Screening of Pregnant Women with Opioid Use Disorder: Identifying Factors Impacting Implementation of Screening Recommendations Using the Theoretical Domains Framework

Tara R. Foti
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Screening of Pregnant Women with Opioid Use Disorder: Identifying Factors Impacting Implementation of Screening Recommendations Using the Theoretical Domains Framework

by

Tara R. Foti

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a concentration in Community and Family Health College of Public Health University of South Florida

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Keywords: Obstetrics, Substance Use, Patient Care, Clinical Recommendations

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DEDICATION

I carry tremendous gratitude for all of the people who have supported me and especially to those who have sacrificed for my professional development and personal growth. To my husband Chris, you are a remarkable partner. You moved across the country with me and took on so much to keep our family functioning. Your commitment to our family and to my dreams takes my breath away. I can only hope to demonstrate my gratitude to you in small and big ways throughout our years together. To my oldest son, Nathaniel, I realized years ago that I was telling you to follow your dreams when I wasn’t following mine. Thank you for your constant love and encouragement. You’ve motivated me to be a better person from before you were born. I am grateful that you moved to Florida and that we have had this time together while COVID kept you from your life plans. To my younger kids, Miles and Max, I don’t know how much of this journey you will remember. I am grateful that you have been patient while I’ve been more absent than I wanted to be. Thanks for movie nights and family games and for beach days and walks in parks. Whether you knew it or not, you have always kept me motivated to keep moving forward.

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ABSTRACT

**Background:** Prenatal opioid exposure is a growing problem in the United States with high and increasing rates of opioid use and opioid use disorder during pregnancy. Almost 23% of pregnant women enrolled in Medicaid programs filled an opioid prescription during pregnancy in 2007, marking a 21.1% increase since 2000. Maternal opioid use during pregnancy is associated with a variety of poor maternal, pregnancy and infant outcomes, including overdose, pregnancy-associated death, prematurity, low birth weight and Neonatal Opioid Withdrawal Syndrome. To optimize prenatal care and pregnancy-associated outcomes, the Alliance for Innovation in Maternal Health, in collaboration with The American College of Obstetricians and Gynecologists, released a bundle of practices to be performed by physicians and health care systems to compile clinical recommendations and evidence-based practices as well as to streamline clinical practices, which are publicly available to all practitioners and health systems. However, it is unknown to what extent these bundled practices have been implemented in inpatient and outpatient settings in west-central Florida, what facilitators and barriers to implementation of these bundled practices exist and to what extent hospital policies align with these recommended practices.

**Purpose:** The purpose of this study was to understand clinical obstetric management behaviors and evaluate how and why they may differ from clinical best-practices with regards to screening and identification of opioid use during pregnancy. This study has three aims: (1) describe clinical practice behaviors related to opioid use during pregnancy among physicians who treat pregnant women, (2) identify facilitators and barriers to clinical guideline implementation in both inpatient and outpatient settings and (3) determine the feasibility of obtaining these
policies among delivery hospitals in the west-central Florida region and categorize the alignment between obtained written hospital policies with clinical bundle components.

**Methods:** This study utilized an equivalent concurrent mixed-methods approach. To describe clinical practice behaviors, qualitative interviews were performed with clinicians and staff who work with pregnant women, including obstetricians, nurses, mental health providers and community agency staff. To identify facilitators and barriers to clinical guideline implementation, both qualitative interviews and quantitative surveys were completed by clinicians and staff from a variety of patient care settings. Both the qualitative interviews and quantitative surveys were be guided by the Theoretical Domains Framework, an implementation science framework. To categorize alignment between written hospital policies with clinical bundle components, individuals participating in the online survey who work in a hospital setting were asked to submit hospital policies related to bundle components, which were categorized according to their fidelity to the clinical bundle components (e.g., full fidelity, partial fidelity, or no fidelity). Findings from Aim 1, Aim 2, and Aim 3 were triangulated across the topical area of screening and identification of opioid use to inform both future hypothesis generation and potential behavior change interventions to address identified implementation barriers in subsequent research.

**Results:** Between February and September 2020, a total of 60 individuals completed the online survey, among whom 15 participated in an interview through video-conferencing software. The majority of survey participants (66.7%) reported always or very often screening pregnant women for substance use. All interview participants described their drug screening practices. In outpatient obstetric settings, this generally occurs at pregnancy intake appointment, although some practices do not screen out of liability concerns and others may discharge women for positive drug screens or biologic tests. Many facilitators and barriers of screening were identified at the level of the patient, provider, practice, and community. The Maternal Opioid Recovery Effort initiative through the Florida Perinatal Quality Collaborative was identified as a
major facilitator to support their screening efforts. Major barriers included the environmental context within the practice, such as staffing, social workers, available time, competing priorities, and customizable electronic medical records. In addition, many providers report training, positive past experiences, and collaborations with other providers and agencies as important facilitators. Only two policies were collected and abstracted by fidelity with recommended screening practices, which brought to light some issues with hospital policy collection. While certain practices, such as universal screening and the use of validated screening tools, were common, other recommended practices lacked specificity to accurately determine fidelity.

**Implications:** Additional training, staffing of, or collaboration with social workers in the outpatient obstetric setting, and having adequate and customizable electronic medical record systems would be beneficial in clinical settings to promote screening. Practices should consider having a more frequent screening routine in addition to the pregnancy intake appointment. Recommended screening practices should be updated to optimize specificity and clarity for institutions and practices to be able to identify their fidelity with best practices. Future research should focus on determining the most salient facilitators and barriers of screening recommendation implementation, which could then be mapped to the most effective behavior interventions for clinicians who work with pregnant women.
CHAPTER 1: INTRODUCTION

Opioid Use Disorder among Pregnant Women

Opioid use disorder during pregnancy is a growing public health issue, as indicated by opioid dependence or abuse during pregnancy increasing by 127% between 1998 and 2011, with 1.7 per 1000 delivery admissions to 3.9 per 1000 delivery admissions, respectively (Maeda, Bateman, Clancy, Creanga, & Leffert, 2014). Maternal opioid use during pregnancy is highly associated with the development of Neonatal Opioid Withdrawal Syndrome (NOWS), which is a postnatal opioid withdrawal syndrome (McQueen & Murphy-Oikonen, 2016) and is identified by neonatal signs such as tremors, hyperirritability, excessive and/or inconsolable crying and diarrhea (Kocherlakota, 2014). Associated annual hospital charges for infants with NOWS are high and increasing, as demonstrated by the change in charges from $39,400 in 2000 to $53,400 in 2009 (Patrick et al., 2012). In Florida, 2,320 cases of NOWS were reported among Medicaid recipients in 2016, representing a 54% increase in cases from 2012 (National Institute on Drug Abuse, 2019).

Opioid use during pregnancy has been associated with various suboptimal maternal epidemiological correlates and health outcomes, including: co-morbid psychiatric disorders or mental illness, specifically mood disorder (Arnaudo, Andraka-Christou, & Allgood, 2017; Benningfield et al., 2010), major depressive disorder or depression (Arnaudo et al., 2017; Benningfield et al., 2010; Faherty, Matone, Passarella, & Lorch, 2018; Patrick, Dudley, et al., 2015; M. V. Smith, Costello, & Yonkers, 2015; Walker, Vinson, Babcock, Benjamin, & Haas, 2018), generalized anxiety disorder or anxiety (Arnaudo et al., 2017; Benningfield et al., 2010; Patrick, Dudley, et al., 2015; M. V. Smith et al., 2015; Walker et al., 2018), suicidal thinking
(Benningfield et al., 2010), schizophrenia (Faherty et al., 2018), bipolar disorder (Arnaudo et al., 2017; Faherty et al., 2018), eating disorder (Arnaudo et al., 2017), or post-traumatic stress disorder (Arnaudo et al., 2017; Walker et al., 2018); drug use, including use of illegal drugs (Metz, Brown, Martins, & Palamar, 2018; M. V. Smith et al., 2015) polydrug use (Metz et al., 2018), cigarette smoking (Margaret S. Chisolm et al., 2013; M. S. Chisolm, Tuten, Brigham, Strain, & Jones, 2009; Jackson & Shannon, 2012; Jones et al., 2009; Patrick, Dudley, et al., 2015; M. V. Smith et al., 2015) and maternal overdose (Bagley et al., 2018) or death (Kavanaugh, 2015; Maryland Department of Health and Mental Hygiene, 2016; Metz et al., 2018; Young, 2013); interpersonal violence and loss of child custody (Nichols et al., 2010), unplanned pregnancy (Heil et al., 2011), interpersonal or intimate partner violence (Alexander, 2013), high-risk sexual activity or sexually transmitted infections (A. M. Holbrook et al., 2012; Kremer & Arora, 2015), and other infectious diseases (A. M. Holbrook et al., 2012; Kremer & Arora, 2015).

Perinatal correlates and outcomes related to maternal opioid use during pregnancy, other than NAS, include: fetal/infant health and offspring effects of opioid use during pregnancy (Patrick, Dudley, et al., 2015; Patrick et al., 2012), physical and custodial separation of the mother from the infant, due to treatment centers not accepting children, loss of custody, and continued postnatal illicit drug use and/or incarceration, which may result in maternal-infant attachment difficulties (Substance Abuse and Mental Health Services Administration, 2016). Other infants health problems may include suboptimal developmental trajectories (Hunt, Tzioumi, Collins, & Jeffery, 2008; McGlone & Mactier, 2015; Merhar et al., 2018) and child neglect or abuse (Rizzo et al., 2014).

**Clinical Recommendations**

Professional associations, such as the American College of Obstetrics and Gynecology (ACOG), are involved with the creation and dissemination of clinical practice guidelines and recommendations, developed based on evidence of best practices and designed to improve
quality and consistency of care, as well as inform quality improvement activities and improve clinical outcomes (Woolf, Grol, Hutchinson, Eccles, & Grimshaw, 1999). Various clinical recommendations regarding pregnant women with opioid use disorder (PWOUD) have been published, including a committee opinion (Committee on Obstetric Practice, 2017), a special report (Ecker et al., 2019), a clinical bundle (American College of Obstetricians and Gynecologists, 2017), a consensus statement (Reddy et al., 2017), and various clinical recommendations (Jones et al., 2014; Jones et al., 2008; E. E. Krans, Cochran, & Bogen, 2015; Reddy, Davis, Ren, Greene, & and for the Opioid Use in Pregnancy, 2017).

**Statement of Need**

Understanding provider clinical behavior, particularly regarding implementation of clinical guidelines, related to PWOUD is an important gap in the literature. Factors influencing provider guideline implementation identified in the research literature include relationships between hospital staff and child welfare workers, as well as clinical team member perceptions of legal or other consequences to the mother or infant (Substance Abuse and Mental Health Services Administration, 2016). As a result, provider perceptions of relationships with local child welfare and potential mother or infant consequences of clinical decision-making needs to be explored, as well as other guideline adherence issues, such as guideline knowledge and provider or systems-level barriers to guideline implementation. However, a gap in the literature exists whereby other relevant and modifiable factors have not yet been identified regarding implementation of clinical guidelines related to PWOUD, as well as the potential relationship between hospital policies regarding screening and clinician screening behaviors.

Additionally, many clinical recommendations and best practices encourage multidisciplinary collaboration and systems integration. However, provider perceptions of multidisciplinary collaboration and systems integration, as well as identification of facilitators and barriers of well-coordinated care, have not been described in the literature. Therefore,
future research must address provider practices of and perceptions of coordinated care and systems integration. Furthermore, referral practices such as knowledge of and referral to local specialists, performing warm handoffs, care coordination, and potential refusal or discharge of pregnant women with opioid use disorder (PWOUD) from obstetric practices are also not well identified nor described in the literature.

**Public Health Significance**

Implementation of clinical guidelines and recommendations is related to various core functions of public health, including: assessment, which refers to the capacity to identify problems, provide data to assist in decisions about appropriate actions and monitor progress; policy development, which is the means by which problem identification, technical knowledge of possible solutions and societal values prioritize policy and direct action; and assurance, which secures the availability of the benefits of public health to all citizens (Committee for the Study of the Future of Public Health, 1988). Implementation of clinical guidelines is an important element of assuring the availability of public health benefits to all citizens, particularly the availability of high-quality medical care for many reasons. First, understanding referral patterns can help provide an understanding of and context for obstetric providers who do not provide clinical management of PWOUD and may, instead, refer them to other obstetricians, obstetric practices, or obstetric specialists. A better understanding of these referral patterns may identify circumstances placing PWOUD at higher risk of having difficulty accessing or obtaining prenatal obstetric care. Additionally, since PWOUD often have a variety of clinical needs, multidisciplinary and collaborative care necessitates working with various specialists; each of which will have their own referral patterns and issues relating to clinical access. Second, quality of care is an element of assurance. To best obtain the benefits of clinical care, the clinical management, itself, should be of high quality and in accordance with contemporary guidelines, recommendations, and evidence-based practices. Gaining an understanding of current
adherence and implementation patterns in clinical care, as well as identifying the factors that may contribute to supporting or preventing these patterns, will help to bring awareness to both the general quality of care being provided as well as potential areas for future intervention that aim to minimize implementation barriers.

Along with the core functions of public health are the essential public health services, which describe the public health activities that all communities are implored to carry out. The essential public health services relevant to clinical guideline implementation include linking people to needed personal health services and assuring the provision of health care when otherwise unavailable; assuring a competent public and personal health care workforce; evaluating effectiveness, accessibility, and quality of personal and population-based health services; and performing research to obtain new insights and innovative solutions to health problems (Centers for Disease Control and Prevention, 2018).

Linking people to needed personal health services and assuring the provision of health care when otherwise unavailable is related to guideline implementation for clinicians who treat PWOUD for several reasons. First, pregnant women need obstetric services. However, PWOUD face barriers obtaining obstetric services due to a variety of reasons, including transportation and childcare barriers to obtaining care, fear of stigma and judgement, and concerns of the possible repercussions of positive toxicology screens, including child welfare involvement and the custodial removal of prior children. Also, PWOUD may need to be linked with behavioral health care, which may include addiction treatment services, outpatient opioid replacement therapy, and mental health services. Ideally, women would have an established relationship with an obstetrician gynecologist who would refer for these services after screening and identifying a need. However, since many women self-refer for addiction treatment services during pregnancy, the screening practices and resultant referral patterns on the part of obstetricians is poorly understood. Additionally, since mental health screening is generally low, mental health care needs may go unnoticed and unmet. Therefore, linking women to needed
health services, including obstetric and behavioral health care, is essential and understanding current screening patterns and barriers to treatment may help improve these linkages.

Guideline implementation for PWOD is also an aspect of assuring a competent personal health care workforce. Clinicians who are up to date on clinical guidelines, recommendations and evidence-based practices can offer the best, well-informed, evidence-based clinical management. Assessing barriers to guideline implementation can help not only improve implementation, but also to inform design of future evidence-based practices that address implementation facilitators and barriers.

Proper guideline implementation, including the identification of facilitators and barriers of implementation, can be conceptualized as an important aspect of the essential public health service of research for new insights and innovative solutions to public health problems. This is because the insight gained can help to inform guideline implementation programs or identify other, related issues that warrant further investigation or intervention. Additionally, understanding gaps of clinical management within the context of screening patterns can help identify new insights into potentially suboptimal prenatal care, which can be used to inform new innovative solutions.

**Clinical Management Utilizing Best-Practices**

Health care systems seek to deliver high-quality clinical care through several mechanisms. The packaging of multiple recommended practices into a clinical bundle has been a strategy to improve consistency, reliability and clinical outcomes (Institute for Healthcare Improvement, 2019). To inform and improve clinical management of PWOD, the Alliance for Innovation on maternal Health (AIM) and the Council on Patient Safety in Women’s Health Care (the Council) released a clinical bundle on Obstetric Care for Women with Opioid Use Disorder (AIM bundle) (American College of Obstetricians and Gynecologists, 2017) that provides a list of evidence-based clinical recommendations (Table 1). This clinical bundle
addresses practices both at the level of the provider and of the practice and/or health system.

**Table 1. Clinical Bundle Components Relating to Screening Practices**

<table>
<thead>
<tr>
<th>Every provider/clinical setting</th>
<th>1. Assess all pregnant women for SUDs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) Utilize validated screening tools to identify drug and alcohol use.</td>
</tr>
<tr>
<td></td>
<td>b) Incorporate a screening, brief intervention, and referral to treatment (SBIRT) approach in the maternity care setting.</td>
</tr>
<tr>
<td></td>
<td>c) Ensure screening for polysubstance use among women with OUD.</td>
</tr>
<tr>
<td>2. Screen and evaluate all pregnant women with OUD for commonly occurring co-morbidities.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Ensure the ability to screen for infectious disease (e.g., HIV, Hepatitis, and sexually transmitted infections (STIs)).</td>
</tr>
<tr>
<td></td>
<td>b) Ensure the ability to screen for psychiatric disorders, physical and sexual violence.</td>
</tr>
<tr>
<td></td>
<td>c) Provide resources and interventions for smoking cessation.</td>
</tr>
<tr>
<td></td>
<td>d) Match treatment response to each woman’s stage of recovery and/or readiness to change.</td>
</tr>
</tbody>
</table>

This study utilizes an implementation science framework to: (1) identify and understand any clinical practice gaps between screening-related best-practices and actual clinical management of PWOUD in the west-central region of Florida, (2) identify facilitators and barriers of full implementation of the clinical bundle, and (3) determine the fidelity of hospital policies elements with the elements of this clinical bundle. For the purposes of this study, the west-central region of Florida is defined as Charlotte, Hernando, Hillsborough, Lee, Manatee, Pasco, Pinellas, and Sarasota counties (Figure 1). The selection and definition of the west-central region was based on high prevalence rates or overall number of NAS-diagnosed infants, containing both urban and rural settings and proximity to the University of South Florida to enable hospital visits and recruitment at delivery hospitals in each county (Table 2).

**Specific Aims and Research Questions**

The **long-term goal** of this study is to ensure universal access to high-quality, evidence-based clinical management of PWOUD, and to optimize perinatal and postpartum outcomes for mothers and their children. The **purpose** of this study is to understand clinical obstetric management behaviors and evaluate how and why they may differ from clinical best-practices.
with regards to screening and identification of opioid use during pregnancy. This is accomplished through three aims: (1) to describe clinical practice behaviors related to opioid use during pregnancy among physicians who treat pregnant women in the west-central Florida region, (2) to identify facilitators and barriers to clinical guideline implementation in both inpatient and outpatient settings in the west-central Florida region, and (3) to categorize written hospital policy components alignment with clinical bundle elements (Table 3). This study utilizes an equivalent concurrent mixed-methods approach.

**Aim 1** To describe clinical practice behaviors related to opioid use during pregnancy, in-depth interviews with clinicians who manage pregnant women in the west-central region of Florida were performed. These clinicians were obstetric providers or staff, other medical or behavioral health providers or staff, or individuals who work with pregnant women at community agencies.

**Aim 2** To identify facilitators and barriers to clinical guideline implementation in both inpatient and outpatient settings, online surveys were performed with clinicians and staff who
Table 2. List of Delivery Hospitals in West-Central Florida Region  

<table>
<thead>
<tr>
<th><strong>Facility</strong></th>
<th><strong>County</strong></th>
</tr>
</thead>
</table>
| Bayfront Health Spring Hill      | Hernando   | manage pregnant women with opioid use disorder.  
| Bayfront Medical Center          | Pinellas   |  
| Brandon Regional Hospital        | Hillsborough |  
| AdventHealth North Pinellas       | Pinellas   |  
| AdventHealth Tampa                | Hillsborough | Additionally, survey participants could elect to participate in an in-depth, qualitative interview.  
| AdventHealth Wesley Chapel        | Pasco      |  
| AdventHealth Zephyrhills          | Pasco      |  
| Lakewood Ranch Medical Center    | Manatee    | Both the interviews and surveys were guided by constructs from the Theoretical Domains Framework and practitioner and  
| Manatee Memorial Hospital        | Manatee    | practice behaviors were compared to those recommended in the AIM bundle. Findings from Aim 1 and Aim 2 were triangulated with the literature to identify and understand promising practice behaviors and clinical guideline implementation facilitators and barriers to inform future hypothesis generation and clinical behavioral change interventions.  
| Mease Hospital Countryside       | Pinellas   |  
| Medical Center of Trinity        | Pasco      |  
| Morton Plant Hospital            | Pinellas   |  
| Oak Hill Hospital                | Hernando   |  
| Sarasota Memorial Hospital       | Sarasota   |  
| South Florida Baptist Hospital   | Hillsborough |  
| St Joseph’s Hospital North       | Hillsborough |  
| St Joseph’s Hospital South       | Hillsborough |  
| St Joseph’s Women’s Hospital     | Hillsborough |  
| St Petersburg General Hospital   | Pinellas   |  
| Tampa General Hospital           | Hillsborough |  

Aim 3 To categorize hospital policies according to their fidelity with clinicalbundle components, hospital policies were requested from individuals who participated in surveys or interviews from Aim 2 and worked in an inpatient obstetric setting. Hospital policies were defined as any evidence of institutionally recommended clinical practices regarding screening of pregnant women, which may include written hospital policy, written unit/department policy, standardized order sets, electronic medical record prompts, recommended practices, care pathways, clinical algorithms, and other similar evidence. The components of the submitted
hospital policies were evaluated to have full fidelity, partial fidelity, or no fidelity with the clinical best practices from the AIM bundle that relate to the study topical areas of screening and opioid identification. Among the hospital policies collected, triangulation between the findings from the qualitative interviews in Aims 1 and 2, the survey in Aim 2 and the findings from Aim 3 occurred to gain insight into hospital policy fidelity with AIM bundle components, as well as to understand the adaptability of hospital policies relating to PWOUD. Additionally, the feasibility of collecting hospital policies and categorizing their components according to their fidelity with clinical bundle components was evaluated.

**Conceptual Framework**

Implementation research can be defined as “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services,” which includes research on factors that impact clinical and organizational behavior (Eccles & Mittman, 2006, p. 1). A healthcare orientation to implementation science aims to identify under-utilized evidence-based practices (EBPs) and address implementation gaps and their resultant quality and clinical outcome gaps at the levels of the provider, practice, or system level(s) (Bauer, Damschroder, Hagedorn, Smith, & Kilbourne, 2015). The Theoretical Domains Framework has been identified as a fitting implementation science framework for this study.

The Theoretical Domains framework (TDF) was developed to characterize a central set of theoretical constructs for studying the implementation of EBP based on psychological theory that could be accessible to and used by non-psychologists, and that prioritized constructs particularly relevant to healthcare-related behavior change (S. Michie, 2005). The TDF has been used previously in a variety of guideline implementation studies (Nash, Garg, Brimble, & Markle-Reid, 2018). It was developed to identify influences on the behavior of health professionals related to the implementation of evidence-based practices and has been widely
cited in peer-review publications (Atkins et al., 2017) and has been one of the most frequently
used theories or frameworks to study guideline implementation among physicians (Liang et al.,
2017).

Table 3. Specific Aims and Research Questions by Topical Area

<table>
<thead>
<tr>
<th>Specific Aims</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim 1: To describe clinical practice behaviors related to opioid use during pregnancy among clinicians who manage pregnant women in the inpatient or outpatient setting in the west-central Florida region.</td>
<td>RQ1-1: How are screening and identification of opioid use among patients described?</td>
</tr>
<tr>
<td></td>
<td>RQ 1-2: How are screening practices and the conditions under which they are performed described?</td>
</tr>
<tr>
<td>Aim 2: To identify facilitators and barriers to clinical guideline implementation in inpatient and outpatient settings in the west-central Florida region.</td>
<td>RQ2-1: What facilitators and barriers of clinical guideline implementation related to screening and identification of opioid use are identified by clinicians and staff who manage pregnant women with opioid use disorder in the west-central Florida region?</td>
</tr>
<tr>
<td>Aim 3: To categorize the fidelity of hospital policies with clinical bundle components and determine the feasibility of obtaining these policies among delivery hospitals in the west-central Florida region.</td>
<td>RQ3-1: To what extent can written hospital policy components be categorized as having full fidelity, partial fidelity or no fidelity with clinical best practices related to screening and identification of opioid use among delivery hospitals in the west-central Florida region?</td>
</tr>
<tr>
<td></td>
<td>RQ3-2: To what extent can written hospital policies related to clinical bundle components be collected from delivery hospitals in the west-central Florida region?</td>
</tr>
</tbody>
</table>

The TDF contains 14 domains: knowledge; skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; intentions; goals; memory, attention and decision processes; environmental context and resources; social influences; emotions and behavioral regulation (Cane, O’Connor, & Michie, 2012). Each domain of the Theoretical Domains framework has corresponding interview questions that can be used for diverse purposes and illustrate the type of questions that would be most relevant to each domain. Use of the questions can help to ensure that each domain is discussed in an interview
and that behaviors associated with each domain can be explored without missing a relevant
domain. Findings from the interview questions will be used to help explain the associated
behaviors for Aim 2, and, eventually, to develop potential behavior change interventions.

Implications

Implementation of clinical guidelines and best practices is a public and clinical health
issue, since many guidelines and best practices have not been fully implemented. Guideline
adherence related to opioid use disorder during pregnancy has been found to be associated with
beliefs about maternal consequences of positive toxicology screens and relationships with social
service agencies (Substance Abuse and Mental Health Services Administration, 2016). Other
guideline adherence barriers have been found to vary by personal and professional factors
(Cahill, Suurdt, Ouellette-Kuntz, & Heyland, 2010). Since guideline adherence has been found
to be associated with beneficial clinical outcomes, a lack of guideline adherence may be a quality
of care issue that can indicate potential suboptimal clinical management (Lugtenberg, 2009).
Therefore, exploring these issues relating to guideline adherence and identification of salient
factors for clinical management of PWOUD may help to improve guideline implementation and
quality of clinical care.

There are many potential research implications based on this proposed research project.
These findings can be used to generate hypotheses related to the current practices and clinical
patterns and how they relate to clinical implementation. The findings could use the identified
theoretical framework-guided facilitators and barriers to inform a future widespread survey to
identify the broader salience of facilitators and barriers across wider demographic sample of
providers. Facilitators and barriers may be identified differentially according to practitioner
type and/or location, which can be used to generate hypotheses and test them in a broader study
population. Finally, a behavior-change intervention could be developed and evaluated in a
future research study.
Regarding public health practice, research findings can be translated through the insight gained regarding awareness of related clinical guidelines and recommendations. For example, if low awareness of clinical bundle components is found, an information campaign can be established to improve provider knowledge. Additionally, the insight gained may help to improve implementation of guidelines and best-practices for quality improvement in light of the identified implementation facilitators and barriers. For instance, barriers of guideline-based screening may be identified that could inform a future quality improvement project focusing on reducing barriers to screening and improving drug, mental health, and sexually transmitted infection screening during pregnancy.

The findings of this study can be used to identify provider emotions and beliefs about PWOU patients, which can be used to improve awareness of implicit bias or inform a quality improvement project addressing provider-patient relationships and communication. Identified barriers may be selected to focus on for a future behavior-change intervention, while identified facilitators may be used to optimize opportunities for incentivized implementation of guidelines and to ensure that policies both support facilitators and minimize or remove barriers. Finally, in the future, a designation for practices and/or hospitals with clinical policies and procedures in-line with clinical guidelines may be explored. This could bring awareness to the issue and provide marketing and awareness for the clinical practices that participate. Additionally, practices that are especially interested and invested in providing clinical care for this population and have the skills and relationships for high quality care can easily be identified by potential patients and other providers.

Finally, lack of referral patterns and multidisciplinary collaboration can be a health problem when systems are designed in siloes and many systemic and practice barriers prevent collaboration across specialties. Since PWOU are likely to benefit from involvement by a variety of providers, particularly addiction and mental health practitioners, barriers to screening and identification of opioid use and/or common comorbidities can inform appropriate care
coordination with both maternal and infant implications. For instance, mothers without adequate substance abuse treatment may engage in illicit use, which may result in child welfare involvement, child custody removal, and maternal incarceration. As a result of this research project, the opportunity exists to translate findings into practice by addressing identification of opioid use and potential comorbidities and, ultimately, to inform policies and practice behaviors that impact best-practice implementation. Future quality improvement and implementation projects can be informed by these findings.

Gaps in hospital policy related to PWOUD aim to be identified, which can alert clinicians and hospital management of the need to bring policies in-line with current bundle components. Environmental barriers will be elicited, which may include public policies that inhibit screening, as well as other policies impacting guideline implementation, such as federal or state policies, or policies at the local or practice level. Dissemination of study findings may also result in advocacy for policy change to modify policies that are barriers to guideline implementation.

In terms of policy making, hospital policies addressing PWOUD, particularly those in-line with clinical bundle components, aim to be identified, as well as gaps in and elements of hospital policies and those policies that are contrary to clinical best practices. Additionally, hospital policies may be identified that are facilitators or barriers to guideline implementation. Relevant policies outside of hospitals may be elicited as barriers to bundle implementation. These may be federal or state laws, or at the obstetric practice, addiction treatment facility, or among community agencies, such as Healthy Start. Identification of various policy barriers can inform future advocacy efforts to align the policies with clinical best-practices and to avoid implementation barriers.

Policy change in Florida is an important potential outcome of the findings of this proposed study. This study aims to categorize the fidelity of hospital policies with recommended screening practices. As a result, participants may identify lack of resources, such as treatment programs for pregnant women or that accept women with children, that could be
the focus for future policy efforts. Furthermore, state policies impacting pregnant or postpartum women with Opioid Use Disorder (OUD) may be identified as barriers to optimal clinical management, such as lack of Medicaid expansion, state implementation of the Child Abuse Prevention and Treatment Act (CAPTA) and the Comprehensive Addiction and Recovery Act (CARA) federal legislation. These policies require states to create legislation to delineate criteria for notifying child protective services and developing plans of safe care for infants with prenatal drug exposure, and availability of drug treatment options for pregnant women, including facility capacity for pregnant women and other children, treatment that addresses the unique needs of women and buprenorphine providers who accept and treat pregnant women. Alternatively, there are many challenges to implementing policy change in Florida, including a potential lack of interest in policy change at the local-, practice- or hospital-levels. There are also many competing priorities and a divisive political climate in Florida.

**Conclusion**

In summary, this study seeks to understand screening and identification of opioid use-related practice behaviors amongst clinicians who treat PWOUD; to identify facilitators and barriers of screening and identification of opioid use; and to identify the extent to which hospital policies are consistent with clinical recommendations for screening of PWOUD. This study aims to explore these factors with a variety of clinicians and staff working in various communities throughout the west-central region of Florida with varying levels of care and system coordination. There are many research, practice, and policy implications of this research that support the prioritization of this project and dissemination of its future findings. It is hoped that the findings from this proposed study will help to promote and ensure universal access to high-quality, evidence-based, non-judgmental clinical management of PWOUD, and to optimize perinatal and postpartum outcomes for mothers and their children.
**Definition of Key Terms**

ACOG: American College of Obstetricians and Gynecologists

DCF: Department of Children and Families

EBP: Evidence-Based Practice

EMR: Electronic Medical Record

FQPC: Florida Perinatal Quality Collaborative

MORE: Maternal Opioid Recovery Effort (quality improvement initiative through the FPQC)

NAS: Neonatal Abstinence Syndrome

NOWS: Neonatal Opioid Withdrawal Syndrome

OUD: Opioid Use Disorder

PWOUD: Pregnant Women with Opioid Use Disorder

SUD: Substance Use Disorder

TDF: Theoretical Domains Framework
CHAPTER 2: LITERATURE REVIEW

Opioid Medications

Medications derived from the opium poppy plant are commonly used for their beneficial pain-relieving, antidiarrheal and sedative properties (Renner, 2011). These medications are classified as opiates or opioids. Opiates are natural opium derivatives and include drugs such as morphine and codeine, while opioids are synthetic or semi-synthetic manufactured medications, such as fentanyl, morphine, methadone, and buprenorphine (Renner, 2011). The term opioid is a superset of opiates (D. H. Epstein, Phillips, & Preston, 2011) and will be used to refer to both natural derivatives and manufactured medications. Use of opioids can be categorized as licit, or appropriate use of prescription medication, or illicit. Illicit use can be further classified as inappropriate use of prescriptions, such as overuse or use of medication prescribed to someone else, or use of street drugs, such as heroin. Opioids are consumed through various routes, including by mouth, inhalation, or intravenously.

Physical tolerance, physical dependence, and withdrawal result from chronic opioid use. Physical tolerance is a state which can be established following regular opioid use over 1-2 weeks, in which progressively higher doses of opioids are required to experience the desired state of euphoria (Renner, 2011). Physical dependence is a separate but often co-occurring process in which opioid users display a characteristic withdrawal syndrome with opioid dose reduction or abstinence (Renner, 2011). Withdrawal symptomatology can vary based on the type of opioid used, however, abrupt discontinuation of opioids causes non-life threatening, severe flu-like symptoms, which can consist of yawning, watery eyes, runny nose, chills, muscle aches, nausea/vomiting, diarrhea, fever, eating disruption, increased sleeping, and other sleep
disruption, fever, sweating, painful cramps and muscle spasms, and elevated temperature, heart rate, blood pressure, and respirations (D. H. Epstein et al., 2011; Renner, 2011).

**Opioid Use Disorder**

Opioid use disorder (OUD) is defined as “a problematic pattern of opioid use leading to clinically significant impairment or distress,” as indicated by symptoms such as tolerance, withdrawal, craving, or an inability to cut down or control opioid use (American Psychiatric Association, 2013, p. 541). As with addictions, in general, OUD is considered a chronic neurobiological disease with genetic, psychosocial, and environmental factors influencing its development and manifestations (American Society of Addiction Medicine, 2017). A diagnosis of OUD is based on specific criteria, such as unsuccessful efforts to cut down or control use, as well as use resulting in social problems and a failure to fulfill obligations at work, school, or home (Center for Disease Control and Prevention, 2017), taking more than prescribed, use in an aberrant pattern, and taking prescription opioid medication without a valid prescription, such as borrowing medication from friends and family (Starer & Christensen, 2018). OUD has been described as a “chronic, relapsing disease, which has significant economic, personal, and public health consequences” (Kampman & Jarvis, 2015, p. 358).

In 2007, 213,000 persons nationally aged twelve or older met the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition criteria for heroin abuse or dependence, while 1.7 million persons met the criteria for pain-reliever abuse or dependence (D. H. Epstein et al., 2011). In the same year, an estimated 335,000 and 558,000 persons aged twelve or older had received treatment in the past year for drug problems involving heroin and pain relievers, respectively (D. H. Epstein et al., 2011). Additionally, an estimated 21 million people, representing 8.4% of the U.S. population, needed but did not receive treatment for drug or alcohol problems due to barriers such as lack of health coverage, inability to pay, not being ready to stop use, perceived ability to manage use without treatment, lack of transportation or
convenient access, concerns about negative opinions or judgment from others and a lack of knowledge regarding where to obtain treatment (D. H. Epstein et al., 2011).

Opioid prescriptions in the United States peaked in 2010 and then decreased each year through 2015 to an average of 70.6 prescriptions per each 100 people in the population (Guy et al., 2017). Substance use disorder (SUD) treatment programs for the misuse of prescription opioids more than quadrupled between 2002 and 2012 (Substance Abuse and Mental Health Services Administration, 2013). From 1999 to 2015, the age-adjusted drug-poisoning death rate more than tripled, from 6.1/100,000 in 1999 to 16.3/100,000 in 2015 (National Center for Health Statistics, 2017). From 2010 to 2015, the percentage of drug overdose deaths varied greatly by type of opioid, with deaths involving heroin tripling from 8% to 25%; deaths involving natural and semisynthetic opioids, which includes prescriptions such as oxycodone and hydrocodone, decreasing from 29% to 24%; deaths involving methadone decreasing from 12% to 6%; and deaths due to synthetic opioids other than methadone, which includes both pharmaceutical and illicit drugs, increasing from 8% to 18% (National Center for Health Statistics, 2017).

Biological, psychological and social classifications can be used to categorize specific risk factors for OUD, according to the biopsychosocial framework (Engel, 1977). Biological correlates of opioid use disorder include younger age (Dowell, Haegerich, & Chou, 2016), pain (B. Fischer, Lusted, Roerecke, Taylor, & Rehm, 2012), tobacco use (D. H. Epstein et al., 2011), and polysubstance use (D. H. Epstein et al., 2011). Psychological correlates include mental health problems, such as depression (Dowell et al., 2016; B. Fischer et al., 2012), anxiety (B. Fischer et al., 2012), and posttraumatic stress disorder (K. Z. Smith, Smith, Cercone, McKee, & Hornish, 2016); as well as use of psychotropic medications (Dowell et al., 2016). Social correlates include marital difficulties (American Psychiatric Association, 2013), opioid availability in the community (D. H. Epstein et al., 2011), and social networks (V. L. Brown & Riley, 2009; D. H. Epstein et al., 2011).
Additionally, many physical symptoms and conditions may arise as a result of opioid use disorder. These may include acute or chronic inflammation; infectious diseases, including Human Immunodeficiency Virus (HIV), Hepatitis A, B or C, Tuberculosis, and sexually transmitted infections; and overdose (D. H. Epstein et al., 2011). Medical co-morbidities may include arthritis, hypertension, heart conditions, chronic lung conditions, stomach ulcers, irritable bowel syndrome, cirrhosis, and diabetes (D. H. Epstein et al., 2011). Histamine release from opioids may cause itching and scratching, which can cause skin excoriation (Starer & Christensen, 2018). Issues specific to opioid injection may include needle or track marks; localized infection, such as cellulitis, abscesses, wound botulism, and necrotizing fasciitis; or systematic infection, such as endocarditis or septic emboli (Del Giudice, 2004; D. H. Epstein et al., 2011), while issues specific to inhalation include pulmonary complications, nasal irritation, and septal perforation (D. H. Epstein et al., 2011).

Further epidemiologic correlates of SUD, in general, include alcohol use (Falk, Yi, & Hiller-Sturmhofel, 2008), family and partner substance use (Starer & Christensen, 2018), unstable job or low work hours, low educational background or frequent educational interruptions (Starer & Christensen, 2018), low income (R. A. Epstein et al., 2013), chronic pain syndromes (Desai, Hernandez-Diaz, Bateman, & Huybrechts, 2014; Klie, 2018; McCarthy, Leamon, Finnegan, & Fassbender, 2017), and poor dentition (Klie, 2018). High-risk behaviors include multiple sexual partners, history of STIs, multiple pregnancy terminations, prostitution or working in strip/nude/erotic dance clubs; and behaviors that may lead to legal problems, including violent behavior and assaults (Starer & Christensen, 2018). Relationship or social issues, such as intimate partner violence, history of childhood physical or sexual abuse, current marital dysfunction, isolation, loss of friendships, distance from family members and lack of interest or participation in hobbies or recreational activities, may also indicate risk of SUD (Starer & Christensen, 2018).
Opioid Use Disorder in Pregnant Women

Opioids were historically prescribed for women around the turn of the 20th century for female conditions that were commonly diagnosed at the time, such as dysmenorrhea and hysteria (M. Terplan, 2017). Social norms, then, dictated that it was more acceptable for men to engage in public consumption of alcohol while women could use opioids discreetly at home (M. Terplan, 2017). According to Terplan (2017), there are a number of factors that predispose women to opioid use and abuse, including a higher likelihood of psychological distress or mental illness (Center for Behavioral Health Statistics and Quality, 2016), higher prevalence of adverse childhood experiences (Felitti et al., 1998), higher likelihood of experiencing gender-based violence (Felipe Russo & Pirlott, 2006; Felitti et al., 1998), higher pain potential for reasons including reproductive capacity, and a higher prevalence of painful chronic conditions (Felipe Russo & Pirlott, 2006; Nahin, 2015), and a greater prevalence of longer-term opioid medication use (Anthony et al., 2008).

Many studies have reported high and increasing rates of opioid use and OUD during pregnancy. Nearly 1% of pregnant women and 2.3% of reproductive-aged women who were not pregnant reported recent non-medical use of opioids in the past 30 days (Kozhimannil et al., 2017). In 2007, 22.8% of women enrolled in Medicaid programs filled an opioid prescription during pregnancy, marking an increase of 21.1% since 2000 (Desai et al., 2014). According to Pan and Yi, there was an increase in opioid-exposed live-born deliveries in the US from 1999 to 2008, who reported 14/10,000 live born deliveries in 1999 and 22/10,000 live born deliveries in 2008 (2013). During a concurrent decrease in the prevalence of alcohol- and cocaine-affected live births from 2000 to 2009, the prevalence of antepartum maternal opioid use increased significantly from 1.2/1000 hospital live births to 5.6/1000 hospital live births based on hospital discharge diagnostic codes among a nationally-representative sample of newborns (Patrick et al., 2012). Opioid abuse or dependence during pregnancy was found to have increased by 127% between 1998 and 2011, with 1.7 per 1000 delivery admissions to 3.9 per 1000 delivery.
admissions, respectively, and the largest increase in opioid use or dependence found within the maternal age group of 20 to 34 year-olds (Maeda et al., 2014).

Maternal opioid use during pregnancy is a major risk factor for the development of Neonatal Opioid Withdrawal Syndrome (NOWS), formerly referred to as neonatal abstinence syndrome (NAS), of the newborn. NOWS is a constellation of symptoms due to the rapid discontinuation of fetal drug exposure at birth (Kocherlakota, 2014). Infants with NOWS are more likely to experience neonatal complications, such as low birth weight, preterm birth and experience syndromic symptoms, such as respiratory diagnoses, feeding difficulties and seizures (Patrick, Dudley, et al., 2015). Signs of NOWS generally include tremors, irritability, diarrhea, and crying which is excessive, high-pitched and inconsolable (Kocherlakota, 2014). The rising prevalence of opioid use in pregnancy has been associated with a sharp increase in NAS, from 1.5 cases per 1000 hospital births in 1999 to 6.0 cases per 1000 hospital births in 2013, representing an increase in annual hospital charges of $1.5 billion (Patrick, Davis, Lehmann, & Cooper, 2015).

Maternal mortality reviews in several states have identified substance abuse as a major risk factor for pregnancy-associated deaths (Kavanaugh, 2015; Maryland Department of Health and Mental Hygiene, 2016; Young, 2013). From 2007 to 2016, pregnancy-associated mortality involving opioids more than doubled, from 1.3/100,000 to 4.2/100,000 live births and the percentage of all pregnancy-associated deaths increased from 4% to 10%, respectively (Gemmill, Kiang, & Alexander, 2019). The majority of opioid-involved pregnancy-associated deaths occurred during pregnancy or within 42 days of pregnancy termination, with the proportion of deaths involving methadone or natural/semisynthetic opioids, excluding heroin, significantly decreasing and the proportion of deaths involving heroin or other synthetic opioids increasing from 17% to 78% over the same time period (Gemmill et al., 2019).
Summary of Issues and Epidemiological Correlates

Based on the Social Ecological Model (McLeroy, Bibeau, Steckler, & Glanz, 1988), the following are a summary of issues and epidemiological correlates related to opioid use disorder in pregnant women, organized according to the intrapersonal, interpersonal, institutional, community, systems, and policy levels.

Intrapersonal Level

Intrapersonal epidemiological correlates can be categorized by demographics, biology, psychology, behavior, and substance use. **Demographic correlates** of opioid use disorder during pregnancy include *white race* (Alexander, 2013; Salihu, Mogos, Salinas-Miranda, Salemi, & Whiteman, 2015), *non-Hispanic ethnicity* (Salihu et al., 2015), and *maternal age* (Bagley et al., 2018; Salihu et al., 2015). A primary **biological correlate** is *chronic pain* (Desai et al., 2014; Klie, 2018; McCarthy et al., 2017). Many **psychological correlates** have been identified, including co-morbid psychiatric disorders or mental illness, specifically *mood disorder* (Arnaudo et al., 2017; Benningfield et al., 2010), *major depressive disorder or depression* (Arnaudo et al., 2017; Benningfield et al., 2010; Faherty et al., 2018; Patrick, Dudley, et al., 2015; M. V. Smith et al., 2015; Walker et al., 2018), *generalized anxiety disorder or anxiety* (Arnaudo et al., 2017; Benningfield et al., 2010; Patrick, Dudley, et al., 2015; M. V. Smith et al., 2015; Walker et al., 2018), *suicidal thinking* (Benningfield et al., 2010), *schizophrenia* (Faherty et al., 2018), *bipolar disorder* (Arnaudo et al., 2017; Faherty et al., 2018), *eating disorder* (Arnaudo et al., 2017), *post-traumatic stress disorder* (Arnaudo et al., 2017; Walker et al., 2018), *postpartum depression* (A. Holbrook & Kaltenbach, 2012), and *selective serotonin uptake inhibitor antidepressant medication use* (M. V. Smith et al., 2015).

**Behavioral correlates** include high-risk sexual activity or sexually transmitted infections (A. M. Holbrook et al., 2012; Kremer & Arora, 2015) and other infectious diseases (A. M. Holbrook et al., 2012; Kremer & Arora, 2015). **Substance use factors** associated with opioid use during
pregnancy include use of illegal drugs (Metz et al., 2018; M. V. Smith et al., 2015) or polydrug use (Metz et al., 2018), cigarette smoking (Margaret S. Chisolm et al., 2013; M. S. Chisolm et al., 2009; Jackson & Shannon, 2012; Jones et al., 2009; Patrick, Dudley, et al., 2015; M. V. Smith et al., 2015) and maternal overdose (Bagley et al., 2018) or death (Kavanaugh, 2015; Maryland Department of Health and Mental Hygiene, 2016; Metz et al., 2018; Young, 2013).

Women seeking substance use treatment often experience trauma, loss and grief from life situations such as adverse childhood experiences, interpersonal violence and loss of child custody (Nichols et al., 2010), and experience unplanned pregnancy (Heil et al., 2011). In addition, substance use treatment-seeking women may have barriers to treatment entry, including lack of transportation access, food and housing instability, financial insecurity or inadequate insurance coverage, and a lack of child care (Nichols et al., 2010). “Women with opioid-use disorders come from all socioeconomic backgrounds, and their lives are often complicated by complex psychosocial and environmental factors that include a history of sexual abuse and/or interpersonal violence, poor nutrition, unstable housing, and co-occurring psychiatric conditions” (Jones et al., 2014, p. 309).

Interpersonal Level

There are several interpersonal processes and primary group correlates of opioid use during pregnancy can be further divided into household, behavioral and perinatal categories. **Household correlates** of OUD during pregnancy include a history of physical or sexual abuse (Walker et al., 2018) or interpersonal or intimate partner violence (Alexander, 2013). **Behavior correlates** include high-risk sexual activity or sexually transmitted infections (A. M. Holbrook et al., 2012; Kremer & Arora, 2015) and other infectious diseases (A. M. Holbrook et al., 2012; Kremer & Arora, 2015). **Perinatal correlates** include fetal/infant health and offspring effects of opioid use during pregnancy (Patrick, Dudley, et al., 2015; Patrick et al., 2012).
Opioid-using women may have a social network supportive of opioid use or that supply them with opioids (V. L. Brown & Riley, 2009). They may experience social and relationship problems, such as isolation, friendship loss and impaired family relationships (Starer & Christensen, 2018). In addition, women may have difficulty establishing a positive relationship with their healthcare and obstetric providers out of fear of stigma and judgment. They may feel a lack of empowerment to engage in personal or shared decision making and feel forced to follow clinical recommendations out of fear of child protective referrals or removal of older children (Howard, 2016).

The concept of patient perception of physician empathy can be defined as a patient feeling that they are understood and accepted by their physician and this has been shown to significantly influence patient satisfaction and compliance (S. S. Kim, Kaplowitz, & Johnston, 2004). As a result, many clinical guidelines and recommendations for management of pregnant women with opioid use disorder (PWOUD) recommend building rapport through respect, care, and nonjudgment (Committee on Obstetric Practice, 2017; Gopman, 2014; Jones et al., 2014; E. E. Krans et al., 2015; McLafferty et al., 2016; Substance Abuse and Mental Health Services Administration, 2018).

PWOUD often experience stress, which can be exaggerated by negative interactions with health care providers (McCarthy et al., 2017). Negative provider interactions can also provoke an avoidance of prenatal or other medical care (Stone, 2015) and a failure to disclose opioid or other substance use (Jones et al., 2014; Stone, 2015).

Another issue related to PWOUD is that of unplanned pregnancy. Although the national average for unplanned pregnancy is close to half of all pregnancies (Finer & Zolna, 2016), the proportion among women with OUD has been estimated above 85% (Heil et al., 2011). Reproductive desires and needs of these women should be discussed throughout pregnancy, with encouragement of long-acting reversible contraception, particularly in the immediate postpartum period prior to hospital discharge after delivery (E. E. Krans et al., 2015).
When discussing the promotion of long-acting reversible contraception among “high-risk” populations, however, it is important to consider reproductive autonomy and ensure that vulnerable women are not having their reproductive desires undermined (Gomez, 2014). Targeting contraceptive counseling for women who use opioids without consideration for her reproductive preferences and long-term family planning desires is concerning given the negative perceptions of fertility and reproduction among certain subgroups of women, such as low-income, young, and women of color (Gomez, 2014). Additionally, certain organizations and groups have aimed to decrease or eliminate the reproductive potential of women drug-users, such as Children Requiring A Caring Kommunity (CRACK), an organization that offered $200 to $300 to mostly low-income, drug-using women for contraception or sterilization (Derkas, 2012), and judges who offer contraceptive implant placement as an alternative to jail time for women convicted of drug abuse during pregnancy (Gandhi, 2017). Given this historical landscape, providers should carefully ensure ongoing conversations regarding current and future reproductive desires, and not encourage contraceptive methods contrary to women’s desires.

**Institutional Level**

Institutional policy and support of evidence-based practices (EBPs) impact clinical care and management of PWOUD. Clear guidelines for universal screening of pregnant women for substance use and misuse exist (Committee on Obstetric Practice, 2017), however, many institutions report substance use screening without the use of a validated and standardized screening tool, screening only a subset of pregnant patients, some providers failing to screen pregnant women for substance use at all, and a lack of understanding of either treatment options or how to refer and connect women with treatment services (Substance Abuse and Mental Health Services Administration, 2017). The U.S. Substance Abuse and Mental Health Service Administration recommends addressing screening barriers through the development
and implementation of hospital protocols, as well as performing comprehensive hospital assessments to ensure statewide policy consistency (Substance Abuse and Mental Health Services Administration, 2017).

