylor, J., & Bradbury-Jones, C. (2017). Integrating trauma-informed care into maternity care practice: Conceptual and practical issues. *Journal of Midwifery and Women's Health*, *62*(6), 661-672. doi: 10.1111/jmwh.12674

[redacted]

Woods-Jaeger, B. A., Cho, B., Sexton, C. C., Slagel, L., & Goggin, K. (2018). Promoting resilience: breaking the intergenerational cycle of adverse childhood experiences. *Health Education & Behavior*, 1-9. doi: 10.1177/1090198117752785

Appendix A

ACEs Questionnaire – English

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often or very often**... Swear at you, insult you, put you down, or humiliate you?
or
Act in a way that made you afraid that you might be physically hurt?
Yes / No

2. Did a parent or other adult in the household **often or very often**... Push, grab, slap, or throw something at you?
or
Ever hit you so hard that you had marks or were injured?
Yes / No

3. Did an adult or person at least 5 years older than you **ever**...
Touch or fondle you or have you touch their body in a sexual way?
or
Attempt or actually have oral, anal, or vaginal intercourse with you?
Yes / No

4. Did you **often or very often** feel that ...
No one in your family loved you or thought you were important or special?
or
Your family didn't look out for each other, feel close to each other, or support each other?
Yes / No

5. Did you **often or very often** feel that ...
You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
or
Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
Yes / No

6. Were your parents **ever** separated or divorced?
Yes / No

7. Was your mother or stepmother:
Often or very often pushed, grabbed, slapped, or had something thrown at her?
or
Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
or
Ever repeatedly hit at least a few minutes or threatened with a gun or knife?
Yes / No

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
Yes / No

9. Was a household member depressed or mentally ill, or did a household member attempt suicide?
Yes / No

10. Did a household member go to prison?
Yes / No
Now add up your "Yes" answers: _____. This is your ACE Score.

Appendix B

ACEs Questionnaire – Spanish

Antes de cumplir 18 años:

1. Alguno de sus padres u otros adultos en su casa **con frecuencia o con mucha frecuencia**...

Lo ofendían, lo insultaban, lo menospreciaban, o lo humillaban?

o

Actuaban de tal forma que temía que lo fueran a lastimar físicamente?

Si No Si la respuesta es SI anote 1_____

2. Alguno de sus padres u otros adultos en su casa **con frecuencia o con mucha frecuencia**...

Lo empujaban, lo jalaban, lo cacheteaban, o le aventaban cosas?_

o

Alguna vez lo golpearon con tanta fuerza que le dejaron marcas o lo lastimaron?__

Si No Si la respuesta es SI anote 1_____

3. Algún adulto o alguna otra persona cuando menos 5 años mayor que usted **alguna vez**...

Lo tocó o acarició indebidamente o le pidió que usted lo tocara de alguna forma sexual?

o

Intentó tener relaciones sexuales orales, anales o vaginales con usted?

Si No Si la respuesta es SI anote 1_____

4. Se sentia usted **con frecuencia o con mucha frecuencia** que... Nadie en su familia lo quería o pensaba que usted era especial o importante?_

o

En su familia no se cuidaban unos a los otros, no sentían que tenían una relación cercana, o no se apoyaban unos a los otros?__

Si No Si la respuesta es SI anote 1_____

5. Se sentia usted **con frecuencia o con mucha frecuencia** que...

No tenía sufiente comida, tenía que usar ropa sucia, o no tenía nadie que lo protegiera?

o

Sus padres estaban demasiado borrachos o drogados para cuidarlo o llevarlo al medico si es que lo necesitaba?

Si No Si la respuesta es SI anote1_____

6. Alguna vez perdió un padre o una madre biológico(a) debido a divorcio, abandono, o alguna otra razón?

Si No Si la respuesta es SI anote1_____

7. A su madre o madrastra:

Con **frecuencia o con mucha frecuencia** la empupjaban, jalaban, golpeaban, o le aventaban cosas?

o

A veces, con frecuencia, o con mucha frecuencia le pegaban, la mordían, la daban puñetazos, o la golpeaban con algun objeto duro?

o

Alguna vez la golpearon durante varios minutos seguidos o la amenazaon con una pistola o un cuchillo?

Si No Si la respuesta es SI anote1_____

8. Vivió usted con alguien que era borracho o alcoholico, o que usaba drogas?

Si No Si la respuesta es SI anote1_____

9. Algún miembro de su familia sufría de depresión o enfermedad mental, o alguien en su familia trató de suicidarse?

Si No Si la respuesta es SI anote1_____

10. Algún miembro de su familia fué a la carcel?

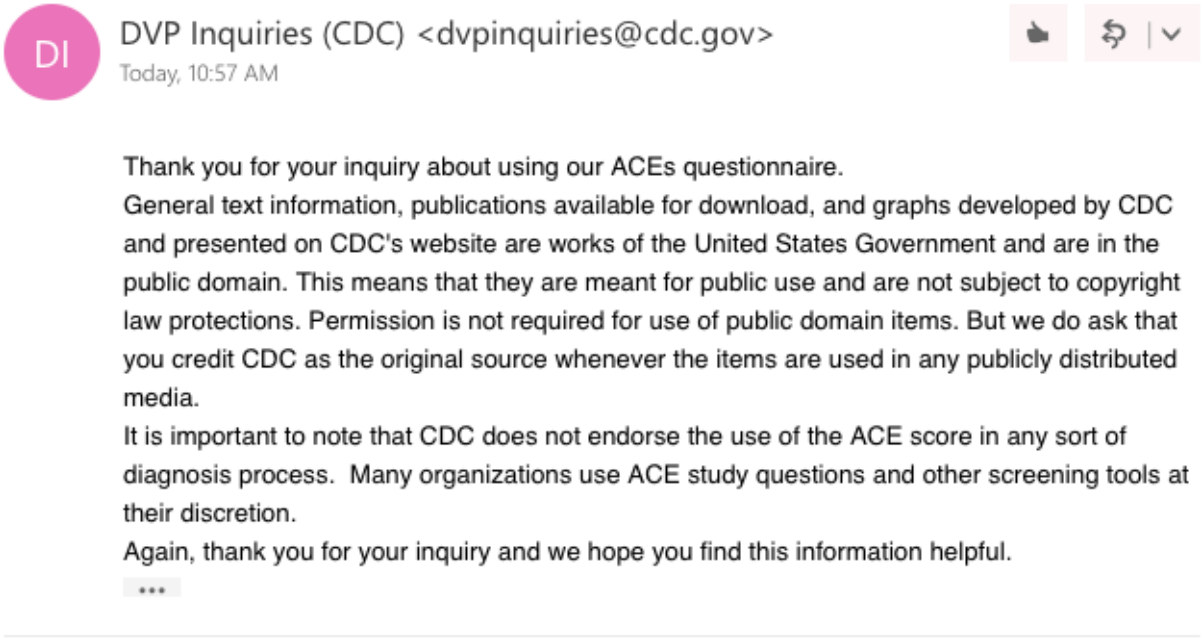
Si No Si la respuesta es SI anote1_____

Ahora sume las respuestas en que anoto "SI."_____

Esta es su Puntuación de Experiencias Infantiles Adversas (ACE)

Appendix C

Permission Obtained from the CDC to use the ACEs Screening Tool



DI

DVP Inquiries (CDC) <dvpinquiries@cdc.gov>

Today, 10:57 AM

Thank you for your inquiry about using our ACEs questionnaire.
General text information, publications available for download, and graphs developed by CDC and presented on CDC's website are works of the United States Government and are in the public domain. This means that they are meant for public use and are not subject to copyright law protections. Permission is not required for use of public domain items. But we do ask that you credit CDC as the original source whenever the items are used in any publicly distributed media.
It is important to note that CDC does not endorse the use of the ACE score in any sort of diagnosis process. Many organizations use ACE study questions and other screening tools at their discretion.
Again, thank you for your inquiry and we hope you find this information helpful.
...

Appendix D

Letter for ACEs Questionnaire – English

Dear Client,

We are using a new screening tool in the [redacted]. Please do not put your name or any other identifying information on the form. Complete the form as best as you can. The form will be discussed with you in more detail during your appointment.

Thank you,

Katherine Sells
Nurse Practitioner Student

Appendix E

Letter for ACEs Questionnaire – Spanish

Estimado cliente,

Estamos utilizando una nueva herramienta de detección en el [redacted]. Por favor, no ponga su nombre o cualquier otra información de identificación en el formulario. Complete el formulario lo mejor que pueda. El formulario será discutido con usted con más detalle durante su cita.

Gracias,

Katherine Sells
La enfermera de estudiante practicante

Appendix F

ACEs Questionnaire Script for Staff

Adverse Childhood Experiences (ACEs) Questionnaire

1. Did the client fill out the questionnaire?

2. What was the score? (add the "yes" answers)

3. "On the form you filled out, your score was _____. A score of four or more indicates a higher risk for health problems in your lifetime."

   -**Score of 0-3**- "You scored low on the form. It does seem that you experienced some traumatic events growing up. The more events you have experienced, the more likely you are to develop health problems. There are places you can go to help you recover from these experiences if you are interested." (Provide referral information sheet if client desires)

   -**Score of 4 or more**- "It is not your fault that you experienced these events growing up. There are places you can go that can help you to recover from these experiences. Getting help can not only help you but can also help your future children by decreasing the chance that the same things will happen to them." (Provide referral information sheet)

Appendix G

Client Referral Form – English

Adverse Childhood Experiences (ACEs) Referral Information

I scored a _____ on my ACEs screening tool

[redacted]

Phone number: [redacted]
Hours: Monday-Friday 8 am-8 pm
Walk-in without an appointment or call ahead to schedule an appointment
Accepts Medicaid, Medicare, private insurance, and offers sliding scale for those without insurance