There are similar policy and clinical practice barriers to other screenings that are important components of obstetric management, especially in the context of OUD, including mental health screening, as well as urine and other biological specimen drug screens. First, screening and identification of opioid use among pregnant women in the inpatient hospital setting is often too late. By the time this screening may take place, the woman is likely to be late in her pregnancy, if not admitted for labor and delivery. This timing is not conducive to the referrals for necessary services, such as addiction treatment, or communication regarding the potential for NOWS and child welfare involvement following childbirth. Further discussion about screening in outpatient obstetric settings can be found in the Health Care system section. Second, perinatal mental health screening is generally low, with even lower use of validated tools for screening (Coleman, Carter, Morgan, & Schulkin, 2008; Leddy, Haaga, Gray, & Schulkin, 2011). There is also a lack of clarity about mental health screening among PWOUD, with many groups supporting universal mental health screening (American College of Obstetricians and Gynecologists, 2017; Jones et al., 2014; Kampman & Jarvis, 2015; E. E. Krans et al., 2015; Reddy et al., 2017), yet, the ACOG committee opinion regarding clinical management of PWOUD uses soft language regarding identification of mental health and other nutrition and social service needs, without specifying universal screening or applicable tools (Table 4) (Committee on Obstetric Practice, 2017). Hospital policy should address criteria for screening, the most appropriate and evidence-based screening tools, and the timing and frequency of mental health screening. Third, the use of urine drug screening is not without potential harm or misinterpretation and must be used with consent and in accordance with state law (Committee on Obstetric Practice, 2017; Patrick, Schiff, Committee On Substance, & Prevention, 2017). Hospital policy regarding the use of urine drug screening should address
who should be screened, timing within the pregnancy or postpartum period, frequency of screening, interpretation of results and procedures following up on positive screens in accordance with state law. Similarly, the use of other biologic samples for drug screens, such as hair, meconium or placental tissue, have issues such as sample availability, window of detection and interpretation of maternal drug dosage, and require fitting hospital policies to address (Price, Collier, & Wright, 2018).

**Table 4. Clinical Guidelines and Recommendations for Mental Health Screening Among Women with Opioid Use Disorder During Pregnancy**

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title of Publication Containing Guideline/Recommendation</th>
<th>Language Regarding Mental Health Screening</th>
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| Alliance for Innovation in Maternal Health (AIM) | 2017 | Obstetric Care for Women with Opioid Use Disorder Patient Safety Bundle | Screen and evaluate all pregnant women with [opioid use disorder] for commonly occurring co-morbidities.  
- Ensure the ability to screen for psychiatric disorders, physical and sexual violence. |
| American College of Obstetricians and Gynecologists (ACOG) Committee on Obstetric Practice, American Society of Addiction Medicine (ASAM) | 2017 | Opioid Use and Opioid Use Disorder in Pregnancy ACOG Committee Opinion | Pregnant women with opioid use disorder often suffer from co-occurring mental health conditions, particularly depression, history of trauma, posttraumatic stress disorder, and anxiety...These women also often suffer from poor nutrition, and many have disrupted support systems leading to social service needs. Identifying these problems during pregnancy with referral for specialized multidisciplinary care is important to achieve optimal care for these women. |
| Jones, H E Deppen, K Hudak, M L Leffert, L McClelland, C Sahin, L Starer, J Terplan, M Thorp, J M Jr Walsh, J Creanga, A A | 2014 | Clinical care for opioid-using pregnant and postpartum women: the role of obstetric providers | ...all pregnant patients who use or are suspected of using illicit substances should be questioned about tobacco, alcohol, and other substance use, comorbid mental health conditions, and social service needs...the presence of a mental health disorder requires referral for appropriate specialized care. |
Many non-pharmacological treatments for opioid-exposed newborns have been identified, including forms of maternal-newborn contact, such as breastfeeding, skin-to-skin holding, and rooming-in, which have been found to be associated with reductions in need for pharmacological treatment for NAS (Dryden, Young, Hepburn, & Mactier, 2009; Holmes et al., 2016; Hunseler, Bruckel, Roth, & Kribs, 2013; Jansson & Patrick, 2018; Lefevere & Allegaert, 2015; O’Connor, Collett, Alto, & O’Brien, 2013). Additionally, these behaviors support the mother-infant relationship and may encourage the mother to remain in substance abuse treatment (Kramlich & Kronk, 2015). Due to these many, potentially cost-saving benefits,
hospital policies should encourage and promote mother-infant contact behaviors, including breastfeeding. Since mothers with SUDs often need education and training in parenting skills (Jansson & Patrick, 2018; Work Group on Substance Use Disorders, 2010) and may experience impaired bonding or attachment (Grella, 1997; Substance Abuse and Mental Health Services Administration, 2016), additional mother-infant dyad-supportive policies may include the assessment of parenting skill and the conditions and resources for referral for parenting education and training, if needed.

Due to high rates of unintended pregnancy among women with OUD, reproductive planning should be addressed by hospital policy, including the option of long-acting reversible contraception. Since most women with OUD do not attend postpartum obstetric visits (Elizabeth E. Krans & Dunn, 2014), hospitals should consider policies to offer contraception, particularly long-acting reversible contraception, in the immediate postpartum period prior to hospital discharge (Dowell et al., 2016; Jansson & Patrick, 2018; E. E. Krans et al., 2015; E. E. Krans, Tong, & Terplan, 2018).

Clinical guidelines and best-practices, as well as literature regarding PWOUD consistently recommend integrated systems of multidisciplinary care to address the multitude of various needs facing this population (American College of Obstetricians and Gynecologists, 2017; Committee on Obstetric Practice, 2017; Johnson, 2019; Jones et al., 2014; Work Group on Substance Use Disorders, 2010). This may include electronic medical record systems integrated across medical systems and specialties and payment models that reimburse for warm hand-offs between providers for referrals, for example. Hospital policy and financial structures, as well as inter-system collaborative relationships and agreements, need to be addressed to identify current practices and barriers to full implementation and ensure optimal coordination and integration of services. For instance, case managers can be instrumental in ensuring adequate and seamless services for PWOUD, however, they may lack resources to provide optimal management (Grella, 1997). These limitations to provide optimal management may include the
inability to access medical records due to unlinked systems or inter-system agreements for addiction services that are not women-centered. A review of related barriers for optimal, women-centered care for PWOD may identify such structures, relationships, and agreements that prevent well-coordinated evidence-based care.

Community Level

Communities can also address integrated systems through community-wide referral networks and inter-agency agreements across healthcare, substance abuse treatment, mental health, social services, child welfare and criminal justice systems (Grella, 1997). Communities can also ensure cross-training (Grella, 1997), facilitate the sharing of best-practices and engage women who have experienced opioid-exposed pregnancies to gain feedback on systems integration, and quality improvement suggestions. Rural communities often face a lack of local resources and may need to explore a more regional approach to systems integration, making sure to address issues such as transportation and timely care (J. D. Brown, Goodin, & Talbert, 2018; Heil, Sigmon, Jones, & Wagner, 2008).

In addition to integrated systems, many communities engage in a harm reduction approach. This may allow for community-level services such as needle exchanges and safe injection sites (Owens & Terplan, 2018), as well as safe disposal sites and take-back days (National League of Cities and National Association of Counties, 2016). Community members and groups interested in harm reduction services may face barriers such as public misperceptions and fear, as well as state statutes preventing harm reduction approaches.

Systems Level

Professionals from within a variety of systems often interact with and are concerned with opioid misuse during pregnancy, including obstetrics, pediatrics, mental health, child welfare and social services, judicial and criminal justice, and addiction treatment systems (Substance
Abuse and Mental Health Services Administration, 2016). Collaboration by both medical and mental health providers to address the physical and mental health needs of their patients is often referred to as integrated care (Butler et al., 2008). Within the context of opioid misuse during pregnancy, not only medical, behavioral and social service providers (M. Terplan, Kennedy-Hendricks, & Chisolm, 2015), but also substance abuse and public health providers with provision of self-help programs, behavioral interventions, and psychotherapy are all important care components (Grella, 1997). Many barriers exist to full implementation of integrated care for PWOU, such as siloed state categorical funding and the logistical difficulties associated with creating an integrated care model that is flexible and comprehensive to respond to the full and diverse range of patient needs (Grella, 1997). Additionally, different systems, agencies, and professionals may have different clinical perspectives, approaches and guidelines, as well as variations in practice, and intersection within communities (Substance Abuse and Mental Health Services Administration, 2016). Within these practices and communities, record-keeping, and electronic medical record systems are often not fully integrated and do not allow medical record sharing in an expedient and uncomplicated manner while ensuring the appropriate level of confidentiality. These variations and barriers indicate that systems within each community may need to assess their own intersecting practices, as well as barriers to collaboration, to ensure optimal interdisciplinary care.

Health Care/Obstetric system.

Epidemiological correlates of opioid use during pregnancy occurring within the health care system include hospital location (Salihu et al., 2015), late presentation to prenatal care, and failure to disclose opioid use to medical providers (Stone, 2015). Thus, service availability and patient-provider trust are important considerations in the provision of prenatal care among PWOU.
The role of obstetrician-gynecologists has been described by the American College of Obstetricians and Gynecologists (1993) as primary care physicians based on their comprehensive role in women’s health, which includes preventive, treatment, and surgical roles (as cited in Coleman et al., 2007). In this capacity, obstetricians function as a “point person” or care coordinator, integrating healthcare delivery across a variety of providers, such as medical specialists and therapists (Duckworth & O'Donohue, 2018). This is an important element of clinical management of PWOD, since many different provider specialists may consult with or provide care during the prenatal and postpartum periods, such as an obstetrician, pediatrician, neonatologist, and addiction specialist (Substance Abuse and Mental Health Services Administration, 2016).

Knowledge about local community resources, such as various clinical providers, social service agencies and drug treatment programs, is beneficial to allow the obstetrician to collaborate with and incorporate other practitioners into patient obstetric management plans and optimize care (Committee on Obstetric Practice, 2017; Jones et al., 2014). Although not directly related to addressing the needs of PWOD, it has been noted that literature addressing guidance on how to build collaborative relationships and local connections is limited (E. Miller, McCaw, Humphreys, & Mitchell, 2015).

Obstetric providers may not be familiar with issues common in complex substance abusing patients, such as prior victimization, child care and custody, and social support needs, and may benefit from in-depth training (Grella, 1997). In general, medical providers lack knowledge and training about mental health and substance abuse; this may be particularly harmful during pregnancy if providers ignore related symptoms or attribute them to the pregnancy (Grella, 1997).

Collaborative, multidisciplinary care of PWOD is consistent with a chronic disease management approach, involving a coordinated multidisciplinary care team along with behavioral interventions and education for self-management (Wagner, 2000), which is
associated with improved abstinence outcomes (Sacks et al., 2016). However, clinical management of this population is complex, resource-intensive, and time-consuming (Kremer & Arora, 2015), particularly because women are likely to miss or be late for appointments (Gopman, 2014; Jansson et al., 1996; Stone, 2015). Women with OUD may avoid prenatal care as a means to avoid judgment and stigma, as well as to prevent involvement of child protective services or removal of other children from their care (E. E. Krans et al., 2015; Kremer & Arora, 2015; Patrick et al., 2017; Stone, 2015).

Universal screening is recommended to detect substance use and/or abuse (American College of Obstetricians and Gynecologists, 2017; Committee on Obstetric Practice, 2017; Reddy et al., 2017). Additionally, infectious diseases and mental health screening are universally recommended (Reddy et al., 2017) or suggested to be considered (Committee on Obstetric Practice, 2017), based on the source of recommendation. Urine drug testing may be considered in addition to verbal screening in accordance with state laws (Committee on Obstetric Practice, 2017) however, there are limitations to interpretation (Price et al., 2018). Additional urine drug screening issues were discussed in the Institutional level. Women who use opioids and attend prenatal care will typically be in the outpatient obstetric setting at least once, if not many times, prior to the hospital obstetric setting, which may not take place until labor and delivery. Therefore, identifying opioid use in the outpatient prenatal setting is an important opportunity to address potential misuse, refer to appropriate specialists, and prepare for potential perinatal and postpartum complications, possibly including NOWS and child welfare referrals.

Many barriers to screening exist, including a lack of validated tools to identify substance abuse during pregnancy (Price et al., 2018) and a general lack of use of validated screening tools by obstetric providers (Leddy et al., 2011). Provider adherence to screening policies may depend on their relationship with child welfare workers and their perception of potential legal consequences to the mother resulting from a positive drug screen (Substance Abuse and Mental Health Services Administration, 2016). Drug screening in this patient population has severe
implications, which may include interpersonal relationship consequences (Price et al., 2018), mandated reporting to child protective agencies, child removal (Price et al., 2018), psychological damage (Price et al., 2018), and criminal accusation of fetal harm and incarceration (Paltrow & Flavin, 2013; Patrick et al., 2017; M. Terplan et al., 2015).

Medication-assisted treatment (MAT) involves the use of opioid replacement pharmacotherapy, with either methadone or buprenorphine, along with counseling and behavioral therapy, and is the appropriate treatment for opioid use disorder in pregnant women (Committee on Obstetric Practice, 2017; Kampman & Jarvis, 2015; Substance Abuse and Mental Health Services Administration, 2018; Work Group on Substance Use Disorders, 2010; World Health Organization, 2014). Access to MAT can be limited for a variety of reasons, including a lack of local MAT providers or treatment services, especially in rural settings; a lack of insurance coverage; or an inability to pay for services (Nosyk et al., 2013; Substance Abuse and Mental Health Services Administration, 2017). Additionally, there is an underutilization of MAT (Johnson, 2019) and many pregnant women self-refer to MAT services (Angelotta, Weiss, Angelotta, & Friedman, 2016), indicating a lack of obstetric provider involvement, lack of provider knowledge or stigma against MAT (Angelotta et al., 2016), or a lack of referral and warm handoff between obstetric and addiction treatment providers. Furthermore, the number of providers who prescribe buprenorphine and offer services to pregnant women is generally unknown (E. E. Krans & Patrick, 2016).

Health care systems seek to deliver high-quality clinical care in several ways. Professional associations, such as the American College of Obstetrics and Gynecology (ACOG) and the Society for Maternal Fetal Medicine are involved with the creation and dissemination of clinical practice guidelines and recommendations. These guidelines and recommendations are developed based on evidence of best practices and are designed to improve quality and consistency of care, as well as improve clinical outcomes and inform quality improvement activities (Woolf et al., 1999). Following peer-review and consensus processes, ACOG
committees release clinical recommendations in the form of practice bulletins, which review a clinical topic and provide recommendations graded by the evidence available, and committee opinions, which are shorter documents with timely information and limited recommendations on clinical management issues (Kirkpatrick & Burkman, 2010). Additionally, the packaging of multiple recommended practices into a clinical bundle has been a strategy to improve consistency, reliability, and clinical outcomes (Institute for Healthcare Improvement, 2019). To inform and improve clinical management of PWOUD, ACOG has released clinical recommendations in the form of a committee opinion (Committee on Obstetric Practice, 2017). Clinical recommendations in addition to those from ACOG have been published (Jones et al., 2014; Jones et al., 2008; E. E. Krans et al., 2015; Reddy et al., 2017), including a special report from the Society for Maternal-Fetal Medicine (Ecker et al., 2019) and a clinical bundle from the Alliance for Innovation in Maternal Health and the Council on Patient Safety (American College of Obstetricians and Gynecologists, 2017), both of which have been endorsed by ACOG.

The Alliance for Innovation in Maternal Health (AIM) is a national partnership that emerged as a response to increasing rates in US maternal mortality rates and which “aligns national, state, and hospital level efforts to improve maternal health and safety, and is poised to reduce severe maternal morbidity and maternal mortality across the United States,” (Mahoney, 2018, p. 400). AIM, along with the Council on Patient Safety in Women’s Health Care, develops and publishes bundles of healthcare practices aimed to improve health outcomes, particularly the reduction of maternal mortality and severe maternal morbidity (Mahoney, 2018). These bundles are composed of ten to thirteen evidence-based or informed practices, or elements, that are intended to be implemented in every birth setting, are specific to a certain maternal condition or event, and are adaptable for both high and low resource settings (Mahoney, 2018). Through a multidisciplinary collaborative agreement, AIM bundles are simultaneously published in professional journals for obstetrics, nursing, midwifery, anesthesiology, and family medicine (Mahoney, 2018). The AIM and Council on Patient Safety in Women’s Health Care
clinical bundle (American College of Obstetricians and Gynecologists, 2017) aims to minimize related maternal morbidity and mortality from opioid use-related complications, such as sepsis, endocarditis, hepatitis, and overdose (Mahoney, 2018).

Quality collaboratives are organizations that use synergistic learning and positive peer pressure to improve and sustain the quality of care and safety (Louis, 2015). Collaboratives, comprised of a multi-professional team from diverse sites, select topics to focus on, utilize clinical and quality experts to provide support and direction, select a model for improvement focused on setting clear clinical outcomes and utilize data to support clinical improvement (Louis, 2015). A type of these quality collaboratives, statewide perinatal quality collaboratives, “are networks of perinatal care providers and public health professionals working to improve pregnancy outcomes for women and newborns by advancing evidence-based clinical practices and processes” (Louis, 2015, p. 365). These groups convene partners across the state, including clinical providers and staff, public health professionals, researchers, patient and family representatives, and representatives of likeminded and related organizations, such as March of Dimes, Departments of Health and Hospital Associations. One such group, the Florida Perinatal Quality Collaborative (FPQC), was established in 2010 and has worked on many past, current, and upcoming initiatives, including a recent project on Neonatal Abstinence Syndrome and a recent Maternal Opioid Use Disorder (MORE) initiative that kicked-off in Fall 2019 (Florida Perinatal Quality Collaborative, 2019).

Substance use/addiction treatment system.

The substance abuse treatment system encompasses a variety of settings, such as residential facilities, outpatient clinics and physician offices, and therapeutic approaches, including medication, counseling and self-help groups (Substance Abuse and Mental Health Services Administration, 2016). A variety of barriers to substance abuse treatment are encountered by PWOUD, including inadequate insurance (Johnson, 2019) and other financial
barriers (Feder, Mojtahid, Musci, & Letourneau, 2018). Women, generally, avoid treatment for reasons of family obligations and lack of transportation and childcare (Jansson et al., 1996). Stigma is a barrier, in general, but is a particularly relevant barrier for pregnant women and mothers who fear judgment, blame, child removal and criminal prosecution (Feder et al., 2018; Grella, 1997; Jansson et al., 1996; Johnson, 2019; Nichols et al., 2010).

An additional barrier to substance abuse treatment is that it does not necessarily address the unique needs of women. Most substance abuse treatment facilities were designed for adult men (Marsh, D’Aunno, & Smith, 2000). Women with SUDs are more likely than men to have dysfunctional families of origin, in which they may have been exposed to conflict, misbehavior, and child neglect or abuse. As a result, these women have more mental and physical health problems, and are often victims of sexual abuse or domestic violence (Marsh et al., 2000). In addition, a minority of U.S. states have treatment programs specifically designed for pregnant women (Guttmacher Institute, 2019) and only 15% of U.S. treatment centers offer services specific to pregnant women, with very little available in rural areas (Mishka Terplan, Longinaker, & Appel, 2015). Due, in part, to a higher prevalence of sexual and physical abuse, women benefit from gender-specific, family-friendly treatment with trauma-informed services (Feder et al., 2018; Marsh et al., 2000; Nichols et al., 2010). Ancillary services, such as vocational training, parenting education, transportation, and legal and housing services, are also particularly beneficial for these women (Grella, 1997).

Collaboration between substance abuse treatment and mental health or medical systems can be complex and difficult. First, substance abuse treatment may adhere to an approach that advocates self-help and drug abstinence, and may consider mental illness to be a symptom of drug abuse (Grella, 1997), which may not be in accordance with mental health or medical paradigms. Second, substance abuse providers may be lacking knowledge or training regarding psychiatric assessments, pharmacological treatments and trauma (Grella, 1997). Third, physical and mental health issues often go unaddressed in substance abuse treatment due to a lack of
training (Grella, 1997), which presents as a barrier to treatment. Fourth, service integration can be complicated by insurance regulations and reimbursement (Grella, 1997), leaving providers concerned that they may not be reimbursed for services. And fifth, state administrative and regulatory requirements may make collaboration exceedingly complex (Grella, 1997). There are several examples of administrative and regulatory requirements impeding collaboration, such programs having differing treatment orientations and eligibility requirements, publicly-funded agencies having constraints placed on the types of patients for whom they can provide services, integrated services needing to meet the regulatory needs of all overseeing bodies as they relate to licensing, staffing and building codes, and insurance companies placing unreasonable restrictions that disproportionally impact dually-diagnosed patients who may be excluded from participation in certain programs, such as individuals with mental illness being disqualified from receiving drug treatment.

In addition to these collaborative barriers, there are specific barriers to MAT maintenance regarding therapeutic MAT beliefs. Since substance abuse treatment programs and support groups function autonomously with their own sets of principles and beliefs, certain programs and groups may not recognize the beneficial use of MAT or acknowledge MAT use as fitting within a sobriety-orientation. Women who receive MAT from an opioid treatment program or directly from a physician, therefore, may face conflict if their substance abuse treatment program or support group espouses such beliefs (Substance Abuse and Mental Health Services Administration, 2016).

**Mental health system.**

Mental health providers often approach treatment by using a case management approach to help individuals to solve their own problems and may view substance abuse as self-medication to address an underlying mental health disorder (Grella, 1997). Barriers to accessing care through the mental health system include living in a rural community, a lack of
mental health provider availability and community poverty (Gresenz, Stockdale, & Wells, 2000). Additionally, recognizing mental illness during pregnancy among women with substance abuse can be difficult as the symptoms of substance abuse and mental illness may overlap and heighten due to hormonal changes during pregnancy (Grella, 1997).

**Social service system.**

Social service programs in the U.S. are comprised of programs addressing economic self-sufficiency, temporary financial assistance, supplemental nutrition assistance, Head Start, child care financing, foster care, adoption, home visiting, home energy assistance, persons with disabilities, seniors, homelessness resources, and military family support (U.S. Department of Health and Human Services, 2018). Because of the complex psychosocial needs of PWOUD, many different social service programs may provide services for these families. As a result of high social service utilization among PWOUD, the increase in NAS cases in one state had a corresponding increase in related social service hours provided (Franca, Mustafa, & McManus, 2016). In communities disproportionately impacted by the increase in opioid-exposed pregnancies and infants, additional investments in various social service providers are necessary (Franca et al., 2016).

Although the social service programs offered address a wide range of social needs, they may function in a disparate and compartmentalized manner and the number of services received by families may not adequately represent the appropriateness and extensiveness of the services (Twomey, Soave, Gil, & Lester, 2005). Therefore, families participating in social service programs may have needs that remain unknown and/or unaddressed.

**Child welfare system.**

The child welfare system aims to promote child well-being by ensuring safety, achieving custodial permanency, and strengthening families in their successful care for their children
Health care providers and mandated reporters must be familiar with their state statutes regarding Child Protective Services involvement, including the reporting of prenatal drug use and positive biological specimen drug screens during pregnancy (Committee on Obstetric Practice, 2017; Patrick et al., 2017; Spehr, Coddington, Ahmed, & Jones, 2017). The child welfare system has traditionally focused mainly on parenting and child safety, with little emphasis on or inquiry into substance abuse (Marsh & Smith, 2011). Additionally, child welfare professionals often have knowledge gaps regarding fetal opioid exposure and agencies may have policies that are unsupportive of appropriate MAT use, such as requiring minimal MAT dosing or using MAT use or a positive toxicology screen resulting from MAT as a reason to support custody removal (Substance Abuse and Mental Health Services Administration, 2016).

**Criminal justice system.**

Some policymakers and members of the criminal justice system, such as law enforcement officials, believe that criminalizing substance use during pregnancy deters substance use and incentivizes drug treatment (Angelotta et al., 2016). As a result, pregnant women with known opioid use in some states are automatically involved in the criminal justice system. Contrary to clinical evidence, however, criminal justice systems tend to not support MAT. For example, one survey found that about 50% of drug courts do not use MAT and 75% do not permit pregnant women to receive MAT as a result of court policy (Matusow et al., 2013). These policies prevent women from receiving the most appropriate care and treatment and also prolong their family involvement in the criminal justice system, which exacerbates both mental and financial stress (Flavin & Paltrow, 2010). Additionally, many PWOD have previously been arrested, as recent incarceration is an epidemiological correlate of OUD during pregnancy (Walker et al., 2018).
George Bush began his 1989 presidency with the public sentiment that crack cocaine was the toughest national issue in decades (Lyons & Rittner, 1998) and called upon the media to use their influence to call further attention to the issue (Glenn, 2006). The media commonly reported on crack cocaine, which led to growing awareness of the emerging social problem of prenatal drug exposure, the narrative of which was established based on the topical convergence of the “War on Drugs” and “fetal rights” (Derkas, 2012). Though the media commonly covered this issue, the reports were generally inflammatory and the perceived magnitude of the “crack problem” and the consequences of fetal exposure throughout childhood were exaggerated (Lyons & Rittner, 1998). As a result of his presidential administration’s desire to fight the “War on Drugs”, the Omnibus Drug Abuse Acts of 1986 and 1998 were enacted, which provided the blueprint for federal drug control strategies; emphasized punishment, incarceration and new prison construction above education, treatment and prevention; made distribution of federal funding largely contingent on states passing similar “zero tolerance” legislation, and established a federal distinction between crack and cocaine that led to a 100-to-1 discrepancy in the amount of crack versus cocaine required to meet similar sentencing requirements (Glenn, 2006). Based on these federal acts, many states enacted statewide legislation that would be used to charge pregnant women with child abuse or endangerment following the birth of a baby who tested positive for illicit substances, particularly cocaine (Lyons & Rittner, 1998). The enforcement of such state legislation became racialized, as black women were more likely to be suspected of drug abuse regardless of generally even distribution across racial groups (Maher, 1990). The term “female crack addict” became a racial code for sexual promiscuity and drug use among black women (Derkas, 2012) and the enforcement of public policy was impacted by racism, sexism, and stereotypes of the poor, as well as biased perceptions of socially acceptable reproduction and mothering (Goodwin, 2017).
Federal healthcare policy that impacts PWOUD includes Medicaid and the Patient Protection and Affordable Care Act (ACA). Medicaid is a federal program that provides health coverage to a variety of individuals in the United States, which includes qualified pregnant women (Centers for Medicare & Medicaid Services, n.d.). The ACA legislation mandated coverage of services relevant to PWOUD, such as mental health and addiction treatment, and ensured access to health insurance coverage to individuals with income higher than the maximum Medicaid requirements (D. E. Smith, 2017). However, the ACA has come under threat of repeal or overhaul under the current presidential administration (D. E. Smith, 2017) and potential impacts on this population remain to be seen.

Regulations regarding MAT are also covered by federal policy. Outpatient prescribing and dispensing methadone may only be done through treatment programs that are certified and regulated by the Drug Enforcement Agency and the U.S. Substance Abuse and Mental Health Service Administration (E. Miller et al., 2015). Certain local governments may have policies preventing or limiting dispensing of methadone (E. Miller et al., 2015). Buprenorphine, on the other hand, can be prescribed by physicians, nurse practitioners, and physician assistants who have attended specialized training and been approved to prescribe the medication (Johnson, 2019). Despite an increasing number of providers offering buprenorphine, not all accept pregnant women and the number of providers who offer services to pregnant women is unknown (E. E. Krans & Patrick, 2016).

The Child Abuse Prevention and Treatment Act (CAPTA) and the Comprehensive Addiction and Recovery Act (CARA) are both federal policies that address the requirements for child protective service notification and plans of safe care for infants with prenatal drug exposure (Alexander, 2013; Substance Abuse and Mental Health Services Administration, 2016, 2017) and are implemented at the state level. CAPTA provides a federal definition for child abuse and neglect. Additionally, the CAPTA was expanded by the CARA requirements to states to develop plans that would ensure the safety and well-being of infants identified as having been
affected by substance abuse or withdrawal symptoms, to address the health and substance use treatment needs of the family and to develop plans of safe care for infants affected by any substance abuse, beyond the prior requirement for illegal substances (Child Welfare Information Gateway, 2017).

Many federal policies are implemented at the level of the state, allowing for some level of autonomy in implementation. Medicaid is implemented by the states and, as a component of the ACA, states were given the option to expand Medicaid coverage to individuals with income within a higher percentage of the federal poverty level, allowing coverage for a greater proportion of low-income state inhabitants (Centers for Medicare & Medicaid Services, n.d.). Medicaid expansion was positively associated with obtaining mental health and SUD treatment (Dey, 2016). Medicaid also plays a large role in medical and substance abuse treatment coverage for pregnant women (Huhn, 2018). But state-imposed limits on eligibility and MAT benefits, including prior authorization, quantity limits and lifetime treatment limits, create barriers to obtaining proper care (E. E. Krans & Patrick, 2016). Additionally, Medicaid coverage for MAT varies tremendously by state, with states that did not support Medicaid expansion under the ACA tending to have lower coverage and more treatment barriers (Rinaldo & Rinaldo, 2013), and some states not providing coverage for methadone (Substance Abuse and Mental Health Services Administration, 2014a). In Florida, lack of Medicaid expansion is associated with tighter eligibility requirements for publicly funded services, which translates to lack of healthcare access for many PWOUD. As a result, these women who are not eligible for Medicaid may miss the opportunity for screening and referral for substance abuse treatment.

Many federal policies are implemented at the level of the state, allowing for some level of autonomy in implementation. Medicaid is implemented by the states and, as a component of the ACA, states were given the option to expand Medicaid coverage to individuals with income within a higher percentage of the federal poverty level, allowing coverage for a greater proportion of low-income state inhabitants. Medicaid expansion was positively associated with
obtaining mental health and SUD treatment (Dey, 2016). Medicaid also plays a large role in medical and substance abuse treatment coverage for pregnant women (Huhn, 2018). But state-imposed limits on eligibility and MAT benefits, including prior authorization, quantity limits and lifetime treatment limits, create barriers to obtaining proper care (E. E. Krans & Patrick, 2016). Additionally, Medicaid coverage for MAT varies tremendously by state, with states that did not support Medicaid expansion under the ACA tending to have lower coverage and more treatment barriers (Rinaldo & Rinaldo, 2013), and some states not providing coverage for methadone (Substance Abuse and Mental Health Services Administration, 2014a).

As a response to the CAPTA and CARA federal legislation, the Plan of Safe Care for Infants Affected by Prenatal Substance Use child welfare policy was enacted in Florida (Florida Department of Children and Families, 2018). As a part of this legislation, attending health care providers who identify an infant as prenatally exposed to alcohol or controlled substances must refer the infant for early intervention, remediation, and prevention services and receive a referral for home visiting and implementation of a plan of safe care (Florida Department of Children and Families, 2018). Additionally, child welfare professionals involved with the family are expected to consult with a substance abuse expert to identify the most appropriate course of action, while Healthy Start services are expected to collaborate with other stakeholders and systems, such as the county health department, child protection teams, prenatal and pediatric care, substance abuse treatment providers, and the child welfare system (Florida Department of Children and Families, 2018). However, these Healthy Start services are voluntary and families may choose not to participate.

Some states have implemented legislation that considers substance use during pregnancy as a criminal offense (Alexander, 2013; Paltrow & Flavin, 2013). This is in opposition to many obstetric and public health recommendations that substance-using pregnant women receive supportive services, including drug treatment, instead of impairing the patient-provider relationship and risking prenatal care avoidance in the face of potential criminal prosecution,
incarceration, and child removal (Committee on Obstetric Practice, 2017; Patrick et al., 2017; Vandervort, 2010).

Prescription Drug Monitoring Programs (PDMP) are statewide online databases that collect patient and pharmacy information on any prescription drug and can be used to monitor opioid prescriptions in an attempt to identify “doctor shopping” behaviors and prevent fraudulent opioid prescriptions (Soelberg, Brown, Du Vivier, Meyer, & Ramachandran, 2017). Each state designed their own PDMP (Soelberg et al., 2017), therefore, the specific data collected varies by state and intrastate prescriptions are difficult to track.

Drug treatment policy also varies by state, with only 19 states providing substance abuse treatment programs specifically designed to treat women during pregnancy and only 12 states offering priority access to state-supported programs to pregnant women (Guttmacher Institute, 2019). In Florida, targeted drug treatment programs have been created and pregnant women are protected from discrimination in publicly funded programs (Guttmacher Institute, 2019). However, pregnant women are not given priority access in general programs (Guttmacher Institute, 2019), access to these targeted drug treatment programs varies by locality and the number of targeted drug programs that also accept infants and children along with the mother is unknown.

**Research Gaps and Summary**

There are several policies and protocols that can be implemented by local hospitals to support clinical practice that are aligned with evidence-informed clinical guidelines, recommendations, and best-practices. Within the context of opioid use disorder during pregnancy, these policies include screening regarding drug use and mental health and use of urine or other biological sample drug screening. Screening policies can address whether the screening should be universal or identify priority populations, as well as timing and screening frequency, interpretation of results and procedures for verifying and/or addressing positive
screens. Policies can also address use of non-judgmental and supportive language and building patient rapport and trust. In the postpartum period, policies may address mother-infant contact and encouragement of maternal involvement in non-pharmacological treatments for NAS, such as breastfeeding, rooming-in, and skin-to-skin holding. Assessment of parenting skill and referrals for parenting education or training can be addressed by hospital policy, including the identification of families for whom a parenting assessment is most valuable, identifying the staff responsible for performing such assessments, their timing, and the use of a validated tool and its interpretation. Finally, care may be most effective when it addresses needs beyond substance abuse, such as trauma, housing, child care, employment, parenting and other supports (Substance Abuse and Mental Health Services Administration, 2016), and hospital policy can be implemented to harness greater awareness and support around these issues.

In addition to identification of hospital policy, understanding provider implementation of hospital policy and clinical best practices is an important gap in the literature. Implementation of screening best practices by obstetric providers may be influenced by relationships between hospital staff and child welfare workers, as well as clinical team member perceptions of legal or other consequences to the mother or infant (Substance Abuse and Mental Health Services Administration, 2016). As a result, provider perceptions of relationships with local child welfare and potential mother or infant consequences of clinical decision-making should be explored, as well as other facilitators and barriers of best-practice implementation, such as knowledge of AIM bundle components and provider or systems-level barriers to bundle implementation. Specifically, there is a dearth of literature on obstetric screening practices to identify opioid use during pregnancy, as well as other relevant screenings, such as for sexually transmitted infections and mental illness. Finally, the context for these screenings, such as whether they are performed utilizing validated screening tools and what populations of pregnant women are most likely to be screened, as well as factors impacting screening-related best-practice implementation, are largely unknown.
Theoretical Framework

Implementation Research Theories

Implementation research can be defined as “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services,” which includes research on factors that impact clinical and organizational behavior (Eccles & Mittman, 2006, p. 1). Initially, implementation research largely lacked theoretical underpinnings, however, a shift occurred by which a proliferation of theories were borrowed from a variety of disciplines, including psychology, sociology, and organizational theory, or developed within the framework of implementation science (Nilsen, 2015). Determinant implementation science frameworks focus on factors that are able to be changed and whose change would improve implementation quality or outcomes (Nilsen, 2015).

Implementation science shares goals with quality improvement, as both seek to improve healthcare quality and patient outcomes. However, quality improvement may identify a specific healthcare system problem and identify strategies to improve that problem for that particular healthcare system while implementation science seeks to identify under-utilized EBPs and address implementation gaps and their resultant quality and clinical outcome gaps at the levels of the provider, practice or system level(s) (Bauer et al., 2015). Thus, use of an implementation science orientation to address EBPs associated with clinical management of PWOUD is a more fitting framework than one oriented to quality improvement since this project aims to address facilitators and barriers of implementation of clinical practice recommendations. The Theoretical Domains Framework has been identified as an appropriate framework for this research project.
The Theoretical Domains Framework (TDF) was developed to characterize a central set of theoretical constructs for studying the implementation of EBP based on psychological theory that could be accessible to and used by non-psychologists and that prioritized constructs particularly relevant to healthcare-related behavior change (S. Michie, 2005). A similar process was previously described by Fishbein, et al. (2001) that focused on constructs relevant to HIV and behavior that was developed and disseminated within the realm of psychological theory without broad appeal or access (cited in S. Michie, 2005). Three groups of experts were identified to participate in the construct elicitation and validation for this framework: health psychology theorists, who identified theoretical constructs and reached consensus about grouping into domains; health services researchers, who provided critical feedback on the proposed domains; and health psychologists who conducted validation of the domains (S. Michie, 2005). Assumptions of the TDF relate to the behaviorist psychology orientation upon which it was founded, namely, that behavior can be described and explained.

The TDF has been used previously in a variety of guideline implementation studies (Nash et al., 2018). It was developed to identify influences on the behavior of health professionals related to the implementation of evidence-based practices and has been widely cited in peer-review publications (Atkins et al., 2017). It has also been one of the most frequently used theories or frameworks to study guideline implementation among physicians (Liang et al., 2017), making TDF an important framework to consider for guideline implementation research.

The TDF initially contained twelve domains, which included: knowledge; skills; social/professional role and identity; beliefs about capabilities; beliefs about consequences; motivation and goals; memory, attention and decision processes; environmental context and resources; social influences; emotion; behavioral regulation; and nature of the behaviors (S. Michie, 2005). The framework underwent a validation process which refined TDF and
ultimately resulted in an updated framework with 14 domains: knowledge; skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; intentions; goals; memory, attention and decision processes; environmental context and resources; social influences; emotions; and behavioral regulation (Cane et al., 2012). Each domain contains related constructs (Table 5).

**Table 5. Theoretical Domains Framework Domains, Definitions and Constructs**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Domain Definition*</th>
<th>Constructs</th>
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</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>An awareness of the existence of something</td>
<td>Knowledge</td>
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<td></td>
<td></td>
<td>Procedural knowledge</td>
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<td></td>
<td></td>
<td>Knowledge of task environment</td>
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<td>Skills</td>
<td>An ability or proficiency acquired through practice</td>
<td>Skills</td>
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<td>Skills development</td>
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<td>Competence</td>
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<td>Ability</td>
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<td>Interpersonal skills</td>
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<td></td>
<td>Practice</td>
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<td></td>
<td></td>
<td>Skills assessment</td>
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<tr>
<td>Social/Professional Role and</td>
<td>A coherent set of behaviors and displayed personal qualities of an individual in a</td>
<td>Professional identity</td>
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<tr>
<td>Identity</td>
<td>social or work setting</td>
<td>Professional role</td>
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<td></td>
<td></td>
<td>Social identity</td>
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<td></td>
<td></td>
<td>Identity</td>
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<td></td>
<td></td>
<td>Professional boundaries</td>
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<td></td>
<td></td>
<td>Professional confidence</td>
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<td>Group identity</td>
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<td></td>
<td>Leadership</td>
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<td>Organizational commitment</td>
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<tr>
<td>Beliefs about Capabilities</td>
<td>Acceptance of the truth, reality, or validity about an ability, talent, or facility</td>
<td>Self-confidence</td>
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<td></td>
<td>that a person can put to constructive use</td>
<td>Perceived competence</td>
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<td></td>
<td>Self-efficacy</td>
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<td></td>
<td></td>
<td>Perceived behavioral control</td>
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<td></td>
<td></td>
<td>Beliefs</td>
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<td></td>
<td>Self-esteem</td>
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<td></td>
<td></td>
<td>Empowerment</td>
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<tr>
<td></td>
<td></td>
<td>Professional confidence</td>
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<tr>
<td>Optimism</td>
<td>The confidence that things will happen for the best or that desired goals will be</td>
<td>Optimism</td>
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<tr>
<td></td>
<td>attained</td>
<td>Pessimism</td>
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<tr>
<td></td>
<td></td>
<td>Unrealistic optimism</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Identity</td>
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<tr>
<td>Beliefs about Consequences</td>
<td>Acceptance of the truth, reality, or validity about outcomes of a behavior in a</td>
<td>Beliefs</td>
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<tr>
<td></td>
<td>given situation</td>
<td>Outcome expectancies</td>
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<tr>
<td></td>
<td></td>
<td>Characteristics of outcome expectancies</td>
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<tr>
<td></td>
<td></td>
<td>Anticipated regret</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consequents</td>
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<tr>
<td>Reinforcement</td>
<td>Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimuli</td>
<td>Rewards</td>
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<td>*</td>
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<td>Incentives</td>
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<td>*</td>
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<td>Punishment</td>
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<td>*</td>
<td></td>
<td>Consequences</td>
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<td>*</td>
<td></td>
<td>Reinforcement</td>
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<td>*</td>
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<td>Contingencies</td>
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<tr>
<td>*</td>
<td></td>
<td>Sanctions</td>
</tr>
<tr>
<td>Intentions</td>
<td>A conscious decision to perform a behavior or a resolve to act in a certain way</td>
<td>Stability of intentions</td>
</tr>
<tr>
<td>*</td>
<td></td>
<td>Stages of change model</td>
</tr>
<tr>
<td>*</td>
<td></td>
<td>Transtheoretical model and stages of change</td>
</tr>
<tr>
<td>Goals</td>
<td>Mental representations of outcomes or end states that an individual wants to achieve</td>
<td>Goals</td>
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<td>*</td>
<td></td>
<td>Goal priority</td>
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<td>*</td>
<td></td>
<td>Goal/target setting</td>
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<td>*</td>
<td></td>
<td>Action planning</td>
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<tr>
<td>*</td>
<td></td>
<td>Implementation intention</td>
</tr>
<tr>
<td>Memory, Attention and Decision Process</td>
<td>The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives</td>
<td>Memory</td>
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<tr>
<td>*</td>
<td></td>
<td>Attention</td>
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<td>*</td>
<td></td>
<td>Attention control</td>
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<td>*</td>
<td></td>
<td>Decision making</td>
</tr>
<tr>
<td>*</td>
<td></td>
<td>Cognitive overload/tiredness</td>
</tr>
<tr>
<td>Environmental Context and Resources</td>
<td>Any circumstance of a person’s situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior</td>
<td>Environmental stressors</td>
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<tr>
<td>*</td>
<td></td>
<td>Resources/material resources</td>
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<td>*</td>
<td></td>
<td>Organizational culture/climate</td>
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<td>*</td>
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<td>Salient events/critical incidents</td>
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<tr>
<td>*</td>
<td></td>
<td>Person x environment interaction</td>
</tr>
<tr>
<td>*</td>
<td></td>
<td>Barriers and Facilitators</td>
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<tr>
<td>Social Influences</td>
<td>Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors</td>
<td>Social pressure</td>
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<tr>
<td>*</td>
<td></td>
<td>Social norms</td>
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<td>*</td>
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<td>Group conformity</td>
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<td>*</td>
<td></td>
<td>Social comparisons</td>
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<td></td>
<td>Group norms</td>
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<td>*</td>
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<td>Social support</td>
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<td>Power</td>
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<td>Intergroup conflict</td>
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<td>*</td>
<td></td>
<td>Alienation</td>
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<td>*</td>
<td></td>
<td>Group identity</td>
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<td>*</td>
<td></td>
<td>Modeling</td>
</tr>
<tr>
<td>Emotion</td>
<td>A complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significantly matter or event</td>
<td>Fear</td>
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<td>*</td>
<td></td>
<td>Anxiety</td>
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<td>Affect</td>
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<td>*</td>
<td></td>
<td>Stress</td>
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<td>*</td>
<td></td>
<td>Depression</td>
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<td>*</td>
<td></td>
<td>Positive/negative affect</td>
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<tr>
<td>*</td>
<td></td>
<td>Burn-out</td>
</tr>
<tr>
<td>Behavioral Regulation</td>
<td>Anything aimed at managing or changing objectively observed or measured actions</td>
<td>Self-monitoring</td>
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<tr>
<td>*</td>
<td></td>
<td>Breaking habit</td>
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<td>*</td>
<td></td>
<td>Action planning</td>
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</tbody>
</table>

* Definitions based on those in the American Psychological Associations’ Dictionary of Psychology, as listed by Cane, O’Connor & Michie (2012), Implementation Science, 7(37).
Each TDF domain has corresponding interview questions that can be used for a variety of purposes. The questions illustrate the type of questions that would be most relevant to each domain. Use of the questions can help to ensure that each domain is discussed in an interview and that behaviors associated with each domain can be explored without missing a relevant domain. Findings from the interview questions can be used to help explain the associated behaviors and develop potential behavior change interventions. Use of this framework requires that the nature of the behavior to be addressed by the intervention or study be clearly presented, although guidelines may poorly specify the related behaviors, which limits or prevents the ability to identify constructs or domains to explain behavioral process and change opportunities (S. Michie, 2005).

The TDF can be used to guide research through framework-guided data collection, qualitatively through observation, interviews or focus groups or quantitatively through surveys, to identify barriers and facilitators to change (Atkins et al., 2017). Former studies have utilized TDF to inform the interview guide and/or analysis to identify factors impacting implementation of clinical guidelines, recommendations, or evidence-based practices (Bain et al., 2015; Campbell et al., 2017; Craig et al., 2017; Currie et al., 2019; Goodarzi et al., 2018; Gramlich et al., 2017; Holloway et al., 2018; Longman, Adams, Johnston, & Passey, 2018; Murphy et al., 2014; Nash et al., 2018; Newlands et al., 2015; Nithianandan et al., 2016; Shrubsol, Worrall, & O'Connor, 2018; Stephan et al., 2018). The TDF can also be used in quantitative modeling to examine relationships between theoretical domains and prediction or explanation of outcomes (Atkins et al., 2017). Two studies disseminated surveys to elicit relevant constructs to build a statistical model to predict compliance based on theoretical influencers of implementation (Currie et al., 2019; McParlin, Bell, Robson, Muirhead, & Araújo-Soares, 2017). Both of these studies identified statistically significant domains to predict provider compliance within their topic of interest. Finally, the TDF can be used to explore factors related to clinical behavior for the purpose of developing interventions to support behavior change (Atkins et al., 2017), such as
implementation of clinical guidelines. Former related studies explored and categorized factors impacting guideline implementation and then identified behaviors to target for behavior change strategies to improve guideline implementation (Garbutt 2018, Stephan 2018)(Garbutt et al., 2018; Stephan et al., 2018).

The TDF has many strengths. First, the TDF is a well-operationalized, multi-level, theory-derived implementation framework (Birken et al., 2017). Second, while this framework is not a theory and does not explain relationships between constructs, it does identify barriers and provides relevant explanations for implementation difficulties (Amemori, Michie, Korhonen, Murtoesaa, & Kinnunen, 2011). Third, behaviors are categorized by psychologically oriented domains and each domain contains suggestions for interview questions that can be used to better understand domain-related behaviors. Fourth, in addition to interview question suggestions, additional TDF resources exist, including a manual for TDF application (Atkins et al., 2017) and recently developed quantitative survey instruments to measure constructs related to guideline implementation difficulties (Amemori et al., 2011; Beenstock et al., 2012). A weakness of the framework is that it does not identify the causal process that link the theoretical domains and constructs together, nor can it be used to explain associated behavior. Additionally, use of this framework relies on a clear description of the nature of the behavior involved. However, EBPs may not provide an adequate description or definition of the behavior to be changed. Finally, the Theoretical Domains Framework focuses on psychological barriers to EBP implementation and does not address non-psychological implementation barriers, such as legal or environmental constraints, with a minor caveat that those psychological processes associated with the non-psychological implementation barrier that can be categorized into a theoretical domain are able to be addressed by the framework (S. Michie, 2005).
Summary

The TDF is well-suited for identification of facilitators and barriers of AIM clinical bundle components, specifically as they relate to the topical areas of screening and identification of opioid use, as well as referral practices and multidisciplinary collaboration. This framework was designed to identify modifiable psychological factors impacting the implementation of evidence-based practices. The TDF domains and constructs are broad and varied and can be measured at the most appropriate level, such as the individual or practice, which can be identified and targeted by the researcher. Additionally, survey items have been developed, tested, and published in recent studies (Amemori et al., 2011; Beenstock et al., 2012; Gandhi, 2017; Gnich et al., 2015; Huijg, Gebhardt, Crone, Dusseldorp, & Presseau, 2014; Huijg, Gebhardt, Dusseldorp, et al., 2014; McParlin et al., 2017; McSherry et al., 2012), as have questions to inform interview guides (Lawton et al., 2015; Longman et al., 2018; Murphy et al., 2014; Nash et al., 2018; Newlands et al., 2015; Stephan et al., 2018). Therefore, published interview guides and surveys based on TDF domains and constructs can be used as a foundation for participant questions for this study and then modified for content.

Several TDF domains are particularly relevant to this study. First, provider beliefs about maternal implications of positive toxicology screens has been cited as influencing guideline implementation and this could be addressed by the TDF domain of beliefs about consequences (Substance Abuse and Mental Health Services Administration, 2016). Second, provider relationships with social service agencies has also been identified as potentially related to guideline implementation (Substance Abuse and Mental Health Services Administration, 2016). This could be addressed by the TDF domain of social influences. Third, social/professional role and identity and emotion seem particularly relevant. Social/professional role and identity, along with emotion, both may relate to beliefs about PWOU, explain possible exclusion of PWOU from a clinical practice, and relate to patient-provider trust and communication. Additionally, moral and ethical issues related to clinical
management of PWOUD, such as drug screening and its relationship to the interpretation of one’s social/professional role. Furthermore, potential emotional responses to OUD during pregnancy and whether emotional factors facilitate or hinder guideline implementation relate the TDF domain of emotion to clinical guideline implementation.

Although theory will not explicitly be used to guide the policy analysis in Aim 3, the constructs of adaptability and fidelity are commonly used in implementation research. Adaptability is defined in the Consolidated Framework for Implementation Research as, “the degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs”, which “relies on a definition of the ‘core components’ (the essential and indispensable elements of the intervention itself) versus the ‘adaptable periphery’ (adaptable elements, structures, and systems related to the intervention and organization into which it is being implemented) of the intervention” (Laura J. Damschroder et al., 2009). Damschroder & Hagedorn explain the importance of identifying core versus adaptable elements of an intervention, particularly within the context of substance use disorder treatment, which will lead to more confident adaptation decisions and help to move evidence-based substance use disorder practices into widespread practice more efficiently and quickly (2011). Fidelity, on the other hand, “refers to the degree to which an intervention or programme is delivered as intended.” (Carroll et al., 2007, p. 1). Fidelity will be used in Aim 3 to categorize hospital policy components according to their alignment with clinical best-practice bundle components.
CHAPTER 3: METHODS

Overview

The *long-term goal* of this study was to ensure universal access to high-quality, evidence-based clinical management of PW OUD and help to optimize outcomes for mothers and their children. The *purpose* of this study was to understand and describe clinical practice behaviors, specifically as they relate to screening, referral patterns, and patient-provider relationships; and to identify facilitators and barriers of screening, referral patterns and patient-provider relationships within the context of clinical guideline implementation for management of pregnant women with opioid use disorder. This was accomplished through three aims (Table 6). This study utilized an equivalent concurrent mixed-methods approach.