24-hour Crisis Hotline: [redacted]
Suicide Prevention Lifeline: [redacted]

[redacted]

Phone number: [redacted]
Call for appointment
Accepts private insurance and able to work with patients without insurance

[redacted]

Phone numbers: [redacted]
Hours: Monday-Wednesday 8 am-6 pm, Thursday 8am-5pm, and Friday 8 am-3 pm
Last walk-in accepted 3 pm Monday-Thursday and 1 pm on Friday
Accepts Medicaid, Medicare, private insurance, and offers sliding scale for those without insurance

Appendix H

Client Referral Form – Spanish

Las experiencias adversas en la infancia (ACE) Información de Referencia

Marqué un _____ en mi herramienta de detección ACE

[redacted]

Número de teléfono: [redacted]
Horario: Lunes a Viernes 08 a.m.-8 p.m.
Se acepta Medicaid, Medicare, seguro privado, y las ofertas de escala móvil para aquellos que no tienen seguro

Crisis 24 horas al día: [redacted]
Prevención de Suicidio: [redacted]

[redacted]

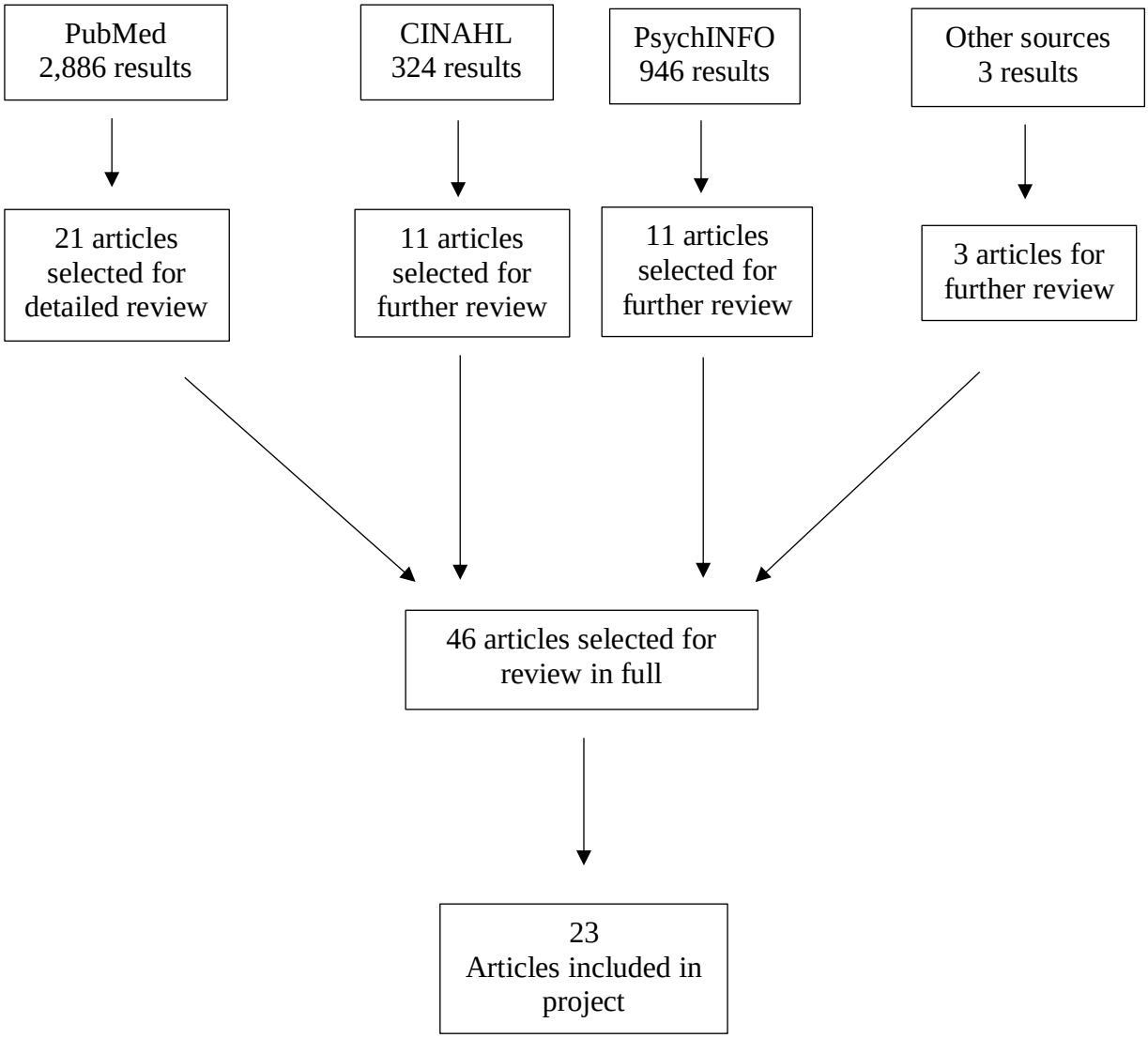
Número de teléfono: [redacted]
Llamar para una cita
Acepta seguro privado y capaz de trabajar con los pacientes sin seguro

[redacted]

Números de teléfono: [redacted]
Horario: Lunes a Miércoles de 8:00 am a 6:00 pm. Jueves de 8:00 am a 5:00 pm. Viernes de 8:00 a 3:00 pm.
Último paciente sin cita se acepta hasta las 3:00 de la tarde de Lunes a Jueves y hasta la 1:00 pm los viernes.
Aceptamos Medicaid, Medicare, seguro privado y se ofrece la escala móvil para aquellos que no tienen seguro.