*Aim 1:* To describe clinical practice behaviors related to opioid use during pregnancy among clinicians and staff who manage pregnant women in inpatient or outpatient settings in the west-central Florida region. To describe these clinical practice behaviors related to opioid use during pregnancy, in-depth interviews with clinicians who treat pregnant women in Florida were performed. These clinicians may represent a variety of work settings, such as inpatient obstetrics, outpatient obstetrics, community-based agency, home-based services, and substance dependence treatment.

*Aim 2:* To identify facilitators and barriers to clinical guideline implementation in inpatient and outpatient settings in the west-central Florida region. To identify these facilitators and barriers to clinical guideline implementation, online surveys of clinicians and staff who manage pregnant women were conducted, along with in-depth interviews as in Aim 1. Both the interviews and surveys were guided by constructs from the Theoretical Domains Framework and practitioner and practice behaviors were compared to
those recommended in the AIM bundle. Findings from Aim 1 and Aim 2 were triangulated with the literature to identify and understand promising practice behaviors and clinical guideline implementation facilitators and barriers to inform future hypothesis generation and clinical behavioral change interventions.

**Table 6. Specific Aims, Research Questions and Methods**

<table>
<thead>
<tr>
<th>Specific Aim</th>
<th>Overview of Methods</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aim 1:</strong> To describe clinical practice behaviors related to opioid use during pregnancy among clinicians and staff who manage pregnant women in inpatient and outpatient settings in the west-central Florida region.</td>
<td>Qualitative semi-structured interviews with clinicians and who manage pregnant women (minimum n=15) in the west-central Florida region.</td>
<td>RQ1-1: How are screening and identification of opioid use among patients described? RQ 1-2: How are screening practices and the conditions under which they are performed described?</td>
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<tr>
<td><strong>Aim 2:</strong> To identify facilitators and barriers to clinical guideline implementation among clinicians and staff who manage pregnant women with opioid use disorder in inpatient or outpatient settings in the west-central Florida region.</td>
<td>Quantitative surveys (minimum n=40) and qualitative semi-structured interviews (same interviews as in Aim 1) with clinicians and staff who manage pregnant women in the west-central Florida region</td>
<td>RQ2-1: What facilitators and barriers of clinical guideline implementation related to screening and identification of opioid use are identified?</td>
</tr>
<tr>
<td><strong>Aim 3:</strong> To categorize the alignment between written hospital policies with clinical bundle components and determine the feasibility of obtaining these policies among delivery hospitals in the west-central Florida region.</td>
<td>Categorization of written unit/hospital policy components according to clinical bundle recommendations obtained from individuals participating in surveys (Aim 2) who work in inpatient obstetric unit(s).</td>
<td>RQ3-1: To what extent can written hospital policy components be categorized as having full fidelity, partial fidelity or no fidelity with clinical best practices related to screening and identification of opioid use among delivery hospitals in the west-central Florida region? RQ3-2: To what extent can written hospital policies related to clinical bundle components be collected from delivery hospitals?</td>
</tr>
</tbody>
</table>

**Aim 3:** To categorize the alignment between written hospital policies with clinical bundle components and determine the feasibility of obtaining these policies among delivery hospitals in the west-central Florida region.
these policies, hospital policies were requested from individuals participating in online surveys and/or interviews from Aim 2. Hospital policies were defined for this study as any evidence of institutionally recommended clinical practices regarding screening of pregnant women, which may include written hospital policy, written unit/department policy, standardized order sets, electronic medical record prompts, recommended practices, care pathways, clinical algorithms, and other similar evidence. The components of the submitted hospital policies were evaluated to have full fidelity, partial fidelity, or no fidelity with the clinical best practices from the AIM bundle that relate to the study topical areas of screening and opioid identification. Among the hospital policies collected, triangulation between the findings from the qualitative interviews in Aims 1 and 2, the survey in Aim 2 and the findings from Aim 3 occurred to gain insight into hospital policy fidelity with AIM bundle components, as well as to understand the adaptability of hospital policies relating to PWOUD. Additionally, the feasibility of collecting hospital policies and categorizing their components according to their fidelity with clinical bundle components was evaluated. The timeline for this study is presented in Table 7.

**Approach**

*Research Paradigm*

The philosophy underlying the research design is important because it provides the foundational perspective that is embraced on the research topic, shapes the nature of the research questions and methods, specifies the types of evidence that is acceptable and conclusions that can and cannot be drawn from the research study (Denscombe, 2010). Qualitative research generally takes an interpretivism approach, in which a researcher seeks to interpret the world around them to gain knowledge of a reality that has no inherent properties, order or structure (Denscombe, 2010). On the other hand, quantitative research generally takes a positivist approach, in which scientific methods are used to observe and measure properties of objects to gain information about the world, which exists and contains properties that allows it
to be measured (Denscombe, 2010). Mixed methods research, however, is well-suited to a pragmatist worldview (Creswell & Plano Clark, 2011; Denscombe, 2010).

**Table 7. Dissertation Timeline**

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<td><strong>Aim 2</strong></td>
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There are several core ideas of pragmatism that make it appropriate for mixed-methods research. First, the best research approach depends on the research question being investigated and the related knowledge that is needed to answer the question (Denscombe, 2010) rather than the methods (Creswell & Plano Clark, 2011). Second, knowledge is based on usefulness, utility and applicability, and is embedded within time and cultural contexts without any absolute truth.
Third, the traditional dichotomy between qualitative and quantitative research is unhelpful and research should focus on the potential for integrating the various approaches instead of keeping them separate (Denscombe, 2010). Finally, empirical inquiry should utilize multiple methods to address the study aims (Creswell & Plano Clark, 2011; Denscombe, 2010).

The research paradigm refers to the research pattern or model (Denscombe, 2010), which, in this case, is mixed methods research. A mixed methods paradigm should be selected based on how useful the methods are for addressing a particular research question, problem or issue being investigated (Denscombe, 2010). The characteristics that identify the mixed methods approach are the use of qualitative and quantitative methods within the same project, a design that clearly articulates the sequencing and priority of the qualitative and quantitative methods, an explicit manner in which qualitative and quantitative research activities relate to each other with a focus on data triangulation, and a philosophical underpinning of pragmatism (Denscombe, 2010).

Considering the issue of clinical guideline implementation among clinicians treating PWOUD, a mixed methods research paradigm is useful for several reasons. There is a dearth of literature on guideline awareness, beliefs or implementation among providers who treat PWOUD. Former studies that have focused on obstetricians/gynecologists and patient opioid use have focused on opioid knowledge and prescribing practices (Madsen et al., 2018; Tucker Edmonds et al., 2017). Alternatively, former studies unrelated to PWOUD have focused on clinical guideline opinion (Cox, 2011; Rainey, Simonsen, Stanford, Shoaf, & Baayd, 2017; Rasinski, Yoon, Kalad, & Curlin, 2011), knowledge (Centers for Disease & Prevention, 2008; Goldenberg et al., 2013; Leone et al., 2016), or practices (Donnelly, Raglan, Bonanno, Schulkin, & D'Alton, 2014; Kelsey, Medel, Mullins, Dallaire, & Forestell, 2017; Kissin et al., 2011; Michael et al., 2013; Power, Henderson, Behler, & Schulkin, 2013) among obstetricians. Using mixed methods allows for in-depth exploration of beliefs and practices among a variety of providers, as
as well as a quantitative survey to gain understanding into bundle component implementation, and facilitators and barriers to implementation at the hospital-level. Using the TDF as a framework for this exploration benefited this research project by exploring constructs within the various domains that relate to modifiable psychological factors that impact the implementation of evidence-based practices.

*Study Design*

For this exploratory study, simultaneous qualitative and quantitative strands comprised of interviews and surveys, respectively, took place (Table 8). This convergent parallel design prioritizes both the qualitative and quantitative strands equally, keeps both strands separate during data collection and analysis and then mixes the findings during interpretation (Creswell & Plano Clark, 2011). The purpose of this design was to obtain separate, complimentary data on the topic of clinical guideline implementation related to clinical management of pregnant patients with opioid use disorder. This design is appropriate to use to better understand the research problem and is relevant when a researcher desires to synthesize qualitative and quantitative findings in order to gain a deeper understanding of a phenomenon, or to investigate different levels within a system (Creswell & Plano Clark, 2011). This simultaneous mixed-methods approach is relevant to PWOD guideline adherence for many reasons. First, there is very little literature that assesses clinician behavior within the context of clinical guidelines, so a multi-strand exploratory study to gain deeper understanding of a phenomenon is appropriate. Second, there are different clinical practice locations, such as outpatient obstetric visits at the practice or clinic and inpatient stays in the hospital, each of which contains different policies, practices, staff, and cultures. Interviews, then, can focus on either the clinical practice or the hospital setting, while surveys and policy analysis can focus predominantly on the hospital setting. Third, utilizing mixed methods, including both interviews or focus groups along with a predominantly quantitative survey, to obtain data on the hospital setting eliminates or reduces
the need to place a lot of emphasis on the hospital during the interviews and, thus, this approach can reduce interview participant burden by minimizing the need to address both the practice and hospital during interviews.

**Table 8. Study Phases by Methodological Approach**

<table>
<thead>
<tr>
<th>Methodological Approach</th>
<th>Preparation</th>
<th>Data Collection</th>
<th>Data Analysis</th>
<th>Data Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative (Aim 1-2)</td>
<td>Develop interview guide.</td>
<td>Semi-structured interviews.</td>
<td>Thematic content analysis</td>
<td>Case study analysis</td>
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<tr>
<td></td>
<td>Identify initial interviewees for each stratification group</td>
<td>Snowball sampling to identify potential interviewees</td>
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<tr>
<td>Survey (Aim 2)</td>
<td>Develop survey.</td>
<td>Disseminate survey.</td>
<td>Survey Analysis</td>
<td>Triangulation</td>
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<td></td>
<td>Pilot Test.</td>
<td>Snowball sampling to identify potential participants</td>
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<tr>
<td></td>
<td>Contact formal networks.</td>
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<tr>
<td></td>
<td>Contact Nurse Managers</td>
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<tr>
<td>Policy (Aim 3)</td>
<td>Develop policy abstraction form.</td>
<td>Follow up with hospitals indicating policies (based on survey responses) who have not provided them</td>
<td>Policy Analysis</td>
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<td></td>
<td>Pilot test.</td>
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<tr>
<td></td>
<td>Identify hospitals with relevant policies</td>
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There were benefits to utilizing convergent parallel design for this study, which include that the data collection is time-efficient since it occurs at the same time and that the design is intuitive and popular for mixed-methods (Creswell & Plano Clark, 2011). Additionally, multiple perspectives were included, such as those of various providers (e.g., obstetricians, pediatrician, nurses, mental health counselors, behavioral health staff, administrators, medical assistant). There were multiple sources of data, including interview transcripts, surveys, and hospital policies. Use of diverse perspectives and data sources are likely to improve the validity of the findings through data triangulation. There were also challenges to using this approach. Meaningful data interpretation can be difficult and researchers may need to address conflicting qualitative and quantitative findings (Creswell & Plano Clark, 2011).
Alternatives to utilizing convergent parallel design exist. A purely qualitative study could have been performed in which only in-depth interviews or focus groups were performed. This could have provided a deep understanding of the phenomena of clinical management of PWOUD and identify potential facilitators and barriers to implementing clinical guidelines. However, a purely qualitative approach would lack external validity, as the knowledge generated from the qualitative interviews would not be able to be presumed as representative of the general experience of clinicians across the state. An explanatory sequential design mixed methods study, in which a qualitative phase is performed to explain the initial qualitative findings (Creswell & Plano Clark, 2011) was another alternative option. The explanatory sequential design is well-suited when the salient variables to measure are known and a quantitative instrument for measuring the desired constructs is available (Creswell & Plano Clark, 2011). However, in this case, the salient constructs related to provider behavior within the context of clinical guidelines for management of OUD during pregnancy were unknown and no related instrument has been identified. Therefore, the TDF domains were used to develop interview and survey questions, which was pilot-tested for saliency. Finally, an exploratory sequential design mixed methods study, in which qualitative findings are generalized to a larger sample using quantitative methods (Creswell & Plano Clark, 2011), could have been used. This approach is useful when measures or validated tools do not exist, salient variables are unknown or no theoretical framework is identified to guide the research (Creswell & Plano Clark, 2011). In addition, this approach is used to identify new emergent research questions to be evaluated in the qualitative phase when the qualitative data cannot address these questions. However, in this case, a broad exploration of salient constructs, both facilitators and barriers of guideline implementation, is sought through utilizing a theoretical framework. Additionally, it was anticipated that surveying a broader sample of obstetricians would have a low response rate and, thus, a broader survey population was identified.
Quantitative Survey (Aim 2)

Overview

The purpose of the quantitative survey was to identify facilitators and barriers to clinical guideline implementation in both inpatient and outpatient settings in the west-central Florida region. To identify these facilitators and barriers to clinical guideline implementation, both in-depth interviews and surveys were performed; this section will focus on the quantitative surveys. Online surveys were conducted with clinicians who manage pregnant women in west-central Florida. This included a variety of provider types, such as physician, nurse, advanced practice registered nurse, mental health practitioners, behavioral health practitioners, administrators, and pregnancy and birthing support staff. This also included a variety of sites in which clinicians worked with pregnant women, such as inpatient obstetric units, outpatient obstetric practices or clinics, outpatient community-based medical clinics, community-based social service agencies, behavioral health facilities, jail, and in-home services. The surveys were guided by constructs from the Theoretical Domains Framework and practitioner and practice behaviors were compared to those recommended in the AIM bundle.

Subjects and Setting

The selection and definition of the west-central region was based on high prevalence rates or overall number of NAS-diagnosed infants, containing both urban and rural settings and proximity to the University of South Florida. This proximity was important to rely on professional relationships and networks to support recruitment efforts. In addition, it was initially desired to conduct on-site meetings and in-person recruitment, however, due to the study timeline and the COVID-19 epidemic, all recruitment efforts were conducted online.

Study endorsement and recruitment support were sought by formal networks and gatekeepers, including the Florida Hospital Association, the Florida Association of Healthy Start
Coalitions, the Tampa Bay Birth Network, and the FPQC. Study information was shared with perinatal substance exposure task forces in each county within the west-central Florida region. County medical associations were contacted to disseminate study information among their members. Finally, recruitment information was passed on through the networks of professional contacts. Effort was made to disseminate the study information among addiction psychiatrists, mental health practitioners, behavioral health practitioners, physicians, nurses, and other women’s healthcare providers and support people, such as midwives, doulas, and lactation consultants.

There were potential alternatives to interviewing and surveying clinicians and staff to explore theoretical factors impacting implementation of clinical guidelines for PWOUD. First, PWOUD could have been interviewed or surveyed directly regarding their prenatal care experience. They could have provided a unique and important perspective regarding clinical management during pregnancy; however, this population was likely to be difficult to reach and were likely to have declined study participation out of fear of stigma, judgement, and reporting to child welfare agencies. Next, addiction treatment facilities, including outpatient methadone clinics, may have been exclusively surveyed or interviewed regarding clinical management of PWOUD. However, with their primary focus on addiction treatment, they may have provided less insight into the management of pregnancy in particular. Additionally, their clinical management decisions and guideline implementation would have primarily aligned with ASAM and not necessarily ACOG guidelines. While the perspectives of addiction clinicians, behavioral health clinicians, and PWOUD are of utmost importance, it was not feasible to focus on the screening practices and experiences among these different populations. Surveys would have needed to be developed, pilot tested, and validated specifically for these populations and it was beyond the scope of this study to undergo this development, dissemination, and validation process for three separate surveys.
**Inclusion Criteria.** Inclusion criteria for online surveys included: (1) practicing clinicians or staff members who provide clinical care or management of pregnant women, (2) were employed and work in an inpatient or outpatient setting within Charlotte, Hernando, Hillsborough, Lee, Manatee, Pasco, Pinellas, or Sarasota county, and (3) able to speak and read English.

**Recruitment.** A variety of clinician and staff participants were sought. Information about the study and recruitment flyers were distributed at a Florida Perinatal Quality Collaborative Kick-Off meeting for the MORE initiative. The Florida Hospital Association, the Florida Association of Healthy Start Coalitions, and the Tampa Bay Birth Network were contacted to assist in identification of key individuals for recruitment, including nursing leadership, as well as other clinicians and staff. Emails with study information and the online survey link were sent to perinatal substance exposure task forces in each county within the study region and to county medical associations with a request to disseminate the study information to their members. The Hillsborough Infant Mental Health committee was sent an introductory email and requested to disseminate the study information to their contacts, particularly within mental and behavioral health. Professional contacts who work broadly within prenatal health were sent an email to introduce the study, request their participation, and provide a link to an online eligibility survey (Appendix 3). Finally, towards the end of recruitment when it was recognized that medical assistants had a unique role in opioid screening in the outpatient prenatal health context, an email was sent to an obstetrician colleague to request assistance identifying and recruiting prenatal health medical assistants.

Study recruitment material, including an introductory email with study information, information about the PI, a link to the online survey (Appendix 4), and an informational flyer attachment (Appendix 1) was sent to contacts identified above by email. Individuals who participated in the online survey were asked to forward the survey link to physicians, nurses, and other staff with whom they work and who provide care for pregnant women.
To promote snowball sampling of qualitative interview participants, survey participants were asked to identify potential interviewees both within the hospital and in the surrounding community. Survey participants were asked to respond to a survey question regarding their willingness to participate in in-depth interviews. There are benefits and limitations to offering in-depth qualitative interviews to physicians, nurses, and other staff throughout the west-central Florida region. This may have yielded more in-depth and thick descriptions of guideline implementation processes, facilitators, and barriers, yet took more time to arrange and complete than paper-based or electronic surveys.

Survey participants who worked in a hospital setting were also asked whether they were aware of related hospital or unit policies. Participants who indicated the presence of hospital or unit policies that related to the topical areas of screening and opioid use identification were asked to either provide the surveys or provide the name and contact information for a person who would have access to obtain and share such policies.

**Sample Size.** It was difficult to predict the number of in-hospital survey participants. As mentioned, survey response rates among physicians are generally low. Obtaining the contact information for potential participants could be very difficult and time-consuming since contact information for eligible participants is very limited and relied on identifying contact information for nurse managers and snowball sampling at each hospital. It was hypothesized that if half of the eligible twenty hospitals participated with an average of four to eight participants, approximately forty to eighty individuals would take part in the survey. However, if only one-quarter of the eligible hospitals participated and the average number of participants range from two to four, approximately ten to twenty individuals would have participated (Table 9). Therefore, it was hoped to obtain approximately 40 survey participants. This range of participation and estimated sample size would not be enough to make generalizable conclusions. Assuming a population of 400, based on an average of 22.2 employees per hospital, the sample...
size needed for a confidence level of 95% and a confidence interval of 5 would be 196 (Creative Research Systems, 2012).

To elicit data via survey, questions relating to hospital and unit demographics and policies related to clinical management of PWOUD, perceived level of implementation of bundle components, and TDF constructs to elicit facilitators and barriers of bundle implementation were developed. Theory-based questions were developed from questions asked in other TDF-based studies (Lawton et al., 2015; Nash et al., 2018).

**Table 9.** Potential Survey Participants based on Hospital Participation and Average Participants per Hospital

<table>
<thead>
<tr>
<th>Percent (Number) of Participating Hospitals</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
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<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
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<td>50% (10)</td>
<td>20</td>
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<td>60</td>
<td>80</td>
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<td>75% (15)</td>
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<td>60</td>
<td>90</td>
<td>120</td>
<td>150</td>
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<td>100% (20)</td>
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<td>80</td>
<td>120</td>
<td>160</td>
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<td>240</td>
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</table>

Survey participants were asked to respond to a survey question regarding their interest in participating in a future interview for the qualitative component of Aims 1 and 2. Both survey and interview participants who indicated the presence of related hospital policies were asked to provide these policies for Aim 3. See Table 6 for a description of research activities and theoretical constructs measured by study aim.

There are many advantages of data collection by survey. Surveys can quickly and easily reach respondents, especially when utilizing email and online surveys, and respondents can complete internet surveys more quickly than self-administered or telephone-based surveys (Whitley & Kite, 2013). Internet-based surveys have also been found to demonstrate less social desirability bias (Whitley & Kite, 2013). Also, the financial cost of distributing surveys electronically and utilizing web-based survey programs is very low, even with offering paper-based follow-up letters. Limitations of surveys include inconsistent response rates, potential lack of access to internet, and the anonymity of surveys allowing for individuals to falsely portray membership within the study group (Whitley & Kite, 2013). In the instance of surveying
nurse managers within hospital settings, however, the concerns regarding internet access and identity are minimal.

Data Collection

The online survey was initially pilot tested through colleagues of a professional contact within the west-central region (n=4) during November 2019 through February 2020. These pilot testing participants provided detailed feedback regarding the utility of construct-based questions and to optimize the interviews for clarity and length through email. After incorporating this feedback into the survey, one obstetrician within another state in the Southern United States with experience working with PWOUUD reviewed the survey and completed a cognitive interview regarding the clarity, flow and length. This interview was recorded and feedback elicited during the interview was incorporated into the survey. None of the pilot testing survey responses were included in the study data. The final survey link was placed on the recruitment flyer, which was distributed in person at the FPQC MORE initiative kick-off meeting and by email as described above. Survey responses were collected between February 24 and September 8, 2020. Due to the COVID-19 epidemic impacting in-person work and provider workload, participant recruitment was halted from mid-March through mid-June, which resulted in a lack of data collection between March 25 and June 14, 2020.

Instrumentation

No validated survey instruments related to identifying facilitators and barriers of bundle components for clinical management of PWOUUD could be identified, nor any studies that explored such implementation or facilitators and barriers. Therefore, existing surveys based on TDF constructs were identified and modified for content focus (see Appendix 4). The survey collected participant demographics, hospital demographics, current level of implementation of each bundle component related to the topical areas of screening and referral patterns,
awareness of hospital policies related to each bundle component, and a theory-based section to elicit potential facilitators and barriers of bundle implementation. Demographic responses were multiple choice or fill-in-the-blank. Participant demographic information collected included participant race/ethnicity, age, profession, role, number of years in role, number of years in profession, and whether the participant has a waiver to prescribe outpatient buprenorphine. Hospital or employer demographic information collected included settings in which participant worked with pregnant women, name of hospital, approximate number of births in 2018, hospital ownership, and awareness and approximate number of providers with waivers to prescribe outpatient buprenorphine. Rating current level of implementation responses was assessed on a five-point Likert scale from “never” to “always” and questions were asked for each bundle component related to screening or referral patterns, for a total of nineteen questions and sub-questions. Each of the fourteen TDF domains contained two to five questions each with five-point Likert scale response options. A subset of questions was identified through a random number generator and worded negatively. The survey was initially pretested with a small number of people who provide clinical care for pregnant women and/or women with opioid use disorder within the study area (n=6). Following this, further pretesting of the edited survey was performed with an obstetrician from outside of the study area (n=1) to ensure clarity, flow, length of time to complete, and to identify questions that may not be relevant or useful and, thus, may be dropped from the survey. All pretesting participants utilized and evaluated the electronic survey, and the final pilot test participant was interviewed regarding the length of time the survey took, the participant’s cognitive processes regarding each question and their suggestions for survey length, clarity, and content.

Operational Management of Theoretical Constructs

The TDF domains of knowledge; skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; intentions; goals;
memory; attention and decision processes; environmental context and resources; social influences; emotions; and behavioral regulation were intended to be included in this study, as defined by Cane et al. (2012). Certain constructs from the TDF were identified through pretesting as difficult to elicit true responses and likely to be skipped, and were excluded from the survey, including optimism, reinforcement, emotion, and intentions. All the other TDF domains were represented in both the qualitative and quantitative arms. A summary of measures collected in the quantitative survey can be found in Table 10.

**Table 10. Summary of Measures Collected for the Aim 2 Interview and Survey Constructs**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Demographics</td>
<td>Demographic information regarding participant, such as age, race, profession, role, length of time in current position, length of time in profession, approximate number of births per year (if applicable), ability to prescribe buprenorphine, locations in which participant works with pregnant women</td>
</tr>
<tr>
<td>Hospital Demographics [hospital employees only]</td>
<td>Demographic information regarding hospital, such as number of obstetricians/prenatal care providers on staff, total births in 2018, ownership, urban/rural location, participation in FPCQ initiatives</td>
</tr>
<tr>
<td>Perceived Ranking of Implementation of Bundle Component</td>
<td>Selection of one of the five levels of implementation, ranging from never to always, for each of the clinical bundle elements related to the topical areas of screening/identification of opioid use</td>
</tr>
<tr>
<td>Knowledge</td>
<td>An awareness of the existence of something</td>
</tr>
<tr>
<td>Skills</td>
<td>An ability or proficiency acquired through practice</td>
</tr>
<tr>
<td>Social/Professional Role and Identity</td>
<td>A coherent set of behaviors and displayed personal qualities of an individual in a social or work setting</td>
</tr>
<tr>
<td>Beliefs about Capabilities</td>
<td>Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use</td>
</tr>
<tr>
<td>Optimism</td>
<td>The confidence that things will happen for the best or that desired goals will be attained</td>
</tr>
<tr>
<td>Beliefs about Consequences</td>
<td>Acceptance of the truth, reality, or validity about outcomes of a behavior in a given situation</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimuli</td>
</tr>
<tr>
<td>Intentions</td>
<td>A conscious decision to perform a behavior or a resolve to act in a certain way</td>
</tr>
<tr>
<td>Goals</td>
<td>Mental representations of outcomes or end states that an individual wants to achieve</td>
</tr>
<tr>
<td>Memory, Attention and Decision Process</td>
<td>The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives</td>
</tr>
<tr>
<td>Environmental Context and Resources</td>
<td>Any circumstance of a person’s situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior</td>
</tr>
<tr>
<td>Social Influences</td>
<td>Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors</td>
</tr>
</tbody>
</table>
**Table 10: (Continued)**

<table>
<thead>
<tr>
<th>Emotion</th>
<th>A complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significantly matter or event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Regulation</td>
<td>Anything aimed at managing or changing objectively observed or measured actions</td>
</tr>
</tbody>
</table>

* Definitions based on those in the American Psychological Associations’ Dictionary of Psychology, as listed by Cane, O’Connor & Michie (2012), Implementation Science, 7(37).

**Data Analysis**

Survey analysis began with an exploration of the data. Questions that were worded negatively were reverse-coded. A visual inspection of the data and identification of missing or extreme values; descriptive analytics to obtain the mean, standard deviation and variance of responses for each item; and looking at the distribution of the data for each variable to determine whether items are generally normally distributed took place (Creswell & Plano Clark, 2011). **Missing Data.** Surveys with three or more missing personal demographic responses missing or at least half of all survey responses missing were excluded from analysis. Data missingness was reported by question. **Variable, Topical and Domain Summaries.** Demographic variables were summarized by proportion of respondents. Theoretical domains included in the survey were summarized by calculating the average of responses for all questions related to the domain. Higher level statistical analyses, such as hypothesis testing or model building and testing was not performed because of the limited geographic area, small number of delivery hospitals and low expected sample size, which would severely limit the power to detect between-group differences. Additionally, subgroup analyses were performed to compare demographics and theoretical facilitators and barriers according to reported level of implementation of bundle components, hospital policy fidelity to bundle components, and clinicians who report providing clinical management for PWOUD and those who do not.
Validity and Reliability

Quantitative validity is a reflection of the quality of scores obtained from the instruments used and the quality of conclusions that can be formed from the findings (Creswell & Plano Clark, 2011). Regarding the validity of scores, four types of validity evidence are relevant: test content, response process, internal structure, and relations to other variables (Bandalos, 2018). Test content refers to the degree to which the instrument contains content that adequately represents the domains of interest (Bandalos, 2018). Test content validity evidence, which traditionally relates to content validity, was optimized by creating a table of specifications to identify the domains and constructs of interest and expert review of content and possible construct underrepresentation (Bandalos, 2018). Test content validity took place using theoretical domains that have been used previously in similar survey research regarding guideline implementation. Two to four questions per domain were written and pilot testing took place to ensure that questions were relevant, and that domains and constructs of interest were contained within the survey.

Response process refers to the cognitive process underwent by the survey participants and the extent to which the survey questions elicit the cognitive processes as expected (Bandalos, 2018). Response process validity evidence, traditionally referred to as construct validity, was optimized through pre-testing and participant interviews regarding their cognitive processes for arriving at their responses. Internal structure, traditionally referred to as construct validity, is a measure of the how well item responses mirror those expected from theory (Bandalos, 2018). This was intended to be measured through calculation of Cronbach’s alpha for aggregate theoretical constructs. Cronbach’s alpha of 0.5 is generally sufficient for preliminary research (Amemori et al., 2011). Cronbach’s alpha <0.5 indicates that there is variability in how participants respond to the different questions within the domain and may suggest that a particular question was misleading, misinterpreted, or ill-fitting for that theoretical domain. Therefore, any instance of Cronbach’s alpha below this level was intended
to be explored by calculating Cronbach’s alpha for aggregate theoretical domains with the exclusion of each item to determine whether a particular item performed differently than the rest. If deleting the item brought Cronbach’s alpha to an acceptable or near-acceptable level, the theoretical domain would remain, but the item would have been reported as a low-performing item. If deleting any of the domain items did not bring Cronbach’s alpha to an acceptable level, this would have been reported and the domain would have been excluded from summary statistics. However, the calculation of Cronbach’s alpha to test the internal structure and identify potentially low-performing items was not performed due to the small sample obtained for the final survey sample.

Exploratory and confirmatory factor analyses are traditional means for investigating internal structure. Exploratory factor analysis was not attempted for this project because the sample size obtained was below that required for factor analysis convergence. Although small sample sizes below 50 may be acceptable for exploratory factor analysis, larger samples are required for inter-correlated data and the number of factors estimated in the data structure (de Winer, 2009). Generally, sample sizes for exploratory factor analysis are expected to be in excess of 150 with some suggesting over 300 (Yong, 2013). Finally, relations to other variables, traditionally referred to as criterion-related validity evidence, is a measure of how well the relationship between test scores and other variables mirrors those expected from theory (Bandalos, 2018). Since this was an exploratory study and there was not a clear expectation of the relationship between scores and variables, traditional measures of relations to other variables were not utilized in this study.

With regards to the quality of conclusions that can be formed, related validity constructs include internal validity and external validity. Internal validity is the extent to which a cause and effect relationship between variables can be concluded, while external validity is the extent to which study findings can be concluded to be applicable to a larger population (Creswell & Plano Clark, 2011). Strategies used for maximizing internal validity included pilot testing of the
questionnaires (Creswell & Plano Clark, 2011; Whitley & Kite, 2013) and offering electronic surveys, the use of which reduces social desirability bias (Creswell & Plano Clark, 2011). Since this was an exploratory study that was used primarily for hypothesis generation, external validity was not a focus of the study. However, varied and multi-pronged approaches were attempted to include as many participants and settings as possible from the west-central region, which contains both urban and rural settings with high incidence and overall number of NAS cases. Therefore, it was anticipated that the findings from this region may help inform hypotheses and potential approaches for improving implementation, particularly as they relate to implementation barriers. Future research could measure how applicable these factors are to a wider population of providers and staff to gain a better understanding of the external validity.

Quantitative reliability refers to the scores from study participants being consistent and stable over time (Creswell & Plano Clark, 2011). To assess quantitative reliability, Cronbach’s alpha would have been calculated as previously described, however, the survey sample size was too small. Although survey participants were not be assessed over time, quantitative reliability was maximized by determining optimal survey flow and wording. In general, reliability measures should be determined prior to assessing quantitative validity (Creswell & Plano Clark, 2011).

**Qualitative Interviews (Aims 1 and 2)**

*Overview*

The purpose of the qualitative interview was to describe clinical practice behaviors related to opioid use during pregnancy among clinicians and staff who manage pregnant women in west-central Florida relating to the topical area of screening and identification of opioid use during pregnancy. To achieve this, in-depth interviews with clinicians and staff who manage pregnant women in Florida occurred. These participants represented a variety of professional backgrounds (e.g., physician, nurse, advanced practice registered nurse, parent educator, mental
health provider, behavioral health staff and administrator, and medical assistant) and settings in which participants worked with pregnant women (e.g. inpatient obstetric hospital unit(s), outpatient obstetric practice or clinic, outpatient community-based clinic, community-based social service agency, behavioral health facility, jail, and in-home services). Previous studies have looked specifically at screening for intimate partner violence (Elliott, Nerney, Jones, & Friedmann, 2002; Rodriguez, Bauer, McLoughlin, & Grumbach, 1999; Wiist & McFarlane, 1999), mental health screening (J. J. Kim et al., 2009; Kingston et al., 2015; L. Miller, Shade, & Vasireddy, 2009; Rowan, Greisinger, Brehm, Smith, & McReynolds, 2012), and marijuana and illicit drug use (Chang et al., 2015; Holland, Nkumsah, et al., 2016; Holland, Rubio, et al., 2016) in obstetric or perinatal settings, but have neither specifically explored screening for opioid use and commonly co-occurring conditions nor the circumstances under which screening practices are likely or unlikely to take place.

Subjects and Setting

The recruitment process for the qualitative strand was reliant on survey participation, during which individuals could indicate whether they were interested in participating in an interview.

Inclusion Criteria. Inclusion criteria for qualitative interviews: (1) practicing clinician or staff who work with pregnant women, (2) work in an inpatient or outpatient setting, (3) works within the counties of Charlotte, Hernando, Hillsborough, Lee, Manatee, Pasco, Pinellas, or Sarasota counties, and (4) able to speak and read English.

Recruitment. Recruitment for survey participation was described above. Survey participants could elect to participate in an online interview. In addition, anyone receiving study information or who obtained the study flyer could have emailed the PI to request to participate in an interview. Finally, other study participants were asked to share study information with their colleagues and any potential subsequent participants using snowball recruitment, in which
acquaintances who are thought to be willing to participate in interviews are nominated, and then those participants nominate other potential participants (Whitley & Kite, 2013). Potential interviewees were contacted by email and/or phone to schedule an interview at a time and date of their convenience. All interviews were conducted remotely through Microsoft Teams videoconferencing or by telephone.

Snowball sampling is a common strategy in qualitative research, which utilizes people who typically have knowledge about the social network in a community and are well-regarded to an extent that other members of the social network may accept their suggestion to participate (Hennick, Hutter, & Bailey, 2011). Snowball sampling is beneficial in that it is especially suitable for identifying participants with particular characteristics who may be difficult to identify otherwise (Whitley & Kite, 2013). Additionally, the initial interviewees essentially become gatekeepers and advocates for forthcoming study participation and can provide valuable information regarding potential study participants, which can positively influence participation (Hennick et al., 2011). A limitation of snowball sampling is that participants may all be from the same social network (Hennick et al., 2011). However, utilizing multiple starting points for snowball recruitment within the state provides a variety of social contexts (Hennick et al., 2011), with a greater variation of lived experience that may elicit greater depth of barriers and facilitators related to guideline adherence to later inform population-based surveys and implementation improvement projects. Physician-led snowball sampling has been found to be associated with high participation rates, benefiting from both physicians-as-liaisons and use of formal and informal networks of physician participants (Asch, 2000).

Each interviewee was asked whether they provide clinical care for women with opioid use disorder (Appendix 3). Responses to this question were tracked and were efforts made to recruit both providers who would respond affirmatively and negatively to the question. In this manner, attitudes towards screening and screening behaviors will be elicited for both providers who do and do not provide clinical management for pregnant women with opioid use disorder.
**Sample Size.** According to Francis et al., researchers engaging in theory-based research should identify an initial analysis sample, which is a predetermined sample size at which the first round of analysis will be completed, as well as a stopping criterion, which is a predetermined number of additional interviews that will be conducted to determine whether any additional emergent themes are identified (2010). The point at which no new additional emergent themes can be identified from the data is the point of saturation, or the point at which no new themes, findings, concepts, or problems are evident in the data (Francis et al., 2010). For qualitative interviews (Aims 1-2), the pre-determined minimum sample size was *at least fifteen interviews* with recruitment of participants representing a variety of professional backgrounds and work settings. After twelve interviews, when three further interviews had been conducted with no new themes emerging, this was defined as the *point of data saturation* and the stopping criteria was determined to have been met.

Guest et al. support the suggestion that data saturation may occur by twelve participants, although this may relate to study interview structure and content, and participant homogeneity (2006). In the case of this study, the interview structure will be consistent, as the same interview guide was used for all participants, with slight modifications for non-obstetric providers to elicit their perceptions of the clinical practices of prenatal care providers. Instrument content, referring to the distribution of the experience or knowledge being explored, was also consistent across participants. Although knowledge or implementation of bundle components may vary, the interview questions related to actual clinical processes and practices for patients with opioid use during pregnancy. Obstetric providers have maximal knowledge of their care practices for these patients and other providers who care for pregnant women were expected to be able to speak to their perceptions of the pregnancy-related care of their patients or clients.
Data Collection

Data was collected through qualitative interviews with participants from June through September 2021. To elicit data via qualitative interviews for this exploratory study, an interview guide was developed for use in semi-structured interviews with slight modifications for non-obstetrician participants (Appendix 3). This interview guide contained a list of main questions to be asked at each interview, with a list of prompts that were used to assist in information gathering and interview flow. Questions progressed from introductory questions, to opening questions, then key questions, and finally, closing questions in an effort to establish trust and a comfortable flow from one topic to the next (Whitley & Kite, 2013). Questions related to Aim 1 were not derived from a theoretical framework, however, questions from Aim 2 were each related to a domain of the TDF. In addition to the interview guide, participant demographic information was collected from the online survey or requested during the interview (Appendix 4).

Survey participants indicated interest in participating in an interview starting in February 2020. However, due to the COVID epidemic, and local and statewide restrictions to halt the spread of the virus, data collection was postponed until June 2020. In addition, due to COVID-related workload, some survey participants who indicated an interest in participating in an interview were unable to schedule interviews or replied to the PI by email that they were no longer available to participate. Data collection continued until fifteen interview participants were identified and completed in-depth interviews.

The interview guide was piloted with individuals who are not within the study population, but share similar characteristics, including providers in other states and a convenience sample of local participants who would not have been recruited for interviews. The pilot interviews were used to identify whether instructions or questions are clear and easily understood, any rephrasing that would enhance understanding or trust, whether the questions are in a logical order, the approximate interview time and whether that may be too long or short,
and whether the research questions could be answered with the information gathered by the interview (Hennick et al., 2011). Because individuals outside of the study population were used for pilot testing, pilot interviews were not included in the data analyzed for this study. With the interviewee’s consent, interviews were audio recorded and transcribed verbatim.

The use of semi-structured interviews with these two groups of individuals has associated strengths and limitations. Strengths of semi-structured interviews include the ability to gain information regarding the personal experiences of individuals, to gain contextual information, to obtain personal stories and experiences, and their particular usefulness for sensitive topics (Hennick et al., 2011). Additionally, using a theoretical framework to guide interview questions is beneficial, as it has been found to elicit more beliefs than interview guides without a theoretical foundation (Dyson, Lawton, Jackson, & Cheater, 2011). Furthermore, stratifying participants by professional role may help to elicit a variety of perspectives and experiences. Limitations of this method include that they are based on a one-to-one interview without feedback from others, skill is needed to establish rapport, and flexibility is needed to change topic (Hennick et al., 2011). Establishing rapport, however, was addressed by being genuinely interested in the person being interviewed and their perspective, showing empathy and keeping the interview flowing through the use of positive body language and verbal affirmations, the use of interview prompts, and keeping the interview to a timeframe of approximately 60 to 90 minutes (Whitley & Kite, 2013). For this study with busy physicians, however, the ideal interview timeframe was a shorter 30 to 45 minutes. Moreover, flexibility will be addressed by piloting the interview and including relevant prompts throughout the interview guide.

Operational Management of Theoretical Constructs (Aim 1)

Since Aim 1 seeks to gain an understanding of how physicians describe certain clinical practice behaviors, including screening and identification of opioid use, there are no theoretical
constructs that will be collected for this aim. Variables that were collected for this aim include personal demographics, such as gender, age, race, type of physician, and length of time practicing. Practice demographics will be collected, such as number of providers, annual patient volume, and hospital affiliations. Open-ended questions were asked from the interview guide regarding screening and referrals. A summary of measures to be collected for Aim 1 can be found in Table 11.

The TDF domains of knowledge; skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; intentions; goals; memory; attention and decision processes; environmental context and resources; social influences; emotions; and behavioral regulation were intended to be included in this study, as defined by Cane et al. (2012). As mentioned above, certain constructs from the TDF were not included in the final survey instrument based on feedback that it would be difficult to elicit true responses and related questions may likely be skipped. As a result, the TDF domains of optimism, reinforcement, emotion, and intentions were excluded from the survey. All TDF domains were included in the interview guide and were asked of interview participants, unless interview questions were skipped to complete the interview within the time allotted. A summary of measures collected for Aim 2 was found in Table 10.

Table 11. Relevant Measures of the Aim 1 Qualitative Analysis

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Demographics</td>
<td>Demographic information regarding participant, such as age, race, profession, role, length of time in current position, length of time in profession, approximate number of births per year (if applicable), and participant’s ability to prescribe buprenorphine</td>
</tr>
<tr>
<td>Practice Demographics</td>
<td>Demographic information regarding clinical practice, such as number of providers, approximate annual patient volume, number of births in 2018 (if applicable), ownership, urban/rural status, whether the practice accepts Medicaid insurance and the number of providers in the practice with buprenorphine waivers.</td>
</tr>
<tr>
<td>Screening and Identification of Opioid Use</td>
<td>Description of clinical behavior related to screening and identification of opioid use, such as types of screening performed with pregnant patients and circumstances in which those screens would typically be performed.</td>
</tr>
</tbody>
</table>
Data Analysis

The qualitative, semi-structured interviews were prepared for analysis by anonymizing the verbatim transcripts, a process by which any potential identifier is removed to preserve participant anonymity (Hennick et al., 2011). Transcripts were analyzed by thematic content analysis. This began with an exploration of the qualitative data, including reading through all of the interview transcripts to foster a global understanding, recording initial thoughts with short memos, and the development of a qualitative codebook (Creswell & Plano Clark, 2011). Since Aim 1 was not theoretically grounded, emergent, or inductive, codes were developed directly from the data. Each transcript was coded using an iterative process by which small units of text are assigned a coding label and those small coding units were then grouped into themes. The codebook was refined through using a second coder to also code the transcripts and discuss areas of disagreement until consensus was reached and each code definition, inclusion criteria and exclusion criteria were refined.

Transcripts were initially coded by a priori, theory-derived codes, with a parent code for each of the TDF domains. Other a priori codes were related to “works with pregnant women”, or the context in which the participant worked as a provider for pregnant women; “screening”, or how the provider described their screening of pregnant women for opioid use and common co-morbidities. Sub-codes for “screening” were developed to track different aspects of recommended screening practices, such as “SBIRT”, “Polysubstance Use and Comorbidities”, “Validated Screening Tool”, “OB practice”, “hospital” and “other setting”. Emergent codes were developed based on repeated commentary from multiple interview participants. These emergent codes included “patient-provider relationship”, “recommendations” and “COVID-19”.

To address Aim 1, the findings from “works with pregnant women” and “screening” were summarized by participant and visualizations developed, including matrices and organization of findings by participant-reported location. For example, participants who described how they work with pregnant women and their screening practices who performed home visits with
clients were summarized together as a matrix of “home visiting”. Likewise, providers who worked in outpatient obstetric practices were summarized together. Through examining similarities and differences in how participants reported working with pregnant women and their screening practices, case studies of similar practice patterns developed. This allowed different participants to be lumped together to develop an aggregate case study description. Although participants and their reported practices were summarized by similarities, certain differences in provider practices were described within one case study.

To interpret findings and seek answers to research questions, themes were arranged by research question and visualized through matrices, which show the intersection of two lists as defined rows and columns; and networks, which show a collection of nodes and links (Miles, Huberman, & Saldana, 2014). Visualization through matrices may involve a matrix of themes according to stratification group by theoretical construct, while visualization through networks may display theoretical constructs and their relationships to each other. To construct these data visualizations, as well as engage in result interpretation, in general, a larger meaning was sought within the context of the research questions, the existing literature, and the researcher’s experience and reflections throughout the study process (Creswell & Plano Clark, 2011). Other data visualizations included tables of themes with relevant quotations as evidence and tables presenting findings according to theoretical constructs.

With regard to theory-based coding, codes were initially developed based on TDF domains, including, “knowledge”, “skills”, “social-professional role and identity”, “beliefs about capabilities”, “optimism”, “beliefs about consequences”, “reinforcement”, “intentions”, “goals”, “memory, attention, decision-process”, “environmental context & resources”, “social influences”, and “behavioral regulation”. These codes, lists of key findings, and associated quotations were arranged in matrices by research question and by level of the socio-ecological model. Based on these data visualizations, levels of identified facilitators and barriers were developed, which
included “patient-level”, “provider-level”, “practice-level”, and “community-level”. Facilitators and barriers were identified from the TDF-related a priori codes and arranged by these levels.

Guba and Lincoln (1985, 1994) identified credibility, dependability, confirmability, transferability, and authenticity as the characteristics of qualitative research related to the optimization of trustworthiness (as cited in Cope, 2014). Credibility refers to the truth of the data or how well the researcher interprets and represents the participant views (Cope, 2014). Credibility was enhanced by keeping a reflective journal and describing my experience as a researcher, as well as discussing research findings with colleagues and mentors (Cope, 2014). Additionally, throughout and at the end of each interview, a researcher summary of participant responses was provided to participants and participant feedback requested to optimize researcher interpretation. Finally, analytic notes were maintained within the MaxQDA software and document coding and analytic decisions and to maintain an audit trail. Dependability refers to the consistency of the data across similar conditions (Cope, 2014). This was enhanced by maintaining an audit trail, as described above, and reviewing findings with peers and more experienced researchers on the research team. Confirmability is the researcher’s ability to demonstrate that the data represent the participants’ responses and not the researcher’s biases or viewpoints (Cope, 2014). Confirmability was enhanced by using the audit trail to describe how conclusions and interpretations were reached and using rich participant quotations to depict themes (Cope, 2014). Transferability can be defined as the ability to apply findings to other settings or groups of participants (Cope, 2014). This was maximized by providing descriptions of the participants and research context to enable others to determine the transferability of findings (Cope, 2014). As mentioned, this exploratory study did not seek to establish high external validity. Finally, authenticity is the faithful expression of the feelings and emotions of the participants’ experiences (Cope, 2014). Authenticity was optimized by providing thick description of participant quotes to enable readers to understand the nature of
the experience (Cope, 2014). A summary of research activities to maximize qualitative trustworthiness can be found in Table 12.

**Table 12. Research Activities to Maximize Qualitative Trustworthiness**

<table>
<thead>
<tr>
<th>Trustworthiness Element</th>
<th>Definition</th>
<th>Research Activities</th>
</tr>
</thead>
</table>
| Credibility             | How well the researcher interprets and represents the participant views | • Reflexive Journaling  
  • Use of observation sheet/interviewer notes  
  • Repeat statements back to participant during interview  
  • Summarize interpretation at end of interview  
  • Transcripts transcribed verbatim  
  • Transcripts reviewed and approved for accuracy  
  • Maintain audit trail  
  • Reviewing findings with research team (committee)  
  • Providing an anonymous identifier for each quote to help reader distinguish  
  • Negative case analysis |
| Dependability           | The consistency of the data across similar conditions | • Pilot testing interview guide  
  • Documenting decisions/audit trail  
  • Discuss findings with additional researchers (committee members) to review decisions made |
| Confirmability          | The researcher’s ability to demonstrate that the data represent the participants’ responses and not the researcher’s biases or viewpoints | • Audit trail to describe how conclusions and interpretations were reached  
  • Use of thick description by themes  
  • Triangulation of findings  
  • Reflexivity by researcher |
| Transferability         | The ability to apply findings to other settings or groups of participants | • Thick descriptions of the participants and research context |
| Authenticity            | The faithful expression of the feelings and emotions of the participants’ experiences | • Providing thick description of participant quotes |

In qualitative research, reliability has only a minor role and primarily relates to the reliability of multiple coders reaching agreement on coding definitions and processes for content analysis, or intercoder agreement (Creswell & Plano Clark, 2011). Intercoder agreement was established by having two individuals coding transcripts and comparing results to determine whether additional clarification to codes needs to be made (Creswell & Plano Clark, 2011). Both coders met frequently to discuss and refine code definitions, and use and dual-coding continued
until intercoder agreement for each parent code and overall for all codes was 0.95, indicating excellent agreement.

Additionally, qualitative research focuses on validity to determine whether the interviewee responses are accurate and credible (Creswell & Plano Clark, 2011). Qualitative validity involves member checking and triangulation, which have been previously described; reporting disconfirming evidence, which is finding information that represents a departure from the general findings and experience; and asking other people, such as peers and more experienced researchers, to review the data and findings (Creswell & Plano Clark, 2011).

**Policy Analysis (Aim 3)**

*Overview*

The purpose of this aim was to categorize the alignment between written hospital policies with clinical bundle components and determine the feasibility of obtaining these policies among delivery hospitals in the west-central Florida region. To categorize the fidelity between hospital policies and bundle components, hospital and unit policies were requested from individuals who participated in the quantitative survey and worked in a hospital-based inpatient obstetric unit. Hospital policies were defined for this study as any evidence of institutionally recommended clinical practices regarding screening of pregnant women, which may include written hospital policy, written unit/department policy, standardized order sets, electronic medical record prompts, recommended practices, care pathways, clinical algorithms, and other similar evidence. The components of the submitted hospital policies were evaluated to have full fidelity, partial fidelity, or no fidelity with the clinical best practices from the AIM bundle that relate to the study topical areas of screening and opioid identification. Among the hospital policies collected, triangulation between the findings from the qualitative interviews in Aims 1 and 2, the survey in Aim 2, and the findings from Aim 3 occurred to gain insight into hospital policy fidelity with AIM bundle components, as well as to understand the adaptability of
hospital policies relating to PWOUD. Additionally, the feasibility of collecting hospital policies and categorizing their components according to their fidelity with clinical bundle components was evaluated. This was reported based on the small number of hospitals who provided their hospital policies, a description of efforts made to collect hospital policies, and limitations of policy collection based on the study design and any noted environmental or contextual factors identified.

**Inclusion Criteria.** (1) Hospitals with employees who participated in the quantitative survey from Aim 2 and (2) indicated the presence of hospital and/or unit policies and (3) the policies relate to clinical bundle components within the topical areas of screening and identification of opioid use.