Appendix I

Literature Review



Appendix J

Evidence Matrix

Student: **Katherine Sells**	**Course** **NURS 8269**	**Faculty Lead:** **Dr. King**	**Date:** **3/17/18**	**Project:** **Adverse childhood experiences in pregnancy: Screening, identification, and referral**
Article (APA Citation)	**Level of Evidence (I to VII)**	**Data/Evidence Findings**	**Conclusion**	**Use of Evidence in EBP Project Plan (Include your evaluation, strengths/limitations, and relevance)**
American Academy of Pediatrics (AAP). (2014). Adverse childhood experiences and the lifelong consequences of trauma. Retrieved from https://www.aap.org/en-us/documents/ttb_aces_consequences.pdf	VII	ACE biology	Importance of understanding ACEs and treatment available.	Supports ACE screening and trauma-informed therapy.
Bellis, M. A., Lowey, H., Leckenby, N., Hughes, K., & Harrison, D. (2013). Adverse childhood experiences: Retrospective study to determine their impact on adult health behaviours and health outcomes in a UK population. *Journal of Public Health*, *36*(1), 81-91. doi: 10.1093/pubmed/fdt038	IV	Increasing ACEs = increased negative outcomes.	Cyclic effect of ACEs to future generations.	Use of ACEs tool in pregnancy mothers because of risk to children as well.
Berens, A. E., Jensen, S. K. G., & Nelson, C. A. (2017). Biological embedding of childhood adversity: From physiological mechanisms to clinical implications. *BioMed Central Medicine*, *15*(135), 1-12. doi: 10.1186/s12916-017-0895-4	V	ACEs can affect neural, endocrine, immune, and metabolic physiology.	ACEs should be screened for given their physiological implications.	Supports ACEs screenings.
Bethell, C. D., Carle, A., Hudziak, J., Gombojav, N., Powers, K., Wade, R., & Braveman, P. (2017). Methods to assess adverse childhood experiences of children and families: Toward approaches to promote child well-being in policy and practice. *Academic Pediatrics*, *17*(7S), S51-S69. doi: 10.1016/j.acap.2017.04.161	V	Comparing ACE measuring tools	Consistency between tools shown, point to use a tool to understand more about the patient's past.	Support use of ACE screening tool in QI project.
Bethell, C.D., Newacheck, P., Hawes, E., & Halfon, N. (2014). Adverse childhood experiences: Assessing the impact on health and school engagement and the mitigating role of	IV	Role of ACEs in healthy childhood	Impact of ACEs begins in childhood.	Supports project screening for ACEs to protect young children.

resilience. *Health Affairs*, *33*(12), 2106-2115. doi: 10.1377/hlthaff.2014.0914		development.		
Campbell, J. A., Walker, R. J., & Egede, L. E. (2016). Associations between adverse childhood experiences, high-risk behaviors, and morbidity in adulthood. *American Journal of Preventative Medicine*, *50*(3), 344-352. doi: 10.1016/j.amepre.2015.07.022	IV	ACE score of greater than or equal to 4 increases risk.	ACEs increase risky behaviors, morbidity, and disability.	Supports positive screening of 4 or more ACEs.
Conn, A. M., Szilagyi, M. A., Jee, S. H., Manly, J. T., Briggs, R., & Szilagyi, P. G. (2017). Parental perspectives of screening for adverse childhood experiences in pediatric primary care. *Family, Systems, & Health*, *36*(1), 62-72. doi: 10.1037/fsh0000311	III	ACEs are a good bridge of support to needed services, parents expressed interest in ACEs.	Patients accepted the use of ACEs and appreciated help.	Supported using ACEs in parent population. Downside, only one qualitative study.
Counts, J. M., Gillam, R. J., Perico, S., & Eggers, K. L. (2017). Lemonade for life – A pilot study on a hope-infused, trauma-informed approach to help families understand their past and focus on the future. *Children and Youth Services Review*, *79*, 228-234. doi: 10.1016/j.childyouth.2017.05.036	IV	Discussed trauma-informed care for ACE exposure.	Home based trauma-informed care can help with those who have past experiences of ACEs.	Utilized ACE screening and treatment. Downside is small population (24).
Freeman, J. (2017). The child is the father of the man: Family physicians' screening for adverse childhood experiences. *Family Medicine*, *49*(1), 5-6. Retrieved from http://www.stfm.org/FamilyMedicine/Vol49Issue1/Freeman5	V	Most providers are not utilizing ACEs.	ACEs should be used to as screening to assess whole life experience.	Article supports ACE screening to get the whole picture of a patient. Limitations include only one study on ACEs in medical residents.
Glowa, P. T., Olson, A. L., & Johnson, D. J. (2016). Screening for adverse childhood experiences in a family medicine setting: A feasibility study. *Journal of the American Board of Family Medicine*, *29*(3), 303-307. doi: 10.3122/jabfm.2016.03.150310	III	Using an ACE questionnaire in rural practices demonstrated 62% with score of 4 or more ACEs.	Small increase in visit time with ACE administration, ACE use offers a more important picture of social determinants of health.	Supports 4 or more ACEs cutoff and use in clinical practice as a screening tool.
Gray, S. A. O., Jones, C. W., Theall, K. P., Glackin, E., & Drury, S. S. (2017). Thinking across generations: Unique contributions of maternal early life and prenatal stress to infant physiology. *Journal of the American Academy*	III	Prenatal stress was associated with infant failure to	Supported need for screening and intervention of ACEs in	ACEs affect next generation. Moderate sample size. First study to demonstrate effect of

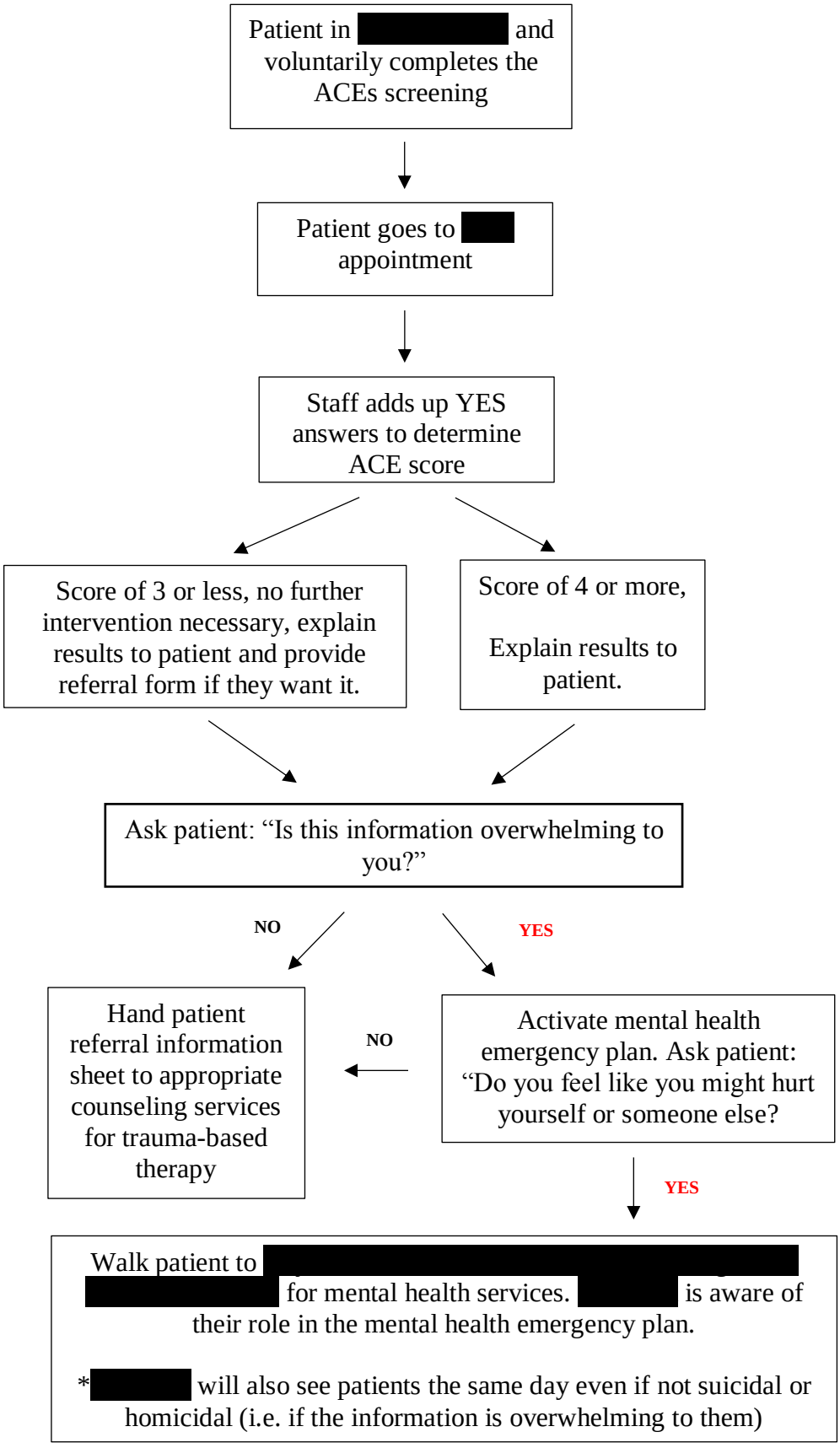
of Child and Adolescent Psychiatry, *56*(11), 922-929. doi: 10.1016/j.jaac.2017.09.001		recover from stress.	pregnant women as study showed relationship between maternal ACEs and infant outcomes.	maternal ACEs on infant stressors.
Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: A systematic review and metal analysis. *The Lancet Public Health*, *2*(8), 356-366. doi: 10.1016/S2468-2667(17)30118-4	I	Four ACEs increases poor physical and mental health.	Multiple ACEs increases health risks and risk of transfer to next generation.	Supports ACE positive screening at four and population of women to target because of risk of exposure to children.
Leckman, J. F. (2017). What are the transgenerational consequences of maternal childhood adversity and maternal stress during pregnancy? *Journal of the American Academy of Child and Adolescent Psychiatry*, *56*(11), 914-915. doi: 10.1016/j.jaac.2017.09.421	V	Discussed results of ACEs on future generations as determined by Gray et al. (2017) study	ACEs affect parental ability and future generations.	Limitations is article discussed another study.
Levenson, J. (2017). Trauma-informed social work practice. *Social Work*, *62*(2), 105-113. doi: 10.1093/sw/swx001	VII	Discussed trauma-informed care.	Trauma-informed care can help with posttraumatic growth.	Strengths include a better understand of what trauma-informed care is. Limitations is this is an expert opinion on the topic.
Madigan, S., Wade, M., Plamondon, A., Maguire, J. L., & Jenkins, J. M. (2017). Maternal adverse childhood experiences and infant health: Biomedical and psychosocial risks as intermediary mechanisms. *The Journal of Pediatrics*, *187*, 282-289. doi: 10.1016/j.jpeds.2017.04.052	III	Linear association between number of ACEs and extend to biomedical and psychosocial risk	Maternal ACEs can affect prenatal, perinatal, and postnatal psychosocial health.	Article supports using ACEs in pregnancy as ACEs can affect future children. Limitations include only one study.
Oral, R., Ramirez, M., Coohey, C., Nakada, S., Walz, A., Kuntz, A., Benoit, J., & Peek-Asa, C. (2015). Adverse childhood experiences and trauma-informed care: The future of health care. *Pediatric Research*, *79*(1), 227-233. doi: 10.1038/pr.2015.197	V	ACE prevalence and treatment.	Early identification and TIC improve outcomes to those exposed to ACEs.	Demonstrate importance for screening, identification, and referral of ACEs.