**Data Collection**

Participants from both the qualitative and quantitative strands of Aim 2 were asked whether there were hospital or unit policies related to any of the clinical bundle components of screening and identification of opioid use. Participants were ensured that hospital policies were not stored or reported with identifiers. Survey participants who indicated the presence of hospital-based policies regarding clinical management of PWOUD as a response to an interview or survey question were asked to provide copies of these policies for document content analysis. If they were aware of the existence of a related policy but did not have access to obtain or share the policy, the individual was asked to provide the name and contact information for an individual who may have such access. The policies were requested to be submitted to the researcher as an attachment by email.

**Operational Management of Key Constructs**

Hospital demographics were used from Aim 2. A summary of measures collected in Aim 3 can be found in Table 13. The numbers of policy components that relate to screening clinical
bundle components were summed per hospital. These were categorized as having full fidelity, partial fidelity, or no fidelity with screening bundle components, which were each summed for a hospital total. The total missing policy components were determined by subtracting the total number of related policy components from the total screening bundle components for each hospital. Core components and adaptable periphery were determined; core components were the policy components that have full or partial fidelity with screening bundle components for the aggregate total of hospitals, while adaptable periphery were the policy components that are generally absent or having no fidelity with screening bundle components. The data collection process was described through reflective journaling and a thick description of the process was summarized. Finally, the number of participating hospitals and the proportion of participating hospitals was calculated.

Table 13. Summary of Measures to be Collected for the Aim 3 Policy Analysis

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Demographics</td>
<td>Demographic information regarding hospital, such as number of obstetricians on staff, total births in 2018, ownership, urban/rural location, participation in FPCQ initiatives, number of outpatient buprenorphine providers</td>
</tr>
<tr>
<td>Total number of related policy components</td>
<td>Sum total of bundle components that are addressed by submitted hospital/unit policies; reported by hospital and overall.</td>
</tr>
<tr>
<td>Total components with full fidelity</td>
<td>Sum total of submitted hospital/unit policies that are determined to have full fidelity with bundle components; reported by hospital and overall.</td>
</tr>
<tr>
<td>Total components with partial fidelity</td>
<td>Sum total of submitted hospital/unit policies that are determined to have partial fidelity with bundle components; reported by hospital and overall.</td>
</tr>
<tr>
<td>Total components with no fidelity</td>
<td>Sum total of submitted hospital/unit policies that are determined to have no fidelity bundle components; reported by hospital and overall.</td>
</tr>
<tr>
<td>Total missing policy components</td>
<td>Sum total of bundle components that are not addressed by submitted hospital/unit policies; reported by hospital and overall.</td>
</tr>
<tr>
<td>Core Components</td>
<td>When compared across all participating hospitals, policy components with a large proportion of full fidelity or partial fidelity.</td>
</tr>
<tr>
<td>Adaptable Periphery</td>
<td>When compared across all participating hospitals, policy components with a large proportion of missing or having no fidelity.</td>
</tr>
<tr>
<td>Data Collection Process</td>
<td>A thick description of the process to obtain hospital/unit policies.</td>
</tr>
<tr>
<td>Number of participating hospitals</td>
<td>Total number of hospitals providing hospital/unit policies related to clinical management of pregnant women with opioid use disorder</td>
</tr>
<tr>
<td>Proportion of participating hospitals</td>
<td>Number of hospitals providing hospital/unit policies related to clinical management of pregnant women with opioid use disorder divided by the total number of hospitals participating in qualitative interviews or surveys.</td>
</tr>
</tbody>
</table>
Data Analysis

An electronic policy abstraction form was created that contains hospital identification and demographic information, as well as each clinical bundle component related to topical areas of screening/identification of opioid use (Appendix 5). Submitted policies were initially read in their entirety. Any component of the policy relating to clinical bundle components was identified and isolated. The isolated hospital policy component was pasted into the electronic policy abstraction form. This hospital policy component was compared to the clinical bundle component and designated as having full fidelity, partial fidelity or no fidelity with each other, based on the previous work of Shihady, et al. (2007), which was also scored on the abstraction form. The total number of related policy components was summed, as well as the total categorized as having full fidelity, partial fidelity, or no fidelity. Missing hospital policy components that were contained within the bundle were identified as missing and were compared across hospitals. Policy components with a large proportion of missing were considered as “adaptable periphery”, while policy components with a large proportion of full fidelity or partial fidelity were considered as “core components”.

Additionally, the feasibility of collecting and analyzing hospital policies was addressed. A reflective journal was maintained to describe the process of requesting, obtaining, and analyzing the policies. The number and proportion of hospitals that indicated the presence of a related policy was calculated, along with the number and proportion of hospitals who provided such policies.

Joint Analysis and Interpretation

Results from the interviews, surveys and policy analysis were jointly analyzed and interpreted. In convergent design, analysis takes place independently for both strands and then data transformation occurs whereby joint analysis can take place (Creswell & Plano Clark, 2011). This was done through several mixed-methods analysis and interpretation strategies, including
data display, utilizing tables, charts and matrices, and data transformation, such as the quantification of the theoretical constructs elicited in interviews, and of the qualitative policy data and qualitatively describing quantitative survey findings, followed by data comparison and data integration (Creswell & Plano Clark, 2011). Additionally, findings relating to screening practices were summarized for each setting (inpatient/outpatient).

In mixed methods research, validity refers to strategies used to prevent compromising the study, and conclusions drawn from the joint qualitative and quantitative data analysis and interpretations (Creswell & Plano Clark, 2011). Data collection issues that potentially limit study validity include the selection of inappropriate study participants, introducing potential bias through one type of data collection, such as quantitative, on the other type of data collection, such as qualitative, and addressing different topics with the quantitative and qualitative data (Creswell & Plano Clark, 2011). Steps were taken to address these data collection concerns, including selecting participants who work in clinical settings that include pregnant women and women with opioid use disorder in both study strands, having overlapping research aims and questions for each strand of the study, using separate data collection procedures for the qualitative and quantitative strands, and not merging or intertwining data or findings until the data interpretation stage (Creswell & Plano Clark, 2011). Data analysis issues may include inadequate approaches to converge the data, making illogical comparisons of the qualitative and quantitative findings, inadequate data transformation approaches, and inappropriate statistics for analysis of quantified qualitative results (Creswell & Plano Clark, 2011). Strategies to address these potential issues include joint data display with quantitative data and qualitative themes, particularly by theoretical framework domains; matching qualitative quotes to quantitative statistics; using straightforward data transformation techniques, including facilitator and barrier counts; and examining the data distributions and using nonparametric statistics when needed (Creswell & Plano Clark, 2011).
Data Triangulation

Triangulation is the process of confirming findings through multiple sources and modes of evidence, such as data source, method, researcher, theory, and data type (Miles et al., 2014). Researchers utilizing triangulation determine what the results are and what they mean by examining them from multiple perspectives (Whitley & Kite, 2013). Data triangulation, or using multiple sources of data and seeking out instances of the phenomenon being studied in different settings and at different times, and methodological triangulation, where the researcher applies two or more analytic techniques to the same data (Whitley & Kite, 2013), were most relevant to this study. For data triangulation, multiple interviewee viewpoints will be elicited by stratifying by different provider type and selecting initial interviewees in diverse locations. Also, utilization of multiple methods, including interviews, surveys, and policy analysis, provides a variety of participants and settings. Additionally, both qualitative and quantitative data were aligned according to the TDF domains, as well as by topical area and alignment of data across constructs were identified.

In addition to data and methodological triangulation, multiple “checks” on the data was performed. This included member checking, in which the researcher communicates their interpretation or findings to study participants to elicit their feedback or clarification (Whitley & Kite, 2013). Also, feedback from senior researchers, including committee members, was elicited to discuss study findings and the data interpretation process.

Human Subjects Protections

Aim 1

Justice should be considered to ensure that the research approach does not exploit the study participants or population, and to consider how to enter the study community and present the research to ensure that participants are not exploited (Hennick et al., 2011). To prevent exploitation, participants engaged in the informed consent process without any researcher
coercion to participate in the study (Appendix 2). Participants were able to ask questions and make informed decisions about participating in the study. The identity of interview participants was protected by tracking participants by unique identification codes and not storing participant names on demographic forms. The amount of time required for study participation was minimized as much as possible through pilot testing the interview guide to remove potentially unnecessary questions and by scheduling interviews at times most convenient to the participant and allowing study participation fully online.

During data collection, ethical issues may involve the avoidance of harm through screening for risk factors, unanticipated harmful effects, and discovering psychological problems, as well as the withdrawal of consent (Whitley & Kite, 2013). Additionally, a lack of harm of any form should be minimized, such as physical harm; mental harm, such as shame or embarrassment; or social harm, regarding how a participant is viewed or treated by fellow community members (Hennick et al., 2011). Certainly, participation in the study, either as an interview participant or a survey respondent, took time. There is a cost associated with the inconvenience of study participation taking away time from other activities (Whitley & Kite, 2013), such as work or personal time. As mentioned, anonymization of data was prioritized, and the time required for study participation was minimized.

Following data collection, ethical issues primarily involve confidentiality of data, particularly when participants have provided information that is personal or could be embarrassing (Whitley & Kite, 2013). In the case of this study, participants may have disclosed negative attitudes or beliefs about opioid-using patients or clinical practices and processes that were not aligned with guidelines or best-practices. Participants may have also made comments regarding their administrators or hospital- or systems-level factors that would be embarrassing or have professional implications if their identity was known. Data confidentiality involved safeguarding participant information and protecting confidentiality (Whitley & Kite, 2013). Strategies to address data confidentiality involved the use of aliases during interviews and
anonymizing interview transcripts; maintaining participant lists in a secure setting and not recording identifiers on any notes, files or file names; and storing data in secure computer or cloud-based storage files (Whitley & Kite, 2013).

In interpreting and reporting findings, ethical issues may involve ensuring that the identity of participants will not be evident from descriptions or quotations; summarizing findings in a report or flyer to distribute to endorsing organizations, study participants and participating organizations; and to provide a balanced view of the findings without sensationalizing or presenting findings that may be detrimental to the study population (Hennick et al., 2011). During interpretation, providing balanced, non-detrimental findings was optimized through consultation with senior researchers, members of the research committee and individuals who served in an advisory capacity, such as those who pretested study materials. A second coder was used to ensure codebook and coding process clarity. Following interpretation of findings, reports were created summarizing findings and these reports will be shared with study participants, participating hospitals, and endorsing organizations.

**Aim 2**

As mentioned, efforts were made to ensure that participants were not exploited, and that data were maintained with confidentiality. While the qualitative interview participants engaged in an informed consent process, as discussed for Aim 1, a waiver of written consent was approved by the Institutional Review Board for survey participants under the premise that the act of completing the survey will serve as consent. In addition to the aforementioned data confidentiality procedures, similar procedures took place to ensure confidentiality amongst survey participants. The list of participant identification numbers and names, as well as the names and contact information of potential participants were securely stored in cloud-based storage. Since some roles may be identifiable, particularly when only one individual holds a position at a hospital, such as a medical director or unit nurse manager, all survey responses
were maintained in secure cloud-based storage. Additionally, data reporting involved summarizing participants by hospital and/or role independently, but not simultaneously by hospital and role to maintain confidentiality.

Respondent burden was a particular issue for participants in this study. Participating in either in-depth interviews or surveys with possible policy document sharing took a certain amount of study engagement time. Even with participation taking place during work hours, there was still a burden of participating in a non-work activity instead of completing work tasks. Physicians have commonly cited lack of time as a reason for not participating in research studies and may want to avoid discussing sensitive topics or aspects of clinical management for which they may believe they are not meeting clinical standards (Asch, Connor, Hamilton, & Fox, 2000). Pretesting was used to eliminate constructs believed by participants to be unhelpful or unrelated to the study topic and aims to minimize participant burden.

**Aim 3**

Since there were no human subjects for Aim 3, protections for this aim are unique. Hospital policy components and summaries of alignment with bundle components were provided in aggregate so as not to identify the policies of any individual hospital. Hospitals may have been unwilling or concerned about providing hospital policies for analysis due to legal or political concerns. Hospital staff were given assurance that findings will be reported without hospital identification.
CHAPTER 4: RESULTS

Survey Demographics

In total, 60 individuals participated in the online survey (Table 14). The majority of participants were non-Hispanic (86.7%) and white (81.7%), and 30% were aged 30-39. Participants had an average of 15.7 (SD 11.8) years of experience working within their profession, with an average of 8 (SD 9.0) years working within their current role. Participants worked with pregnant women in a variety of settings, with the majority of participants reporting working in multiple settings (n=40). The most common work settings were inpatient postpartum units (n=33, 55%), followed by inpatient labor and delivery (n=31, 51.7%), and outpatient medical settings (n=28, 46.7%). Just over half of participants were not responsible for clinical guidelines in their work role (n=34, 56.7%), meaning they were not involved in guideline development or implementation. One in-hospital participant completed the federal requirements for a waiver that enabled them to prescribe buprenorphine in the outpatient setting, in accordance with federal policy. Participants were dichotomized by whether they worked in a hospital in any setting or did not work in a hospital at all and demographics were compared. Demographics were similar across groups, with the exceptions of age distribution, profession and work settings.

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<th>Out of Hospital Participants</th>
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<th>15.6 (11.6)</th>
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<tr>
<th>Settings in which participant works with pregnant women</th>
<th>Outpatient medical setting **</th>
<th>Inpatient Antepartum ****</th>
<th>Inpatient Labor and Delivery ****</th>
<th>Inpatient Postpartum ****</th>
<th>Social Service Agency/Community-Based ****</th>
<th>In-Home ****</th>
<th>Jail</th>
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Demographics were also compared for obstetricians and non-obstetrician participants who reported any current work in a hospital setting (Table 15). In-hospital demographics were similar for obstetricians and non-obstetricians, with the exceptions of age, years in profession, number of deliveries performed or assisted in 2019, and certain work settings, including outpatient medical settings, inpatient postpartum units, and social service or community-based agencies. Obstetrician participants were generally younger than non-obstetrician participants, with less mean years of work within their profession (7.8, SD 8.1 vs. 18.2, SD 11.5) and less mean years within their current role (5.8 SD 6.8 vs. 11.7 SD 11.9), respectively. Not unexpectedly, obstetricians were more likely to work in inpatient or outpatient obstetric settings, whereas non-obstetricians most commonly worked in social service or community-based settings (96%), inpatient postpartum (80%), and inpatient labor and delivery (72%) settings.

Survey participant profession demographics were compared for in-hospital and out of hospital participants (Table 16). Most physician participants were obstetricians, either general (n=10) or maternal fetal medicine specialists (n=4). One physician participant was a
Table 15: Demographics of Participants who work in Hospitals

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</tr>
<tr>
<td>Non-Hispanic</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>missing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profession ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>14</td>
<td>100</td>
</tr>
<tr>
<td>Advanced Practice Provider</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Midwife*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nurse</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Social Worker/mental health counselor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other @</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Current Trainee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>21.4</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>71.4</td>
</tr>
<tr>
<td>missing</td>
<td>1</td>
<td>7.1</td>
</tr>
<tr>
<td>Years in Profession - mean (SD) *</td>
<td>7.8 (8.1)</td>
<td>18.2 (11.5)</td>
</tr>
<tr>
<td>Years in Current Role - mean (SD)</td>
<td>5.8 (6.8)</td>
<td>11.7 (11.9)</td>
</tr>
<tr>
<td>Buprenorphine Waiver^</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes*</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>100</td>
</tr>
<tr>
<td>Settings in which participant works with pregnant women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient medical setting **</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>Inpatient Antepartum</td>
<td>9</td>
<td>64.3</td>
</tr>
<tr>
<td>Inpatient Labor and Delivery</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>Inpatient Postpartum *</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>Social Service Agency/Community-Based *</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
pediatrician. All physicians worked within the hospital setting. Most nurses reported a current role other than staff or administration (n=7), such as case manager, home visitor, manager, public health nurse, and home visiting program supervisor.

**Table 16: Profession-Related Demographics**

<table>
<thead>
<tr>
<th>Profession</th>
<th>All</th>
<th>In- Hospital</th>
<th>Out of Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>100</td>
<td>39</td>
</tr>
<tr>
<td><strong>Profession</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>15</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Advanced Practice Provider</td>
<td>4</td>
<td>6.7</td>
<td>3</td>
</tr>
<tr>
<td>Midwife</td>
<td>10</td>
<td>16.7</td>
<td>10</td>
</tr>
<tr>
<td>Nurse</td>
<td>15</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>Social Worker/mental health counselor</td>
<td>9</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Other *</td>
<td>7</td>
<td>11.7</td>
<td>1</td>
</tr>
<tr>
<td><strong>Physician Specialty</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetrics</td>
<td>10</td>
<td>16.7</td>
<td>10</td>
</tr>
<tr>
<td>Maternal Fetal Medicine</td>
<td>4</td>
<td>6.7</td>
<td>4</td>
</tr>
</tbody>
</table>
There were eleven hospitals with staff who participated in the survey from the list of birthing hospitals in the eligibility region, with an additional five participants that reported working in a hospital within the region that was not on the list and were not identified by participants (Table 17). There was a range of 1-16 participants from each hospital, with most hospitals having a single survey participant. Most hospitals represented did not have obstetric residency programs. Five hospitals had participants reporting their hospital participation in the FPQC MORE initiative. Most hospitals did not have participants report having awareness of providers with buprenorphine waivers at their hospital, or buprenorphine providers who would accept pregnant women as patients.

**Table 17: Hospital-Related Demographics**

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Survey Participants</th>
<th>Percent of Participants</th>
<th>OB Residency Program</th>
<th>MORE Initiative</th>
<th>Buprenorphine 1 *</th>
<th>Buprenorphine 2 #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>2.6</td>
<td>Unsure</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>2.6</td>
<td>Unsure</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>2.6</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>2.6</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>2.6</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>5.1</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>G</td>
<td>2</td>
<td>5.1</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>H</td>
<td>7</td>
<td>17.9</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Table 17: (Continued)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2.6</th>
<th>No</th>
<th>No</th>
<th>No</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>1</td>
<td>2.6</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>K</td>
<td>16</td>
<td>41.0</td>
<td>Yes</td>
<td>Yes</td>
<td>No (12); Yes (4)</td>
<td>Yes (4)</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>12.8</td>
<td>No (2); Unsure (2)</td>
<td>Unknown</td>
<td>No (5)</td>
<td>No (5)</td>
</tr>
</tbody>
</table>

* Aware of providers with Buprenorphine waiver at hospital
# Aware of providers with Buprenorphine waiver at hospital who accept pregnant patients

**Interview Demographics**

With two exceptions, all interview participants were identified through their participation in the online survey, in which they indicated interest in taking part in an interview. The two additional participants who did not participate in the online survey were identified through professional contacts as potential interview participants based on working in an area or in a professional role that was not otherwise represented in interview participants. A table of interview participant characteristics can be found in Table 18.

**Table 18: Interview Participant Demographics**

<table>
<thead>
<tr>
<th>Participant ID</th>
<th>Gender</th>
<th>Age Group</th>
<th>Profession</th>
</tr>
</thead>
<tbody>
<tr>
<td>P01, OB</td>
<td>Female</td>
<td>30-39</td>
<td>Obstetrician (OB)</td>
</tr>
<tr>
<td>P02, MFM</td>
<td>Female</td>
<td>30-39</td>
<td>Maternal Fetal Medicine (MFM) specialist</td>
</tr>
<tr>
<td>P03, MFM</td>
<td>Female</td>
<td>60+</td>
<td>Maternal Fetal Medicine (MFM) specialist</td>
</tr>
<tr>
<td>P04, RN</td>
<td>Female</td>
<td>30-39</td>
<td>Registered Nurse (RN)</td>
</tr>
<tr>
<td>P05, NP</td>
<td>Female</td>
<td>50-59</td>
<td>Nurse Practitioner (NP)</td>
</tr>
<tr>
<td>P06, PE</td>
<td>Female</td>
<td>50-59</td>
<td>Parent Educator (PE)</td>
</tr>
<tr>
<td>P07, RN</td>
<td>Female</td>
<td>60+</td>
<td>Registered Nurse (RN)</td>
</tr>
<tr>
<td>P08, LMHC</td>
<td>Female</td>
<td>40-49</td>
<td>Licensed Mental Health Counselor (LMHC)</td>
</tr>
<tr>
<td>P09, FNP</td>
<td>Female</td>
<td>30-39</td>
<td>Family Nurse Practitioner (FNP)</td>
</tr>
<tr>
<td>P10, MFM</td>
<td>Male</td>
<td>60+</td>
<td>Maternal Fetal Medicine (MFM) specialist</td>
</tr>
<tr>
<td>P11, Ped</td>
<td>Male</td>
<td>30-39</td>
<td>Pediatrician (Ped)</td>
</tr>
<tr>
<td>P12, Adm</td>
<td>Female</td>
<td>30-39</td>
<td>Administrator (Admin)</td>
</tr>
<tr>
<td>P13, LCSW</td>
<td>Female</td>
<td>30-39</td>
<td>Licensed Clinical Social Worker (LCSW)</td>
</tr>
<tr>
<td>P14, RN</td>
<td>Female</td>
<td>60+</td>
<td>Registered Nurse (RN)</td>
</tr>
<tr>
<td>P15, MA</td>
<td>Female</td>
<td>20-29</td>
<td>Medical Assistant (MA)</td>
</tr>
</tbody>
</table>
Interview participants worked in counties throughout the West-Central Florida region, with most participants working in Hillsborough county (n=8, Table 19). Interviews took place between June 18 and October 7, 2020 and lasted between 23 and 77 minutes, with an average duration of 43.4 minutes.

### Table 19. Count of Interview Participants by County of Employment

<table>
<thead>
<tr>
<th>County</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlotte</td>
<td>2</td>
</tr>
<tr>
<td>Hillsborough</td>
<td>8</td>
</tr>
<tr>
<td>Lee</td>
<td>1</td>
</tr>
<tr>
<td>Manatee</td>
<td>1</td>
</tr>
<tr>
<td>Pinellas</td>
<td>1</td>
</tr>
<tr>
<td>Sarasota</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
</tr>
</tbody>
</table>

**Policy Demographics**

Two hospitals provided policies related to primary (e.g., opioid) and secondary (e.g., alcohol, tobacco, polysubstance use, mental health, physical and sexual violence) screening. One hospital provided a written hospital policy and a nurse administrator participated in a brief interview regarding the written policy, policy implementation, practices, and electronic medical record prompts. The second hospital did not have a written policy regarding screening, but a performance improvement specialist participated in a brief interview regarding hospital practices and electronic medical record prompts. Following the interview, the performance improvement specialist emailed a validated screening tool used within the hospital, as well as screenshots of their electronic medical record prompts related to primary and secondary screens performed in triage and inpatient obstetric units at their hospital.

**Aim 1 Results: Research Question 1**

Qualitative interviews with fifteen clinicians and staff who manage pregnant women were performed to describe clinical practice behaviors related to screening and identification of opioid use during pregnancy, and to be able to address RQ1, namely, how screening and
identification of opioid use among patients was described. In this section, a summary of results based on qualitative findings will be presented. These findings range from how participants view their role and professional responsibility in screening, hopes and concerns for their patients or clients with opioid use disorder, and motivations for screening. Results are organized by the TDF domains of social and professional role and identity, and motivation and goals (Table 20).

**Table 20: Provider Description of Screening and Identification of Opioid Use Among Patients**

<table>
<thead>
<tr>
<th>Social and Professional Role and Identity</th>
<th>Professional Responsibility</th>
<th>Interprofessional Team</th>
<th>Support the mother-baby dyad</th>
<th>Motivation and Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Responsibility</td>
<td>“For the most part, it’s [an obstetrician’s role] to provide oversight. And then to follow-up on that because I’ll see them in subsequent visits.” (P02, MFM)</td>
<td>“…having an inter-professionalism team where you have social work, counselors... they’re able to kind of assist in that so that they feel more comfortable screening, because when there are positives, we already know here’s what we do.” (P11, Ped)</td>
<td>“… that it is my role to prepare and support a household and a family and a supportive system for the babies. And so all of the work in screening and preparing and anticipatory guidance early, earlier in pregnancy is my role as the biggest advocate for the baby. And in being the biggest advocate for a baby simultaneously, that means I’m the biggest advocate for mom as well.” (P11, Ped)</td>
<td>Prevent maternal morbidity and mortality: “[My biggest concerns are] relapse and overdose. ... the leading cause of maternal death is overdose... So, what we’re trying to do is to screen for those things ahead of time... You have this window of opportunity during your prenatal care.” (P03, MFM)</td>
</tr>
<tr>
<td>Ensure coordinated care</td>
<td>“I think it’s absolutely necessary and needs to happen across the board all the time with every new patient they [obstetricians] have and periodically throughout their pregnancy just to reassess and make sure that, you know, patients are telling the truth, that we’re communicating with other providers so that we can really provide that coordinated care that needs to happen and the wraparound services that have been proven to be the most effective way to treat things.” (P08, MHC)</td>
<td></td>
<td>Link patients with resources: “… my biggest concern is making sure they get into the appropriate therapies and they aren’t on the street trying to get [opioids].” (P02, MFM)</td>
<td></td>
</tr>
<tr>
<td>Interprofessional Team</td>
<td></td>
<td></td>
<td>Assess and ensure safety: “… how is their living situation? Is she able to care for her baby? Did she have enough supplies for her baby? So, then we get resources to help us out... Is it appropriate to take the baby with her to go home? We refer the baby to Healthy Start. Any outreach out there that can help Mom to make sure that her safety and the baby’s safety will be intact when she takes the baby home.” (P05, NP)</td>
<td></td>
</tr>
<tr>
<td>Support the mother-baby dyad</td>
<td></td>
<td></td>
<td>Provide education: “We’re doing parenting education. I have the opportunity to go to their homes if needed... So, we do a lot of parenting education and we like to do anticipatory guidance if we get them before they deliver to let them know what to expect in the hospital, how long the baby’s going to be there. That sort of thing.” (P04, RN).</td>
<td></td>
</tr>
</tbody>
</table>
Medical/Family planning

“We do birth control, right? So that’s a huge, huge factor for women with substance use disorders that they, it’s very difficult for them to sometimes follow through, getting particularly long-acting reversible contraception... Any kind of any kind of family planning that they can avail themselves of before they leave the hospital or not requiring them to come back for a prenatal visit is always more effective.” (P03, MFM)

Promote bonding and attachment

“... my biggest concern is how they can connect with their child. There’s a lot of conflicted feelings and a lot of guilt. And a lot of judgment at the hospital, too. And that kind of makes the mom feel badly about the whole situation... And a lot of times we can be working with a third or fourth generation person with addiction. So, having not experienced nurturing themselves, a lot of times they don’t know how to give that to the baby. And we try to do education and modeling and encouragement to facilitate that.” P06, PE

Social and Professional Role and Identity

Obstetricians described screening as a professional responsibility. Obstetrician participants generally described their role in screening as providing oversight to make sure that in-office screening takes place and is properly documented. Following screening and documentation, the obstetrician will be able to follow-up with any documented issues in the electronic medical record at subsequent visits. A maternal-fetal medicine specialist working in an outpatient Medicaid obstetric practice described, “For the most part, it’s [an obstetrician’s role] to provide oversight. And then to follow-up on that because I’ll see them in subsequent visits.” (P02, MFM). Another participant expanded on this perspective, adding how involving the broader healthcare team within the outpatient practice was beneficial in terms of optimizing obstetrician time and focus during the patient encounter.

*I think as a physician, you should be promoting screening and things. It doesn’t necessarily have to be me personally doing the screening, I guess is what I’m trying to say. We [physicians] should make sure that it is implemented and that if something is positive then we need to make sure that we’re addressing it, but I feel that we can use our broader teammates to spread our resources out and so that it doesn’t all fall on the physician.* P01, OB

One obstetrician described how their frequent contact with women, particularly during pregnancy, places them in a unique position in terms of their primary care responsibility. This
responsibility, alongside their provision of education and resources to offer during pregnancy, are particularly important for patients with opioid use disorder.

We have a mandate to do that [screening], you know. Particularly since we have very important resources like interventions for neonatal withdrawal, offering treatment and support... So, in terms of OB-GYN, we have a lot of face time potential with women with opioid use disorders. We are primary care physicians in a sense. And so, we should be mandated to screen for opioid use disorder. P03, MFM

A mental health counselor participant who worked exclusively with pregnant women within an inpatient drug treatment facility described her perception of the importance of obstetrician screening for drug use during pregnancy. This screening, in her opinion, should take place periodically throughout the pregnancy to identify the true level of patient drug use more closely. Another aspect of obstetric screening is the opportunity to collaborate and coordinate care with other providers, such as behavioral and mental health care practitioners, to address underlying patient issues most effectively and comprehensively.

I think it’s absolutely necessary and needs to happen across the board all the time with every new patient they [obstetricians] have and periodically throughout their pregnancy just to reassess and make sure that, you know, patients are telling the truth, that we’re communicating with other providers so that we can really provide that coordinated care that needs to happen and the wraparound services that, you know, have been proven to be the most effective way to treat things. P08, MHC

A family nurse practitioner participant described how her training as a family nurse practitioner uniquely positioned her as well-prepared to perform comprehensive screening based on her patient demographics and risk factors.

We pride ourselves on screening as nurse practitioners, specifically family nurse practitioners. We’re taught this in school, that a lot of what we do is prevention. Because that’s what my professors always say, you want to open the parachute before we hit the floor. And one of the things that we can do is [those] primary interventions and screenings before we get to tertiary, if we can if we can help it... We are built to really be able to recognize based on the patient population demographics what screens we should be doing and then implementing those. So, I think we’re really, really important, very essential, at least as family nurse practitioners... That’s a lot of what we pride ourselves in and being able to improve quality of care and clinical outcomes long term by being able to prevent any kind of acute issues from progressing. P09, FNP

This perspective is also aligned with a sense of professional responsibility to perform screening for opioid use disorder.
The importance of social workers and therapist clinicians was identified by several participants. One mental health counselor, when asked about her professional role regarding screening, replied about how she would prefer to incorporate screening into her clinical practice more than she is able. Her perception of her professional role was that she was burdened by administrative tasks that interfered with her clinical time and ability to perform screening and, as a result, she wished that she was able to do more screening. “I wish I could do more [screening]. I wish I could use my knowledge, my skills and ability more. It just seems like a lot of documentation of other things and less actual skill and technique. It’s a little disheartening but, you know, we’ve got to do it.” (Po8, MHC).

Another participant, a pediatrician, discussed the importance of an inter-professional team to care for pregnant women with opioid use disorder. He went on to describe the many reasons that social workers are well positioned and prepared to engage clients through rapport and to receive more thorough responses than other professionals on the medical team may receive. Additionally, they benefit screening by either obtaining more truthful and thorough responses from clients, or by being able to identify community-based agencies and services available, should the screen be positive and needs for services be identified.

*The purpose behind [social workers] being involved, I think, goes directly to the cornerstone of what we're trying to do, right? They are ones that are connected to the community and resources. They also have the ability to provide mental health counseling. They are probably better than most providers in building rapport and getting more thorough answers that can help. And so, I think like working with a team in a team with them, obviously improve[s] your ability as a provider to provide the best screening and treatment of these moms... So, I think that having an inter-professionalism team where you have social work, counselors, stuff like that, they're able to kind of assist in that so that they feel more comfortable screening, because when there are positives, we already know here's what we do. Here's our pathway for this. Here's how we address it.”* P11, Ped

This pediatrician participant also identified their professional responsibility in terms of screening pregnant and postpartum patients for opioid and drug use, along with other substance and social screens. He described how his primary role is to serve as an advocate for the mother-
infant dyad, and that screening and providing anticipatory guidance early in pregnancy allows him the best opportunity to identify relevant needs and advocate for the dyad.

*I tell my moms that it is my role to prepare and support a household and a family and a supportive system for the babies. And so all of the work in screening and preparing and anticipatory guidance early, earlier in pregnancy is my role as the biggest advocate for the baby. And in being the biggest advocate for a baby simultaneously, that means I’m the biggest advocate for mom as well. Because I believe that my role is to see them as a dyad and not to parse out the individual pieces and address certain things. My job is to support them overall as a whole.* P11, Ped

**Motivation and Goals**

Another compelling reason for providing screening to pregnant women is to prevent relapse and overdose. One maternal-fetal medicine specialist discussed the elevated risk of relapse and overdose in the postpartum period, causing overdose to be the leading cause of pregnancy-associated maternal death. The approach to addressing the risk of postpartum relapse and overdose, in this participant’s opinion, is to screen for drug use and any risk or protective factors associated with relapse. These may include social support, neonatal abstinence syndrome, child protective investigations or child removal, and losing pregnancy Medicaid coverage.

*[My biggest concerns are] relapse and overdose. And have you seen that urgent maternal mortality statement that came out, I think maybe about two months ago now? So, what they’re responding to is the fact that... the leading cause of maternal death is overdose. And 75 percent of those cases happen more than six weeks after the delivery, so after prenatal care is done. So, what we’re trying to do is to screen for those things ahead of time... You have this window of opportunity during your prenatal care. You’re seeing a patient much more frequently than you probably ever see them otherwise. And so, they can rely on that health care system.* P03, MFM

In addition to prevention of relapse and overdose, screening was also described as important to identify patients who could benefit from services and referrals. One such service and referral would be for medication assisted treatment. This could be beneficial for women for whom opioid use is recently identified or who are recently willing to participate in behavioral health services. Alternatively, medication-assisted treatment referrals would also be beneficial for women who are using opioid replacement therapy from outside of the behavioral health care
system, such as street use, or from a friend or family member. Two participants described their concerns about pregnant women using medications such as Subutex or buprenorphine without the required medication assisted treatment services, including screening, testing for illicit substances, medical oversight, and therapy.

For the patients that are not under therapy, then I have a whole host of concerns including how are they getting it, what methods are they using, are they, what other medications are they using, what risks do they have for the baby, are they going to get appropriate prenatal care. Versus someone who is in in a treatment center, then I feel like they’ve clearly demonstrated their motivation to get help. They’re in a system... Most of the systems have counseling available and housing options. They’re linked into resources versus those patients who aren’t [in treatment]. So, I guess my biggest concern is making sure they get into the appropriate therapies and they aren’t on the street trying to get it. P02, MFM

The opportunity to identify appropriate referrals to services within the community was clearly a beneficial aspect of screening pregnant women. All participants mentioned the importance of screening within this context. Service referrals for pregnant women with opioid use disorder may include medication assisted treatment, as mentioned above, mental health services, home visiting, and educational services. In addition, services specific to each woman’s situation may be necessary, such as a domestic violence shelter, human trafficking interventions, specific healthcare needs, such as dentistry, and general assistance with supports, such as housing, transportation, and childcare. In some practices, a social worker would be enlisted to perform further screening and referrals; however, most practices lack social work support, and the obstetrician or other staff members would be responsible for identifying and meeting such needs. One participant described her intention to provide appropriate medical care and referrals to address identified needs through the social worker within the obstetric practice. “What are my intentions? Providing appropriate treatments for women. Appropriate social work referral, appropriate MAT referral, appropriate screening during prenatal care, trying to decrease the incidence of neonatal withdrawal and trying to keep the women [and their deliveries] safe.” (P03, MFM).
Screening was also described as important to identify and address safety needs and safe discharge planning at the time of delivery. This screening perspective highlights the need for knowledge of substance use at the time of delivery and birth hospitalization discharge, but also demonstrates the value of early screening and identification of substance use. With early identification, providers can set several actions into effect. One of the critical actions relates to patient and family safety. This safety can be related to stable housing and a physically safe housing environment, addressing issues such as neighborhood safety and the context of the neighborhood and physical environment. Within the household, itself, there are also safety issues. These could relate to potential physical, emotional, and sexual violence in the household. Household safety could also relate to the future emotional and physical safety of the baby, in terms of whether there will be a safe and nurturing environment to support optimal attachment and development.

Approximately half of the participants discussed the issue of addressing safety by screening and identification of opioid use. One comment was in response to the costs and benefits of screening. “Yes, there is cost to run the test. But that cost [of screening] is outweigh[ed by] the benefits of our patients well-being because if we know the results, then they can better plan for the patient herself and our baby’s safely.” (P05, FNP). Another participant mentioned the importance of in-hospital screening and developing a Plan of Safe Care for discharge planning. “And then there is extra counseling and then a plan of safe care is started for them if it’s in the hospital that they’re getting screened.” (P03, MFM).

Participants also discussed the issue of safety in terms of the opportunity to involve child welfare, specifically, the Department of Children and Family Services (DCF). One participant described DCF involvement as a further opportunity to identify household and supply needs, in addition to making a household safety assessment.

Well, obviously, both of their safety and more importantly, the baby [are my biggest concerns]. If it’s, you know, how is their living situation? Is she able to care for her baby? Did she have enough supplies for her baby? So, then we get resources to help us
out, like, you know, if [the mom was] exposed to any illegal substances, of course, [then we’re] going to reach out to [DCF]. They have to assess where mom is living, who is there. Is it appropriate to take the baby with her to go home? We refer the baby to Healthy Start. Any outreach out there that can help Mom to make sure that her safety and the baby’s safety will be intact when she takes the baby home. P05, NP

This same participant described DCF involvement again later in the interview by focusing on negative patient responses to DCF investigations. “Yes, they are upset that they had DCF involved and so on. And we just need to explain it and reiterate with the patient that this is our way to ensure that their safety and their baby’s safety is intact. And then whenever they need, we provide them and help try to have the all the resources to provide whatever they need for themselves and for the baby.” (P05, NP).

A pediatrician participant offered another perspective on patient safety. This perspective was not related to identifying safety issues, but to develop a relationship with the patient that does not place judgment based on her previous life experiences. In this perspective, screening is a tool to empower patients to make decisions from a place of safety from judgement and punishment.

I always tell them I focus on [the] baby. I have no reason to judge or figure out things from the past because for me, [it] doesn’t matter, you know what I mean? Like for me, it doesn’t matter what’s going to happen because I have a baby that’s about to come or has just been born. That is chapter zero for that kid and for mom, because this is a new chapter in life. No matter if she has other kids before, whether she’s raised those kids, whether she’s given up for adoption or whether she’s had them taken away by DCF, it doesn’t matter. No matter what, this is a chapter zero and we’re able to start fresh. So, my goal is, how can I support Mom to empower her to make the best decisions to where she feels safe, supported, and has the best outcome for her? P11, Ped

Screening was also described as a means for identifying areas in which the provider can offer patient education. Two main areas of education were described as important within the context of opioid screening. For patients with opioid use, there is a risk for the development of neonatal abstinence syndrome (NAS) or Neonatal Opioid Withdrawal Syndrome (NOWS). Since observation and treatment for NAS and NOWS can involve long hospital stays and unpleasant infant symptoms, such as high-pitched crying and irritability, parents benefit from education and preparation. One nurse talked about preparing mothers for what they and their babies will
experience in the hospital. “We’re doing parenting education. I have the opportunity to go to their homes if needed... So, we do a lot of parenting education and we like to do anticipatory guidance if we get them before they deliver to let them know what to expect in the hospital, how long the baby’s going to be there. That sort of thing.” (P04, RN). Another nurse described her concerns about the dose of medication-assisted treatment that pregnant women receive. In her opinion, women should receive education about the dangers of high medication doses and the potential impact on their fetus and newborn. In this way, pregnant women could make a more informed decision about whether and how frequently to increase their doses of medication during pregnancy.

In the obstetrician’s office [it’s their responsibility] to make sure that they [the moms] are aware of that [the risk of using medication-assisted treatment]. And every time that they go for their visit, we need to talk about it [these risks]. How are you doing? Where are you with your medication? Do you understand the effect that it may cause your baby? You may be separated from your baby for a long time. And there may be deficits, that the medication has effects and that... [it] is not a quick fix. P05, NP

In addition to providing education, screening was also described as a tool to identify medical planning needs of patients. One patient described the importance of identifying opioid use to inform education, shared decision-making, and planning with regards to pain management during delivery and the postpartum period.

But the biggest concern would be, of course, in managing, not just pain during the pregnancy, but post-op, especially if they’re going to be in need of a C-section or have complications. We need to do adequate pain management for them without, of course, putting them at risk for further dependence. Or if they no longer are abusing opiates but have that history, to try to respect that and not put them in that danger of relapse. So, the treatment for them in terms of pain becomes one of the primary things to think about. Additionally, we consider also, the stressful environment that this places them in and the effects that they could have on, of course, the infant as well as the mom. P09, FNP

One obstetrician participant discussed the importance of having discussions and shared decision-making regarding family planning. This participant described the importance of family planning discussions because of the high rate of unplanned pregnancies and how unplanned pregnancies early in recovery may interfere with the recovery process.
We do birth control, right? So that’s a huge, huge factor for women with substance use disorders that they, it’s very difficult for them to sometimes follow through, getting particularly long-acting reversible contraception... Any kind of any kind of family planning that they can avail themselves of before they leave the hospital or not requiring them to come back for a prenatal visit is always more effective. And having an unplanned pregnancy in the very near future is probably for most women who are trying to get themselves into the place where they are moving toward recovery is not necessarily productive for them. I think, yes, women who have opioid use disorder can certainly plan a pregnancy. But the fact is... women with opioid use disorder probably have double the amount of unplanned pregnancies then women who don’t. Po3, MFM

This participant also described a practice-wide prompt to ensure discussions about family planning with patients with positive opioid use screens. “And then there [are] reminders for starting to talk about family planning early in the pregnancy and with an emphasis on long-acting reversible contraception.” (Po3, MFM).

Finally, screening for opioid use was described as important to identify patients for whom supports for promoting optimal maternal-infant bonding and attachment may be beneficial. One participant described how opioid exposure during pregnancy could lead to the development of NAS, as well as special needs during childhood. Believing that their substance use negatively impacted their child, as well as experiencing judgment from medical professionals, can cause maternal guilt. In addition, for mothers in inpatient substance dependency treatment, they may be limited in terms of how often and for how long they can visit their babies while in the hospital for observation or treatment for NAS. All these factors can impact mother-infant bonding and attachment.

Oh, the biggest concerns. OK. Well, the neonatal abstinence syndrome and just making sure they understand the special needs of the child and what they can do. And my biggest concern is how they can connect with their child. There’s a lot of conflicted feelings and a lot of guilt. And a lot of judgment at the hospital, too. And that kind of makes the mom feel badly about the whole situation. And when they are at [inpatient substance dependency treatment] I think [they can receive] a ride to the hospital three days out of the week. And we’re talking about attachment with your baby and being there and holding their baby and looking into the baby’s eyes. And a lot of times we can be working with a third or fourth generation person with addiction. So, having not experienced nurturing themselves, a lot of times they don’t know how to give that to the baby. And we try to do education and modeling and encouragement to facilitate that. Po6, PE
**Aim 1 Results: Research Question 2**

The fifteen qualitative interviews also addressed research question 2, how participants described their opioid and related screening practices, as well as the conditions under which these screens are performed. In addition, the 39 online, quantitative survey participants who responded to questions about screening implementation are summarized according to the extent to which they report implementing each component of the AIM bundle related to screening for opioid use disorder among pregnant patients or clients and are also dichotomized by obstetrician or non-obstetrician profession. First, the survey responses will be summarized. Then, the general approach to screening will be described in text and by diagram. Finally, a series of case studies have been developed based on screening practices. These case studies are presented in narrative form according to their approaches to screening for opioid use, use of validated screening tools, secondary screening approaches and other general findings. Diagrams are presented to visually represent screening during prenatal care in outpatient obstetric settings. To the extent possible, the case studies were also described according to their patient population, and other relevant and known practice and patient demographic information.

Participants generally reported the extent to which they implement the AIM bundle screening practices within the online survey. Individuals were asked about the extent to which they implement each recommendation from the AIM bundle related to screening and these results were compared for obstetrician and non-obstetrician participants (Table 20). The most common screening recommendation reported as implemented always or very often by participants was to assess all pregnant women for substance use disorders (66.7%), with the least frequent being match treatment response (33.3%), use validated screening tools (35.9%), and incorporate an SBIRT approach (35.9%). Reports differed among obstetrician and non-obstetrician participants for incorporating an SBIRT approach, ensuring screening for infectious disease, and ensuring screening for psychiatric disorders and physical and sexual violence.
A variety of screening practices and conditions were described by qualitative interview participants. In general, a framework emerged relating to key touchpoints during which screening was likely to happen. Participants described the importance of the initial pregnancy intake appointment, the specifics of which varied by practice, but generally involved a variety of screenings and patient education. Another time that was generally described as a critical screening touchpoint was the hospital delivery, during which women were generally screened during triage (Figure 2).

<table>
<thead>
<tr>
<th>Table 21: Participant Report of Implementation of Screening Best Practices</th>
<th>All Participants</th>
<th>Obstetrician Participants</th>
<th>Non-OB Participants</th>
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<tr>
<td><strong>Extent to which participants implement recommendation</strong></td>
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<td><strong>%</strong></td>
<td><strong>N</strong></td>
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<tr>
<td>Assess all pregnant women for substance use disorders</td>
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<td>100</td>
<td>14</td>
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<tr>
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<td>66.7</td>
<td>10</td>
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<tr>
<td>Sometimes/Rarely</td>
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<td>20.5</td>
<td>3</td>
</tr>
<tr>
<td>Never</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>missing</td>
<td>5</td>
<td>12.8</td>
<td>1</td>
</tr>
<tr>
<td>Utilize validated screening tools to identify drug and alcohol use</td>
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<td>35.9</td>
<td>3</td>
</tr>
<tr>
<td>Always/Very Often</td>
<td>14</td>
<td>35.9</td>
<td>8</td>
</tr>
<tr>
<td>Sometimes/Rarely</td>
<td>6</td>
<td>15.4</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>5</td>
<td>12.8</td>
<td>1</td>
</tr>
<tr>
<td>Ensure screening for polysubstance use among women with opioid use disorder occurs</td>
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<td>59.0</td>
<td>6</td>
</tr>
<tr>
<td>Always/Very Often</td>
<td>11</td>
<td>28.2</td>
<td>7</td>
</tr>
<tr>
<td>Sometimes/Rarely</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Never</td>
<td>5</td>
<td>12.8</td>
<td>1</td>
</tr>
<tr>
<td>Screen and evaluate all pregnant women with opioid use disorder for commonly occurring co-morbidities</td>
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Table 21: (Continued)

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<th>Ensure that screening for infectious diseases occurs *</th>
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<th>Sometimes/Rarely</th>
<th>Never</th>
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<tr>
<td>Ongoing/Very Often</td>
<td>18 46.2</td>
<td>7 50.0</td>
<td>11 44.0</td>
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<tr>
<td>Sometimes/Rarely</td>
<td>6 15.4</td>
<td>4 28.6</td>
<td>2 8.0</td>
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</tr>
<tr>
<td>Never</td>
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<td>0 0 0</td>
<td>0 0</td>
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</tr>
<tr>
<td>missing</td>
<td>15 38.5</td>
<td>3 21.4</td>
<td>12 48.0</td>
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<th>Sometimes/Rarely</th>
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</thead>
<tbody>
<tr>
<td>Always/Very Often</td>
<td>18 46.2</td>
<td>7 50.0</td>
<td>11 44.0</td>
<td></td>
</tr>
<tr>
<td>Sometimes/Rarely</td>
<td>6 15.4</td>
<td>4 28.6</td>
<td>2 8.0</td>
<td></td>
</tr>
<tr>
<td>Never</td>
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<td>0 0 0</td>
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<tr>
<td>missing</td>
<td>15 38.5</td>
<td>3 21.4</td>
<td>12 48.0</td>
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</tbody>
</table>

<table>
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<tr>
<th>Ensure that resources and interventions for smoking cessation are provided</th>
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<th>Sometimes/Rarely</th>
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<tbody>
<tr>
<td>Always/Very Often</td>
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<td>6 42.9</td>
<td>9 36.0</td>
<td></td>
</tr>
<tr>
<td>Sometimes/Rarely</td>
<td>9 23.1</td>
<td>5 35.7</td>
<td>4 16.0</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>0 0 0</td>
<td>0 0 0</td>
<td>0 0</td>
<td></td>
</tr>
<tr>
<td>missing</td>
<td>15 38.5</td>
<td>3 21.4</td>
<td>12 48.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Match treatment response to each woman’s stage of recovery and/or readiness to change</th>
<th>Always/Very Often</th>
<th>Sometimes/Rarely</th>
<th>Never</th>
<th>missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always/Very Often</td>
<td>13 33.3</td>
<td>5 35.7</td>
<td>8 32.0</td>
<td></td>
</tr>
<tr>
<td>Sometimes/Rarely</td>
<td>9 23.1</td>
<td>6 42.9</td>
<td>3 12.0</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>2 5.1</td>
<td>0 0</td>
<td>2 8.0</td>
<td></td>
</tr>
<tr>
<td>missing</td>
<td>15 38.5</td>
<td>3 21.4</td>
<td>12 48.0</td>
<td></td>
</tr>
</tbody>
</table>

* p<0.05
** p<0.01

Many participants also described the initial pregnancy intake appointment and the time during delivery at the hospital as opportunities for the healthy start prenatal risk screen and the healthy start infant risk screen, respectively. These risk screens identify specific areas of medical and social risk and, based on cumulative risk scores, offer the opportunity for participation in home visitation programs, for women residing in counties that participate in the MIECHV programs (Figure 3).
Different practice patterns emerged from the interviews with obstetricians and obstetric service providers. These patterns will be described by practice. Because of the number of participants from one practice, that practice will be detailed first and then the differences in other practices will be described.

**Figure 2: Critical Obstetric Screening Touchpoints**

Different practice patterns emerged from the interviews with obstetricians and obstetric service providers. These patterns will be described by practice. Because of the number of participants from one practice, that practice will be detailed first and then the differences in other practices will be described.

**Figure 3: Key Opportunities for Referral to MIECHV Programs based on Obstetric Screening**

**Case 1: The Medicaid Practice**

The first practice is comprised of women’s health care practitioners affiliated with a teaching hospital in an urban setting in west-central Florida. Four participants who participated in interviews were from this practice: one obstetrician, two maternal fetal medicine (MFM) specialists, and one medical assistant. This practice was described as a Medicaid clinic, with a
large population of patients who are low-income or were considered high risk and, therefore, could not continue with obstetric care at their low-risk practice.