Plant, D. T., Jones, F. W., Pariante, C. M., & Pawlby, S. (2017). Association between maternal childhood trauma and offspring child psychopathology: Mediation analysis from the ALSPAC cohort. *British Journal of Psychiatry*, *211*(3), 144-150. doi: 10.1192/bjp.bp.117.198721	IV	Maternal ACEs associated with child difficulties.	Offering treatment for ACE exposure in mothers decreases chance of transfer to children.	Supports use of ACEs tool in pregnant mothers.
Radcliff, E., Crouch, E., & Strompolis, M. (2018). Rural-urban differences in exposure to adverse childhood experiences among South Carolina adults [Abstract]. *Rural Remote Health*, *18*(1), 4434. doi: 10.22605/RRH4434	IV	Investigated rural-urban differences in ACEs.	Limited ACE support in rural communities .	Support information regarding ensuring access to services for those positively screened.
Randell, K. A., O'Malley, D., & Dowd, M. D. (2015). Association of parental adverse childhood experiences and current child adversity. *Journal of the American Medical Association Pediatrics*, *169*(8), 786-787. doi: 10.1001/jamapediatrics.2015.0269	III	Increasing ACEs increases childhood adversity likelihood.	Need for screening parents for ACEs, i.e. in pediatric practice settings.	Supports screening parents for ACEs to decrease transfer risk to children.
Sexton, M. B., Hamilton, L., McGinnis, E., Rosenblum, K. L., & Muzik, M. (2015). The role of resilience and childhood trauma history: Main and moderating effects on postpartum maternal mental health and functioning. *Journal of Affective Disorders*, *175*, 562-568. doi: 10.1016/j.jad.2014.12.036	III	ACEs have a significant impact on postpartum mental health diagnoses.	Resiliency can provide a buffer against trauma caused by ACEs.	Informed of positive role of resiliency. Limitations included specific for postpartum health.
Smith, M. V., Gotman, N., & Yonkers, K. A. (2016). Early childhood adversity and pregnancy outcomes. *Maternal and Child Health Journal*, *20*(4), 790-798. doi: 10.1007/s10995-015-1909-5	III	ACEs can have a negative effect on pregnancy outcomes.	Each additional ACE decreased birth weight by 16.33 g and decreased gestational age by 0.063	Article supported use of ACEs in pregnancy not only to support exposure of children to ACEs but discuss effects of ACEs on pregnancy outcomes.
Sperlich, M., Seng, J. S., Li, Y., Taylor, J., & Bradbury-Jones, C. (2017). Integrating trauma-informed care into maternity care practice: Conceptual and practical issues. *Journal of Midwifery and Women's Health*, *62*(6), 661-672. doi: 10.1111/jmwh.12674	V	ACEs result in poor pregnancy outcomes, poor postpartum mental health, impaired or delayed bonding.	Trauma-informed care can improve maternal-infant health.	Support use of tool and referral in pregnant population.
Woods-Jaeger, B. A., Cho, B., Sexton, C. C., Slagel, L., & Goggin, K. (2018). Promoting resilience: breaking the intergenerational cycle of adverse childhood experiences.	IV	Protective factors and family strengths	Supports identificatio n and treatment of	Strengths include data with internal validity. Limitations