That is very much low-income clinic. It’s mostly Medicaid and self-pay. There are a handful of people with private insurance that were considered too high-risk and got kicked out from their private clinics... It’s like 90% Medicaid/self-pay, less than 10% private... Very diverse population. I use Spanish all the time there. Much more minority population by a long shot. Lots of different languages. Lots of interpreter services for things like Creole... And that’s what we consider the resident clinic because I work with the residents at that clinic... And a lot of high-risk because... anybody who risks out of their clinic because they’re too high-risk comes to our clinic. So, lots of diabetes, lots of insulin, lots of crazy things. P01, OB

This practice offered various services, such as ultrasound, and staff, including residents, social work, Healthy Start, and representatives from a local substance dependency treatment facility that offers medication assisted treatment and has treatment programs specifically for pregnant women. In addition to the collaboration with the behavioral health treatment staff, pregnant women participating in their inpatient treatment program attend this practice for their prenatal care.

The process of screening began with the patient being brought to their room by the medical assistant, who may ask preliminary questions. The patient is then seen by a resident or nurse practitioner, who will do more thorough screening. The results of the screening are entered into the electronic medical record and any positive screens will result in a related item being listed in the ‘Problem List’ in the chart. The obstetrician, then, can address positive screens or screening elements at the intake visit, or they may have other medical issues and education to address at that time and will follow-up on the screen at a subsequent visit.

A lot of the initial screening is done at their initial OB visit, so a lot of the history or social history or discussion of these conditions are typically done at their OB visit. And then, and then they’re listed out as concerns that would be there and I’ll address them as I’m seeing the patient if there’s identified concerns. Outside of that, unless if something comes up in the conversation or if there’s a known history of drug use, a known history of having intimate partner violence, some of our HIV patients, those I might touch on or screen for that in a more regular fashion, but for the most part it’s an initial screen is done by a nurse practitioner and then I’ll address it at subsequent visits. P02, MFM
Everyone interviewed from this practice mentioned their practice’s participation in the Maternal Opioid Recovery Effort, or MORE initiative through the Florida Perinatal Quality Collaborative. This initiative, which was launched early in 2020, seeks to systematize the implementation of universal opioid screening during obstetric care and at delivery. This practice, largely because of the MORE initiative, has implemented universal screening during pregnancy at the initial pregnancy intake visit using a validated screening tool, 5Ps. “So, what we chose for our screening tool was the 5Ps. So ideally, we’re working on this. But ideally, women are given the survey at their first prenatal visit.” (P03, MFM). This participant emphasized the word ‘ideally’, which may indicate that use of the 5Ps screening tool is expected, but not yet fully universally implemented. The 5Ps tool was developed to evaluate for prenatal substance abuse, particularly relating to alcohol and drugs, and all questions orient around “problems with alcohol or drug use”. For example, pregnant women are asked about whether their parents, peers or partner have problems with alcohol or drug use, or whether the pregnant woman had problems before pregnancy or used alcohol or other drugs within the past month.

In addition to the alcohol, drug, and mental health screens, one participant reported that every pregnant patient is evaluated for domestic violence or intimate partner violence.

>Every, every. Every patient who comes in for OB care is screened for that. And every person who walks on the labor and delivery is screened for that. That is separate from the MORE initiative. But that’s always been the case... And then, you know, if you see something that bothers you. Now, it’s different now because patients can’t bring visitors to clinic. But, back in the day before COVID, patients would bring their partners and if you see things that make you concerned. You know, you always go beyond that first screening. You know, I would always continue to ask or give them additional opportunities to give you that information. P03, MFM

Another participant, however, had a different perspective on screening for mental health and intimate partner violence, indicating that there may be some provider variation in practice at this clinic.

>I always screen for that [mental health and intimate partner violence] in my annual exam. I have to say I’m not as good about screening for that, myself, in the initial prenatal visits. That is, I think, on the Healthy Start form and then normally if it is screened for my MA’s [medical assistants] are gonna be screening for it. Like, “Do you
feel safe at home” is kind of one of their questions they may ask. I don’t think there’s anything we really have universal at this point, per se, and I think, I’m pretty sure, I’d have to check, but I think when they come into Labor and Delivery, they get a very thorough social history screening from the nurses and I’ve heard them do this, it’s extensive. Like, “Do you have a car seat? Do you have a place to live?” and I’m sure that’s included in there. So that’s another place that we can kind of capture that. But I don’t know if our MA’s do that at every single visit. I kind of doubt it. I bet it’s more just on the first time visit at the resident clinic, probably. I’m sure we are missing people because we don’t have really like a universal protocol for that. P01, OB

Based on the results of the 5Ps screening, patients with a positive screen may receive counseling from the resident. “And when we do counseling, the brief intervention part of SBIRT, we have a template that the residents use, or anybody can use it. But I’ve worked with the residents more of how to counsel about each of those substances.” (P03, MFM). In addition, patients with positive screens would be referred to the practice’s social worker for further evaluation and referrals.

We... put together an algorithm... for their prenatal care for antepartum visits. And then their visits at delivery. And it's an algorithm that goes through if there’s any positive answer on the 5Ps... And then it just took you down, like a positive result gets you a social work consult. And then you screen for mental health issues because so like I think the number is 40 to 50 percent of at least women who use opioids have a history of depression. Not to mention other mental illnesses. So, if we follow that algorithm, it gets them social work with attention to mental health evaluation, medical assisted treatment, if they’re ready for that. And then some additional screening tests, like Hepatitis A, TB and Hepatitis C, most places are doing Hepatitis C, but if they’re not. And then there is extra counseling... P03, MFM

All the interview participants from this practice discussed the role of the practice’s social worker in providing further screening and referrals. One participant mentioned the importance of having both a social worker and Healthy Start representative present in the practice. One participant responded to being asked about how positive screens are handled.

I think there’s more information collected regarding what their history is, if they have an opioid disorder then there’s a social work consult, and we try to get them into [substance dependency treatment] or one of the medically directed therapies. And if there’s other types of abuse or concerns, again, like typically a social work consult. Sometime that involves [intervening] right away about certain options, particularly if it’s intimate partner violence or depression, or if they just need options as far as where to go for directed therapy for abuse. We utilize our social worker and Healthy Start a great amount for that. P02, MFM
Although the social worker was generally portrayed as highly involved and integral to the SBIRT process within the clinic, one participant did describe the importance of knowing how to refer patients directly for substance dependency treatment and other services in situations in which the social worker is not available.

There is a project going on to try to connect [patients] from the hospital to [a substance dependency treatment facility] better and now we have a direct line and a social worker to really get them connected in. And that has been amazing because postpartum we can connect them. But when the just show up in my clinic and I'm kind of not with the whole hospital system with a social worker that's always right there that knows how to help me. [Participant whispered] The social worker in our clinic is kind of difficult. Sometimes you can't find her and you're like, I don't know what to do. So, I think [my biggest concern is] getting people into the care that they need because we don’t have a system set up to do it through the OB system right now. P01, OB

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**Figure 4:** Case 1 Screening and Referral Process: A Medicaid Clinic Affiliated with an Academic Teaching Hospital

To summarize screening within this outpatient obstetric practice, screening for alcohol and drug use was implemented because of the MORE initiative, although it may not yet be fully universal. Screening may be started by medical assistants but will be more thoroughly addressed
by residents or nurse practitioners at the initial pregnancy intake appointment. Obstetricians, then, may follow up on the positive screen, or may need to address it at subsequent visits. Residents, nurse practitioners or obstetricians, may involve social work by initiating a social work evaluation, which will trigger additional screening and evaluation of mental health. The social worker will, ideally, be involved in identifying helpful community resources and services, however, the social worker may not always be available to assist. This, then, would require the medical provider to refer to community services directly. In addition, Healthy Start representatives at the practice ensure completion of the Healthy Start Prenatal Risk Screen. As a result of the prenatal risk screen, home visiting services can be offered. If accepted, the mother can be assigned a home visitor from a program operating within her county of residence. Both the social worker at the outpatient obstetric practice and the home visitor can refer the mother to community services, including substance dependency treatment, mental health services, services for physical and/or sexual violence, and ancillary services to address needs such as housing and childcare (Figure 4). The obstetricians from this practice also see patients at a local teaching hospital, which has also implemented universal drug screening at delivery.

Case 2: “We don't have a policy other than what's in the EMR”

One participant described their experience working in a Federally Qualified Health Center that provides obstetric and gynecologic services. This practice contains four obstetricians and one MFM specialist. The practice uses Athena for their electronic medical record. “Now Athena is an EMR developed by an OB-GYN... So, it has certainly all the pieces that need to be there. Maybe it is enough. I would have to sit down, study it, and match it up with one of the screening tools because it's used all over the country. Athena is used all over the country.” (P10, MFM).

Patients meet with a nurse at their intake visit, where they are asked the screening questions that are integrated into the Athena electronic medical record. “They're asked to come
in an hour or so earlier [for the intake visit]. And then the nurse or whoever is going to screen them and take all their history, gravidity, parity, etc., etc., why you’re here. Pregnancy history. Drugs. Everything. We’ll do all that in the hour or so before the patient sees the doctor or the midwife.” (P10, MFM). The interview participant was unclear exactly what questions were asked and whether they were based on validated screening tools.

I've asked our nurses, how is this screening done now for our patients? And basically, it's through a series of questions that Athena asks when the patient has her intake for her initial OB appointment... And I've not looked at it. The nurses said that they can pull it out and I go over it and see if that includes everything. Not like one of the screening tools. But it asks questions in regard to opioid use. Does it include all the ones that we would expect in one of the screening tools? I haven't the slightest idea. I do know that it does pick up because when I look at that, there are questions about using substances. How good they are, I don't know. We'd have to pull the questions and go from there. P10, MFM

With regards to the full range of topics covered during screening at the intake visit, the participant was not sure. However, the participant did believe that the screening was fairly comprehensive because of the information they would have in the electronic medical record when they met with the patient.

I have not looked at all the questions that they ask. But eventually they fill everything out. And then if you hit the history, you’ll see not only their gravidity and parity, LMP, EC, past medical history of C section, new, first baby. But, you know, five years ago she had substance abuse, or she's on valium for this and that other, she was incarcerated, whatever. The history is pretty much there. Now sometimes we have to dig into it and ask them why you missed the fact that she had such and such and such. P10, MFM

As far as the participant was aware, the screening included topics such as alcohol and drug use, tobacco use, mental health, and physical violence. Following the interview, the participant’s administrator shared a screenshot of the social history template from the electronic medical record. This template had drop down menus to record responses to topics, such as ‘general stress level’, ‘smoking pre-pregnancy’, ‘tobacco smoking status’, ‘smoking-how much’, ‘has smoked since age’, ‘chewing tobacco’, ‘alcohol pre-pregnancy’, ‘alcohol intake’, ‘alcohol-years of life’, ‘caffeine intake’, ‘illicit drugs pre-pregnancy’, ‘illicit drugs’, ‘illicit drugs-years of life’, and then questions about seat belts and sunscreen use. It would appear that these questions
were not based on validated screens but were general topics to be covered in the intake interview. Of note, there did not appear to be questions related to mental health or physical or sexual violence.

Similar to the practice in Case 1, this FQHC employed a social worker within the practice, as well as a Healthy Start representative. “Well, in the clinic, there is a social worker, there is Healthy Start... So, yes, when I when I see a patient with a lot of stuff going on, I can call in the social worker and I can, as you know, these patients have all kinds of problems. Yes, she may not be immediately available, but she's going to be seeing the patient or calling the patient, hopefully within 24, 48 hours.” (P10, MFM).

Figure 5: Case 2 Screening and Referral Process: A Federally Qualified Health Center

In summary, screening for opioid use in this practice is similar to Case 1. During the initial pregnancy intake appointment, patients meet with a nurse for approximately an hour for
various screening and patient education. Following that, the patient meets with an obstetrician or midwife, who can see screening results in the electronic medical record and follow up on any identified issue. Differences in this practice from Case 1 are that there may not be screening for mental health issues, or physical or sexual violence. The screening that is done is based on the items pre-loaded into the electronic medical record for the practice and does not appear to be based on validated screens. The obstetrician interviewed was not aware of the content of screening, nor the breadth and width of information the screening covered. While there is a social worker and Healthy Start representative at this practice, there was neither a thorough discussion with the participant about the process of following up on positive screens nor connecting patients with community agencies and services. It seems likely, though, given their professional roles, that both of these individuals would be linking women in with community services, such as home visiting and substance dependency treatment, if warranted. No one from Case 1 referred to the social worker following up with patients after their appointment, so it is unclear whether the practice of the social worker either meeting with a patient during the intake visit or following up within one to two days is a variation in practice between the cases. Finally, there was no mention of whether all patients from the practice delivered at the same hospital and whether that hospital had a practice of universal screening for drug use at the time of delivery. See Figure 5 for a comprehensive image of the screening and referral process at this FQHC practice.

Case 3: No Validated Screening

One Family Nurse Practitioner participant worked in a single-provider women’s health center with a collaborating obstetrician.

*I’m a family nurse practitioner and I’ve been working with my collaborating physician now for about almost 4 years... And it’s a patient population I’ve just fallen in love with and on a daily basis, the kinds of patients I see traditionally are typically are on the younger end. We do a lot of OB as well as GYN. But you know, depending on the practice, sometimes they’re you’re either more OB or you’re not. And she’s an*
obstetrician, so we'd actually do a lot of high-risk OBs. I do see GYN, though, on my end just because I'm a family nurse practitioner and she's the obstetrician. As much as I do their OB care and their OB visits, I also see GYN. And so, I kind of get to do a little bit of both, which is nice.” P09, FNP

This participant described the approach to screening within the practice, which was to avoid formal screens and to obtain patient information conversationally without formal documentation of any screening. This approach was directed by the collaborating obstetrician because of her liability concerns.

The social screens are actually informal. I maybe two years ago, brought up to my collaborating physician to put in place a standardized approach to screening since we do utilize an EHR [electronic health record]... to at least have documentation using the PHQ-9 or Edinburgh or, you know, whichever tool she felt most comfortable with. And she’s declined, actually, using a formal tool for fear of liability. She says that unfortunately, and this isn’t my favorite answer to hear, that it was all fine and well to do the screening. But if it's documented in an official capacity and the follow up care doesn't match, that it opens up the clinic to liability. So as much as we do some screenings, they're not documented on using a standardized kind of tool that I think we see a lot sometimes in, you know, different evidence-based practices... So, we'll talk using more of a conversation that's had in the either the amenorrhea visit [or] we can have it right where we're doing that scan that we can tell the pregnancy is confirmed. P09, FNP

The participant went on later in the interview to provide more context around her proposal to use validated mental health screens within the practice.

And when I brought that up to [my collaborating obstetrician], it was in regard to postpartum depression because we had really gotten a decent amount of postpartum depression and it kind of just brought it up. And at the time I was going through my [Doctor of Nursing Practice] schooling and I’m like, why aren’t we using standardized tools, you know?... I had done my research. I had looked at different tools that would be available. I sent her an email with a pdf. I was like, ‘Let me know what you think, and we can start implementing this.’ And she pretty much responded back to me like, that's great. And, you know, like this is important. But, you know, by all means, take a look at these. And if that helps you with your questions or with managing the patient, that's great. But we’re not going to be like adopting one particular tool to use to guide... because we have limitations in that we are a smaller practice with less resources and a lot of referral for a lot of things, especially when it comes to areas outside of our specialty... That's the one instance that I tried to implement something in the office which didn’t really work out. P09, FNP

This Family Nurse Practitioner participant reported performing a variety of screening in an informal, conversational capacity. “We screen in terms of, of course, domestic abuse, since we know that these are high risk populations for that. We screen also for... we talk about
lifestyle, exercise, diet, and drug abuse, as well as smoking, caffeine. We’ll have that conversation along with the importance of prenatal and all the lifestyle adjustments that typically need to or should occur as soon as possible.” (P09, FNP). Specific to opioid screening, though, the participant reported not performing opioid screens often. Reflecting on her practice, the participant wondered whether opioid use is very low in her practice, or whether they are missing opioid use because patients are not universally asked about it.

We don’t really do so much the opioid screen. And, again, I don’t know if that’s because we just don’t see it as much. Or maybe that patient population we tend to see are typically insured, typically have a little bit of a higher socioeconomic status. And so, I don’t know if it’s really just the population we see, but we just don’t see often enough where we felt the need to routinely screen and ask for it... That’s kind of a sad thing, [does it have] to be so obvious that we’re like, oh, something’s up. And if that’s the case, then how many people are we actually missing? You know, I guess a great thing would be to know, like, what are the better questions to ask for how can you screen for that? P09, FNP

In terms of the screening process in the practice, the medical assistant would first meet with the patient for the initial intake visit. However, the participant described how the medical assistant’s time with the patient was limited and that screening was more checking boxes than building rapport and trust for the patient to be comfortable disclosing any socially undesirable behaviors. The participant went on to describe how, even if they asked the same questions, the patient would be more likely to open up to the nurse practitioner.

But I do think that... either the person who is doing a triage, either an MA or CNA or RN, however, the office is being run, whoever is doing that primary intake, it’s challenging because they usually have less time with the patient. It’s much more kind of checking boxes. So that can be more challenging. But I think that there’s room there for them [doing the screening] to be a good thing if they had the time or the education to know what to ask for and what to look for. But probably I would say the main care providers probably end up being the better people because we have the time and patients tell us more. They just do. And it frustrates my front staff all the time. The [medical] students always [are] like, ‘I swear to God I asked the same question. And they didn’t tell me half of what they told you.’ P09, FNP

In summary, this case is a small obstetrics and gynecology practice with one OB/GYN and one family nurse practitioner seeing patients, along with a medical assistant. This medical assistant does a preliminary screen that may also be performed by the medical provider. All
screening is informal and providers are careful about liability in terms of their documentation. Little screening for opioid use is done and it is unclear whether there is truly little opioid use in their patient population or if opioid use goes undetected amongst their patients. The practice does not contain a social worker and it appears that the providers in this practice refer their patients out for various issues and services. However, there appears to be a lack of available services or awareness of services for referrals that leads to liability concerns with lack of follow-up. There was also no mention of Healthy Start prenatal risk screens, collaboration with Healthy Start, or connecting patients with any home visitation services. Finally, there was no discussion about the hospital(s) at which their patients deliver and what the screening practices there are (Figure 6).

**Figure 6:** Case 3 Screening and Referral Process: A Small Independent Outpatient Women’s Health Practice

**Case 4: Discharged from Practice**

A final case relating to screening within obstetric practices emerged from the data but is not associated with a specific participant. Several participants described situations in which pregnant women would be ‘discharged’, ‘kicked out’ or ‘get transfer of care’ from their prenatal
practice for drug use. When referring to an interest in investigating variation in screening behaviors amongst local obstetric practices, one participant described the following:

We're going to find out some practices are indeed doing a screening questionnaire and following the bundle and doing that questionnaire... And we're going to find some that their idea of screening is pee in the bottle. It was positive. I'm sorry. We don't see patients who have a positive drug screen. So, it's a very first step of one of screening. I know practices are doing number two, some very good practices. One [reason for that] is that some practices are just not doing what the bundle says. They don't have time to do it. They don't want to have to make time to do it. They don't want to be involved because then they'll be [a] practice that takes a patient with a positive drug screen. They don't want these people in [their] practice to begin with. And that's called implicit bias. And some of it's called just racism. And remember that... the patients can say no. Right. Patient doesn't have to take their screening. They can say Thank you very much. I don't want to be screened. I don't want to answer your questions. And that's her right. And the doc can say, OK, you don't want to answer my questions. You're out of my practice. Or I don't want to do the drug screen today. You're out of my practice. Or if the verbal screen comes back. Yes, I did use drugs. And when was the last time you used drugs? A couple months ago. Okay. You have to have a urine. I don't want to have a urine. Then you're out of my practice. So, a lot of it has to do with the doc and their understanding and desire to understand pregnant women who use substances.” P10, MFM

Another participant described women being discharged from their prenatal practice or unable to obtain prenatal care from a practice because of current or former drug use.

I think that in moms that I see that come from other practices that actually get transfer of care, either because they got screened or because they don't screen properly. A lot of practices around [this] county do not care for moms that have substance use or opioid use disorder. So, they will not provide prenatal care because there are one or two providers in the practice that do not agree with that. And so that to me seems to be a barrier because we know how tough it is to get all of these moms proper health care during pregnancy. It's definitely not an easy system to work in. And so, for them to be involved with a prenatal care provider and then not able to follow through with them, not able to finish prenatal care with them, I think is a barrier because, again, you're losing trust in the ability to them to provide an honest and transparent response to the proper screening. And because I don't think that they're actually screening. You know, I think that they're looking for anything in the history and therefore they [get discharged]. Even if mom's been recovering for however many years, maybe she's had a complete negative drug screen for the past four years and they still won't take her in prenatal care because of the history. So, I think that that's almost the opposite of screening. It's like a false screening or something. P11, Ped

An obstetrician, while not describing patients being discharged from obstetric practices, discussed the use of universal biologic drug screens during prenatal care. “There are some groups, we are not doing this, but some groups that are actually screening with the urine tox
screens, which none of the national organizations are really endorsing, but... a fair number of [obstetric practices] are just doing universal tox screens. So that presents a barrier for women getting prenatal care, right?” (P03, MFM).

While no participants described engaging in this practice themselves, it seems to be an important case with limited information available. For a variety of reasons, potentially including not wanting patients with drug use, having providers who do not want women with drug use in their practice and, perhaps, liability concerns, some obstetric practices will discharge women for drug use. As reported by participants, this may be based on universal biological screens, such as urine screening, at obstetric visits. This may also be based on women refusing to participate in screening or a known or self-disclosed history of drug use. This practice appears to be undesirable, at least, with one participant describing the practice of universal biological screening as a practice that is not evidence-based nor encouraged by national medical associations and can serve as a barrier to obtaining prenatal care. To the previous two participants quoted here, the practice of using screening to discontinue prenatal care appears repugnant, with one referring to the practice as ‘implicit bias’ and possibly ‘racism’, and the other as ‘the opposite of screening’ and ‘false screening or something’.

**Figure 7:** Case 4 Screening and Referral Process: Obstetric Practices that Routinely Discharge Pregnant Patients with Substance Dependence
In summary, little is known about this practice and whether there are discharge practice variations that this would be considered multiple cases. Nonetheless, there is some form of screening offered, either biologic or verbal. If a woman refuses screening, she can be discharged from the prenatal practice. Likewise, if she admits to current and, in some cases, former drug use, she can also be discharged from the practice. It is unclear whether the obstetric practice will help to identify a new prenatal practice to attend, and to what extent they are helpful with sharing medical records and other elements of the care transition (Figure 7).

**Case 5: Outpatient Community-Based Medical Clinics**

Three interview participants represented two different medical clinics within their respective communities. These clinics, while having different sources of funding, administration, and co-location with community services, operated in meeting the needs of families in similar ways. The first clinic is located within a community agency and focuses on early development of babies and children with fetal substance exposure. Two participants discussed working at this clinic: one pediatrician and one registered nurse.

*What we do is we focus on babies that have exposure to medications and drugs and substances while in-utero. And so, as a part of that work, what I do is I do prenatal visits with any of the moms that have opioid use disorder. And so, I meet with moms either at drug treatment facilities or at jail in order to provide anticipatory guidance and kind of try to guide them through pregnancy... And then I follow those babies in my clinic up until age five. I'm following for a developmental delay, social, emotional issues and behavioral concerns.* P11, Ped

This clinic collaborates with community agencies, home visiting services, drug treatment facilities and obstetric providers to receive referrals for their clinic services. A nurse at the clinic mentioned how they receive most of their clients postnatally and question how much screening and referral to treatment and related services is happening during pregnancy.

*Well, I can tell you, just based in our patient volume, I don't feel like they're [screening]. I would say 95 percent of our patients, we've actually got postnatally. So, we're getting them at the NICU... And half the time, the doctors didn't know of any prior substance use. And then the ones that are on methadone or Subutex, I don't know what their*
thought is about that, but we don’t see anything happening with those patients. It’s kind of like, OK, cool, you take it. And that’s what they, it seems like is happening. Po4, RN

The second clinic is housed within the county Department of Health and meets with a wider range of clients, not all of whom have substance involvement.

This was started about six years ago, as a pilot program aimed at assisting prenatal, postpartum and... between pregnancy families... When I [worked] in the hospital setting, my heart was touched by the number of babies that were being born that were opioid exposed. And I saw that there was a real need for raising the level of awareness in the community and also increasing the health literacy of the families with opioid use disorder and the people that worked in medication-assisted treatment programs. But one of the things I saw across the board is that there was also a need for family planning... So basically, I see families prenatally up until age five. And the thing that’s unique to this, because there are a lot of things that make it unique to the program. In [this] county I’m really the only nurse visiting agency for children... P14, RN

This participant went on to describe a broad range of support they offer to their clients.

Part of what I do with my program too, prior to [COVID-19], was outreach at the methadone clinic... I gave vaccines to people that were there, like trying to get people vaccinated with the flu, the hepatitis A or B or the Tdap vaccines, hand out toothbrushes for the kids... just trying to increase their health literacy and try and connect people to local services in whatever manner that I can. So, I’ve helped women apply for jobs, I’ve helped women, you know, connect them to like EmployFlorida.com career fairs, of course, to referrals to programs like Kids Thrive or Healthy Start or Healthy Families. I’ve helped women navigate divorce proceedings, connecting them with rural legal aid services when they were in abusive relationships and they asked for assistance. I’ve helped connect people to language programs. Really, if somebody asks me to help them with something, if I can help them, I do more case management than I do actual medical nursing at this point. P14, RN

Both clinics receive grant funding, which allows them to be flexible in their offering of services and not be as limited in the amount of time that they spend with families. One participant described:

But what's nice about my program is because I'm supported by the health department and some other grant funding, I'm able to be very flexible. And so, this program is extremely client driven. I’d like to say, like my goal is to help families identify and achieve their health goals. That being said, I don’t have any agenda. It’s all based on what the client needs are. So, compared to some other programs that would be more restrictive, for instance, you know, like you've got to be seen once a week in that first month of post-partum. Well, if somebody only wants to be seen once a month, I accept that. Or and it’s proved very beneficial, I think, especially for people that suffer from Opioid use disorder because they tend to, it takes a while to develop a trusting relationship. They're hesitant to have you come into their homes and they’re not really good about keeping track of appointments or making appointments, either because of transportation or just scattered lives or whatever... P14, RN
The clinics described very different patterns of screening. One clinic provided a very thorough screening approach, while ensuring that patient-provider trust and rapport were established prior to screening. In particular, this clinic had a unique approach to screening mothers for adverse childhood experiences after screening for resiliency.

So, I guess what I would say the most kind of hefty amount of information gathering that I do is through PEDI clinic. So anytime I get a referral, no matter what it’s for, my initial intake with mom we screen for opioid and substance use disorder. We screen for human trafficking; we screen for domestic violence. We screen for interpersonal relationship tension and stress. We screen for food and health insecurity. And then we do all the childhood stuff that’s not really mom stuff. We screen for postpartum depression and I’m trying to think if there’s something else I’m missing. [short pause] Those are most of the mom outcomes that we screen for... We’ll do ACE [Adverse Childhood Experiences] screening. So usually we do ACE screening on the mom at our second visit and on the baby at our one year visit, because usually what we want to do is we want to do a resiliency screening prior to administering the ACE screen because I’m not a big fan of doing an ACE screen without kind of any knowledge or expectation of like, how will this be received and kind of what are my repercussions of doing an ACE screening, kind of like out of the blue. So, yeah, we do we do ACE screenings with a subsequent visit. P11, Ped

Because of their thorough approach to screening, this participant was asked how they developed or identified their screening protocol and they responded that the protocol was largely developed through their own experience.

Yeah, so it’s a conglomerate kind of like of what I’ve experienced as I started focusing on babies with substance, with substance exposure, I, you know, it was an immediate recognition that it is through the support of the moms and providing necessary resources and support to the mom that provides a better outcome for baby. So, a lot of what our focus socially and supportively had been on the mom, you know. And obviously, you know, in the first in the first initial days of hospitalization and stuff like that. Yeah. A lot of the focus on baby if you’re seeing signs of withdrawal. But you know when you go through that first year where the babies are, you know, I don’t have much developmental concern. I don’t have social emotional concern or behavioral concerns that first year. So, a lot of that is focusing on mom. Trying to screen for anything we possibly can to see if there’s any underlying contributors to what her overall health and wellness picture is and then try to implement services to support her. Because we know that I mean, obviously, as I say, that we try to get involved as early as possible. So that’s why we aim for that prenatal visit to be able to see them before [emphasis] and able to do a lot of our screening and help her through the actual pregnancy. But we know that a lot of our relapse rates are highest in that postpartum period. So that’s where we focus a lot of our effort is that first year of life is a lot more on mom. And then we kind of as the child develops, then obviously we get into more social, emotional, behavioral stuff for the child. But yeah, so it’s just through personal experience that, you know, if you just focus on the baby and just outcomes, you’ll never get anywhere. Because obviously, if you don’t have a supportive family house and a sense of safety in
the kid, they will never [emphasis] develop any of those three things adequately on their own. P11, Ped

The other clinic had a more informal approach to screening. This clinic approached screening in a conversational sense and expected clients to be more willing to share information over time as their relationship and trust developed.

With my clients it’s just more, I don’t use a formal tool for that. I have a form that I’ve developed in my program. And that’s what I use because I found that, and then some of it is historical from what I get from my referring agency. So, it’s really in a conversational kind of context. And it’s interesting with people that are use drugs, I found that you can’t you’re not going to get the whole history. It’s better to have a conversation, for me anyway. I think I learn more by using more of a casual informational kind of approach than sitting there with the pen and paper or the keyboard asking questions, because what I have to do before I really can develop a plan of care is to, as a nurse, develop a trusting relationship. And so that comes from, I don’t get all that information usually. Some people are very open and forthright, but some people you learn bits and pieces the longer you know them. P14, RN

When asked specifically about each of the screening elements within the AIM bundle, this participant reported screening for opioids, alcohol, tobacco, mental health, sexually transmitted infections, and domestic or intimate partner violence. This participant mentioned that they do not routinely screen for adverse childhood experiences, although they are aware of other providers who do routinely perform that screening with clients. “I’m not consistent with the doing of the ACEs. I mean I, I talk, I do talk to people about, you know, it’s not like not everybody gets, I know [name at local program] does ACEs on a regular basis and I actually you’re nudging me, I should incorporate that into my, into my screening. But, and I do talk about human trafficking and I’ve had some human trafficking of people, some clients that were trafficked.” P14, RN

In addition to suggesting that they should start incorporating ACEs screening into their routine, this participant also indicated at the end of the interview that they should be more systematic with their screening, in general. “But, you know, like now I’m talking to you. I’m like, dang it. I got to get to the set screening tool... I use the for the depression screening tools. I do use standardized screening tools for... depression. But for the drug and alcohol I don’t have
a set screen and I, it’s been needling me lately. That’s something that I gotta do. And the ACE score.” (P14, RN).

Participants described having less physical and technological resources in their setting than they would have in a more structured and funded setting, such as a hospital. For example, one participant mentioned that they have no way to set screening reminders other than to manually input them into their Microsoft Outlook office calendar. A participant from another clinic mentioned how they lack electronic medical records and standardized policies.

I feel like I’m honestly like just sometimes just flying by the seat of my pants because I’m so overwhelmed by the number of problems that people have... So because I don’t because it’s just, just me, I mean I have to create my whole way of documenting. I don’t have like an electronic way of doing electronic medical records. So, I’ve had to create my own template for going into the home that’s not longhand. When I got here everything was longhand. So, if I if I do a breastfeeding assessment, I’ve created a template or I’ve created a template for a postpartum assessment. I’ve got templates for first trimester, second trimester for things that I would normally discuss in education. So, you just gave me an idea to just quick put that on my, I can easily add that, the screening, as something that I should do for each, I mean, you just gave me a great idea. So, thank you for that. That’s like on my list of things to do is because I work with [name] over at the hospital too. And, you know, I want to get more familiar with that screening tool that they use so I’m more legitimate in what I’m doing. I guess it’s sometimes I feel like I’m not, I mean, I’m not that legitimate. That’s part of, you know, the program isn’t legitimate if you don’t have, if you can’t prove what you’re doing and it’s a little difficult to be doing everything by yourself, so. But you’ve given me some good ideas, so thank you. P14, RN

In summary, both clinics mentioned benefits to their setting and administration, such as flexibility and the length of time they could spend with their clients. They both were well connected with community agencies and local medical providers and practices. However, their screening practices varied greatly, from using several validated tools over time to collect a breadth of health and social information on their clients to having some informal conversations and using one validated tool to assess for depression. These clinics both described some limited resources, such as technology and written policies.
Case 6: Community Agency

Two participants described their experience with working in a community-based agency and providing in-home services to clients: one parent educator with Parents as Teachers (PAT) Plus and one registered nurse with Nurse Family Partnership. One participant described the screening process for identifying pregnant and postpartum women for services. "Let me explain the screening process, perhaps that would be helpful. When a woman is pregnant and goes to the hospital and also when she has the baby, there is a form that is filled out. According to this form we get the referral. They can score in. Also, a person can request services even if they don't score in to Healthy Start. We get our referrals that way." (P07, RN). This participant also described how they generally work with their clients.

Well, we used to do in-home visits before COVID, but now we're doing everything with video chats, video chats or auditory phone calls. If somebody needs something and I have it, I will run it out to the house, but I leave it on the porch. And, you know, to maintain distance and safety for clients and myself. We go we do a lot of teaching. We do a lot of community resources referrals. That sort of thing. A lot of support to my girls. Try to find out what their goals are to help them achieve their goals. P07, RN

The Parent Educator described PAT Plus and their typical clients.

We do curriculum from the Parents as Teachers National Center in St. Louis with mothers, pregnant mothers, or mothers who their babies go from zero to three. And our specific department was created because of the opioid epidemic. So, most of our clients have substance abuse history, if not in the near present, but in the past. So that's usually one of their risk factors. And a lot of our people start... in the NICU because baby, mom was on methadone, so baby was withdrawing. And then we then when they get discharged, then we meet in the home or at a therapeutic community, depending on where they're living. P06, PE

Both participants talked about their approaches to screening clients for a range of factors. For the parent educator from PAT Plus, there is limited screening for drug use because it is known at the time of program entry. “[Client drug use is] kind of known and presumed. We don't necessarily have any direct intervention for keeping clean and sober, we're more proactive parent education and connecting to resources like especially counseling or rehabs or whatever the needs may be.” (P06, PE). However, clients are routinely screened for mental health and physical violence. "We screen for postpartum depression and domestic violence..."
We do the RAT [Relationship Assessment Tool] for the domestic violence and we do the Edinburg for the postpartum. Yeah. And then we do developmental screenings for the child.”

(P06, PE).

The RN participant described the screening tools used with their clients. In general, the participant reported screening for drug, alcohol, and tobacco use; mental health; and physical violence.

We do [use validated screening tools]... We use Edinburgh for depression. Depending on which program I’m working in, the forms can be a little different from one to the other. And domestic partner violence. Yes. And we do screening for these things periodically throughout our relationship at certain points in our service to the client... I usually do them all and take, though they can stagger a little bit. You know, there’s a time frame. They can they kind of stagger them. P07, RN

When clients have positive screens, the RN participant mentioned seeking information from the client about what kind of programs she would be interested or willing to participate in and then providing relevant resources for her. ”Usually, I’ll find out where mom is with the, what are her desires? I’ll provide community resources for her.” (P07, RN).

The parent educator also described following up on positive screens with clients.

So, we try to, you know, hook them up with counseling services, mental health services. PAT Plus has a counselor on staff that could possibly meet with them in the home as well. If they would rather do it or if they don’t have insurance, we kind of save that for people who don’t have insurance. But she’ll go see pretty much anyone. Yeah, we have a whole, Healthy Start resource guide has a whole page of agencies that are available who also take Medicaid that, you know, actually we have another page of agencies that are just intended for substance abuse. So, we try to hook them up if they’re not hooked up but most of our people by the time they get to us the substance abuse treatment centers have referred to us. P06, PE

In summary, two participants spoke to their experience working with pregnant clients with opioid use in the community agency and home visitation setting. Both participants report either known drug use on the part of their clients or screening using validated tools. In addition, validated tools were used to identify depression and domestic violence. Both participants were familiar with community resources and would refer clients to resources based on certain factors, such as their insurance coverage and willingness to participate.
Case 7: Inpatient Obstetric Care

Several participants discussed screening within inpatient obstetric care, which include obstetric triage, antepartum, labor and delivery, and postpartum units. Participants who spoke about hospital screening included those who worked in both outpatient obstetric practices, as well as in hospital settings, such as generalist obstetrician physicians and maternal-fetal medicine specialists. In addition, a nurse practitioner administrator was interviewed who spoke exclusively about her experience in the inpatient hospital setting and one social worker participant discussed her former job performing in-hospital drug and other screening. Finally, some individuals at community-based agencies, outpatient medical clinics, and substance dependency treatment facilities spoke to their experiences preparing patients for their inpatient hospital delivery or the experiences of their clients in the hospital setting.

The hospitals that were discussed reported to have implemented universal screening. Participants who work at one hospital reported its use of a validated screening tool. "Every patient who walks into triage at [this hospital] gets screened, even if they were screened before." (P03, MFM). Another participant at a different hospital reported utilizing universal biologic screening and an Emergency Drug Screen of patients with concerns for drug use during triage.

What we do is that all inpatients, and actually outpatient, all our inpatient we do what we call EDS, Emergency Drug Screening, regardless of where they come from. That's just our routine and clothing like the OPR and, oh, you know, blood type and stuff like that. That is a routine for us. Now, when the patient comes in for evaluation for triage, if we think that the patient may have been exposed to illicit substances that warranted them to come and see us, we will do an EDS, which is an emergency drug screening test... A set of questions and also their behavior. You know, if they're coming in like twenty-five weeks or a 35 weeks with AROM [artificial rupture of membranes]. Or SROM [spontaneous rupture of membranes]. Any behaviors like they're mentally a little bit altered and so on. It would trigger our nurses to do the EDS. P05, NP

Participants also discussed additional screening. Several participants mentioned universal screening for domestic or physical violence. "Every, every, every patient who comes in for OB care is screened for that [domestic violence or IPV]. And every person who walks on
the labor and delivery is screened for that. That is separate from the MORE initiative. But that's always been the case.” (P03, MFM). A participant from another hospital also described similar screening. "Well, that's a set of questions that we ask the patient [about intimate partner violence]. And, you know, fortunately, most of our patients very come forward with that when they have domestic problems at home.” (P05, NP). Other screenings include alcohol use, which is included in validated screening tools for drug and opioid use, such as the 5Ps. Finally, other social screens were described in the inpatient hospital setting. "I think, I'm pretty sure, I'd have to check, but I think when they come into Labor and Delivery, they get a very (emphasis) thorough social history screening from the nurses and I've heard them do this, it's extensive. Like, “Do you have a car seat? Do you have a place to live?” and I'm sure that's included in there. So that's another place that we can kind of capture that.” (P01, OB).

In addition to the thorough screening in the hospital setting, there was also generally social work staff available to assist both with screening and following up on positive screens and other social needs. One participant mentioned the role of social work to follow up with the Department of Children and Family services and how their role was unique to the hospital setting. "So social work does all of that [refer to DCF] and we thankfully have a really strong social work system inside the hospital. We have lots of social workers 24/7. That's never a problem getting them. Outpatient is different." (P01, OB). In addition to communicating with DCF, social workers also connect women with substance use disorders to facilities for substance dependence treatment. "There is a project going on to try to connect them from the hospital to DACCO better and now we have a direct line and a social worker to really get them connected in. And that has been amazing because postpartum we can connect them. But when the just show up in my clinic and I'm kind of not with the whole hospital system with a social worker that's always right there that knows how to help me.” (Participant 10). Another participant described the role of social work within newly developed algorithms to systematize response to patient substance use in the hospital setting.
So, there is an algorithm that we, as part of the MORE initiative, I with a couple other people at the FPQC, put together an algorithm. And that's also those are also on the MORE web sites. But it's for their prenatal care for antepartum visits. And then their visits at delivery. And it's an algorithm that goes through if there's any positive answer on the 5Ps. And then how, or whatever screening tool they choose, chose, because with the MORE initiative, there were multiple things you could use. And then it just took you down like a positive result, gets you a social work consult. And then you screen for mental health issues because so like I think the number is 40 to 50 percent of at least women who use opioids have a history of depression. Not to mention other mental illnesses. So, if we follow that algorithm, it gets them social work with attention to mental health evaluation, medical assisted treatment, if they're ready for that. And then some additional screening tests, like Hepatitis A, TB and Hepatitis C, most places are doing Hepatitis C, but if they're not. And then there is extra counseling and then a plan of safe care is started for them if it's in the hospital that they're getting screened. And then there is reminders for starting to talk about family planning early in the pregnancy and with an emphasis on long-acting reversible contraception. P03, MFM

Several participants described process in place at hospitals to connect women to services following delivery. One pediatrician from a community-based clinic described the use of SBIRT in the hospitals participating in the MORE initiative. "So, through our institutional screening through [my hospital] and FPQC's NAS and MORE initiative is using SBIRT. So, doing screening with the 5Ps with any mom who comes into triage into [my hospital] and then like I said, follow through with SBIRT." (P11, Ped). Certain hospitals have developed more formalized processes to connect patients to substance dependency treatment that rely on the resources in the hospital setting, including policies, procedures, and having social workers on staff. "There is a project going on to try to connect them from the hospital to DACCO better and now we have a direct line and a social worker to really get them connected in. And that has been amazing because postpartum we can connect them." (P01, OB). Finally, a participant provided an overview of the process of following up on positive screens at their hospital.

[If the screen is] positive, of course, we're going to, the provider will inform the patient and the staff then, you know. So, they have a plan. Whether the patient, is it chronic for them, they've been used for a while. And what is their plan? Because, of course, the substance will affect their unborn baby. So, their provider and the patient, they discuss the plan of care and whether the patient is, you know, interested [in going to substance dependency treatment] or, you know, their shared decision making. And of course, if they continue and they have no plan, [DCF] will get involved with that as well. So... when the baby is born, the baby maybe gets placed in with, you know, the Family and Children's, the organization there. So, or their family, not necessarily going with them until they meet the court requirement and stuff like that, or going to classes. P05, NP
Another important aspect of inpatient obstetric care for women with opioid use disorders is communication with substance dependency treatment staff and providers for women who are engaged in medication-assisted treatment. One participant, a mental health counselor who works with pregnant women in a residential substance dependency treatment program, described how she helps prepare her clients for childbirth at a hospital and fosters communication with the hospital staff.

*I also want to let them know what to expect at the hospital when they deliver. Like, hey, this call is going to be made. And this is why it’s going to be made. And this is how we as an agency help you during that time to make it a little less stressful. One, we’re going to let you know, hey, this is definitely going to happen. But you’re also going to walk into the hospital with a letter from us stating you’re in a program, that this is your current dose amount, you can contact medical to confirm anything. We go over postpartum instructions. You know, what to do if you’re prescribed any other medication from any other prescriber. And why it’s important to let us know if you’re getting anything from anybody else.* Po8, LMHC

In summary, screening practices within a few local hospitals were described by many participants who were familiar with hospital practices. Universal screening was described in two hospitals, for which one used a validated screening tool and the other used biological screening. Participants described thorough additional screening, including mental health, physical violence, and other social circumstances, such as baby equipment and housing. Social work staff and well-defined policies, procedures, and algorithms aided both screening and positive screen follow-up. Providers were informed of positive screens and an SBIRT approach was clearly described in one hospital. One hospital had a formalized connection with a substance dependency treatment program. Hospital staff, particularly social workers, connected patients with community agencies, resources, and programs. Finally, a clinician at a substance dependency treatment facility described how they prepare their clients and communicate with hospital staff for their clients who participate in medication-assisted treatment.

**Aim 2 Results: Research Question 1**
Both survey and interview participants responded to research question 1 of Aim 2: what facilitators and barriers of clinical guideline implementation related to screening and identification of opioid use are identified by clinicians and staff who provide clinical care for pregnant women with opioid use disorder in the west-central Florida region? Survey participants responded to implementation science theory-based questions for which they were provided with a statement and a Likert scale on which they would select which response matched their agreement with the statement, ranging from agree to neither agree nor disagree or disagree. Since theory-driven statements were randomly assigned to be negatively worded, all statements and responses were transposed to show agreement with positively worded statements. Interview questions were similar to theory-driven statements and addressed the same framework domains, with the addition of the optimism, reinforcement, emotions, and intentions domains, which were determined to be not ideal in survey format in pilot testing. The results of the survey questions related to the identification of facilitators and barriers of screening for opioid use and common co-occurring conditions will be presented first, followed by results of the qualitative interviews. The interview findings, initially coded and compiled according to the corresponding TDF domains and constructs, have been re-organized into levels similar to the Social Ecological Framework: patient factors, provider factors, practice factors, and community factors.

Survey participants were asked whether they agreed with statements based on Theoretical Domains (Table 21). More participants agreed with the AIM bundle recommendations (88.1%) than reported being familiar with the recommendations (66.7%). Participants generally agreed that following these recommendations is a part of an obstetrician’s professional role (88.1%), although more out of hospital participants agreed (94.4%) than in-hospital (83.3%). Participants generally disagreed that it is easy to implement these recommendations (38.1%) and that they had the skills necessary to implement the recommendations (28.6%). The majority of participants reported that there are particular skills
involved in implementation of the screening recommendations (76.2%). More participants reported confidence that they can follow these recommendations (76.2%), but less than half reported that they are well equipped to follow them (47.6%). Following the recommendations was generally viewed positively in terms of benefit for the provider, patients, and employer, although more participants reported benefit to patients (90.5%) and their employer or hospital (85.7%) than those who reported patient benefit (69%).

While participants reported being motivated to follow the recommendations (78.6%), few reported incentives to following the recommendations (16.7%) and reported being more likely to screen patients on methadone than others (14.3%). Around half of participants reported screening as something they usually do (54.8%), although more participants reported being likely to remember to screen in the future (66.7%). Many of the questions within behavioral regulation received low agreement, including being currently prepared to follow the recommendations (28.6%), having prompts to follow the recommendations (23.8%), and screening having the same level of ease for all patients (11.9%). Over half of participants were not concerned that screening would harm their relationship with their patient (59.5%), and the majority of participants reported not having other more important things to discuss with patients (78.6%).

Very few participants were familiar with billing codes for recommended screening practices (9.5%), with a significant difference between in-hospital (16.7%) and out of hospital (0%) participants (p=0.0006). There was also low agreement that having EMR prompts would not improve screening (11.9%). While many participants reported feeling pressure to implement these recommendations (40.5%), they also reported low agreement that people they work with follow these recommendations (16.7%), that those they work with support them to implement the recommendations (9.5%), and that staff at other hospitals are following the screening recommendations (9.5%).
**Table 22:** Agreement with Theoretical Domains-Based Survey Questions for In-Hospital and Out of Hospital Participants

<table>
<thead>
<tr>
<th></th>
<th>All Participants</th>
<th>In-Hospital Participants</th>
<th>Out of Hospital Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>KNOWLEDGE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am familiar with these recommendations</td>
<td>28</td>
<td>66.7</td>
<td>14</td>
</tr>
<tr>
<td>I agree with these recommendations</td>
<td>37</td>
<td>88.1</td>
<td>21</td>
</tr>
<tr>
<td>These recommendations are evidence-based</td>
<td>32</td>
<td>76.2</td>
<td>19</td>
</tr>
<tr>
<td>SOCIAL/PROFESSIONAL ROLE and IDENTITY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following these recommendations is part of an obstetrician's role</td>
<td>37</td>
<td>88.1</td>
<td>20</td>
</tr>
<tr>
<td>Staff members other than the obstetrician are best suited to follow these recommendations</td>
<td>25</td>
<td>59.5</td>
<td>14</td>
</tr>
<tr>
<td>SKILLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to act on these recommendations</td>
<td>16</td>
<td>38.1</td>
<td>9</td>
</tr>
<tr>
<td>There are particular skills involved in implementing these recommendations</td>
<td>32</td>
<td>76.2</td>
<td>17</td>
</tr>
<tr>
<td>I have the skills necessary to follow these recommendations</td>
<td>12</td>
<td>28.6</td>
<td>5</td>
</tr>
<tr>
<td>BELIEFS ABOUT CAPABILITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident I can follow these recommendations</td>
<td>32</td>
<td>76.2</td>
<td>18</td>
</tr>
<tr>
<td>I am well equipped to follow these recommendations</td>
<td>20</td>
<td>47.6</td>
<td>12</td>
</tr>
<tr>
<td>BELIEFS ABOUT CONSEQUENCES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementing these recommendations will be beneficial for me</td>
<td>29</td>
<td>69</td>
<td>17</td>
</tr>
<tr>
<td>Implementing these recommendations will be beneficial for my patients</td>
<td>38</td>
<td>90.5</td>
<td>23</td>
</tr>
<tr>
<td>Implementing these recommendations will be beneficial for my hospital or employer *</td>
<td>36</td>
<td>85.7</td>
<td>22</td>
</tr>
<tr>
<td>The costs of following these recommendations do not outweigh the benefits</td>
<td>22</td>
<td>52.4</td>
<td>14</td>
</tr>
<tr>
<td>MOTIVATION and GOALS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am motivated to act on these recommendations</td>
<td>33</td>
<td>78.6</td>
<td>19</td>
</tr>
<tr>
<td>There are incentives for following these recommendations</td>
<td>7</td>
<td>16.7</td>
<td>6</td>
</tr>
<tr>
<td>I follow the recommendations the same regardless of if someone is on methadone</td>
<td>6</td>
<td>14.3</td>
<td>3</td>
</tr>
<tr>
<td>MEMORY, ATTENTION and DECISION PROCESSES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following these recommendations is something I usually do</td>
<td>23</td>
<td>54.8</td>
<td>14</td>
</tr>
<tr>
<td>I am likely to remember to follow these recommendations in the future</td>
<td>28</td>
<td>66.7</td>
<td>15</td>
</tr>
<tr>
<td>Table 22: (Continued)</td>
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<tr>
<td>------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>BEHAVIORAL REGULATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am prepared to follow these recommendations now</td>
<td>12</td>
<td>28.6</td>
<td>7</td>
</tr>
<tr>
<td>There are things that help to prompt me to follow these recommendations</td>
<td>10</td>
<td>23.8</td>
<td>7</td>
</tr>
<tr>
<td>Implementing these recommendations is the same level of ease for all patients</td>
<td>5</td>
<td>11.9</td>
<td>3</td>
</tr>
<tr>
<td>I do not worry that following these recommendations might harm my relationships with my patients</td>
<td>25</td>
<td>59.5</td>
<td>15</td>
</tr>
<tr>
<td>I do not have more important things to discuss with my patients during pregnancy than these recommendations</td>
<td>33</td>
<td>78.6</td>
<td>19</td>
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<tr>
<td><strong>ENVIRONMENTAL CONTEXT and RESOURCES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am familiar with billing codes for these recommendations ***</td>
<td>4</td>
<td>9.5</td>
<td>4</td>
</tr>
<tr>
<td>There are not financial barriers to following these recommendations</td>
<td>7</td>
<td>16.7</td>
<td>5</td>
</tr>
<tr>
<td>There are environmental factors or resources that help me follow these recommendations</td>
<td>19</td>
<td>45.2</td>
<td>11</td>
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<td>There are not environmental factors or resources that hinder me follow these recommendations</td>
<td>11</td>
<td>26.2</td>
<td>6</td>
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<tr>
<td>The systems in place support me to follow these recommendations</td>
<td>19</td>
<td>45.2</td>
<td>9</td>
</tr>
<tr>
<td>The systems in place do not keep me from following these recommendations</td>
<td>20</td>
<td>47.6</td>
<td>12</td>
</tr>
<tr>
<td>If I had electronic medical record prompts, I would not be more likely to follow these recommendations</td>
<td>5</td>
<td>11.9</td>
<td>4</td>
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<tr>
<td><strong>SOCIAL INFLUENCES</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>People I work with follow these recommendations (e.g., other physicians/nurses)</td>
<td>7</td>
<td>16.7</td>
<td>6</td>
</tr>
<tr>
<td>Others I work with support me to follow these recommendations</td>
<td>4</td>
<td>9.5</td>
<td>4</td>
</tr>
<tr>
<td>I feel pressure to implement these recommendations</td>
<td>17</td>
<td>40.5</td>
<td>12</td>
</tr>
<tr>
<td>I think staff at other hospitals outside of mine follow these recommendations</td>
<td>4</td>
<td>9.5</td>
<td>2</td>
</tr>
</tbody>
</table>

* p < 0.05  
*** p < 0.001

Overall percent agreement was averaged by theoretical domain constructs and compared for in-hospital and out of hospital participants (Table 22). The highest overall average percent agreement occurred within the knowledge construct (77%), followed by beliefs about consequences (74.4%), and social/professional role and identity (73.8%). The lowest average
percent agreement occurred within the social influences construct (19.1%), followed by environmental context and regulations (28.9%) and motivation and goals (36.5%). The bottom three constructs for in-hospital and out of hospital participants mirrored the overall participants. The top three constructs for in-hospital and out of hospital participants were the same, although in different orders.