Health Education & Behavior, 1-9. doi: 10.1177/1090198117752785		are important to build upon with promoting resiliency with ACE exposure.	ACEs to break intergenerational cycles.	include small sample size and lack of generalization of findings.

Appendix K

Algorithm for ACE Scores: Mental Health Emergency Plan



Appendix L

Project Site Letter of Support

[redacted]

March 15, 2018

To Whom It May Concern:

We at the [redacted] have reviewed Katherine Sells DNP Project titled "Adverse Childhood Experiences (ACES) in Pregnancy Screening, identification and Referral". Ms. Sells has organizational support and approval to conduct her project within our institution. We understand that for Ms. Sells to achieve completion of the DNP program, dissemination of the project will be required by the University, which will include a public presentation related to the project and a manuscript submission will be encouraged.

Our organization has deemed this project as both a research and a quality improvement initiative and not requiring institutional IRB review.

Thank you,

[redacted]

Appendix M

Approval Letter from ECU's Office of Research Integrity and Compliance (ORIC)

ORIC Determination:

☑ Not Human Research: The ORIC has determined that based on the description of the project, approval by the IRB is not necessary. Any changes or modifications to this project may be discussed with the ORIC at that time to ensure those changes do not elevate the project to human research that would need IRB approval.

☐ Human Research: This project requires review by the IRB prior to initiation. An application in the electronic IRB submission system should be submitted.