**Table 23:** Average Percent Agreement by Theoretical Domain Construct for In-Hospital and Out of Hospital Participants

<table>
<thead>
<tr>
<th>Theory Construct</th>
<th>All Participants</th>
<th>In-Hospital Participants</th>
<th>Out of Hospital Participants</th>
</tr>
</thead>
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<tr>
<td>KNOWLEDGE</td>
<td>77.0</td>
<td>75.0</td>
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<td>SOCIAL/PROFESSIONAL ROLE and IDENTITY</td>
<td>73.8</td>
<td>70.8</td>
<td>77.8</td>
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<td>SKILLS</td>
<td>47.6</td>
<td>43.0</td>
<td>53.7</td>
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<tr>
<td>BELIEFS ABOUT CAPABILITIES</td>
<td>61.9</td>
<td>62.5</td>
<td>61.1</td>
</tr>
<tr>
<td>BELIEFS ABOUT CONSEQUENCES</td>
<td>74.4</td>
<td>79.2</td>
<td>68.1</td>
</tr>
<tr>
<td>MOTIVATION and GOALS</td>
<td>36.5</td>
<td>38.9</td>
<td>33.4</td>
</tr>
<tr>
<td>MEMORY, ATTENTION and DECISION PROCESSES</td>
<td>60.8</td>
<td>60.4</td>
<td>61.1</td>
</tr>
<tr>
<td>BEHAVIORAL REGULATION</td>
<td>40.5</td>
<td>42.5</td>
<td>37.8</td>
</tr>
<tr>
<td>ENVIRONMENTAL CONTEXT and RESOURCES</td>
<td>28.9</td>
<td>30.4</td>
<td>27.0</td>
</tr>
<tr>
<td>SOCIAL INFLUENCES</td>
<td>19.1</td>
<td>25.0</td>
<td>11.1</td>
</tr>
</tbody>
</table>

Theoretical domain findings from the online survey were repeated for in-hospital participants to compare obstetrician participants to non-obstetrician participants (Table 23). Most responses were not statistically different between obstetrician and non-obstetrician in-hospital participants, with the exception of reporting that it is easy to act on these recommendations (p=0.04), being confident that the participant can follow these recommendations (p=0.018), there not being financial barriers to following the recommendations (p=0.041), not having environmental factors or resources that hinder following these recommendations (p=0.013), and that systems in place do not keep the participant from following these recommendations (p=0.047).
<table>
<thead>
<tr>
<th>Table 24: Agreement with Theoretical Domains-Based Survey Questions for Obstetrician and Non-Obstetrician In-Hospital Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Hospital Participants</td>
</tr>
<tr>
<td>#</td>
</tr>
<tr>
<td>39</td>
</tr>
</tbody>
</table>

**KNOWLEDGE**

- I am familiar with these recommendations: 14 (58.3%), 6 (50%), 8 (66.7%)
- I agree with these recommendations: 21 (87.5%), 11 (91.7%), 10 (83.3%)
- These recommendations are evidence-based: 19 (79.2%), 10 (83.3%), 9 (75%)

**SOCIAL/PROFESSIONAL ROLE and IDENTITY**

- Following these recommendations is part of an obstetrician's role: 20 (83.3%), 11 (91.7%), 9 (75%)
- Staff members other than the obstetrician are best suited to follow these recommendations: 14 (58.3%), 8 (66.7%), 6 (50%)

**SKILLS**

- It is easy to act on these recommendations: 9 (37.5%), 2 (16.7%), 7 (58.3%)
- There are particular skills involved in implementing these recommendations: 17 (70.8%), 9 (75%), 8 (66.7%)
- I do not need to develop the skills necessary to follow these recommendations: 5 (20.8%), 1 (8.3%), 4 (33.3%)

**BELIEFS ABOUT CAPABILITIES**

- I am confident I can follow these recommendations: 18 (75%), 6 (50%), 12 (100%)
- I am well equipped to follow these recommendations: 12 (50%), 5 (41.7%), 7 (58.3%)
- Implementing these recommendations will be beneficial for me: 17 (70.8%), 8 (66.7%), 9 (75%)
- Implementing these recommendations will be beneficial for my patients: 23 (95.8%), 11 (91.7%), 12 (100%)
- Implementing these recommendations will be beneficial for my hospital or employer: 22 (91.7%), 11 (91.7%), 11 (91.7%)
- The costs of following these recommendations do not outweigh the benefits: 14 (58.3%), 8 (66.7%), 6 (50%)
### Table 24 (Continued)

#### MOTIVATION and GOALS

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>16.7</th>
<th>2</th>
<th>16.7</th>
<th>2</th>
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<tbody>
<tr>
<td>I am motivated to act on these recommendations</td>
<td>19</td>
<td>79.2</td>
<td>10</td>
<td>83.3</td>
<td>9</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are incentives for following these recommendations</td>
<td>10</td>
<td>41.7</td>
<td>5</td>
<td>41.7</td>
<td>5</td>
<td>41.7</td>
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<tr>
<td>I follow the recommendations the same regardless of if someone is on methadone</td>
<td>3</td>
<td>12.5</td>
<td>1</td>
<td>8.3</td>
<td>2</td>
<td>16.7</td>
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#### MEMORY, ATTENTION and DECISION PROCESSES

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<tr>
<td>Following these recommendations is something I usually do</td>
<td>14</td>
<td>58.3</td>
<td>6</td>
<td>50</td>
<td>8</td>
<td>66.7</td>
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<td></td>
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<tr>
<td>I am likely to remember to follow these recommendations in the future</td>
<td>15</td>
<td>62.5</td>
<td>7</td>
<td>58.3</td>
<td>8</td>
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#### BEHAVIORAL REGULATION

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<tbody>
<tr>
<td>I am prepared to follow these recommendations now</td>
<td>7</td>
<td>29.2</td>
<td>2</td>
<td>16.7</td>
<td>5</td>
<td>41.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are things that help to prompt me to follow these recommendations</td>
<td>7</td>
<td>29.2</td>
<td>2</td>
<td>16.7</td>
<td>5</td>
<td>41.7</td>
<td></td>
<td></td>
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<tr>
<td>Implementing these recommendations is the same level of ease for all patients</td>
<td>3</td>
<td>12.5</td>
<td>2</td>
<td>16.7</td>
<td>1</td>
<td>8.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not worry that following these recommendations might harm my relationships with my patients</td>
<td>3</td>
<td>12.5</td>
<td>1</td>
<td>8.3</td>
<td>2</td>
<td>16.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not have more important things to discuss with my patients during pregnancy than these recommendations</td>
<td>19</td>
<td>79.2</td>
<td>9</td>
<td>75</td>
<td>10</td>
<td>83.3</td>
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#### ENVIRONMENTAL CONTEXT and RESOURCES

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<th>Description</th>
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<th>16.7</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>I am familiar with billing codes for these recommendations</td>
<td>4</td>
<td>16.7</td>
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<td>16.7</td>
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<td>16.7</td>
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<tr>
<td>There are not financial barriers to following these recommendations</td>
<td>5</td>
<td>20.8</td>
<td>1</td>
<td>8.3</td>
<td>4</td>
<td>33.3</td>
</tr>
<tr>
<td>There are environmental factors or resources that help me follow these recommendations</td>
<td>11</td>
<td>45.8</td>
<td>4</td>
<td>33.3</td>
<td>7</td>
<td>58.3</td>
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Table 24 (Continued)

<table>
<thead>
<tr>
<th>There are not environmental factors or resources that hinder me follow these recommendations *</th>
<th>6  25  0  0  6  50</th>
</tr>
</thead>
<tbody>
<tr>
<td>The systems in place support me to follow these recommendations</td>
<td>9  37.5  2  16.7  7  58.3</td>
</tr>
<tr>
<td>The systems in place do not keep me from following these recommendations *</td>
<td>12  50  3  25  9  75</td>
</tr>
<tr>
<td>If I had electronic medical record prompts, I would not be more likely to follow these recommendations</td>
<td>4  16.7  2  16.7  2  16.7</td>
</tr>
<tr>
<td><strong>SOCIAL INFLUENCES</strong></td>
<td></td>
</tr>
<tr>
<td>People I work with follow these recommendations (e.g., other physicians/nurses)</td>
<td>6  25  2  16.7  4  33.3</td>
</tr>
<tr>
<td>Others I work with support me to follow these recommendations</td>
<td>10  41.7  3  25  7  58.3</td>
</tr>
<tr>
<td>I feel pressure to implement these recommendations</td>
<td>4  16.7  2  16.7  2  16.7</td>
</tr>
<tr>
<td>I think staff at other hospitals outside of mine follow these recommendations</td>
<td>2  8.3  1  8.3  1  8.3</td>
</tr>
</tbody>
</table>

* p < 0.05

The percent agreement for each question was averaged by Theoretical Domain construct (Table 24). The highest overall average percent agreement was found within the beliefs about consequences construct (79.2%), followed by knowledge (75%), and social/professional role and identity (70.8%), which were also the three constructs with the highest average percent agreement for all participants. The lowest overall percent agreement occurred within the social influences construct (22.9%), followed by environmental context and resources (30.4%), and behavioral regulation (32.5%). Average percent agreement for the environmental context and resources was much lower for obstetrician participants (16.7%) than for non-obstetrician participants (44%).
Table 25: Average Percent Agreement by Theoretical Domain Construct for Obstetrician and Non-Obstetrician In-Hospital Participants

<table>
<thead>
<tr>
<th>Theory Construct</th>
<th>Average % Agree (based on positive scoring)</th>
</tr>
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<tr>
<td></td>
<td>In-Hospital Participants</td>
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<tr>
<td>KNOWLEDGE</td>
<td>75.0</td>
</tr>
<tr>
<td>SOCIAL/PROFESSIONAL ROLE and IDENTITY</td>
<td>70.8</td>
</tr>
<tr>
<td>SKILLS</td>
<td>43.0</td>
</tr>
<tr>
<td>BELIEFS ABOUT CAPABILITIES</td>
<td>62.5</td>
</tr>
<tr>
<td>BELIEFS ABOUT CONSEQUENCES</td>
<td>79.2</td>
</tr>
<tr>
<td>MOTIVATION and GOALS</td>
<td>44.5</td>
</tr>
<tr>
<td>MEMORY, ATTENTION and DECISION PROCESSES</td>
<td>60.4</td>
</tr>
<tr>
<td>BEHAVIORAL REGULATION</td>
<td>32.5</td>
</tr>
<tr>
<td>ENVIRONMENTAL CONTEXT and RESOURCES</td>
<td>30.4</td>
</tr>
<tr>
<td>SOCIAL INFLUENCES</td>
<td>22.9</td>
</tr>
</tbody>
</table>

Factors related to screening identified by qualitative interview participants, either facilitators or barriers, were categorized into levels: patient factors, provider factors, practice factors, and community factors (Figure 8).

Patient-Level Screening Facilitators

While several patient factors related to screening were discussed by participants, many of them were only described in the context of screening barriers.

Therefore, two main facilitators of screening were described. First, the patient would need to be present for appointments to be screened. One participant mentioned that the biggest factor related to her screening was having her clients present for their appointments. “Mostly catching people, you know, for them to keep their appointments.” (P07, RN). Other participants mentioned that during COVID, having remote telehealth or telemedicine visits improved appointment attendance and reduced appointment no-shows. One participant described a benefit of telemedicine to help the client or patient build rapport with the provider and allow them to feel more comfortable in appointments. “Currently, right now, telemedicine has been
huge. I think that has helped to break down barriers between moms to where they feel more comfortable.” (P04, RN).

The second patient factor that facilitated screening was their willingness to be screened, to be honest with screening and to accept resources based on their screening findings. Most of the participant responses related to patient willingness were described as barriers to screening. However, one participant described how individuals who are involved in a substance dependency program are motivated to get help and participate in various programs and

**Figure 8:** Diagram of Identified Screening Facilitators and Barriers

The second patient factor that facilitated screening was their willingness to be screened, to be honest with screening and to accept resources based on their screening findings. Most of the participant responses related to patient willingness were described as barriers to screening. However, one participant described how individuals who are involved in a substance dependency program are motivated to get help and participate in various programs and
resources, all of which were predicated upon their willingness to first disclose substance use. “Someone who is in a treatment center [has] clearly demonstrated their motivation to get help. They’re in a system, they have, like most of the systems have counseling available and housing options. They’re linked into resources versus those patients who aren’t [in treatment].” (Po2, MFM).

Patient-Level Screening Barriers

On the other hand, several patient factors served as barriers to timely and accurate screening. First, there were many barriers to patients attending appointments. Several participants spoke to practical and functional barriers to attending appointments.

Transportation was discussed several times by several participants. One participant discussed the lack of good public transportation in their county and how travelling by bus to appointments could take several hours. “It can take them four hours to get to a clinic visit with our bus system.” (Po4, RN). Another participant talked about their patients without reliable transportation and how that may prevent them from participating in daily outpatient methadone programs, although the transportation barriers could also prevent attending prenatal care appointments, as well. “Trying to get them connected to a treatment program is really difficult. And they have to go like every day and stuff like that. Especially for people who don’t have a driver’s license, don’t have any transportation, how in the world are they going to get to [a methadone clinic] every day?” (Po1, OB).

Other participants mentioned how patients may receive inadequate or late-entry prenatal care. “Our population have some challenges. Sometimes they don’t... receive prenatal care or not enough and stuff like that.” (Po5, NP). One program administrator participant described that many women with substance use were late to obtain prenatal care.

[My biggest concern is] just seeking the treatment and coming in at an earlier stage. You know, unfortunately, we’re getting a lot of women who are not already our patients that are finally coming into treatment. They’re doing it so late in their
pregnancy. So, finding a better way to get in touch with them earlier in their pregnancy versus in the last 10 weeks so we can try to decrease the poly substance use that's going on during their pregnancy or in their earlier phases of their pregnancy.

P12, Adm

This participant went on to describe that late prenatal care entry among women in substance dependency treatment programs may be related to clients considering whether to terminate the pregnancy and also having limited options for prenatal care that will accept pregnant patients with opioid use disorder.

The hardest part we have is actually getting them to go to the prenatal care, especially because a lot of them [are considering terminating] or keeping the pregnancy. So, then they just don't seek out the prenatal care as early on as they should. So that's been the hardest thing that I have personally found was just making sure that they are going to prenatal care from the beginning and finding a provider that will work with them. P12, Adm

Other factors related to attending prenatal care appointments related to the use of biologic screens for substance use. One participant mentioned that biologic screens were being used in practices despite their recommendation by national obstetric and women’s health organizations. “There are some groups that are actually screening with the urine tox screens, which none of the national organizations are really endorsing, but there are certainly places... So that, you know, that presents a barrier for women getting prenatal care.” (P03, MFM).

Similarly, women could be discharged from their prenatal care practice for substance use. “They're being kicked out [of prenatal care].” (P04, RN). Being discharged from prenatal care served as a barrier to screening and obtaining services for several reasons. Since women would need to find new obstetric providers, there may be a delay in appointments. Additionally, because identification of their substance use led to being discharged, the process of developing trust and rapport with a new provider and being willing to discuss substance use may be difficult and/or time-consuming. For these reasons, being discharged from an obstetric practice may prevent identification of the full spectrum of needs and patient willingness to disclose and receive related programs and services.
One participant discussed how patients with opioid use disorder or other substance dependence often have a variety of other medical issues to address at appointments, which may serve as a barrier to screening because of the time limitation in appointments.

So often these patients have a multitude of problems or issues and they may or may not have recollection of all of the care that they've been receiving or knowledge of it. You often want to address every single problem that [they] have [but we’re] on a tight schedule there with limited reimbursement for both consultations and for discussions. And also [patients have] limited knowledge of what’s going on... So, I think that those can be some of the constraints. P03, MFM

This participant went on to describe how they may not be able to address substance use during an appointment because of the time required to address other health issues. “It’s the importance of the patient’s other problems and my timeline. So that if I get too bogged down in something else, I might write, ‘Due to our long discussion of the patient’s heart disease, we were unable to address their substance use disorder. Please address at the next visit.’ It may get delayed.” (P02, MFM).

In addition to co-occurring medical issues, patients may also display certain attributes that would prevent screening altogether at that appointment. For example, patients with psychosis may not receive a screen because the screen may not be valid or useful.

If [the patients] really have just dosed up with whatever their drug of choice is, sometimes you can't get the information, you can't screen. You can't do whatever you need to do. So, some of that is if it interferes with your ability to do it... I think a frank psychotic patient I probably wouldn't do all the screening with just because you may not get useful information and it may just direct patients in too many different directions. But I can't think of a lot of reasons why I wouldn't do it. I ask patients about it. Even every time I do a consult, I ask. So, I think there aren't very many situations in which I wouldn't. P03, MFM

Another participant described other attributes that may prevent screening, such as being in a manic state or having cognitive delays.

Realistically, there [are]... two kinds of patients that definitely I would screen less. And not because I don’t care about them. A lot of them have to do with it if they have psychiatric conditions and are, for example, in a manic state. I’ve had that where it's very difficult to manage that patient because they're literally not receptive to anything you’re saying... The other patient population would be those who have cognitive delays that wouldn't allow for, again, that kind of an exchange... Cognitively, they're maybe not understanding fully of what's going on in their own life because they just don’t have
the mental capacity of it or for some reason if their caregivers [is] more directly in charge of the visit. But I can count on one hand how many times have happened in four years for me. So, it's not often. P09, FNP

However, both participants made it clear that these patient attributes that prevent screening are very rare.

Patient willingness was previously described as a facilitator, but also was described in negative as a barrier. One aspect of patient unwillingness to be screened stemmed from a lack of trust with the provider or healthcare system. One participant discussed their biggest concern for pregnant patients with opioid use disorder being that they will have a negative encounter within healthcare that causes the patient to lose trust.

*But my biggest concern is that [patients] will have one encounter [with the healthcare system] that is not a savory encounter and therefore they lose trust in health care. They lose trust in medicine; they lose trust in following up and compliance and in medical care and then therefore [have] a bad outcome because of that... So, in reality that's like my biggest concern with these moms is the number of encounters they have throughout her pregnancy and throughout that initial postpartum period. And the chances or the odds that they're going to have one encounter no matter who it's with. Whether it's [with] the financial lady above the hospital or whether it's their actual OB provider, who knows where it is. But these moms are easily triggered, just like any mom that's pregnant no matter their history and can have a bad experience and then really throw them into things that that cause bad medical outcomes. P11, Ped*

Another aspect of unwillingness is for patients to not be forthcoming with their lived experience during screening. This may manifest itself as the patient shutting down, not wanting to or being willing to disclose substance use or to refuse screening. One participant described patients shutting down and needing to be screened at a subsequent appointment. “*If they shut down or they don’t want to discuss [substance use], then they may need to be screened in a different way or at a later time.*” (P02, MFM). Another participant described patients not being willing to disclose substance use. “*Sometimes people aren’t forthcoming. They don’t want to talk about it or they’re not forthcoming with the cornucopia of drugs that they’re using.*” (P14, RN). Similarly, another participant mentioned that patients may not be truthful with providers. “*Sometimes patients may take [screening] negatively or not [be] truthful. Often that’s because they’re concerned about being able to maintain custody of their children or concerned that if*
they acknowledge the things that they’re doing that they’ll be taken away.” (P02, MFM).

Relating to not being truthful, some patients may be high from substance use or coming down from a substance high that they say anything to their providers to get the screening over with. “It starts to come out [that the patient] was tired... dope sick... [didn’t] want to deal with [screening]... didn’t like that person [doing screening]... Whatever the case may be. And they just kind of blurt out whatever answer comes to mind just to get it done.” (P08, LMHC).

An additional aspect of unwillingness is that patients may be unwilling to participate in screening or to share vital information about their substance use. One participant discussed how some patients may be receiving methadone outside of the context of a methadone clinic. When this obstetrician asks patients about their methadone use, they ask where the patient obtains their methadone and sometimes patients are not willing to disclose their methadone source. “She may be getting her Methadone, hopefully she’s getting it from a methadone clinic, a MAT clinic. Anything less than that with any of these, then we’ve got a problem... Most of them are getting the methadone from the MAT clinic. And the Subutex, they’re getting it either from a friend, which a lot of it is diverted, or they’re getting it from a doctor in town, or [are not willing to] tell [their provider].” (P10, MFM)

A final aspect of unwillingness is that many patients fear the repercussions of positive screens, such as DCF involvement, their child being taken away, and potential incarceration or other punitive measures. One participant mentioned that the biggest fear, for many patients, is that their baby will be removed from their care and custody because of discovery of their opioid or substance use. “A lot of [patients] don’t want to disclose because of bias or because of fear that the baby will be taken. That’s the biggest thing that they have.” (P01, OB). Another participant mentioned different outcomes of identification of substance use that might be undesirable or cause a patient to not want to disclose substance use. “And the negative out of [screening is that] the baby [might be removed] from the mom. Or [the mother] can be
incarcerated, depending on the severity. And mom also will be a court-ordered to attend classes and stuff like that.” (P05, NP).

Finally, social support and relationships with other people were described as a potential barrier to screening. Specifically, during telehealth visits over video chat during COVID, the provider performing screening may be unaware of who is present but not visible on the video chat screen. One participant discussed how a patient’s social circle may impact substance disclosure but that a provider may not always know who is present during telehealth visits. “Probably their relationship with family and friends, how they’ve been treated in the past [might impact their willingness to disclose]. Sometimes just environment is, are there other people around? We try and encourage it to be somewhere that’s private. But especially with video chats, I try and find out who’s there but sometimes you can, sometimes you can’t.” (P07, RN).

Provider-Level Screening Facilitators

Factors related to screening at the level of the provider included patient-provider relationship; knowledge; skill; experience; motivation, emotions, and beliefs; goals and priorities; and concerns. Certain elements of the patient-provider relationship were identified as screening facilitators. First, trust and rapport between the provider and patient were important. One participant described the importance of patients and providers being able to communicate effectively and relate to each other.

*Being able to explain them in a language that each patient would understand instead of going through the screenings, and it just feels like more questionnaires that they have to answer and more things that they have to sift through and do with it, as some patients would say. They kind of want to get in, get out and be done. It’s like, no, this is why we need to do these things. And this is how it needs to be done. But just in a language that they can better understand and maybe cut down on... where the patient feels like the medical staff is so much above where they are that they couldn’t possibly relate to one another. Po8, LMHC*
Another participant mentioned the importance of having a welcoming manner and striving to develop rapport with the patient prior to screening. “I think that they would need to have kind of a warm manner with the [patient] and then at least try to establish some sort of rapport with the [patient] before diving into the screenings.” (P06, PE). Another participant built on the importance of rapport by suggesting that patients may be more open and honest with screening after rapport is built. “I guess when you develop that relationship, maybe they’re a little bit more open to discussion about that.” (P14, RN).

Several participants described their approach to build and develop rapport with patients. One participant talked about supporting their clients. “[Rapport is built] by not being accusatory or having an attitude [and] supporting the client regardless of their actions or judgments.” (P07, RN). Another participant described their approach being particularly valuable in the jail setting. “So, I think that’s the biggest thing is to just be able to approach them with a non-bias, not blaming them because especially in the jail setting, I’ve found that that’s the best way to connect to people.” (P01, OB). Finally, a participant talked about having a non-judgmental attitude and humility about being welcomed into a client’s home.

How do I approach building trust and rapport? I guess I have a nonjudgmental attitude. And I think that’s really critical when especially when somebody gives me permission to come into their home. I feel like that’s such a privilege that I’m humbled to be allowed into another person’s home. And so, I think having a nonjudgmental attitude, no matter. I mean, I’ve gone into places that were very chaotic looking... But I think by being able to really see into the person, not necessarily the environment that’s there, that maybe I’m better able to develop that rapport with people. P14, RN

Another element of the patient-provider relationship is that of having empathy and wanting to understand the patient or client’s story. One participant described their empathy towards their clients.

I tend to have a lot of... empathy for them because there’s just not a lot of malicious reasons why somebody wants to abuse opiates. Nobody wants to put themselves in that situation and nobody really wants to endanger the life of their babies. I feel bad for them. I feel [like] I want to understand more of what brought them to this situation... but I try not to judge them. I think that’s not going to do anybody any good anything. I try to be empathetic and I mostly I just feel bad for them. And hopefully can help them somehow. You know? P09, FNP
A medical assistant mentioned their desire to hear their patient’s story about why they are on opioids. “I mean, obviously [I want] to find out why they’re on opioids. Did they have like a chronic back pain and the doctor just kept pushing opioids on them instead of helping them actually? And try to understand, like the reasoning [for using].” (P15, MA).

Participants also described the importance of having a trauma-informed care approach with their patients and clients. One participant talked about how to approach patients with a trauma-informed approach and how it benefits their relationship.

To do that trauma informed care training and really be informed about it and make sure that it’s being implemented in your practice... But the biggest thing is making sure patients show the truth, like not lying to them, letting them know what you’re there for, that your there for the safety of them and their child. Just being honest with them and then making sure that your own bias is not showing, and they know that they can trust you. I think that that goes a really long way in understanding that past traumas do affect the way that they are as adults. I think that’s huge and knowing and not judging people from where they’re at today. P04, RN

A pediatrician described how a person with any role in healthcare, utilizing a trauma-informed approach, could do a good job at screening.

Because honestly, I think that when it comes to the question of who is best to provide [screening], I do not think that there is the credential, a board certification, a schooling, or an educational pathway that proves that someone is the best equipped to do it. I think it is personal skills. I think that is the ability to build rapport, come from a perspective that’s well-informed, trauma-informed and history informed in order to provide the best way of screening. So that could be a pediatrician, that could be an OB-GYN, that could be a social worker, that could be a nurse. That could be anybody. That could be Joe Schmoe. It could be nobody. You know, our home visitation services through Healthy Start, those are not nurses. Those are not health care professionals. And they do really great screening. So, I do not think that it is specifically a job or a position that is the best at doing it. I think it’s people. And so, I think it’s the people that are best equipped to provide proper care for these moms that screen the best... I don’t think that there is a role or credential that deems them the best person to screen. P11, Ped

In terms of knowledge, several aspects of knowledge facilitated screening. First, procedural knowledge, or knowledge related to how to perform a screen for opioid use and related screens, was important. One participant described the importance of education, retention of information, and experience leading to a greater level of skill in terms of screening.
Definitely having that education piece and then following up and making sure that [it] stays fresh in our brains, especially in offices like mine [where] we don’t typically see a whole lot or do a whole lot of [opioid screens, it] tends to be forgotten... And the retention of doing what we do in a course, the more you it, the more second nature comes and the less another thing to check off your list. And the more comfortable you are with it. P09, FNP

Another participant mentioned the importance of buy-in and universal education for staff and providers at all levels to have greater knowledge about screening and navigating positive screens. “You have to have buy-in to have education and [provide it for] all people at all levels to understand why you’re doing it and what to do if somebody is positive. And bias training [is also needed].” (P01, OB).

Another form of knowledge that was described by participants is that of experiential knowledge. This includes visiting a practice or agency to better understand the lived experience of participating as a patient or client and better understanding what and how services are provided. One participant described how they toured a substance dependency treatment facility, and that their experience with the tour helped them to understand services like providing childcare that were valuable to be aware of and to inform communication with patients.

Several of us got the opportunity to tour [a substance dependency treatment facility] not so long ago. And understanding what they have there really helps me to talk to women about it. But so that’s encouraging. Understanding what the services are and being able to tell women these things are out there for you. They can help you with your childcare, you know. Women who will go and stay at [the treatment facility] after their delivery have childcare. They have their own room. They have all these opportunities for support. They have Healthy Start there. They have all of these opportunities to make some changes. And so those are the things that would encourage me to do [screening]. P03, MFM

Another participant spoke of another aspect of procedural knowledge, where they described how visiting practices that had implemented screening in an exceptional way in which other providers could visit the practice to better understand and envision implementation at their own practice.

I think demonstration of best practices at other institutions or other locations I think is the biggest thing because if you can convince someone [that screening] is not a whole bunch of more work, this is for the benefit of the patient, this is for better outcomes, than I think you’ve sold them. I think a lot of times when these statements come out and
they say, here’s the recommendation, then in reality the biggest headache of a provider is how do I implement this? Not how do other people do it and how is it beneficial overall? Because obviously these are coming from places that have good intent... But the perspective of the provider is [that] this is another thing I need to put on my questionnaire, or this is another thing the nurse has to ask. This is another 10 minutes that I need to spend with the patient. In reality... these institutions or these practices have implemented this. Look how they do it and look at their outcomes. They’re actually screening for something that we were not uniformly screening for in the past. And their outcomes are better for it. They are making just as much money... they're getting reimbursed and they’re doing just as well, if not better, in regard to overall outcomes. P11, Ped

Skill was described as a facilitator of screening, in terms of having skill in completing screens for opioid use. One participant described how obstetricians already have skill navigating conversations that can be difficult and rife with breaking social norms, such as discussing whether a pregnancy resulted from the union of related partners.

*I talk to people about their genetic background and ask if they’re related in any way to their partner. And some people will tell you yes. And other people will laugh. And, you know, you just have to ask everybody because there are people who are... So, it’s kind of the same thing, you just ask everybody. And you just make it part of your routine and you say, ‘I always ask these questions,’ and then you just ask them. And then there’s no judgment with them... If you make it a routine, then the patients feel like it’s a routine. And they would be more apt, I think, to [answer] rather than feel like you’re making some judgment about them...* P03, MFM

This participant described discussing genetically related parents as a potentially awkward and uncomfortable discussion due to the social unacceptability of intercourse between relatives, which was related to the discussion of opioid use during pregnancy. Another participant mentioned the importance of the screening provider having certain characteristics, such as authenticity, to demonstrate skill in screening and be able to successfully screen pregnant women. “I think it really depends on the authenticity of the person asking the questions whether or not that mom is going to care enough to actually answer the question.” (Po6, PE)

Experience was described as a facilitator of screening. One relevant type of experience is previous experience with screening patients that was positive or being exposed to success stories where screening led to a positive outcome. Several participants discussed hearing stories of
women in recovery in terms of a facilitator of screening. One participant mentioned, “I think hearing about women’s stories about recovery encourages you to do it. Any time you can make an impact.” (P03, MFM). Another participant had a similar perspective. “I would say I’m encouraged to use [screening tools] because I’ve seen the patients that are identified through them and then the assistance that they can get because of it. And their successes.” (P04, RN). A participant mentioned specifically hearing stories of women who were supported into recovery by their obstetrician. “Once you listen to the women, some of whom were encouraged into recovery by OBs, once you see the impact that made on even just one person’s life, that should be motivating enough to do the behaviors. A lot of it is just listening.” (P03, MFM).

Another participant described the joy she experienced by having clients who had positive outcomes.

_I've had actually three women are totally clean now. They're not in medication-assisted treatment programs. So that's really rewarding by supporting them through their journey. I think that the support of these women in saying that I believe in them or I'm proud of what they're doing or that they're inspirational to other people, helps build that self-esteem because that's a big problem with the women. So, I really love feeling like if I do any small thing to improve the outcomes..._ P14, RN

Finally, a participant talked about the experience of having a patient who was happy to be asked about her substance use, and, ultimately, had a positive outcome.

_I think some [patients] are happy that you asked. I was just thinking about a patient that was at [my clinic]. We saw her in the hospital first. She was high on methamphetamines and heroin. She had a horrible cellulitis from her injection sites... she had these horrible lesions, all of her legs. And then we actually got her into [treatment] while she was in the hospital, or we started her on methadone, I think, in the hospital. And then she continued at [treatment] and she came to the clinic. And to just see her in her recovery phase, that was very helpful. Patients can show you where they can go. And then she came into Labor and Delivery she had her mental health issues for sure. But she was a different, much different person than when she came in the first time. So, even just a couple experiences like that will keep you doing the screening._ P03, MFM

Motivation, emotions, and beliefs were identified as another facilitator of screening. Motivation was generally related to the reasons or beliefs that motivated a provider to perform screening. There were several motivators for screening described by participants. First,
providers were motivated to identify patients or clients who had hidden or unknown substance use. One participant mentioned the screening is positive because it identifies patients whose substance use is unknown. “I think the positive reasons to do it is mostly to make sure that we’re catching people who have substance abuse that they may not talk about if we just don’t ask it, and we don’t make it a priority saying that this is important for us to talk about.” (P01, OB).

Another participant discussed the desire to identify substance use and help fill knowledge gaps by connecting women with substance use to local agencies or treatment programs.

“I think [the screening is] important because it’s a huge amount of our population that are having [opioid use] and probably more than actually admit to it or will answer our initial questions. So probably really important. And then, just in my interactions with the patients, there’s a lot of lack of knowledge, or um, knowing about what’s the best treatment or where they can get care. So, I think it’s important.” (P02, MFM)

This motivation bridged both wanting to identify use and to connect women with services and programs to support her recovery and other identified needs. This was also discussed by a participant who was motivated by being able to refer women for services. “So good things [that could come out of screening] - you could identify patients that need therapy and who possibly [need] mental health [services], as well as put them on a directed therapy and, hopefully postpartum be able to wean them. And, you know, get them out of potentially dangerous situations.” (P02, MFM).

One participant discussed being motivated to screen women in an effort to prevent neonatal abstinence syndrome in infants.

“I think it’s a good idea [to screen] and we should always be connecting with patients like that. So, I have always done that. So that isn’t something that’s different for me. I feel strongly that we should be doing it. But it doesn’t make me feel burdened in any way. And when you can make an impact, even a little one for someone, that is very gratifying. And if you could prevent one patient from getting neonatal withdrawal, that would be all you needed to do, right? So, if each one of us could prevent one, even that would help. Or having a patient say something to you, like thank you for talking to me the way you did or you’re the first person to listen to me.” (P03, MFM)
Similarly, this participant mentioned how pregnancy is an opportune time to intervene because of women’s motivation to make life changes in preparation for motherhood and to optimally provide for their infant.

*It makes me sad [when pregnant patients use opioids], I guess that that's where they are. And it makes me want to try to get them help because it's not, I guess that's my judgment, but it's not a good place to be. And I think most people would tell you that as well... A lot of women try to avoid withdrawal symptoms and how sick that makes them, and if we can try to get them to a better place, with both they and the baby without feeling those feelings that they're trying to avoid so much, then we have an opportunity, right? And [for] women, pregnancy is a good time because women will do things for their baby that they may not do just for themselves.* P03, MFM

In addition to referring women for services, one preventing maternal mortality, particularly during the postpartum period, was discussed by two participants. One participant mentioned being motivated to get women into treatment to best prevent postpartum overdose and death.

*I think trying to screen everybody and then anybody who screens positive getting them into care is really important especially for baby wellbeing and mom wellbeing. Especially with our high maternal mortality in the first year after delivery for moms who have substance abuse disorder. So, the biggest thing I have to stress is that treatment is the most important. Medication-assisted treatment is better than no treatment and the risk of relapse is really bad if they try to wean off of it, so I think trying to get people into care is the biggest thing.* P01, OB

Another participant discussed the importance of putting supports in place to prevent relapse among women who sought treatment for substance use. “*Our biggest concern is relapse. That's the biggest thing. Making sure that we can provide them whatever they need to where relapse doesn't happen. So, we're there to support them with anything.*” (P04, RN). This participant went on to mention the importance of providing resources for the mother to be healthy. “*Being able to identify them and provide resources to assist the mom with being the best that she can be.*” (P04, RN)

Some participants discussed being motivated to screen in order to improve or optimize clinical outcomes. One participant mentioned that by intervening early in the pregnancy, the mother, and infant would be best positioned for better outcomes. “*In what ways do I feel...*
positively? Well, I guess because the earlier you identify the need, the earlier you can provide 
the intervention and goal is to get better long-term health outcomes. So, the earlier the 
intervention, the more likely you are to get better outcomes.” (P14, RN). This participant also 
described their desire to support clients in meeting their health goals, which is another potential 
clinical outcome. “My job as a nurse is to be an advocate for the client and to teach the client, 
hopefully help them be advocates for themselves and for their baby. And so, if I can help people 
achieve better health goals by doing that, that’s my goal, is to try and help them overcome 
those social determinants of health that impact their ability to achieve their health goals.” (P14, 
RN). Another participant also focused on improving clinical outcomes. “Hopefully, [my biggest 
希望] would be to improve clinical outcomes and patient outcomes, the quality of life, all of 
that. Because if we can intervene in a timely manner and hopefully prevent issues from 
becoming bigger issues or help if there’s an ongoing issue, provide resources for patients and 
help where they need it.” (P09, FNP).

Finally, a participant described their desire to help clients gain confidence and self-
respect in an effort to help overcome substance dependency.

The biggest hopes [I have for pregnant women with opioid use disorder] are that they 
can gain that confidence in themselves and the self-respect, respect for themselves and 
the confidence so that they can see themselves as some somebody other than an addict, 
so that they can see themselves as a person that’s worth loving and caring for. Because 
I’ve had people when I offer to help them, they say, well, why would you? Why wouldn’t I, 
you know, like when I go out of my way to help them. So, I think a lot of people that 
have opioid use disorder, I have such compassion for them because their stories are just 
so impactful. Many of them started at a very early age and some of them was by 
introduction from a family member or as a result of being in a situation like an abusive 
situation, poor foster care, or some kind of sexual abuse. And then they turned turn to 
it. And then they’re stigmatized by society, even if they have to go to the E.R. for care. 
There’s a stigma against people that are in a medication-assisted treatment program... 
They’re trying the best they can, but it really hurts their self-esteem. So, I try and help 
persons see their own beauty in themselves and try and help them see that there are 
things outside of that dependency that they can take joy and fulfillment from, whether 
it’s, you know, from parenting or getting into, you know, butterfly gardening... So, it’s 
just finding the truth in themselves, I guess, and on how to be able to have that self-
esteeem so that they can be productive people in society. P14, RN
Participants also described beliefs about screening being important and valuable. One participant mentioned, “I think they’re valuable [screening] tools, certainly, to identify where the person is and what is needed going forward.” (P07, RN).

Goals and priorities were also described as screening facilitators. An example of this is having an implementation goal of universal secondary screening. One participant talked about the importance of ongoing screening for cigarette use due to their experience that people generally refuse help for cigarette smoking when it is first mentioned but may be more willing to receive assistance over time.

Well, [the AIM screening recommendations] sounds very thorough. And, also, what like, if you offer tobacco cessation to smoking mom, they’re going to usually say no the first time. But if you keep offering them, you know, maybe the third time. Maybe by the third time, they’ve evolved to a point, which they’re like, well, maybe I’ll give Tobacco Free Florida a call then. I think it’s not a one-time shot because a lot of these behaviors are much harder to change than just saying, hey, I’m going to screen you and you came out positive. What are you going to do about it? I mean, it just depends on... meeting them in whatever phase of recovery they are in, because if they’re not in a phase where they are going to be seeking change on certain things, then it’s not going to work that first time. P06, PE

In this way, having a goal or belief that ongoing screening is important facilitates periodic or regular screening.

Provider-Level Screening Barriers

Many of the facilitators of screening also functioned as barriers, as well. Concerns about screening disrupting the patient-provider relationship could potentially impact screening. One obstetrician described how screening can feel like approaching law enforcement and punishment from a provider perspective.

...And a lot of it comes down to, I think some physicians ultimately feel that if we are screening for [opioids] and we know about it then we’re getting into a little bit of law enforcement kind-of issues and then we disrupt the patient provider relationship if you’re drug-testing somebody. You have to kind of walk that line of being like, I’m not here to punish you, I just want to help you but then they also know that when I chart that DCF is gonna get involved and that just becomes like a really weird patient provider relationship at that point because you’re, I’m not trying to punish you, I just
have to, like, put it in the chart because it’s what’s going on but social work is going to see it and then DCF may get involved.” P01, OB

Provider judgement towards patients can also impact screening. While several participants described scenarios that may indicate some level of internal judgement towards patients, one participant more thoroughly described their internal biases and the need to minimize them.

I have plenty of internal biases. I just have to tamp it down. Because you want to blame [the patients], like, why the hell are you doing this? This is bad, you know it’s bad. Why are you using heroin? This’ll wreck your life. But I think it’s similar to racial bias, you just have to self-correct and I know that I have bias. Racial bias really may flair all the time and I have to be like, no I’m not going to act on that. The same thing, you have substance use bias, and you have to say, no, I’m going to treat her like I do any other patient and it’s also kind of hard because a lot of these patients can be kind of manipulative, so you also have to be careful. It’s kind of a weird dance. You have to trust; you have to believe them and take their words for it, but you also have to have a healthy realization that they may or may not be being truthful because of their disease. P01, OB

Another participant comment addressed the need to accept patients where they are at and not take it personally if they are not ready to seek treatment for substance use.

But when I’m doing [screening] myself, I think talking to the patient, establishing a good enough rapport with them to be able to talk about this, this is kind of a sensitive issue, is not easy. You have to be able to do that fairly quickly during a triage visit, right? And then not every patient is ready. So, you have to not, it’s not a personal defeat if that person isn’t ready to follow through with MAT and all that. P03, MFM

Knowledge was viewed as a barrier when it was positioned as a lack of training or knowledge about screening or managing positive screens. One participant mentioned that the largest negative associated with screening is not having knowledge about how to navigate positive screens. “And the biggest negative people feel with the screening on the part of the providers is not knowing what to do with it.” (P01, OB). Another participant described the concern many providers have about managing a positive screen for postpartum depression, for example.

I think that there is a fear of screening for a lot of these things where we don’t have an answer for, like what if the screening is positive, what do we do? A best example of that is when we talk about postpartum depression... which is a huge comorbidty in these opioid use disorder moms, in that if a provider screens for postpartum depression and
say mom is to be positive, then it’s on them to find out what’s my next step. So, I think a lot of the barrier is the concern if I screen for all these things, what if they all turn out to be positive? Yeah, that’s the purpose of the statement. But what does it provide in the eyes of an uninformed provider? It provides more work for them. P11, Ped

Experiential knowledge, which was described as a screening facilitator, could also serve as a screening barrier when it is missing or is not integrated within a system. One participant described how they do not interact with the Department of Children and Families, which makes conversations with families about their potential DCF interaction difficult. “…Thankfully have a really strong social work system inside the hospital. We have lots of social workers 24/7. That’s never a problem getting them. Outpatient is different. So, I don’t really interact with [DCF] at all. That’s one box that I don’t really know what happens that’s probably not really helpful for me explaining to moms, though, because I don’t really know.” (P01, OB).

Lack of screening and referral skill also served as a barrier to screening. Many participants described the negative aspects of screening when it was implemented in a less than ideal manner. First, this may include not building appropriate rapport with the patient prior to screening. One participant mentioned, “My worry is that [screening is] not implemented in the right way.” (P11, Ped). Another participant similarly mentioned, “I wouldn’t say I feel negative but making sure that the tone is appropriate and that you have some sort of rapport and it’s not just going through checking the box.” (P04, RN). While several participants described the need for screening to not just be checking boxes, they rarely described beyond that to describe what skills would be required for appropriate or good screening. One participant made a distinction between screening, in terms of asking questions off a list or form and screening best practices.

I think in the hospital where things are based off of reimbursement, insurance, and staffing, I think it’s tough to do [screening]. Actually, I take that back. I think if you were to find how easy is it to implement the screening - just that statement - I think it’s easy. Because we’ve done it. Whether we done it the right way or not, I’m not sure, because, like I said, is it easy to add eight questions to a thirty-seven-question nurse intake form? Yes, it’s easy. Does it get done? Yes, it does. Do I think it’s right? No, I don’t think it’s the best practice… In regard to this blanket implementation of screening.
Yes, I think it's easy. In implementation of best practice or the right way to screen, no, I don’t think it's easy in the hospital setting. P11, Ped

This participant more thoroughly described their concerns with implementation of screening recommendations in terms of developing longer lists of questions to ask and suggested that there be a way to implement feedback from patients or clients in terms of how they felt supported and safe within their prenatal care.

Just that they come with like a blanket statement in regard to the recommendation. They do not come with supporting resources in order to provide best practice recommendations, just like kind of we were talking about in that if the recommendation is screen for this, it’ll be thrown into a list of questions. I do not think of that, and I don’t believe the evidence supports that is beneficial in caring for these moms. The other thing that makes me fear is that a lot of the evidence that comes from behind these types of recommendations in regard to like ‘screen for this’ come from a lot of epidemiology base to where you say, hey, if you have this, there’s a high incidence of this, screen for it. What it doesn’t do is it doesn’t provide information on what the outcome of the pregnancy is. So, what I think is also just as important, which again is an impossible feat, but being able to implement this kind of thing into your practice and then at the end of pregnancy and say, how was your prenatal care? How did you feel supported and safe by your provider? How did you do all those things I think are just as important as actually doing the screening, because, again, if someone doesn’t feel safe and doesn’t feel supported, you can ask the same question a million different ways and they may not be honest and truthful with you because of the fear that it’s going to be either judged or it’s going to be detrimental to the overall relationship or your care as a patient. So, I think that’s a big fear and that when it comes to that, because a lot of the recommendations are based off of just incidence of disease, incidence of comorbidities, what we should information we should be able to gather. But the problem is, is the how to gather or the best way or best practice together is not is not available. P11, Ped

Finally, another participant described the importance of building rapport and ensuring a non-judgmental environment for screening.

People have a lot of pride and there’s a lot of shame and stigma related to opioid abuse and things of that nature, of course. So, I think they may be deterred from the provider if it’s not done in a way that makes people feel comfortable and not judged. So, I think... there could be some negative effects there more in that if the screenings aren’t done in a, I don’t know, in a gentle way that they could feel judged and maybe not return to care. And then that could be giving adverse effects both to mom and baby if they don’t continue with prenatal care and things like that. P09, FNP

Provider experience could serve as a barrier to screening. This may happen because of previous negative experiences or patient responses. One participant mentioned how patients may respond to screening in a negative manner but went on to describe how that should not
stand in the way of future screening. “You know, sometimes the responses you get from women don't encourage you to do it again, but it just depends. Those are the women that aren't ready, right? But you can't judge ahead of time who that is, otherwise, you're already judging who you're going to give the screening to based on some bias that you have, obviously. So, everybody gets it.” (P03, MFM). Provider experience may also involve fear of or a desire to prevent a negative experience with a patient. One provider mentioned how clients may become angry when asked questions about substance use. “[The] mom could totally get really pissed off. How dare you? You know, I'm not that kind of addict. You're trying to steal my baby. All of those things.” (P08, LMHC).

Some providers reported feeling overwhelmed or ambivalent at the prospect of screening. Two participants reported a sense of being overwhelmed by the recommendations for opioid screening. One participant described, “I guess when you just read it from the beginning and you're thinking about implementing it at a clinic that doesn't have it, I think it feels kind of overwhelming, trying to put something in place that I think a lot of clinicians would be like, eh, it's not worth the effort.” (P01, OB). Another participant similarly mentioned, “It's not about the recommendation itself, I think it's just about how we go about pushing it out. Sometimes it's overwhelming at one time, make sense?” (P05, NP). A third participant mentioned that perhaps the recommendations could be simplified to avoid provider fatigue. “I think it's a lot of recommendations sometimes. And, you know, people could get like fatigue with that. But I think it could be simplified. And I think it would be effective if it's used kind of simplistically.” (P09, FNP).

Competing priorities, such as COVID or addressing other medical concerns, were described as barriers. One participant generally mentioned competing priorities. “I deal with it so much I feel like it is worth the effort but, you know, is it my top priority? Maybe other things are more of a priority for me...” (P01, OB). Another participant described how implementing
opioid screening as a part of the MORE initiative was difficult in terms of the timing of the COVID epidemic.

It’s more to do... At some point, you get overload. Like, I think a lot of things stopped with COVID because everybody was in COVID overload, so you could barely think beyond that. There were so many issues each moment to think about. So, we’re getting more the hang of the COVID. And so now we can go back to adding other things. So, I think, unfortunately for us [the MORE initiative and implementing screening] started at a really difficult time. And for the MORE initiative, many large hospital systems just put a pause on it just because they furloughed people, people were working at home. They didn’t have access to the hospital EMR. So, I think, in terms of negativity, the presence of COVID has negatively impacted, certainly the MORE initiative. But we’re hoping to start moving it around. P03, MFM

Other competing priorities within an obstetric practice were mentioned, such as the patient load and other required elements of the obstetric visits.

I mean, I know that they have a lot to do in those [obstetric] visits. I mean, I think that that would be the biggest thing with how much they have going on, with how many different patients, all the other required screenings that are required to be done. I know some of them are on [the AIM bundle] like HIV and everything, just making sure that they’re hitting all of the marks while not just checking boxes. So, I think that could be a hard thing to do. P04, RN

One participant described competing priorities within the hospital setting, where multiple patients could arrive in labor and the level of acuity was much higher than in the outpatient setting.

Sometimes when they come in [to the hospital] and [membranes are] ruptured and we have to take them back for a stat c-section or when the baby is down, you know, before we have the opportunity to collect their urine, we already treat them with opioids and other stuff like that. It can be challenging to determine which one did we give and which one they come on their own. So that’s challenging when that situation arises. P05, NP

The final barrier to screening at the provider level is that of liability concerns. One provider who was interviewed requested to her collaborating physician that they initiate validated screening instruments in the practice, and she was denied due to liability concerns.

I maybe two years ago brought up to my collaborating physician to put in place a standardized approach to screening since we do utilize an HER... to at least have documentation using... whichever tool she felt most comfortable with. And she’s declined actually using a formal tool for fear of liability. She says that unfortunately, and this isn’t my favorite answer to hear, that it was all fine and well to do the screening. But if it’s documented in an official capacity and the follow up care doesn’t
match, that it opens up the clinic to liability. So as much as we do some screenings there, they're not documented on using a standardized kind of tool that I think we see a lot sometimes in different evidence-based practices. P09, FNP

Practice-Level Screening Facilitators

Several factors related to screening were identified at the level of the outpatient or hospital practice. These included resources, technology, policies and standardized practices, partnerships, and buy-in. In terms of resources, there were several elements that related to screening. First, there were practice resources, that could include staffing, the ability to prescribe buprenorphine and having a variety of professional disciplines operating on an interprofessional team. Having Healthy Start representatives at the obstetric practice was referred to as a facilitator of screening. One participant mentioned:

I think that's if Healthy Start is involved, [the OB practices] are [screening]. From what I have seen, a lot of our substance using moms are those clinics just because of social economic status, they're there anyway. So, I mean, it could just be that, that those are Medicaid-only clinics basically. And there are the high-risk clinics because we also see that if a doctor sees they're on methadone or subutex they kind of kick them to the curb unless it's one of those places. P04, RN

Another participant also mentioned Healthy Start, in addition to social work, as beneficial in terms of screening. “Well, in the clinic, there is a social worker, there is Healthy Start. There is a social worker at both places. So, yes, when I when I see a patient with a lot of stuff going on, I can call in the social worker and I can, as you know, these patients have all kinds of problems. Yes, she may not be immediately available, but she's going to be seeing the patient or calling the patient, hopefully within 24, 48 hours.” (P10, MFM).

Educating the front desk staff and medical assistants to assist with screening was also identified as a potential asset for screening. “I think it’s a great way [to screen] would be to actually educate front staff or [medical assistants] or people who are doing the intakes because they could be a great resource to do like a preliminary screen and then really bringing more attention to the person who's going to be doing the patient care in the interview.” (P09, FNP).
Having social work or other staff with referral knowledge as a part of the obstetric staff was described as highly beneficial. One participant described the importance of having an inter-professional team with a social worker or other staff member who would be able to support screening by developing pathways and being aware of resources in the community to offer to patients or clients with positive screens. “I think that having an inter-professionalism team where you have social work, counselors, stuff like that. They’re able to assist in that so that they feel more comfortable screening, because when there are positives, we already know here’s what we do. Here’s our pathway for this. Here’s how we address it.” (P11, Ped).

The MORE initiative through the FPQC was described as a positive. Practices that were affiliated with hospitals participating in the initiative were likely to have heightened awareness and knowledge of opioid use disorder and related screening, as well as have developed or being in the process of developing a screening protocol. While almost all study participants mentioned the MORE initiative, two directly spoke to the beneficial role of the initiative in terms of screening. One participant described how the initiative helped to share information and provide algorithms for addressing positive screens.

I think that's part of what we're trying to capture with MORE, trying to bring it into the everyday... to try to make it easy and try to make it your routine and try to make it easy to document, easy to refer, easy to know the path to take. Know the additional testing that every patient needs. Know where to go. Those algorithms, you know, having that made easier for you so that you know which phone calls to make. And it's not that you'd have to look it up every time. Those are the things that make it easier for you to swallow. And that's the idea for what MORE is trying to do. Give you the path and all the tools that you need to be able to do it and not have it become your full-time job if that's not what you want. P03, MFM

Another participant described the benefit of universal screening and the policies that were being put into place because of the MORE initiative, although the launch was complicated by the COVID epidemic.

I think that FPQC MORE is kind of the big thing and it was trying to be launched like right before COVID hit so it kind of went out the window a little bit. So, I think that's going to be the big thing is when, and that's just screening. So, and actually the big thing that will make a positive impact on screening because everyone that comes into clinic and everybody who comes into triage/Labor and Delivery is going to get a
universal screening and then we have a universal way that we’re going to try to get them connected to care if they have an issue. So, I think that policy is really positive. P01, OB

Two participants mentioned having grant funding that alleviated time constraints with patients or clients. One of these participants summarized how not being beholden to the insurance reimbursement system allowed them to have additional time with their patients, which supported rapport-building and screening.

If I’m at my clinic, it is easy [to screen] in the sense that I’m able to have all the time in the world that I want with my moms and my babies. I’m able to since I am grant funded, I do not care about reimbursement. I do not care about billing for insurance. I do not care about anything like that. So, for me, there is benefit from it. And there’s the payment for that benefit is just extra time with my patient, which I think is beneficial. So, in the clinic, in the prenatal settings, either drug treatment facilities or jail, something like that, I think [screening is] easy. Because like I said, I’m I have been able to give myself the support that’s necessary to do it properly and do it right. P11, Ped

One last resource that was mentioned by participants was having printed reminders related to screening, such as pocket cards with billing codes, and posted screens or screening policies. One participant described how they relied on printed reminders and protocols related to opioid screening to serve as reminders and provide important information to staff.

We’ve printed it [the screening recommendations] out and laminated and stick it on to the board on the nurses’ station. Yeah, just like any other AIMs, any other recommendations. We have a folder. We have laminated it and put it in the bathroom and so on. And we refer to it very frequently. Just like any protocol, for example for hypoglycemia. So, I mean, we have challenges on that. So, we just go back and forth and look at it. P05, NP

Technology was described as a screening facilitator, particularly in terms of utilizing electronic medical records and the increased use of telehealth visits during COVID. Several participants mentioned the benefit of having electronic medical records (EMR) with integrated screening questions and results. Integrating screening into EMRs was described as beneficial and making screening easier. “And then people who are going to incorporate things into particularly EPIC or whatever, whatever electronic records system use so that it’s easy to do.” (P03, MFM).
One participant described an ideal EMR as being intuitive and flowing through the required information. “Effective electronic health systems that just flow and you’re able to just kind of get through it. But the questions, you can kind of say them in your own words, so it doesn’t sound so clinical and they understand it. And you can ask the question, get the answers and just flow and get it done in one fell swoop.” (Po8, LMHC). Another participant mentioned the benefit of having screening within the EMR and incorporating alerts to ensure that screening and documentation was completed by providers.

You know, with the electronic medical system, even if it’s just those tabs or those alerts, and you can’t get through unless you click those buttons and how the screenings that are automatic. I think that would be extremely helpful because you can’t forget it, you can’t miss it, and it’s documented right there. So, it’s safety for that clinician who’s providing the services not to forget and to also document they did it. And also, a nice reminder for that client and advocating for them and their needs. P13, LCSW

Electronic reminders and tools to serve as memory joggers were discussed, predominantly in the context of prompts integrated into the electronic medical record software. One participant described how they built their own reminder system, but that it may be beneficial to have it integrated into the EMR. “For us we have reminders set up for patients to where it goes off at certain times throughout their pregnancy... that's just what I have set up for myself, so I just have a reminder. I don't know if maybe a pop up could come up with or could be built into the EMR [Electronic Medical Record]. That's interesting.” (Po4, RN).

Policies and standardized practices were discussed as being facilitators of screening. For the most part, this looked like policies related to screening, brief intervention, and referral to treatment, which is one of the components of the AIM bundle. One participant described the training necessary for universal implementation of SBIRT policies.

I think the ability to educate your peers for one and then that would be nursing staff, physicians, because in order to do this well, everybody's got to be able to do SBIRT the same way, right? Or the same-ish way. So, giving people the resources that they need so they feel comfortable talking about this. And then it has to become part of a practice... So, having all the reminders and having people that can do that. So, part of this is somebody's got to teach nurses, having somebody that's going to put this into the usual workflow so people can’t sidestep it or forget about it. Po3, MFM
Another example of policies and standardized practices was having a clinic or practice-wide initiative with a clear implementation plan. This clinic or practice-wide approach was described by one participant as being beneficial to have a more universal approach to screening and responding to positive screens.

I think having a clinic-wide initiative is really key because you... have to have a plan. [We have] a very clear plan of like, we're going to use this form, it's going to be given out at this time, if it's positive, we even have a SMART phrase for like what we did to address it, handouts for everybody so they know if it's positive how to risk stratify and what to do next. Giving them contact information for like if it's positive, what to do, because I think people aren't going to want to do it if they don't know what to do next. So, I think you have to go in with... a well-thought-out strategy of what is it going to take, who is the best one to do it that would minimize your cost and everything, and then what are your resources for if they're positive... So that's the schematic of strategy. So, you have to figure out what to do, like, you know if they're positive, are we going to keep them in our clinic? And if they're positive, where are we going to send them for care? Or where are we going to send them for medication-assisted treatment? Where are we going to send them for counseling? A lot of it is that, thinking it through from start to finish. P01, OB

This participant also discussed the benefit of having a clinic or practice-wide plan, which they described as an action plan. “I think the biggest thing is just letting people know what resources are out there in the community and then having an action plan for if somebody is positive, this is what you're going to do... because a lot of it is just that unsureness of what to do when somebody does have it and how to counsel them and what words to use and how to connect them to care...” (P01, OB).

An additional example of a clinic or practice-wide plan is utilizing an implementation strategy to ensure universal screening. In the example of one practice, pink bags were used to provide educational material on the inside of the bag and forms, including validated drug use screening, were stapled to the outside of the bag. In this manner, all patients were provided with a “pink bag” at the intake visit to support universal drug screening.

I do the vitals and then I send them to the restroom to get me the urine sample because obviously we have to confirm pregnancy. While they're in the bathroom, I put the vitals in [the EMR], and I start the episode of prenatal care and then we give a pink bag out to our patients. In the bag it has the addresses of all of our locations that we do prenatal care at. It has the safe over the counter medication list, it has kind of what to expect with different visits, some safe things for your hair, safe exercises... And then on
the outside there's forms for them to fill out. We have a Healthy Start form. We have cystic fibrosis screening form and then we have the substance alcohol screening form... I tell my patients here, fill this out... while you wait for the doctor to come in and then we'll go over everything. P13, MA

Partnerships were also identified as a screening facilitator, particularly within the context of partnering with other agencies. One participant, an administrator at a substance dependency treatment facility, described a formalized partnership they had with a mental health provider to ensure that their clients would have access to mental health services.

Our agency, [a substance dependency treatment center] has also with PEMHS [Personal Enrichment through Mental Health Services] in [our] County. So, our program itself does not offer the mental health counseling, but we do offer the virtual counseling through PEMHS... But we had actually partnered with our mental health provider in [another] county to come on-site and provide mental health counseling that we were not able to do because of the amount that it takes with our services. But we actually had a mental health counselor coming once a week to provide the mental health counseling. They were the ones providing onsite mental health counseling for us, but with the [state policy requirement] changes of 65D-30... we were not able to come in and provide that this any longer. So, we've teamed up with our mental health agency up in [our county] to provide Zoom [videoconferencing] sessions and do referrals. P12, Adm

An administrator from a substance dependency treatment facility described their process for collaborating and promoting communication between the treatment facility and the obstetrician’s office.

We [at our substance dependency treatment center] are actually required to and we have all of our pregnant patients as soon as we find out they’re pregnant and as soon as they identify an OB-GYN that they’re going to be utilizing, they sign a release of information so that we can have open communication with their OB-GYN. We are also required to make contact with the OB-GYN and inform them that the patient is a patient of [our agency] and is receiving methadone or Suboxone and ask them, ‘Does the doctor have any concerns or any questions regarding the patient or their dose...?’ We don't get a lot of feedback, honestly. Mainly we go through the doctors' nurses, but we do make those calls to say, ‘Hey, you know, so-and-so is a patient of yours. They're a patient of ours. This is their dose. Do you have any concerns? If you do have any concerns, I’m going to provide you our doctor’s phone number. Please let your doctor know that he can call our doctor at any time and go over those questions or concerns.’ So, we do make that approach to the OB-GYN, the individual ones that our patients are utilizing. P12, Adm

Staff buy-in, or understanding the importance of an agreeing to participate in screening of pregnant women for opioid use, was another identified factor. One participant described the
importance of having their obstetricians be supportive and participatory regarding screening policies and practices within their hospital. “The OBs are on board and practicing in our facility. And of course, they have their resources from ACOG, which is most of them follow. So that’s where we get the support from.” (P05, NP). On the other hand, another participant described how they would not be swayed by colleagues who were not supportive of such screening policies and that they would try to encourage their colleagues to participate in screening. “In terms of people that would discourage you from doing it. You know, I just don’t know. I would just agree to disagree. And then I would probably try to convince them that they should be screening, but, you know, you can’t convince everybody of everything. Some people don’t believe COVID is a thing.” (P03, MFM).

Practice-Level Screening Barriers

Several practice resources were identified as screening barriers. First, time and staffing constraints negatively impact screening. One participant described that a variety of required screens and limited time impact screening for opioids. “Time. I think we have so many things to screen for that just having time and attention span of the patient and the doctor or the, and the screener, are limiting factors and then having the resources of how to refer our patients when you have a positive screen.” (P03, MFM). Another participant similarly mentioned that, with having a limited amount of time with patients in an outpatient medical setting, adding a required drug screen would necessitate time being allocated from something else. “…you know there’s always time limitations for the amount of things that we can address. And so, I think that if you’re being asked to really go through an extensive screening then you’re always going to have to pull that from somewhere else. So that’s the concern is where is it coming out of in your time.” (P02, MFM).
An obstetrician participant described an approach that works in one of their work settings to enable screening for opioid use, by relying on additional staff such as nurse educators, midwives, nurse practitioners, and such.

I think a lot of it is just the amount of time needed to do these things. So normally these are done at the first prenatal care visit, which is a very long visit because you are trying to cover a lot of ground. So, if you can have a nurse educator or somebody who is empowered to do this screening, not just a physician or the providers, I’m sorry, midwife, NP, whoever. Trying to use a team-based approach to the visit I think can really help because you want to maximize the time you are with the provider and minimize the time that we spend on lots of extra things. So, in one of my clinics everybody on the first visit meets with the nurses and goes through a whole bunch of education pieces with them and that’s really helpful. My other clinic, we don’t do that and so all of it is on me to do all of the screening. P01, OB

This participant also described how a lack of resources, such as not having access to a social worker at the outpatient obstetric practice, can impact screening negatively. Without access to a social worker, providers may be overwhelmed with the concern of how to manage a positive screen.

But I think the biggest drawback or the biggest thing that we as clinicians feel like is, like, if we find out, what do we do? That’s kind of the big, it’s not really a policy, but it’s kind of a helplessness of like, ‘OK, well, I found out she uses opiates. Now, first of all, it’s going to derail my whole clinic for the rest of the day. Second of all, I don’t have anybody to help me.’ And so, one of my clinics I have a social worker on site. The other one I don’t. And that’s truly difficult because if I find something like that, either intimate partner violence, substance abuse, anything that I need help with, and normally, I would, at my other clinic I would just find a social worker, at my other one I don’t have at [this] clinic and we’ve been begging for one because we have, even though it’s high-income clinic, we have so many social work issues, insurance, transportation, whatever... So, I think that’s the biggest barrier in that clinic, like, well what if we find out it’s positive, then what do we do? Same for intimate partner violence, you know. A lot of people don’t want to ask because they don’t want to, they don’t feel comfortable knowing what to do if it’s positive. P01, OB

A second resource that may negatively impact screening is that of insurance reimbursement. Navigating a reimbursement-based system can limit the funding that makes having time available with patients and funding for additional resources within a practice available. One participant described how providers would not engage in aspects of patient care that are not reimbursable. “Reimbursement, I think that the way that health care goes now is that a good majority of providers will not do things that are not reimbursed so they do not get
time for. And I think that that is the biggest barrier when it comes to implementing some of these screening practices.” (P11, Ped). Another participant talked about how reimbursement relates to having staff on the treatment team and how Medicaid reimbursement is limited, in general. “…the biggest thing is reimbursement because the more people you add on to your treatment team, the more money you have to find to be able to get reimbursed. And if you’re working with Medicaid-mainly-patients, reimbursement is not really great and most of the money that you get for pregnancy care in general is all at delivery it’s not in prenatal health care.” (P01, OB). Lastly, a participant talked about staffing and balancing perceived importance with the time and money associated with any clinical action. “Let’s see, payment from the top, trying to figure out if this is worth our time and money. Nursing staff, nursing effort, social workers - do you have the right people involved so that if they screen positive do you know what to do?” (P01, OB).

A third resource that was identified as impacting screening is that of training. One participant described a situation in which training was provided that did not reach all or the right staff. “We’ve [seen] even as part of the FPQC, the physician lead on that came out and gave them some direction on that but even at that they weren’t present for the time that she was there. They had been assigned to be somewhere else. So, she gave it to the people that maybe weren’t as directly involved... It takes a lot of coordination and people’s time and so that is hard to get to those right people.” (P02, MFM).

Technology was also described as a screening barrier. As described in Aim 1, some practices do not customize their electronic medical record, which limits the question prompts and documentation. One participant described how they inquired about screening policies and discovered that all screening practices were related to the questions that came pre-loaded into the practice EMR.

*There are no policies. What there is what is in the EMR. [Because of the] MORE initiative... I asked [nursing staff] what is our screening policy. We don’t have a policy other than what’s in the EMR. I think the card that’s been developed [by the FPQC] will*
be helpful. I don’t think that we’re doing everything that we can be doing in the clinic. We’re doing what [the EMR software company] tells us to do. But are we doing more than that? No. And I’m not sure, I would bet that [our EMR] is not picking everything up... Maybe it is enough. I would have to sit down, study it, and match it up with one of the screening tools because it’s used all over the country... So, some of the screening is going to be built into an EMR. Not going to be a separate part, OK, let’s screen now for drugs. It’s going to be embedded in the EMR. Same thing with the behavioral health. Are we able to tease that out? The person to talk to, really is somebody from [the EMR software company], if they are available. That might be something to do. And just see how they feel it is training with substance use and for behavioral health and domestic violence. Again, I’ve not looked at all the questions. P10, MFM

Alarm fatigue is a technological barrier that may impact screening. One participant mentioned that EMR prompts and flags would be beneficial, but also acknowledged that their benefit may be limited by alarm fatigue. “I think having for a system that use EHR as having the flags are actually helpful. I know there’s a limitation there with like alarm fatigue and minimizing or just kind of silencing different flags.” (P09, FNP).

Under certain circumstances, policies and standardized practices could serve as a barrier to screening. One participant described how competing policies and priorities in the hospital setting may prevent early screening. In their example, multiple patients could arrive to triage at once. Since they are required to complete the Maternal Fetal Triage Index within 10 minutes of arrival, the rush to complete these indices for each patient, in the setting of labor and potentially other medical complications or urgencies, could prevent opioid screening.

“I think it’s just like everywhere else, our staffing is challenging, so we can’t really prepare for our patient load because all our patients come through us unless they [are] having a medical complaint or under 20-week gestational age [and] they go through the ER. But everybody else comes to us. And then we, with the recommendation that they MFTI [Maternal Fetal Triage Index] and stuff like that, it’s like we have to triage in just 10 minutes. But when the patients show up at the front desk, two or three at a time we really cannot implement MFTI them in 10 minutes. So that is challenging is the staffing part of it.” (P05, NP)

Other participants talked about not having screening policies and how that could prevent screening. One participant, as described more thoroughly in Aim 1, was instructed to not document validated screening tools out of liability concerns. As a result, the practice had no
written screening policies and had a practice of informally discussing issues such as mental health and drug use.

No, we don't [have screening policies]. We do not being that... we only have one provider. She's the physician I work with. It's just her and I at the moment. It’s been her and I for the last years. And so, I don't know if that's a limitation, but definitely based on the environment of working either in a hospital versus like a solo provider office, I think changes a lot. Right? You don’t have to necessarily have policies in place for most things. As long as we’re with the Florida Board of Nursing, that's pretty much the only requirements that we fulfill. So, there is no policy specifically in place. P09, FNP

Another participant described working in a community-based medical clinic located within the Department of Health. In this setting, they had less formalized policies and protocols as they would have had in a setting such as a hospital.

You have a different responsibility as a medical professional, and it's frustrating. You know, I do so much more just case management that I'm stuck on. Those resources and some of the medical stuff I'd like to tighten it up. I'm used to when you're in a hospital setting, you've got your policies, your procedures and protocols. And in a lot of ways, it's a lot easier, a LOT easier than what I'm doing. Because you when you're in a hospital setting, you've got a captive audience, got your doctor's orders, you've got people to back you up and you’ve got a limited time that person's there, then they're gone... P14, RN

Another policy or protocol that could impact screening relates to communication between the obstetrician’s office and the substance dependency treatment facility. Without buy-in, relationships and standardized policies and/or protocols, communication between the medical/obstetric and behavioral health providers can be lacking. One participant talked about their desire to improve communication between these providers.

I wish there would-be better communication between the obstetrician's and the treatment centers, especially if they're doing drug screens, which I'm sure they are. I hope they are. You know, and just letting us know sometimes. We don't know that they're positive there, but they're negative with us. So, we can't address it and identify it and recommend higher level care because we don't have the same drug screen results as the obstetrician does. Maybe not duplicate the referrals and the resources by communicating better between the obstetrician and the treatment center. Po8, LMHC

Two participants from the same outpatient practice discussed barriers to obtaining their buprenorphine waiver, or their X-waivers. With a buprenorphine waiver, they would be able to prescribe buprenorphine in the outpatient setting, which would enable their patients to have
access to medication-assisted treatment within their obstetric practice. However, the requirements regarding buprenorphine waivers are rigorous and difficult to obtain, as they require days of training and wrap-around services within the outpatient practice.

...And then there’s also a push for some of us to get our X’s [X-waiver to prescribe buprenorphine]. [A colleague] and I were going to go and get our X. We were going to go get it at one of the meetings, I think it’s through ACOG [where they] help fund us to get our X. So, it’s like a multi-day, 2-days of training you have to go through. And then you have to have a system around it and that’s kind of the other thing that it’s not easy to have a proper system around it. So that’s one thing in the long-term I’d like to have is I’d like to have my X but I would have to have a proper opiate clinic and more social work help and all that stuff to wrap-around. P01, OB

Policies and practices that support discharging women for positive drug or opioid screens function as a barrier to truthful or future screening. As was described in Aim 1, there are outpatient obstetric practices that perform mandatory biologic screening and discharge women from the practice who refuse screening or screen positive. In addition, some practices also discharge women who previously used substances. One participant described this practice of discharging patients based on the screening and referred to this as a barrier to prenatal care.

And then there are some groups, we are not doing this, but some groups that are actually screening with the urine tox screens, which none of the national organizations that are really endorsing, but there are certainly places. Like we have these coaching calls that we do with the hospitals that are participating in MORE initiative and a fair number of them are just doing universal tox screens. So that, you know, that presents a barrier for women getting prenatal care, right? P03, MFM

Buy-in was described as a screening barrier in the instances where staff members resist implementing screening. One participant mentioned getting resistance from staff members regarding changes in or new implementation of screening. “Any change is difficult. And you get resistance from staff members and complaints from staff members that they’re overworked and all the things that we do.” (P08, LMHC). Another participant described the importance of universal buy-in and that certain patients will be missed with screening if not all providers agree to the importance and practice. “You have to have buy-in from everybody from the administration to the nursing supervisors on down. If you don’t have buy-in then even if I try to do it, it’s gonna fail because I’m not going capture everybody... And then of course you have
to have buy-on from the colleagues because if you don’t have everyone doing it then you’re going to miss everybody.” (P01, OB).

In addition to lack of buy-in, some providers may refuse to either participate in screening or will not allow women with substance use into their practice. One participant mentioned that a number of local practices do not provide prenatal care for women with substance use. “A lot of practices around Hillsborough County do not care for moms that have substance use or opioid use disorder. So, they will not provide prenatal care because there are one or two providers in the practice that do not agree with that.” (P11, Ped). Another participant described a similar issue with certain local practices.

Well, there are people who just refuse, like there are providers that just won’t [screen for opioids]. And at [my hospital], it’s much more of a collective so there we have fewer barriers to that, I think. But when trying to get everybody to remember to do it is another thing, though. At [my practice], I’m constantly sending out things. And then some of the hospitals that have larger private practice[s], very few, who just say, no, they’re not. I won’t be participating in this. Period. And I think that some of the community hospitals have that as a huge barrier for them. That they can do the screening tests all they like, but the rest of SBIRT, their providers are just saying no, I’m not going to do that. So, part of that, what they’re the barriers for them is trying to have their physician groups understand the importance of it. P03, MFM

Community-Level Screening Facilitators

Some community factors were identified as facilitators of screening, such as resources and partnerships. Community resources that were identified as facilitating screening included community opioid task forces, which may share information, provide education, collect data, and monitor trends. One participant described attending a community opioid task force meeting where relevant data were shared.

I feel positively about [the screening recommendations] because I think that, I mean, just that these things are being investigated [is] going to have an impact. I recently went to a meeting where it was found that... we had about 300 overdose deaths last year and thirty three percent of those people, I think that’s the number, had been touched in some way with mental health services, which means two thirds had not ever. So, yeah, the more people I think we can reach, the better. P06, PE

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In addition to community opioid task forces, communities may have various programs and resources to offer to families in need. One participant described their community as having a wealth of programs offered and collaboration within programs. “I know there’s a lot of efforts going on that I’m not aware of personally within our community. [Our] county has a lot of really great resources, great collaboration...” (P13, LCSW). Another participant mentioned a compilation of community resources available through their local Healthy Start. “[The] Healthy Start resource guide has a whole page of agencies that are available who also take Medicaid... Actually, we have another page of agencies that are just intended for substance abuse. So, we try to hook them up if they’re not hooked up but most of our people by the time they get to us the substance abuse treatment centers have referred to us.” (P06, PE).

Community partnerships and collaborations were also identified as potential facilitators of screening. Community partnerships and collaborations may institute data sharing and centralized program referral. One participant described the upcoming implementation of First 1000 Days within their community and how it would be beneficial to women with substance use.

“So here the first 1000 days [is] going to try to start enrolling patients at the end of August, I believe. It will be different... That's going to unite the agencies in terms of registering them, getting them in the system, referrals, etc... The dream would be there when I saw a patient, and I saw one recently or a week ago. It was a new OB. They didn't have any money. Needed the medication, 20 weeks pregnant. Husband had lost his job because of COVID. She was pregnant. And she had a lot of stuff going on. That type of patient would be, we saw her in the clinic, so it would be the clinic who would register her and get her into the first 1000 days. Then a whole group of people providing all kinds of services would be brought in. That is the hope, more than just the hope. Now we’re moving in that direction. P10, MFM

Another participant described their approach to collaborate with community partners through bi-weekly staffing meetings.

“We do bi-weekly or bi-monthly staffings, as we’re calling them, with a bunch of community partners. So, we have people from Healthy Start, Healthy Families, Nurse Family Partnership. Then we also have people from CPI [Child Protective Investigators]... on the board as well. They’re actually part of our funders. Then we have [our physician] that's there, so we have a medical background. And then there are caseworkers as well are there. We have people that are just involved in the community and we bring up cases. And then as a community, we decide what we need to do for those patients that relapse, of course, especially with the safety of the children. That’s
going to be our biggest concern, which is why we have our structure with our clinic set up to also see them at those times. P04, RN

Additionally, shared resources within the community were another resource that may support screening. This may involve shared responsibility for transportation, such as one participant described.

...Women who live at [inpatient substance dependency treatment] have to go to a certain number of [peer recovery] meetings and that sort of thing... And then [they also] have a baby in the neonatal intensive care unit who has neonatal withdrawal syndrome. And so, what the NICU wants is those women to be there to help console and comfort and learn how to take care of that baby. But then [the dependency treatment facility] has its requirements that you must participate in this that and the other thing. And so that was a huge problem. And then actually [a local hospital] stepped up and they are transporting. [The treatment facility] will transport one way [and the hospital] will transport the opposite way. And so, it's just stuff like that... some places have those resources. Some places don't. [Our hospital also] has... that MAT pathway that they started in the ER... The E.R. docs were seeing so many opioid overdoses and opioid use complications that they started this MAT pathway and multiple providers in the ER became Subutex providers and then they established a link with [with a treatment facility]. So those docs go over and work some weekends at [the treatment facility]. And in return, they're able to funnel patients from the E.R. directly to [the treatment facility]. It's a tight program, it's nicely done. And they'll take pregnant women and they just facilitate the start into [treatment]. They're just breaking down that get-started barrier if people are ready. But the weirdest thing though, when that started, I didn't find out about that until forever into their program.... I just happened to be [at a meeting] sitting next to one of these guys who started this program from the ED... It's like, oh my God, this is available in my own institution and I know nothing!” P03, MFM

Community-Level Screening Barriers

A lack of resources was described as a barrier to screening. One participant discussed how community resources varied greatly by county in Florida.

We were talking about the different counties in Florida and their differing numbers of women with opioid use disorder. And then, also much different was the availability of resources. And some areas are just rich with resources. They have amazing ways to provide help to women. Once that woman has decided that recovery is a possibility for her, they have so many services to help a woman. And in other counties and areas have literally nothing. There are there are no MAT programs in their whole county. So, I think financial resources is a huge difference. It's hugely important as much as we wish that we didn't have to say that. And then just the availability of services that may or may not be tied to the money. But those are the things that are great and frustrating. P03, MFM
A specific community resource that is lacking in some communities is that of housing. One participant discussed the challenge of finding safe housing for their clients, especially during COVID. “Probably one of the biggest challenges in community resources we’ve had, and this is probably off your track a little bit, is housing. Housing is huge, trying to find places for people to go. You know, it’s always a challenge, but with COVID, it’s been off the wall. Trying to get things in order, where there's a safe place for people to live.” (P07, RN).

Another community resource that varies greatly by community is transportation. Some participants described transportation as being a barrier to women being able to attend appointments to be screened. One participant mentioned: “[Our] county’s poor transportation. That’s a big [barrier to screening].” (P04, RN). Another participant described their community’s transportation barriers in greater depth.

...The lack of transportation. We don’t have public transportation in the normal sense. We don’t have a bus system that just goes from corner to corner. You actually have to call twenty-four hours in advance in order to and then they pick you up at your house and take you to your destination. But sometimes when individuals are making these decisions [about whether to get help for drug use, they are] going to do it right now. And if [they] can’t do it right now then [they’re] not going to do it. And so, having to wait 24 hours for transportation, whether it be through Medicaid transportation or through the county provided transportation, it’s just not that likely that they’re going to follow through. And then you’re being picked up on a bus with other people, other individuals on the bus... [Our] county is not even, that’s not a concern for them. They’ve already made that very well known. They’re not changing their public transportation system... So, we definitely have transportation issues with those individuals. So, coming to treatment can be difficult if they don’t have a car or a way to get there. P12, Adm

Finally, a lack of providers was described as a screening barrier, such as prenatal care providers; buprenorphine providers, particularly those who accept pregnant women; and mental health providers. One participant mentioned having a lack of prenatal care providers: “...prenatal care, especially in in our community. It’s a very small community. We don’t have a very large base of OB-GYN.” (P12, Adm).

In summary, a number of facilitators and barriers to opioid screening during pregnancy have been identified. These facilitators and barriers have been categorized according to level in a
modified social ecological model: patient factors, provider factors, practice factors, and community factors. In addition, certain factors have been identified at the intersection of patient and provider levels, and at the intersection of practice and community levels.

Aim 3 Results: Research Questions 1 and 2

Survey participants responded to questions regarding the existence of workplace policies related to elements of the Aim bundle recommendations. In addition, survey respondents who indicated working in a hospital setting and having written hospital policies related to opioid screening during pregnancy were asked to provide contact information for individuals who may be able to share such policies. These individuals were contacted by the researcher and provided with study information and asked to share any form of written policy, which was defined for this study as written hospital policy, written unit/department policy, standardized order sets, electronic medical record prompts, recommended practices, care pathways, clinical algorithms, and other similar evidence. Individuals who were willing to share such written policy evidence were asked to participate in a short unstructured interview to discuss their written policy, the approximate amount of time the policy had been in place, and whether secondary screens recommended within the Aim bundle are routinely addressed. Participants were also asked to email the researcher any evidence of their hospital policy, such as a written policy document, screening tools, and/or EMR questions and prompts. The purpose of these interviews and policy collection was to categorize the alignment between written hospital policies with clinical bundle components and determine the feasibility of obtaining these policies among delivery hospitals in the west-central Florida region. The survey responses regarding the existence of related policies or procedures, and the results of the brief interviews and policy collection will be summarized. Survey participants reported their awareness of policies related to various elements of the AIM bundle of evidence-based practices and results were compared for obstetrician and non-obstetrician participants (Table 25). Overall, participants reported the existence of policies
most commonly for assessing all pregnant women for substance use disorders (48.7%) and ensuring screening for psychiatric disorders and physical and sexual violence (48.7%). Policies regarding matching treatment response with each woman’s stage of recovery and/or readiness to change were the least common (25.6%). Reports of policies were similar among participant groups, with the exceptions of use validated screening tools to identify drug and alcohol use, screening and evaluating all women with OUD for commonly occurring co-morbidities, ensure that screening for psychiatric disorders and physical and sexual violence occurs, and ensure that resources and interventions for smoking cessation are provided.

**Table 26: Participant Report of Existence of Related Hospital Policies**

<table>
<thead>
<tr>
<th>Existence of related policies or procedures</th>
<th>All Participants</th>
<th>Obstetrician Participants</th>
<th>Non-OB Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies/protocols exist</td>
<td>39</td>
<td>14</td>
<td>25</td>
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<tr>
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<td>2</td>
<td>1</td>
</tr>
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<td>9</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Missing</td>
<td>8</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

Assess all pregnant women for substance use disorders

| Policies/protocols exist                   | 19               | 8                         | 11                  |
| No policies/protocols exist                | 3                | 2                         | 1                   |
| Unsure                                    | 9                | 3                         | 6                   |
| Missing                                   | 8                | 1                         | 7                   |

Utilize validated screening tools to identify drug and alcohol use *

| Policies/protocols exist                   | 15               | 3                         | 12                  |
| No policies/protocols exist                | 6                | 5                         | 1                   |
| Unsure                                    | 10               | 5                         | 5                   |
| Missing                                   | 8                | 1                         | 7                   |

Incorporate an SBIRT approach in the maternity care setting

| Policies/protocols exist                   | 13               | 3                         | 10                  |
| No policies/protocols exist                | 8                | 6                         | 2                   |
| Unsure                                    | 0                | 4                         | 6                   |
| Missing                                   | 8                | 1                         | 7                   |

Ensure screening for polysubstance use among women with opioid use disorder occurs

| Policies/protocols exist                   | 15               | 5                         | 10                  |
| No policies/protocols exist                | 7                | 5                         | 2                   |
| Unsure                                    | 9                | 3                         | 6                   |
| Missing                                   | 8                | 1                         | 7                   |
Table 26 (Continued)

Screen and evaluate all pregnant women with opioid use disorder for commonly occurring co-morbidities *

<table>
<thead>
<tr>
<th></th>
<th>Policies/protocols exist</th>
<th>No policies/protocols exist</th>
<th>Unsure</th>
<th>Missing</th>
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</thead>
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<td>7 (17.9)</td>
<td>13 (33.3)</td>
<td>8 (20.5)</td>
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<td>5 (35.7)</td>
<td>1 (7.1)</td>
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<tr>
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<td>1 (4.0)</td>
<td>8 (32.0)</td>
<td>7 (28.0)</td>
</tr>
</tbody>
</table>

Ensure that screening for infectious diseases occurs

<table>
<thead>
<tr>
<th></th>
<th>Policies/protocols exist</th>
<th>No policies/protocols exist</th>
<th>Unsure</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
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<td>5 (12.8)</td>
<td>7 (17.9)</td>
<td>8 (20.5)</td>
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</tr>
<tr>
<td>Unsure</td>
<td>12 (48.0)</td>
<td>4 (28.6)</td>
<td>5 (20.0)</td>
<td>7 (28.0)</td>
</tr>
</tbody>
</table>

Ensure that screening for psychiatric disorders, physical and sexual violence occurs *

<table>
<thead>
<tr>
<th></th>
<th>Policies/protocols exist</th>
<th>No policies/protocols exist</th>
<th>Unsure</th>
<th>Missing</th>
</tr>
</thead>
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<tr>
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</tr>
<tr>
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<td>5 (35.7)</td>
<td>8 (28.0)</td>
<td>7 (28.0)</td>
</tr>
</tbody>
</table>

Ensure that resources and interventions for smoking cessation are provided *

<table>
<thead>
<tr>
<th></th>
<th>Policies/protocols exist</th>
<th>No policies/protocols exist</th>
<th>Unsure</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4 (28.6)</td>
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</tr>
<tr>
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<td>5 (35.7)</td>
<td>7 (28.0)</td>
<td>7 (28.0)</td>
</tr>
</tbody>
</table>

Match treatment response to each woman’s stage of recovery and/or readiness to change

<table>
<thead>
<tr>
<th></th>
<th>Policies/protocols exist</th>
<th>No policies/protocols exist</th>
<th>Unsure</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies/protocols exist</td>
<td>10 (25.6)</td>
<td>8 (20.5)</td>
<td>13 (33.3)</td>
<td>8 (20.5)</td>
</tr>
<tr>
<td>No policies/protocols exist</td>
<td>2 (14.3)</td>
<td>6 (42.9)</td>
<td>5 (35.7)</td>
<td>1 (7.1)</td>
</tr>
<tr>
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<td>8 (32.0)</td>
<td>2 (8.0)</td>
<td>8 (32.0)</td>
<td>7 (28.0)</td>
</tr>
</tbody>
</table>

* p<0.05

Two individuals discussed their hospital policies and provided written policies and/or screenshots of their EMR prompts (Appendix 6). Based on overall online survey participation of 11 hospitals within the west-central Florida region, two hospital participants represented approximately 18% of the participating hospitals. Hospital 1 provided a written policy and discussed their triage EMR prompts. At this hospital, all pregnant women are assessed for substance use disorders, with flow diagrams provided for completing and following up on this screening for both the triage and OB inpatient unit settings. The 5Ps screening tool is included in the written policy, however, it is “preferable” to use the tool and not written as mandatory or
universal. In terms of SBIRT, both the screening and referral to treatment aspects are clearly presented in the written policy. However, the brief intervention component is not addressed. Identification of polysubstance use is not clear in the policy, yet current use would be identified if the patient met the criteria and gave consent for urine drug screening or if the infant received drug screening. Additionally, the social work evaluation or physician follow-up may contain this element, although that is not contained within the written policy.

Co-morbidities were not included in the screening, based on the brief interview. The only screenings that were mentioned but not otherwise included in the AIM bundle was caffeine use. Tuberculosis and COVID were the only infectious diseases mentioned for infectious disease screening. In terms of psychiatric disorders, physical and sexual violence, several screens took place. Mental health screening included mood disorders, depression, a history of postpartum depression and other psychiatric disorders that the patient could self-identify. In addition, patients were screened for human trafficking and domestic violence, although sexual violence was not specifically mentioned. Neither providing resources and interventions for smoking cessation nor matching treatment response to each woman’s stage of recovery and/or readiness to change were addressed in either the written policy or the brief interview.

At Hospital 2, the contact person described the hospital as having “moved away” from using written hospital policies out of litigious concerns. Therefore, this hospital provided the 5Ps screening tool, screenshots of their EMR prompts and a brief interview. At this hospital, screening of pregnant women for SUDs was to take place universally with a written version of the 5Ps validated screening tool that would be scanned for integration into the patient’s EMR. Incorporating the brief intervention component of an SBIRT approach was neither addressed within the screening tool nor the EMR prompts provided, although the screening tool contained a note to inform the provider if any question was positive. There was no written guideline or prompt to indicate whether that was universally followed-up with a brief intervention. Polysubstance use appears to be screened for universally, with an EMR question about drug use
and possible selections including a multitude of drug types. The co-morbidities screened for in the EMR included homelessness, housing problems and transportation problems. Psychiatric disorders and physical and sexual violence were addressed within the social assessment. While it is unknown the extent to which providers and staff follow-up on current smoking and tobacco product use, the EMR contained a prompt for “counseling given”. Finally, screening for infectious disease and sexually transmitted infections, and matching treatment response to each woman’s stage of recovery and/or readiness to change were not addressed in the validated screening tool, EMR prompt screenshots or within the brief interview.

Regarding evaluating “core components”, which for this study is considered the elements of the Aim bundle that are implemented by all participating hospitals according to their written hospital policies, the only element of the AIM bundle of recommended practices with full fidelity at both hospitals was to assess all pregnant women for substance use disorders. The use of validated screening tools to identify drug and alcohol use was close since both hospitals named a validated screening tool to use during pregnancy. However, the policy of Hospital 2 was to prefer use of a validated screening tool and not to require its use universally.

The other clinical bundle components would more appropriately be considered adaptable periphery because of their lack of fidelity with the recommended practices or the lack of clarity around what would be considered full fidelity. One such example of this was the recommended practice to ensure the ability to screen for psychiatric disorders, physical and sexual violence. Both hospitals implemented screening related to psychiatric disorders and physical violence, albeit each hospital screened for different psychiatric disorders and different elements of physical violence. These components, then, may be considered adaptable in their implementation.

The hospital policy abstraction forms are provided in Appendix 6.
CHAPTER 5: DISCUSSION AND IMPLICATIONS

Aim 1 Discussion and Implications

The results from Aim 1 represent important findings related to how screening and identification of opioid use among patients are described amongst clinicians who treat pregnant patients in West-Central Florida. Various screening patterns were described according to practice case studies that were developed based on a compilation of similar patterns described in qualitative interviews. In addition, the second component of Aim 1 addressed how screening practices and the conditions under which they are performed were described by participants. This incorporated both quantitative findings based on an online survey and qualitative findings from in-depth interviews performed with the clinician participants. The key findings, strengths, and limitations of the approaches in Aim 1, and practice, policy and research implications will be described.

Universal screening and the use of validated screening tools varied by profession and work setting. Patient care settings outside of obstetric healthcare settings, such as community-based medical clinics, agency staff, and substance dependency treatment facilities, reported universal screening. Obstetrician interview participants reported universal or near-universal screening, while survey results showed 71.4% of obstetricians reporting always or very often assessing all pregnant women for substance use disorders. This difference is likely due to participant bias, where interview participants were more likely to be further along in their implementation of opioid screening than the survey participants or general obstetrician population. When reporting use of validated screening tools to identify drug and alcohol use, 35.9% of survey respondents reported always or very often using validated tools. Looking by
profession, only 21.4% of obstetricians and 44% of non-obstetricians reported always or very often using validated tools.

Interview participants generally reported a belief that obstetricians have a role in screening, while obstetricians, themselves, viewed that role more specifically as providing oversight to ensure that screening occurred and to follow-up on positive screens. Among survey participants, 91.7% of obstetricians reported that following the AIM bundle screening recommendations is part of an obstetrician’s role, while only 75% of non-obstetrician participants agreed this was part of their role. It is unclear why non-obstetrician survey participants had less agreement, but perhaps they were considering other office or hospital staff who might perform the initial screen. Alternatively, some interview participants mentioned concern about obstetrician’s limited time with patients and number of essential items to address during visits. Perhaps this concern for obstetrician’s time with patients is reflected in this difference. Future research may be beneficial to identify differences in perceptions of roles related to screening among various providers who work with pregnant women.

Other studies have had similar findings related to obstetrician screening, low use of validated screening tools, and high reports of professional responsibility. A study performed in 2017 assessing obstetrician-gynecologist screening practices found that among the 353 survey participants, 79% frequently screen and 11% use a validated screening tool to identify patient substance use (Ko et al., 2020). Among this study sample, 63% of participants were female, 81% reported white race, and participants had an average of 21 years of practice since residency. Since this study addressed substance use screening, responses were not representative of their screening practices for opioid use, in specific. When referring to their level of priority within their practice, 55% of participants reported high priority for screening for prescription opioid use, 61.4% reported a high priority for screening for non-medical use of prescription opioids, and 61.4% reported high priority screening for non-medical use of other prescription medications. Approximately 37% of survey participants reported confidence in treating pregnant
patients using opioids. In terms of professional responsibility, 94% of participants agreed that screening pregnant patients for substance use is their responsibility and 88% agreed that it is their responsibility to be aware of local resources available to patients with substance use disorder.

Most participants who discussed screening within outpatient obstetric practice settings reported screening for opioid and substance use at the initial pregnancy, or intake, visit. One exception was a nurse practitioner whose collaborating obstetrician in charge of the practice disallowed documentation of validated screens out of liability concerns. For the other practices, the intake visit is a major point of opioid identification, at which patients appear to be dichotomized by substance use or risk of use. The patients who are determined to be of risk seem to receive several additional screens, particularly if social work staff members are present in the practice to follow-up. Participants reported that these patients would be screened for mental health and other co-morbid conditions. However, the patients determined at intake visit to be of low risk do not appear to receive any follow-up screening. This is concerning as patients may not be likely to admit to substance use for many reasons, including provider judgment and fear of DCF involvement. While many participants reported the importance of rapport-building and non-obstetrician participants generally reported the importance of ongoing and follow-up screening, obstetricians generally seemed to focus on pregnancy intake and hospital delivery screening. This seems unnecessarily limited in approach, not only for opioid and other substance use, but also because of the importance of the secondary screens, such as mental health and sexual violence.

Certain office staff, particularly social workers and onsite Healthy Start staff, were identified as valuable to ensure that initial and follow-up screening and referral for services occurred. In addition, several participants spoke about the importance of an interprofessional team to identify and address patient needs. Appropriate referrals in the community would address needs such as inpatient or outpatient substance dependency treatment, mental health,
in-home services, and education, domestic violence, sexual violence and sexual trafficking interventions, specific healthcare needs, housing, transportation, and healthcare. Obstetrician survey respondents reported very low rates of incorporating an SBIRT approach (14.3%) with their patients. It is unclear whether obstetricians rely on social workers or other team members to address brief interventions and referrals to treatment, or what kind of screening follow-up is occurring, in general. Obstetrician interview participants reported integrating an SBRIT approach at their practice or clinic due to their MORE initiative involvement, so perhaps those practices are ahead of the others in terms of implementation. Another possibility is that the COVID epidemic has taken focus from implementation of the MORE initiative practices and that more time is needed post-COVID for SBIRT implementation.

Among hospital survey participants, most were unaware of providers with Buprenorphine waiver at hospital. At Hospital K, the hospital with the greatest number of survey participants, only four out of sixteen participants were aware of providers with a Buprenorphine waiver. Future research should address whether provider demographics or attitudes and beliefs impact awareness of Buprenorphine providers.

Tower (2006) performed a study of social workers, family practitioners and obstetricians in Florida to determine their perspective on and frequency of screening patients for domestic violence. This study found that screening rates were low, with 33.9% of social workers and 17.25% of obstetricians reporting always or almost always screening. In the current study, 50% of obstetricians and 40% of non-obstetricians reported always or very often ensuring that screening for psychiatric disorders, physical violence, and sexual violence occurs. These rates are higher than were reported in Florida for domestic violence alone, however, the reports in the current study did not disaggregate physical or domestic violence screening from psychiatric disorders and sexual violence. Interview participants frequently reported screening for domestic or physical violence, but infrequently reported screening for sexual violence. An exception to that were the three participants who specifically reported screening for sexual trafficking,
although this is a particular subset of sexual violence. Future research and quality improvement initiatives should collect data regarding screening practices separately for psychiatric disorders, physical violence, and sexual violence.

Aim 1 of this study had several strengths. This study provides important insights into current screening practices in the obstetric setting. For example, when screening for substance use is present, it generally takes place at the intake appointment and subsequent screening relies on a positive screen at the intake visit. Several case studies were developed based on the data, which give insight into different practice patterns. The interview findings highlighted the importance of EMR questions, prompts, and flags, and raises questions about customizability and identifying the sources of EMR screening questions. Finally, even with a participant sample that likely was more interested or invested in opioid and substance dependence screening than the general provider population, the study still found certain low rates of screening, such as using validated screening tools and of screening for psychiatric disorders, physical and sexual violence.

There were several limitations. Interview participants volunteered for participation through the online survey and were asked to share the survey link with their colleagues. With this recruitment method, participants were more likely to be involved with quality improvement initiatives related to opioid use during pregnancy or have a general interest in the topic and were, therefore, not representative of providers in the region, in general. This was made especially clear as participants described practices in which patients with opioid or other substance use were discharged, and yet none of the participants reported this occurring within their practices. In addition, most participants mentioned the MORE initiative through the FPQC, which also indicates their involvement in the topic and in related quality improvement initiatives.

The timing of the rollout of the MORE initiative also may have impacted or limited findings. A great majority of interview participants reported participation in the MORE
initiative and a majority of survey participants who worked in a hospital setting reported working at a hospital participating in the MORE initiative. The MORE initiative, and participation thereof, has increased attention and focus on the issue of opioid use during pregnancy, and has provided ongoing online trainings which are available to both initiative participants and the general public. According to many interview participants, their universal (or near universal) implementation of validated screening tools was prompted by MORE initiative participation. For some interview participants, while implementation of MORE initiative components was delayed by the competing demands of the COVID epidemic, it may have altered certain practice behaviors, nonetheless.

Finally, it was desired to interview a broad range of participants based on their professions. Recruitment efforts were made to reach providers such as midwives, doulas, and lactation consultants through local practices and the Tampa Bay Birth Network. However, no midwives, doulas, or lactation consultants participated in interviews. This may have been at least partly due to the timing of the survey and interviews and the impact of COVID-19 in the region. Recruitment for surveys and interview participants began in February, but lost momentum in March due to work-from-home and other social distancing recommendations due to the initial spread of COVID. Recruitment was re-started in May and, while several individuals offered to participate in interviews, some were unable to do so when contacted due to the demands at work. A few individuals responded by email that they were unable to participate because of COVID or staffing issues, while others did not respond to emails at all. To meet the minimum number of interview participants, study inclusion criteria were widened to include individuals outside of hospitals and outpatient obstetric practices. As a result, a small number of participants were obstetricians. While this was beneficial to provide a wider range of perspectives on screening, it also limited the depth of understanding of screening practices in different practice settings. For instance, there were three obstetricians and one medical assistant participant from an outpatient practice. It may have been beneficial to intentionally recruit at
the level of the outpatient practice or hospital to have more participants from fewer practices in order to have a greater depth of understanding of their screening practices, and related facilitators and barriers.