ORIC Staff Signature [redacted] **Date:** 7-3-18

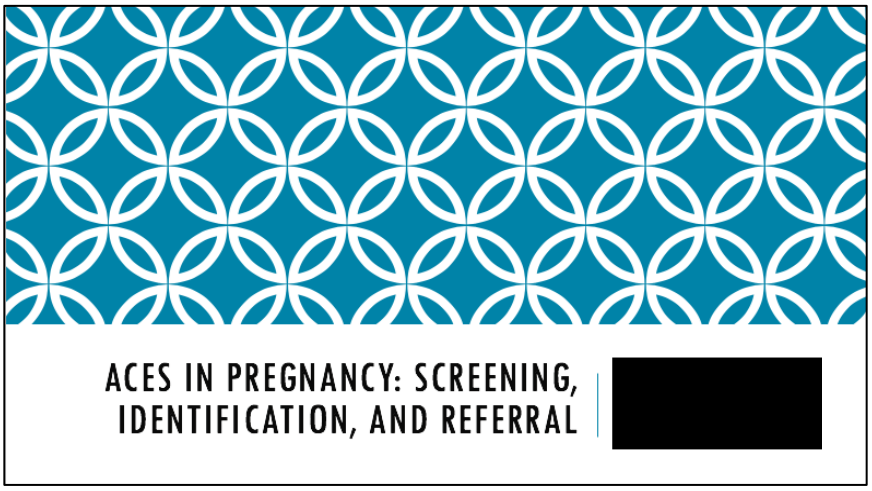
Appendix N

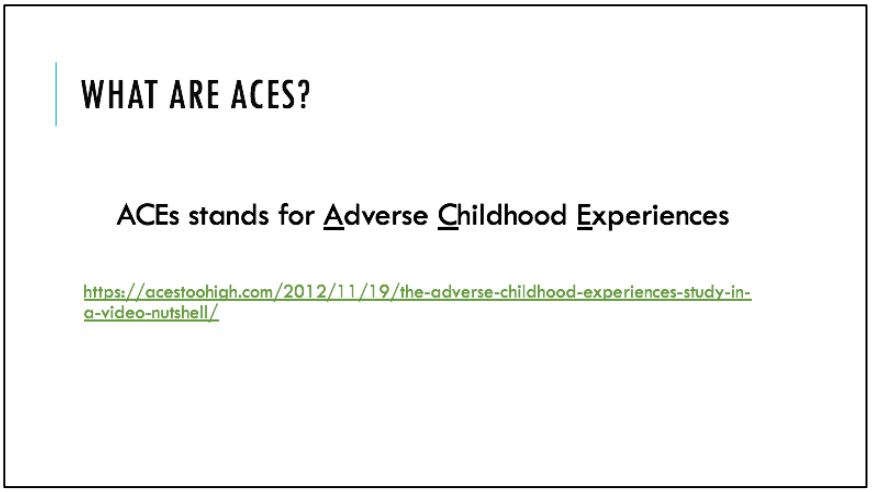
ACEs Data Collection Tool

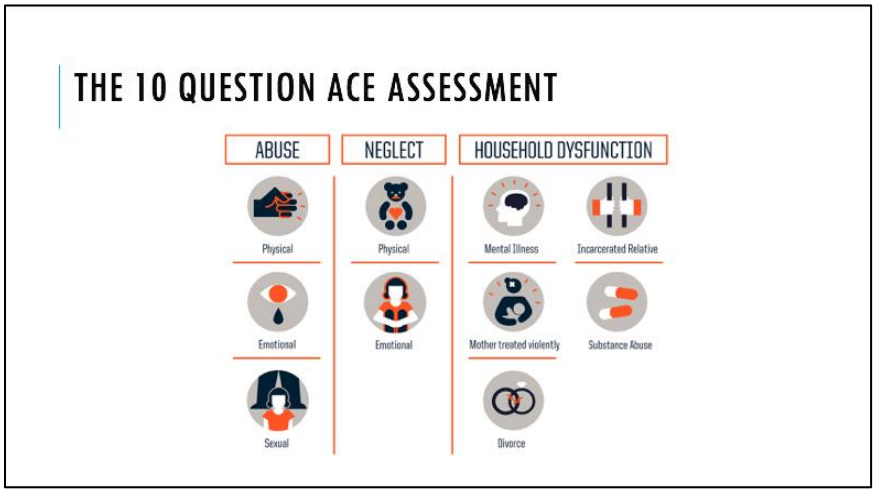
Date: Did patient complete screening? Y / N If no, why not? What was their score? 0 1 2 3 4 5 6 7 8 9 10 Was referral information given? Y / N Was emergency counseling needed? Y / N If yes, was it provided? Y / N Additional comments:	Date: Did patient complete screening? Y / N If no, why not? What was their score? 0 1 2 3 4 5 6 7 8 9 10 Was referral information given? Y / N Was emergency counseling needed? Y / N If yes, was it provided? Y / N Additional comments:
Date: Did patient complete screening? Y / N If no, why not? What was their score? 0 1 2 3 4 5 6 7 8 9 10 Was referral information given? Y / N Was emergency counseling needed? Y / N If yes, was it provided? Y / N Additional comments:	Date: Did patient complete screening? Y / N If no, why not? What was their score? 0 1 2 3 4 5 6 7 8 9 10 Was referral information given? Y / N Was emergency counseling needed? Y / N If yes, was it provided? Y / N Additional comments:
Date: Did patient complete screening? Y / N If no, why not? What was their score? 0 1 2 3 4 5 6 7 8 9 10 Was referral information given? Y / N Was emergency counseling needed? Y / N If yes, was it provided? Y / N Additional comments:	Date: Did patient complete screening? Y / N If no, why not? What was their score? 0 1 2 3 4 5 6 7 8 9 10 Was referral information given? Y / N Was emergency counseling needed? Y / N If yes, was it provided? Y / N Additional comments:

Appendix O

Staff Education PowerPoint







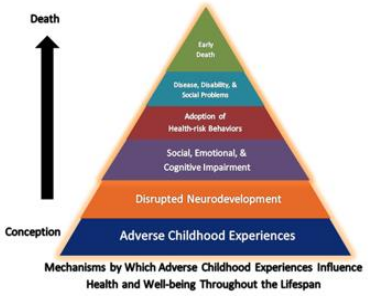
The Impact of ACEs

Substance abuse

Chronic health conditions

Mental health

HOW CAN WE HELP?



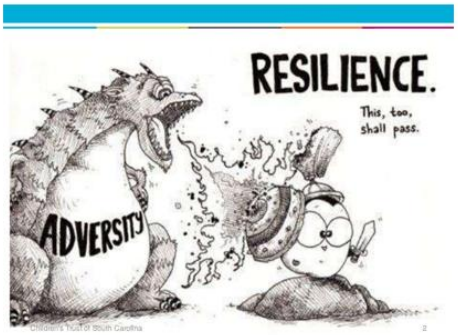
Mechanisms by Which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan

WHAT IS OUR ROLE?

1. Administering the questionnaire

2. Discussion of results during appointment and referral information given if applicable

WHAT IS THE PURPOSE OF THIS QI PROJECT?



WILL THE PATIENTS' IDENTITIES BE PROTECTED?

DO THE REFERRAL AGENCIES KNOW ABOUT THIS PROJECT?

PROJECT TIMELINE

This project will last a total of eight weeks
from **August 27 – October 15**

QUESTIONS?

Additional information can be obtained by viewing the following websites:

https://www.cdc.gov/violenceprevention/acestudy/about.html

https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences

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