There are several practice implications from Aim 1 of this study. When screening occurs regularly, it is generally during the intake appointment. There may be follow-up because of positive screens, such as addressing substance use, polysubstance use, mental health and other co-morbidities at the intake and future appointments. There is a major opportunity for ongoing screening throughout prenatal care because of the number and duration of prenatal care visits. In addition, many participants discussed the importance of rapport, which is generally built over time. Therefore, patients may be more likely to admit to substance use at subsequent visits, and this is a missed opportunity when practices exclusively screen at intake.

There are several clinical recommendations based on Aim 1 findings. First, all providers who interact with patients at the intake visit should be trained in substance use, opioid use disorder, developing rapport, and utilizing a non-judgmental approach. Second, the benefits of screening periodically throughout pregnancy should be considered. Third, screening for mental health and psychiatric disorders should not be dependent on opioid and substance dependence risk screens. Practices should consider implementation of universal mental health screening at intake and periodically throughout pregnancy. Fourth, while it appears that practices may be doing well with domestic or physical violence screening, the same may not be true for sexual violence and sexual trafficking. Therefore, it is important for practices to consider universal screening for sexual violence and sexual trafficking. This is particularly important in the obstetric setting as a history of sexual assault can cause pelvic exams and labor and delivery to be re-traumatizing (Sobel et al., 2018), and cause a fear of childbirth (Schroll, Tabor, & Kjaergaard, 2011). Practices should develop standards for screening, including the population to be screened, the screening tool or questions to be asked, the minimum requirements for
documentation, the time points during pregnancy during which the patients should be screened, and if any additional screening or follow-up is needed based on positive screens.

In some practices, social workers follow-up on positive drug screens to perform further evaluation and provide referrals for treatment and services. However, many practices lack the resources to have a social worker on staff. There must be a plan made for practices without social workers. At the practice level, another individual could be tasked with further screening and referral. However, without the proper education, training, and experience, this may not be optimal. Practices could compile their resources and “share” a social worker between multiple practices or form a partnership with a social worker or agency in the community. To some extent, Healthy Start fills some of this gap for practices without social work staff. However, there are limitations to this. First, it is unclear whether all obstetric practices perform prenatal screening and report screening results back to Healthy Start, or if this is more likely with onsite Healthy Start staff. Second, even in practices with both social work and Healthy Start on-site, participants reported added benefits from having social workers on staff. Therefore, another potential solution for practices without social work staff is at the community-, region- or state-level. At this level, social workers could be employed in a manner similar to public 211 resources. Individuals, providers, and other practice staff could call a social work hotline to receive information about screening and referral. Alternatively, arrangements could potentially be made for social work follow-up to occur remotely with credentialled providers through the telephone or telehealth visits. Ideally, this would take place in the obstetric practice, or at whatever location the patient or client initially screened positive for substance use.

This study also highlighted the importance of EMR screening questions, prompts, and flags. For low-technology practices, reminders can be manually written in charts or on calendars or protocols. Reminders can also be entered into electronic calendars or appended as a note to electronic appointments. For practices and hospitals with EMR systems, this study raises questions about the ability to customize screening questions, prompts, and flags, and the
required staff and training to perform customization. Some practices integrate validated
screening questions into the EMR, and others use printed screening forms for patients to fill out.
Identifying best practices and collaborating with EMR systems and programmers to integrate
validated screening tools or easily provide resources or documentation about the source of
certain EMR questions or prompts may be beneficial. For example, if a hospital system or
outpatient practice were to integrate the 5Ps screening tool into their EMR, it may be beneficial
for there to be a clickable icon that will provide further information about the question, such as
identifying that it is one of five questions from the validated 5Ps screening tool, for example.
With these additional resources or documentation, providers can easily keep track of what
questions are asked and why, which would be beneficial when considering future integrations or
changes to screening questions. Identifying both low-technology and EMR-based best-practices
for supporting screening may be highly beneficial to support practices and providers in their
screening and quality improvement efforts.

One participant specifically discussed concerns with how prenatal care is evaluated and
suggested that patients are asked to what extent they felt supported, to which one could add
feeling heard, feeling safe, not experiencing judgment or bias, and engaging in shared decision
making. This could be systematized using survey and healthcare quality organizations like Press
Ganey (Press Ganey, 2021), or by homegrown surveys, interviews, phone calls, and feedback
cards. Identifying the best ways to evaluate prenatal care, particularly for patients who are at
greater risk of experiencing provider bias, judgment, and discrimination, is important to ensure
access to high-quality prenatal care and optimize maternal, pregnancy, and infant outcomes.

Of similar focus and importance is the issue of evaluating how screening is performed.
EMR documentation could be used to identify provider report of screening or the number of
positive screens, but more qualitative methods may need to be used to evaluate the process and
experience of being screened. In addition, practices and institutions may consider balancing
screening rates with patient-oriented outcomes, such as missed or non-missed appointments, quality ratings, and the dimensions discussed above regarding prenatal care evaluation.

There are also policy implications from Aim 1. First, while there is little understood about practices that discharge patients for current or former substance use because of their lack of participation in this study, discharging women from prenatal care can be a major concern based on how it is done. At best, there is a lack of continuity of care and women are provided with a warm hand-off to another prenatal care practice. Ideally, this would be to a practice that is accustomed to providing prenatal care to patients with substance use disorders. At worst, patients are left to find an alternate provider, may miss prenatal care appointments while finding or changing providers, or are hesitant to seek care elsewhere due to perceived judgment and discrimination. Professional organizations and state policies should consider the circumstances under which a transfer of care is appropriate and the standards of such transfer. For example, policies could be enacted to ensure that any transfer of care during pregnancy requires a warm hand-off and a new intake appointment within a certain number of business days from the last appointment with the previous practice.

In a time during which agencies, quality improvement groups and hospital associations may be considering the benefits and costs of enacting policy regarding universal drug screening during pregnancy, there may be actionable policy implications from the findings from this study. Universal screening is certainly important to identify substance use and dependence, provide brief intervention, provide referrals for treatment and services, and would ideally prevent overdose and maternal deaths. However, certain obstetric practices utilize biological screening against the advice of professional organizations. Subsequently, certain obstetric practices discharge women for positive substance use screens or a history of substance use. Additionally, while there may not be a medical need to discharge patients or elevate care to specialists solely based on substance use (Jones et al., 2014), there are certainly benefits to the patient for attending a practice that is welcoming of, and has experience managing women with substance
use. Therefore, it may be beneficial to create a practice designation for practices that are highly qualified to manage and treat pregnant women with opioid use disorder. This designation may already exist, such as the additional training and practice resources to prescribe buprenorphine in the outpatient setting. Or this designation may be created at the state level. There may also be policies implemented about the minimum number of providers or practices with this designation in a given area, or incentives for providers or practices to obtain the designation in areas that lack such resources. Without ensuring access to high-quality obstetric care, pregnant individuals with substance dependence may only face discrimination and banishment in the face of a universal requirement to screen for substance use.

Finally, while the postpartum period was not within the scope of this study, the importance of screening is related to the prevention of maternal overdose and death, which the majority of which occur postpartum. At least one participant described how the loss of Medicaid in the postpartum period may aggravate circumstances that lead to maternal overdose and death, such as the lack of access to an obstetric healthcare provider. To optimize maternal health, promote consistence of access to and quality of healthcare, and rely on the close relationship between patient and obstetrician, expansion of Medicaid coverage in the postpartum period is important to consider.

Future research related to screening practices should focus on the effectiveness of various training approaches, such as online or in-person and using an online learning management system, and topics, such as implicit bias, substance use and addiction, effective screening techniques and skills, and methadone dosing during pregnancy. Additionally, since the perspective of this study focused on the experience and perspectives of healthcare providers, future research should focus on the experience and perspectives of pregnant individuals with opioid use disorder. This research may provide very useful insight into similarities and differences in experience and perspectives. Moreover, identifying the benefits and potential harms of screening at intake compared to screening at every obstetric visit or encounter would
help to identify best practices and potentially expose unintended consequences of frequent screening. Finally, while this study primarily focused on opioid screening, future research should focus more on the secondary screens, such as polysubstance use, co-morbid conditions, psychiatric disorders, physical and sexual violence, and infectious diseases.

**Aim 2 Discussion and Implications**

Results from Aim 2 identified facilitators and barriers to implementation of AIM bundle components in both inpatient and outpatient settings. These facilitators and barriers were arranged by level, including patient-level, provider-level, practice-level, and community-level. Key facilitators and barriers will be discussed, along with strengths and limitations of Aim 2 and practice, policy, and research implications.

Patient characteristics were identified that certain providers considered more difficult or incompatible with screening for opioid or substance use, albeit rare for providers to encounter. These characteristics included intellectual delay and certain psychiatric conditions, such as mania or schizophrenia. It may be beneficial to identify a range of patient conditions that may impair screening and to develop pathways to identify substance use and dependence within these infrequent conditions or circumstances.

Several provider factors impacted screening. Many providers discussed knowledge deficits and beneficial training. While training is certainly highly valuable and important in the setting of substance use, screening and referral for treatment and services, there were some key findings related to training. First, several participants discussed trainings in which patients shared their stories of substance use, addiction, and recovery. Some providers seemed especially eager to hear stories of substance dependence development, such as when addictions resulted from accidents or medical prescriptions. It is unclear whether the desire to hear patient stories relates to a desire to legitimize and destigmatize certain substance use, such as dependence that started with medical prescriptions. A small minority of participants described substance use in
the context of childhood family dysfunction, coercion, and abuse. It may be valuable to further explore the benefit of patient stories embedded within trainings and whether certain stories are more valuable in provider knowledge and behavior change, or if they work to fit or dispel certain addiction narratives.

Another training strategy was identified from interview participants. This involved experiential learning or having some kind of on-site training. A few contexts of experiential learning were shared in interviews, namely visiting obstetric practices with well-developed screening programs, visiting substance dependence treatment facilities, and having some experience with child welfare. These experiential learning opportunities not only provided a means by which to share best-practices, but also provided clinicians and providers with a greater understanding of processes and services offered in different settings that could then be explained to patients. This type of training may occur in other settings, such as intake coordinators at community-based agencies riding along with home visitors during their on-boarding.

Several interview participants reported a lack of training or desire for future training to increase information and knowledge related to substance use, addiction, and dependency, and methadone dosing, for example. Other studies have found training to be associated with screening. Coleman, Carter, Morgan & Schulkin (2008) reported obstetricians with comprehensive or adequate training being significantly more likely to screen patients for anxiety during pregnancy. Tower (2006) found that professional continuing education credits and in-service hours of training on domestic violence were significantly associated with screening. Therefore, developing and providing comprehensive training through professional continuing education credits and in-service hours may be beneficial to support provider behavior change to increase opioid and substance use screening.

Providers talked about different motivations that encourage them to perform screening, such as preventing maternal mortality, and ensuring safety for pregnant persons and their
babies. Identifying a range of motivations may be beneficial to incorporate into trainings. In addition, survey participants responded to questions about incentives, and generally reported low rates (16.7%) of incentives to perform screening. Providers also reported lower benefit to themselves (69%) compared to benefits of screening on patients (90.5% and their employer or hospital (85.7%). Providing incentives may be a valuable way to increase motivation and change provider behavior. This may be done by linking provider screening with higher reimbursement, or by sharing screening rates amongst providers or averages for practices. While this may motivate providers to implement screening, the data would likely not take rapport-building or any context of screening into account. In addition, making screening data public may support patients intentionally selecting providers with low screening rates to avoid substance detection. Therefore, it may be most beneficial to share data amongst the providers within a practice.

Skills related to screening were a topic in both the online survey and the in-depth interviews. Survey participants had low rates of agreement that they had the skills necessary to implement the recommendations (28.6%), that they were currently prepared to follow the recommendations (28.6%), and that they were well equipped to implement screening (47.6%). In addition, it was very difficult to elicit the specific skills related to screening for substance use. One interview participant described how obstetricians have the skills to navigate difficult conversations, as they may discuss whether parents are related within the context of genetic testing and potential genetic abnormalities. However, with the exception of the necessity of patient-provider rapport and non-judgment, the specific skills were not elicited. Participants often spoke about the importance of screening “not just checking a box” but did not identify what that would look like or what skills would be necessary. The importance of an empathic and non-judgmental approach with patients with opioid use disorder is emphasized from a variety of sources (Gopman, 2014; Howard, 2016; Jones et al., 2014; Reddy et al., 2017). Techniques for demonstrating empathy have been identified, such as active listening and responding to the patient’s emotions (S. S. Kim et al., 2004; Mercer & Reynolds, 2002) and specific behaviors,
such as eye contact, nonverbal cues, not interrupting the patient, and using the patient’s own words to summarize and seek clarification (Jones et al., 2014).

Providers, practices, and healthcare systems can support such a non-judgmental approach by implementing and supporting trauma-informed care. A trauma-informed care approach can be summarized with four core assumptions and six key principles (Substance Abuse and Mental Health Services Administration, 2014b). SAMHSA summarizes the four assumptions (or the four R’s): “A program, organization, or system that is trauma-informed realizes the widespread impact of trauma and understands the potential paths for recovery; recognizes the signs and symptoms of trauma in clients, families, staff, and others involved with the system; and responds by fully integrating knowledge about trauma into policies, procedures, and practices, and seeks to actively resist re-traumatization.” (Substance Abuse and Mental Health Services Administration, 2014b, p. 9). In addition, SAMHSA provides six key principles, which include safety; trustworthiness and transparency; peer support, collaboration and mutuality; empowerment, voice, and choice; and cultural, historical, and gender issues (Substance Abuse and Mental Health Services Administration, 2014b). Providers, practices, and healthcare systems can also look to SAMHSA for guidance on implementing a trauma-informed approach and may benefit from examining such domains to evaluate their current level of implementation and to identify next steps. For example, obstetric practices or healthcare systems may evaluate their leadership, policies, physical environment, screening, and workforce development efforts to ensure that they are in alignment with evidence-based practices to promote trauma-informed care.

The priority placed on opioid and substance screening and the existence of other competing demands also impacted screening. Based on the timeline for this research project, the COVID epidemic was certainly a competing demand, but other competing demands were identified, such as patient co-morbidities and having multiple patients arrive in labor in a hospital triage setting. Certainly, there will be competing demands in healthcare settings.
Additionally, there will be great time and effort inputs required in the face of emerging infectious diseases and limited hospital bed availability. However, certain conditions, whether co-morbidities or community factors related to infectious disease outbreaks and associated economic crises, may increase the risk for substance use and dependency. Therefore, it is critical to develop back-up plans for screening under circumstances which make screening difficult. For instance, Healthy Start or community-based agencies could implement additional screening and communicate the results with healthcare providers; or testing programs for infectious diseases could incorporate various additional screening programs, as well.

The patient-provider relationship and the importance of building rapport were both discussed among all interview participants. Clearly, there is an importance to develop trust and communicate in a non-judgmental manner. There also seems to be an understanding that patient-provider rapport is built over time and can also be damaged at any healthcare encounter, either with a clinical provider or other staff. Therefore, ongoing training is important and future research should identify the most impactful means and topics for training, as well as benchmarks to identify strong patient-provider rapport and trauma-informed care. The opportunity and importance of screening beyond the initial pregnancy intake appointment was discussed earlier with the Aim 1 discussion.

Facilitators and barriers of screening at the practice level were linked with screening. Some interview participants discussed some issues related to billing and reimbursement. Survey participants reported low agreement (9.5%) that they were familiar with billing codes. However, a few interview participants discussed how billing cards with screening-relevant billing codes were developed through the MORE initiative. This intervention will hopefully assist providers and billing staff to ensure adequate reimbursement for screening.

Social support was also explored regarding screening. While interview participants did not discuss lack of support from their own practice colleagues, some did mention that certain providers and/or practices were not supportive of screening for opioid and substance use, and
that certain practices discharge women for a history of or current substance use. Survey participants generally had low agreement that co-workers follow screening recommendations (16.7%), that co-workers support them to implement screening recommendations (9.5%) and that staff at other hospitals follow the screening recommendations (9.5%). Hopefully, these numbers are changing because of the MORE initiative. Future research should investigate whether sharing provider or practice screening rates can serve as an incentive to change provider behavior and increase screening rates overall.

Finally, community-level facilitators and barriers were identified. Community task forces addressing substance use were perceived as beneficial in terms of raising awareness, knowledge and sharing community-level data on substance use, overdose, and associated deaths. The extent to which local physicians and providers who treat pregnant patients are associated with or collaborate with such community taskforces, and the level of association or collaboration likely varies by community. Communities with strong ties with their perinatal providers could identify best-practices for collaboration and share their strategies with other task forces. As previously mentioned, literature on how to build collaborative relationships and local connections, such as between obstetric practices and community agencies and behavioral health facilities, is lacking (E. Miller et al., 2015). Future research should test and compile best-practices related to building collaboration and connections between medical practices and community resources, as well as community-wide referral networks and inter-agency agreements.

Partnerships between medical staff and practices and other resources in the community, such as providers, agencies, and services, are clearly beneficial and essential to refer pregnant patients with substance dependency for treatment and ancillary services. This can include mental health providers, home visitation services, and other services to support transportation and childcare needs, for example. It is unclear what circumstances best support partnerships
between obstetric practices and community services, but it may involve practice size and resources, as well as social work staff.

There were several strengths associated with identification of facilitators and barriers of obstetric screening for opioid use disorder (Aim 2). First, this Aim was guided by the Theoretical Domains Framework, which provides constructs embedded within domains that are considered important to consider within the context of clinical behavior of providers. The Theoretical Domains Framework contains certain domains that seemed important in the consideration of provider screening for opioid use, such as Social-Professional Role and Identity, and Emotion, which are not prominently considered within other similar frameworks and theories. Second, the interpretation of the screening facilitators and barriers easily and clearly fit within another framework, the Social Ecological Model. Synthesizing findings within this model is beneficial because it is commonly used and identifies the level at which certain facilitators and barriers impact screening, namely, the patient, provider, practice, and community levels.

There were also several limitations of Aim 2. The interview guide was long and, for many of the interviews, not all theory-based domains were fully addressed. Certain questions were intentionally left broad to allow for participant interpretation, such as with the questions related to further training that would be beneficial, emotions related to screening and women with opioid use disorder, and the impact of COVID on screening. As a result, participant responses were divergent in their interpretation and approach in their responses. For example, some participants responded to the question about future training by focusing on training approaches, such as providing short trainings, online trainings or training during lunch while providing food. Other participants focused on training topics, such as trauma-informed care or methadone dosing during pregnancy. As a result, some findings are predominantly beneficial for identifying a range of issues or needs and for future research question and hypothesis generation. However, the findings were not gathered in a systematic and rigorous enough approach with which to
identify differences by group, such as profession or work environment. Limitations of recruitment and study population were discussed in Aim 1.

This study had several implications for clinical practice. While certain patient characteristics, such as many co-morbid conditions, severe intellectual deficits, and certain psychiatric disorders, may make screening difficult, there should be pathways for follow-up and future screening. There should be clarity around, and training on proper billing to optimize reimbursement for substance dependency screening. In addition, other training would be beneficial, such as continuing education units and experiential training opportunities, particularly in screening best practices in the obstetric setting, substance dependence treatment, and child welfare. Providers should focus on patient-provider relationships, rapport, and trust and be adequately trained to maximize their relationships and minimize bias or judgment. Finally, few participants discussed reproductive justice or family planning. Providers and practices should ensure discussion about the desires of patients to have more children and optimal timing, as well as options for delaying or preventing future pregnancies, if desired. According to Jones, et al., patients should receive contraceptive counseling both during pregnancy and in the postpartum period (2014). Other guidance encourages consideration of long acting reversible contraception insertion during the birth hospitalization to reduce access and compliance barriers (E. E. Krans et al., 2015). All of these identified clinical implications could be evaluated within different clinical setting to identify opportunities for future quality improvement initiatives.

Future projects may consider the role of ancillary tools and decision support systems, which have been shown to help improve guideline implementation. A scoping review by Fischer, Lange, Klose, Greiner & Kraemer (2016) found that there were several guideline-related factors that may impact implementation. Their recommendations to promote implementation included having short, user-friendly guidelines, as well as ancillary tools, such as electronic platforms (e.g., smart phones, tablets) and decision-support systems (F. Fischer et al., 2016). Such
decision-support systems could assist with identifying which screening recommendations are particularly salient for certain patients and could both shorten the screening time required and increase effectiveness. These could be built into EMR systems or used as a stand-alone technology as an application on a mobile device, for example. Another study, performed within outpatient Dutch cardiac rehabilitation clinics, interviewed health care professionals about their adherence to guideline adoption following the implementation of a computerized decision support system (Goud et al., 2010). Participants reported improved guideline adherence following the decision support system implementation, largely through improving familiarity with the guidelines and the related decision logic, and by reducing guideline complexity (Goud et al., 2010).

There are also policy implications of Aim 2. While several important aspects of provider training have been discussed, professional organizations and practices should develop minimum standards for training on substance use and abuse, screening, and issues related to patient-provider rapport, trust, and shared decision-making. In addition, professional organizations should develop standards and best-practices for developing partnerships with community organizations, agencies, and other providers to ensure a spectrum of appropriate services and providers for patients with substance dependence.

The facilitators and barriers identified in Aim 2 also support the identification of several research topics to explore in the future. While facilitators and barriers of screening for opioid use have been identified within this study population and geographic area, it would be beneficial to identify whether these are the facilitators and barriers identified amongst other providers in other areas. It would also be beneficial to identify the most salient facilitators and barriers to guide the identification and development of future interventions. Community task forces have been identified as potentially beneficial, and future research should better understand the expected outputs of community task forces and evaluate their effectiveness.
There were several future research topics identified relating to providers. Provider training should be evaluated, both in terms of the most important topics to cover and the most effective training methods and approaches. Additionally, while participants discussed screening and referral to treatment fairly thoroughly, there was much less discussion about the brief intervention component of SBIRT. Therefore, future research should clarify the role of brief intervention and measure the extent to which it is taking place among different professions of providers. Moreover, the limitations of the identification of the skills required for effective screening have been discussed. Therefore, future research should identify screening best-practices and related skills required. This may be done through observation methods or by narrative inquiry, in which providers are asked to tell a story about a time in which screening was especially effective. Additionally, such training and evaluation may be incorporated into student education within medical and nursing schools and extended into residency and fellowship programs. Finally, this study has been done through the perspective of the providers and it would be greatly beneficial to better understand the perspective of patients with opioid use disorder and how they interpret facilitators and barriers of screening.

**Aim 3 Discussion and Implications**

The results from Aim 3 support understanding of the fidelity of hospital policies with clinical bundle components and issues related to the development and collection of hospital policies. In this section, I will describe fidelity of hospital policies with clinical bundle components, limitations in clinical bundle recommendation language, and difficulties associated with development and collection of hospital policies.

Despite many attempts to obtain written policies from hospitals within the study region, only two hospitals provided written information and a brief interview about their screening policies. At one hospital, this consisted of a written policy and validated screening tool. At the
other hospital, this consisted of a validated screening tool, and EMR questions and prompts related to primary and secondary opioid screenings.

Categorization of certain screening elements was fairly straightforward. For instance, hospitals may universally screen using validated screening tools, which clearly has fidelity with the recommendation to “assess all pregnant women for substance use disorders” and to “utilize validated screening tools to identify drug and alcohol use.”

The recommendation to “incorporate a screening, brief intervention, and referral to treatment approach in the maternity care setting” is not necessarily contained within written hospital policy or EMR questions and prompts. One hospital included a pathway for follow-up within their written policy. The other indicated on the validated screening tool to “inform provider if any question is positive”. However, there is no written indication that the provider will perform a brief intervention and referral to treatment.

The recommendation to “ensure screening for polysubstance use among women with opioid use disorder” could also be difficult to determine fidelity. For one hospital, the EMR prompts contained a multitude of options for selecting different substances. However, without a written policy, it is unclear whether providers ask about each of these categories and substances. At the other hospital, the screening was primarily for opioids but no other substances. Likewise, “ensure the ability to screen for infectious disease (e.g., HIV, Hepatitis and sexually transmitted infections)” did not appear to be universally done. One hospital provided information about screening for COVID and tuberculosis but did not provide any information about screening for sexually transmitted infections. It is possible, however, that the sexually transmitted infection questions are contained in a different policy and EMR section and may take place. The other hospital did not provide information about screening for infectious diseases at all, although interview participants described screening for sexually transmitted infections at this hospital. Therefore, hospitals may have greater fidelity with this recommendation than is suggested by the findings of this study.
Certain recommendations were difficult to determine fidelity with recommended practices. First, the recommendation to “screen and evaluate all pregnant women with OUD for commonly occurring comorbidities” does not contain any detail about which commonly occurring comorbidities to include. At one hospital, the social assessment included issues such as homelessness, housing problems, and transportation problems. However, no medical co-morbid conditions were identified in the EMR questions and prompts provided. At the other hospital, EMR questions and prompts included human trafficking, caffeine, tobacco, alcohol, and recreational drug use. It would be beneficial for this recommendation to have more clarity around which co-morbid conditions should be included in routine screening. According to Reddy, et al., prenatal screening should include social conditions, such as unstable housing, lack of social support, substance use of partner, food insecurity, employment, education, parenting, and legal issues (Reddy et al., 2017). However, the medical conditions for screening remain less clear. Without a recommended screening of social and medical issues, these screenings would be beneficial to identify under commonly occurring comorbidities.

Similarly, the recommendation to “ensure the ability to screen for psychiatric disorders, physical and sexual violence” is difficult to determine fidelity. While each hospital screened for certain psychiatric disorders, they did not screen for the same conditions. One hospital screened for mental health, including mood disorders, depression, postpartum depression, and any “psychiatric issues”. The other hospital screened for “little interest in doing things” and “feeling down, depressed or hopeless”. As with the co-morbidities recommendation, it would be beneficial to identify which psychiatric conditions warrant universal screening. Reddy, et al. (Reddy et al., 2017) recommended comprehensive screening for post-traumatic stress disorder, depression, anxiety, bipolar and other psychiatric disorders, which may be a useful starting point. Both hospitals screened for physical violence in terms of “domestic violence” and one hospital also screening for “history of abuse or violence”. Additionally, both hospitals screened for sexual violence, with one hospital screening for “human trafficking” and the other hospital
screening for “history of sexual abuse or forced sexual contact”. It would be beneficial to provide clarity around what current and former physical and sexual violence would be the most important screens to perform.

Some studies have shown the beneficial nature of the role of policy in implementation of guidelines or evidence-based practices. Titler, in an evidence-based handbook for nurses, reported that it is important to ensure that policies and procedures, as well as EMRs and clinical pathways, support implementation of evidence-based practices (2008). Gerrish & Clayton conducted a survey with clinical nurses to identify sources of knowledge that informed changes in clinical practice (2004). Policy and procedure manuals were ranked highly as a source of knowledge to inform practice of the survey participants, and this was ranked much higher than accessing information from professional journals, research journals, medical journals, or textbooks (Gerrish & Clayton, 2004). Another study, based on a cross-sectional survey with 298 nurses and allied professionals, identified incompatibility between guidelines and workplace policies as a work-related barrier to guideline implementation (McKee et al., 2017). However, there is limited literature on the role of workplace policies and implementation of guidelines in clinical practice.

Some studies have identified the importance of policy development to support guideline implementation among providers. Ploeg, Davies, Edwards, Gifford & Miller identified factors impacting guideline implementation among administrators, nursing staff, and project leaders. Participants in their study identified embedding the guideline or evidence-based practice into policy as an important component of implementation. “Participants explained that embedding the guideline in organizational policy and procedures, including documentation systems at the start of implementation acted as a facilitator. Staff particularly noted the value of having documentation systems that acted as reminders for guideline implementation and helped avoid duplication of charting. [insert reference, page 214]”
There are a number of issues related to the extent to which written hospital policies can be collected from delivery hospitals. First, according to a representative of one participating hospital, their hospital is moving away from developing written hospital policies out of liability concerns. This mirrors the liability concerns mentioned by an interview participant who was told to not document the use of validated screening tools. The development of a hospital policy sets a standard of care and clearly there are concerns about deleterious litigation of hospitals, practices, and providers for not ensuring this minimum standard of care. It remains unclear how, in the face of liability concerns and decreasing written hospital policies, minimum clinical standards are communicated, tracked, and enforced.

In addition, few survey and interview participants reported having hospital policies, or provided the contact information for a staff member who could provide such policies. Either there is a lack of information about such policies and who has access to them, or there is a concern about sharing such policies. Either way, this makes collecting hospital policies exceedingly difficult.

The policy component of the study (Aim 3) had several strengths. Identifying hospital policies supportive of universal obstetric screening of opioids and other substances is beneficial to identify and disseminate policy best practices. Several components of the screening recommendations were included in the hospital policy and/or EMR screening questions, which is beneficial to identify. However, certain recommended policy components lacked clarity and it was difficult to determine whether hospitals had full fidelity to the recommendation. For example, providers are recommended to screen for co-morbid conditions, but do not identify the most frequent, significant, or high-risk conditions for which to screen. Likewise, the recommendation to ensure the ability to screen for psychiatric disorders, physical and sexual violence is unclear. Both hospitals had questions about depression or “feeling down, depressed or hopeless”, however, neither identified screening related to anxiety or post-traumatic stress disorder. Similarly, one hospital screened for domestic violence and sexual trafficking, while the
other screened for domestic violence, a history of sexual abuse or forced sexual contact and a
history of abuse or violence, in general. It would be beneficial to provide further clarity around
these particular screening recommendations.

However, there were also limitations with the policy component. First, there was very
limited participation. Of the survey and interview participants, only two hospitals had staff
willing to provide and discuss their obstetric screening policy. While these hospitals were of very
different sizes and patient populations, they likely do not represent the broader region because
of the small sample size. It is likely that there are hospitals without screening policies that either
did not have staff who took the survey or did not offer to provide policy information. Second,
because of a trend towards not having written hospital policies due to liability concerns, one of
the two hospitals did not have a written policy. Instead, they provided a brief interview and
screenshots of screening questions from their EMR system. A limitation of this data collection is
that it remains less clear to what extent each question is asked, the context of the screening and
any resulting follow-up based on positive screens. Third, the recruitment strategy was biased
towards hospitals with written policies in two ways. Staff working at hospitals with a focus on
obstetric screening for opioids and other substance use may have been more likely to participate
in the survey. Additionally, the policy question within the survey asked participants whether
they had a written policy and, if so, to provide the contact information for someone at their
hospital who could provide such policy. In this way, hospitals without written policies were
likely to be excluded from participation.

There are certain practice implications because of this study. With at least certain
hospitals having liability concerns with regards to maintaining written hospital policies, it is
important to standardize practices and identify best-practices. Therefore, hospitals without
written policies should ensure minimum practices through the EMR, such as requiring
completion of certain screening questions. In addition, there should be increased screening to
optimize alignment and fidelity with recommended practices, such as ensuring providers
performing brief interventions as a component of SBIRT and screening for appropriate co-morbid conditions and psychiatric disorders. Finally, it may be beneficial to develop a compilation of hospital policies for institutions and practices to easily identify optimal screen policy language for their own adoption.

The policy implications of the policy component of this study relate to the AIM bundle recommendations. Certain AIM bundle components lack clarity and future recommendations should be more detailed for practices and institutions to be able to determine whether their in-house policies or practices are fully aligned with the recommendations. This is most evident for the recommendations relating to ensuring the ability to screen for psychiatric disorders and violence, including both physical and sexual violence; and screen and evaluate all pregnant women with opioid use disorder for commonly occurring co-morbidities. A list of the most salient psychiatric disorders and co-morbidities for which to screen, as well as clarity about current and/or former physical and sexual violence, would be beneficial. The sexual violence screening, in particularly, may overlap with certain screens for sexual trafficking and identifying the areas of overlap may help to streamline screening.

Future research related to the policy component of this study may focus on more widespread collection of policies, protocols, clinical pathways, or EMR screening questions to identify alignment and fidelity with best practices. Additional studies investigating actual screening practices and the extent to which they are aligned with written policies and recommendations or evidence-based practices, would be beneficial.

**Overall Discussion and Implications**

The use of the Theoretical Domains Framework was beneficial for this research, providing a framework of domains to investigate to identify salient facilitators and barriers of screening. There were facilitators and barriers identified by participants within each domain of the framework, indicating that it was a good fit for this study. A weakness of using this
framework, however, is that it was developed to identify psychological facilitators and barriers of EBP implementation. As a result, non-psychological factors may not have been elicited by participants. Other implementation science frameworks may have beneficial for use in this project, such as the Consolidated Framework for Implementation Research. This framework contains domains that were not investigated in this study, such as characteristics of the intervention, characteristics of the individual, and implementation processes.

The use of the Theoretical Domains Framework was particularly desirable because of the map between facilitators and barriers and subsequent interventions to aid in implementation (Susan Michie, Van Stralen, & West, 2011). In this model, physical and psychological capability can be achieved through training and skill development. Motivation can be achieved through eliciting positive feelings about the targeted intervention and providing incentives. Finally, physical and social opportunities can be achieved through environmental change and enablement. Future studies should evaluate the most salient facilitators and barriers to screening, as well as identify the corresponding interventions and policies to optimize implementation.

Previous literature has identified certain factors to be associated with screening pregnant women for opioid use, namely, the provider’s relationship with child welfare and their perceptions of legal consequences (Substance Abuse and Mental Health Services Administration, 2016). However, in this study, these factors were not identified by participants as salient barriers of screening. It may be that these factors are somewhat outdated in their impact on screening, or that since reporting of positive drug screens to child welfare seems to generally be a role of social workers, there were not enough participants with this professional background to identify these factors.

Many qualitative and quantitative participants reported universal screening of pregnant women, which is a hopeful finding. However, there is likely a bias in participation that tended towards participants being more knowledgeable and involved in opioid-related initiatives during
pregnancy. Therefore, it remains important to identify practices and practitioners who are less knowledgeable and involved in opioid-related quality improvement efforts to understand their practices and perspectives on opioid-related screening.

Several facilitators and barriers of opioid-related screening were identified, spanning from patient-related factors to provider-related, practice-related and community-related factors. These factors all help to better understand the landscape of opioid-related screening, knowledge, beliefs, and behaviors. While a broad range of facilitators and barriers were identified, it is important to place them within the context of the participants, most of which were reporting on their professional experience outside of the prenatal obstetric practice setting. The wide range of participant background and work setting cast a broad net to understand screening behaviors and attitudes, however, this may have limited applicability in outpatient obstetric practice settings. Future research should be performed to examine the extent to which the facilitators and barriers identified in this study are relevant for obstetric providers in prenatal settings across a larger geographic setting.

Aim 3 findings were positive in the sense that both hospitals had policies or EMR prompts relating to universal screening of pregnant women for opioid use and the use of validated screening tools. This was discussed by hospital staff as being an outgrowth of MORE initiative participation. Therefore, both hospital participation in the MORE initiative and written hospital policies or EMR prompts regarding universal screening and the use of validated screening tools appear to be facilitators of hospital screening. However, certain elements of recommended practices were found to be unclear or to benefit from further clarification. While both hospitals had policies regarding screening for physical or domestic violence, secondary screens such as sexual violence and comorbidities were somewhat unclear and less common.
**Conclusion**

In summary, this study sought to describe clinical practice behaviors related to opioid use during pregnancy; identify facilitators and barriers to clinical guideline implementation in both inpatient and outpatient settings; and categorize hospital policies according to their fidelity with clinical bundle components. To address these aims, an online survey, in-depth interviews and policy component categorization took place with providers who work with pregnant women in the west-central Florida region. Elements of both the online survey and in-depth interview were guided by domains based on the Theoretical Domains Framework. Providers were generally positive about screening for substance and opioid use among pregnant women, although the frequency of screening, the use of validated screening tools, and screening for co-morbid conditions were varied by provider type and setting. Based on the study design, recruitment methods and findings, it is expected that participants are not representative of the general provider population within this region, namely that they are probably more invested in opioid screening and involved in the Florida Perinatal Quality Collaborative’s Maternal Opioid Recovery Effort quality improvement initiative than the general population of providers.

Many facilitators and barriers of screening were identified and were organized by patient-level, provider-level, practice-level, and community-level. Factors identified at the patient-level included being present for appointments, along with psychiatric and intellectual conditions that may interfere with screening. Provider-level factors related to the patient-provider relationship and rapport, training, skill, competing priorities, and liability concerns. Practice-level factors included resources, staffing, buy-in, policies, partnerships and technology. The importance of screening questions and reminders housed within the electronic medical record was a key finding that could inform future EMR components. Finally, community-level factors included resources, providers and partnerships.

There were many public health and clinical medicine implications of this study.

Screening recommendations by professional organizations may benefit from additional clarity,
particularly around which co-morbidities to screen for in the clinical setting. Having appropriate staffing with an interprofessional team was identified as highly beneficial, although many outpatient obstetric practices do not have social workers or behavioral health specialists on staff or on-site. Future efforts may include local partnerships or the ability to refer to remote mental and/or behavioral health providers remotely. Different training needs and approaches were identified, such as informational trainings, exposure to patient stories, trauma-informed care, and experiential learning through site visits or shadowing. Finally, to provide an environment where pregnant women are comfortable disclosing substance use, providers may consider more widespread training and utilization of trauma-informed care, patient-centered care, shared decision-making, and patient-provider trust and rapport approaches.
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APPENDIX 1. RECRUITMENT MATERIALS

Figure 9A. Recruitment Flyer
October 15, 2019

Tara Foti  
Community and Family Health  
13201 Bruce B Downs Blvd  
MDC56  
Tampa, FL 33612

RE: Exempt Certification
IRB#: Pro00041955
Title: Screening of Pregnant Women with Opioid Use Disorder: Identifying Factors Impacting Implementation of Clinical Bundle Components in West-Central Florida Using the Theoretical Domains Framework

Dear Mrs. Foti:

On 10/14/2019, the Institutional Review Board (IRB) determined that your research meets criteria for exemption from the federal regulations as outlined by 45 CFR 46.104(d):

(2) Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:(i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; (ii) Any disclosure of the human subjects’ responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, educational advancement, or reputation; or (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).
As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF HRPP policies and procedures.

Please note, as per USF HRPP Policy, once the exempt determination is made, the application is closed in ARC. This does not limit your ability to conduct the research. Any proposed or anticipated change to the study design that was previously declared exempt from IRB oversight must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant an Amendment or new application.

We appreciate your dedication to the ethical conduct of human subjects research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Melissa Sloan, PhD, Vice Chairperson USF Institutional Review Board
APPENDIX 3. AIM 1-2 INTERVIEW GUIDE

Date and Time of interview: ____________________________

This interview should take approximately 30-45 minutes. Your participation is completely voluntary and we can stop the interview at any time. Everything you say will be confidential and will not be linked to you or your name. There are no right or wrong answers to any of these questions. I just ask that you answer me as honestly as you can. Would you mind if I audio-record our conversations?

[Background Practice Demographics]
Do you provide prenatal care?

Do you see pregnant women with opioid use disorder?

- If no, where do those patients go for prenatal care?

In what settings do you see pregnant patients who might have opioid use disorder? (prompts: hospital, clinic, outpatient practice, jail, social service agency, in-home)

Alternative for non-physicians: Please tell me about your job an in what capacity and settings you work with pregnant women.

[Background Screening behavior]
I have a few questions about screening.

Can you tell me about different kinds of screening you do for pregnant women (prompts: tobacco, alcohol, drugs, mental health, STI, domestic violence/IPV)?

For each kind of screen mentioned:
- Under what circumstances do you do this screen?
- What do you use to do this screen (prompt: use of validated tools)?
- Can you walk me through what happens if the screen is positive? Negative?

Do you take care of pregnant women with opioid use disorder?

- If no: Have you ever screened a pregnant woman for opioid use disorder?
  - If yes: What happened to pregnant women who were screened for opioid use disorder (prompt: Were they referred elsewhere, discharged from practice)?

Do you routinely screen all patients [clients] for opioid use disorder?

- If yes: What screening tool or processes do you use? (prompts: conversational, verbal, urine drug screen, validated tool – name?).
• If no: Under what circumstances do you screen pregnant patients for OUD?

How do you view your role in screening?

**Addition for non-physicians:** I’d like to hear your impressions about what you think obstetricians are doing in regards to screening pregnant women.

• Are they screening?
• Who are they screening?
• How are they screening?
• What issues might there be with their screening?

**[Questions about caring for pregnant women]**

What are your biggest concerns about caring for/working with pregnant women with OUD?

If a patient reveals OUD to you, will you continue to provide care for/work with her?

Alternative: Under what circumstances will you recommend or require that a pregnant patient seek care from another provider or practice?

Are there any/are you aware of any reimbursement barriers to screening?

Can you tell me about policies that may be in place where you work with pregnant women that may impact screening in any way? [prompts: positively? Negatively?]

**[Questions about Professional Education and Service]**

What kind of professional continuing medical education [training] would help you care for pregnant women with opioid use disorder?

Do you participate in any local or state workgroups on NAS or maternal OUD?

**[Questions based on previous factors identified as relating to screening behavior]**

I’d like to hear about your relationships with local child welfare – can you tell me about any experiences you’ve had working with child protective workers or child welfare agencies?

Can you think of any potential mother or infant consequences of screening?

• How might these consequences impact your screening behavior?

**[Questions based on the Theoretical Domains Framework]**

Now I have a number of questions for you regarding implementation of the AIM bundle. Some of these questions might feel repetitive because they are asking slightly different things.
In the online survey you took, there was a list of recommended screening practices from ACOG. Just so that we’re on the same page, I’ll quickly read these recommendations to you.

Every provider/clinical setting will:

- Assess all pregnant women for substance use disorders.
  - Utilize validated screening tools to identify drug and alcohol use.
  - Incorporate a screening, brief intervention, and referral to treatment (SBIRT) approach in the maternity care setting.
  - Ensure screening for poly-substance use among women with Opioid Use Disorder.
- Screen and evaluate all pregnant women with opioid use disorder for commonly occurring co-morbidities.
- Ensure the ability to screen for infectious disease (e.g. HIV, Hepatitis and sexually transmitted infections)
- Ensure the ability to screen for psychiatric disorders, physical and sexual violence.
- Provide resources and interventions for smoking cessation.
- Match treatment response to each woman’s stage of recovery and/or readiness to change.

**Knowledge**
- Are you aware of the Obstetric Care for Women with Opioid Use Disorder Patient Safety Bundle?
- How familiar are you with the screening recommendations within this bundle?
- How did you hear about this bundle?
- What do you think about the evidence base for these recommendations?

**Goals**
- How do these screening recommendations relate to other guidelines or recommendations that may exist (for example, other ACOG, SMFM or ASAM guidelines)?
  - Are they aligned? In conflict?

**Intentions**
- What are your intentions with regards to implementing these screening practices?

**Skills**
- What techniques or skills might be useful in implementing these screening recommendations?
  - How important do you think these techniques or skills are?

**Optimism**
- What value is there in following these screening recommendations?
- How positive do you feel about these screening recommendations?
- How negative do you feel about these screening recommendations?

**Beliefs about Capabilities**
- How easy is it for you to regularly implement these screening recommendations? [modify to “would it be for you” if not currently implementing the bundle at all]
- What problems have you encountered when implementing these screening recommendations? What would help resolve these problems? [modify to “would you anticipate encountering” if not currently implementing the bundle at all]
| **Environmental Context and Resources** | What resources or environmental factors interfere with implementing these screening recommendations?
What resources or environmental factors or help with implementing these screening recommendations?
What competing tasks and/or time constraints might get in the way of implementing these screening recommendations? |
| **Goals** | How often do you feel that you should follow these screening recommendations?
What other things might you want to do for patients’ care that could interfere with following these screening recommendations? |
| **Memory, Attention and Decision Process** | Can you please describe what goes through your mind when deciding whether or not to follow these screening recommendations?
Might you decide not to follow these screening recommendations? Why or why not? |
| **Social/Professional Role and Identity** | How do you think following these screening recommendations is part of your professional role?
Can you identify other health professionals who should be doing this screening?
Is there anything in your professional role that would help you determine whether or not to follow these screening recommendations (e.g., any protocols you follow, other technologies)? |
| **Reinforcement** | Based on previous experience with other patients, what encourages or discourages you from following these screening recommendations? |
| **Beliefs about Consequences** | What do you think will happen if you do not follow these screening recommendations?
What are the benefits of following these screening recommendations?
Do you think the benefits of following these screening recommendations outweigh the costs (in terms of benefits and costs for you, your patients, practice, etc.)? How so? |
| **Social Influences** | How do others (i.e., colleagues, nurses, patients, etc.) influence your opinion on whether or not to follow these screening recommendations?
In what way might patient emotions or behaviors ever influence whether or not you follow these screening recommendations? |
| **Emotion** | How do you feel about following these screening recommendations?
When you are with a pregnant patient who uses opioids, what feelings arise for you (could prompt with examples from other interviews)?
Can you think of a time when your emotions might have influenced your decision on whether or not to follow these screening recommendations (e.g., cognitive overload, stress)? |
| **Behavioral Regulation** | What strategies or plans would help you to follow these screening recommendations?
Can you think of a time when you used such strategies or plans to follow these screening recommendations? |

Do you have anything else to add about screening?
Thank you, these are all of the questions that I have for today. Is there anything else that you would like to add on this topic that we did not discuss today?

We are trying to recruit other physicians for this study. Do you know other obstetric or addiction providers who might be interested in participating? If so, can you please provide their name(s) and contact information (or share the survey link with them)?

[Emergent Questions Added]

Can you tell me about how you build rapport with your patients/clients and how you know when good rapport has been established?

What impact, if any, has COVID had on screening.

What impact has COVID had on pregnant women with opioid use disorder?

[Concluding Interview]

Thank you so much for participating today and making an important contribution to our study. As a reminder, we will not be using your name or any other individual-level information in our reported findings. Please feel free to contact me if you have any questions or concerns about this study.
APPENDIX 4. ONLINE SURVEY

Screening of pregnant women in West-Central Florida

Survey Flow

<table>
<thead>
<tr>
<th>Block: Default Question Block (37 Questions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page Break</td>
</tr>
</tbody>
</table>

Q1 Informed Consent to Participate in Research  Information to Consider Before Taking Part in this Research Study Title: Screening of Pregnant Women with Opioid Use Disorder: Identifying Factors Impacting Implementation of Clinical Bundle Components in West-Central Florida Using the Theoretical Domains Framework  PRO # 00041955  Overview: You are being asked to take part in a research study. The information in this document should help you to decide if you would like to participate. The sections in this Overview provide the basic information about the study. More detailed information is provided in the remainder of the document.  Study Staff: This study is being led by Tara Foti who is a PhD Candidate at/in the University of South Florida. This person is called the Principal Investigator. She is being guided in this research by Dr. Russell Kirby. Other approved research staff may act on behalf of the Principal Investigator.  Study Details: This study is being conducted online. The purpose of the study is to understand clinician screening behaviors of pregnant women, particularly as they relate to opioid use and other conditions that women with opioid use disorder commonly experience, and to find factors that either increase or decrease screening behaviors. This will be done through an online 10-minute survey.  Participants: You are being asked to take part because you work with pregnant women within the West-Central Florida region.  Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start. Alternatives to participating in the study include not participating. Your decision to participate or not to participate will not affect your job status, employment record, employee evaluations, or advancement opportunities.  Benefits, Compensation, and Risk: We do not know if you will receive any benefit from your participation. There is no cost to participate. You will not be compensated for your participation. This research is considered minimal risk. Minimal risk means that study risks are the same as the risks you face in daily life.  Confidentiality: Even if we publish the findings from this study, we will keep your study information private and confidential. Anyone with the authority to look at your records must keep them confidential.  Why are you being asked to take part? You are being asked to take part because you provide clinical care for pregnant women and may either screen for opioid use or be aware of how screening generally happens. We are interested in understanding your perspective on these screening practices and whether there are factors that may make you or others more or less likely to screen pregnant women.
Study Procedures If you take part in this study, you will be asked to follow an electronic survey link to an online Qualtrics survey and complete the approximately 10-minute survey. Within this survey, you will be asked whether you would like to also participate in an interview and whether you are aware of related written hospital policies regarding screening of pregnant women. If you are interested in participating in an interview, you will be asked to provide your name and contact information to set up an interview at a time of your convenience. If you indicate the presence of hospital policies, you will be asked to provide the name and contact information for an individual who may be able to provide the PI with the written policy.

Alternatives / Voluntary Participation / Withdrawal You do not have to participate in this research study. You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study. Your decision to participate or not to participate will not affect your job status.

Benefits and Risks You will receive no benefit from this study. This research is considered to be minimal risk.

Compensation You will receive no payment or other compensation for taking part in this study. Privacy and Confidentiality We will do our best to keep your records private and confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Certain people may need to see your study records. The only people who will be allowed to see these records are: Principal Investigator, research team, the advising professor. The University of South Florida Institutional Review Board (IRB). It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet. However, your participation in this online survey involves risks similar to a person’s everyday use of the Internet. If you complete and submit an anonymous survey and later request your data be withdrawn, this may or may not be possible as the researcher may be unable to extract anonymous data from the database. Data collected for this research will be stored at the College of Public Health, located at the University of South Florida in the United States.

Contact Information If you have any questions, concerns or complaints about this study, call Tara Foti at 585-746-3857. If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu. We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are. You can print a copy of this consent form for your records.

☐ I freely give my consent to take part in this study. I understand that by proceeding with this survey that I am agreeing to take part in research and I am 18 years of age or older. (1)
Q40 Please select all of the following statements that are applicable to you:

☐ I am able to read, write and speak in English  (1)

☐ I am a practicing clinician or staff member who works with pregnant women who may have opioid use disorder  (2)

☐ I work in an inpatient hospital setting  (3)

☐ I work in an outpatient or community-based setting  (5)

☐ I provide prenatal care  (6)

☐ I provide addiction treatment services for pregnant women  (7)

☐ I work within Charlotte county  (8)

☐ I work within Hernando county  (4)

☐ I work within Hillsborough county  (9)

☐ I work within Lee county  (10)

☐ I work within Manatee county  (11)

☐ I work within Pasco county  (12)

☐ I work within Pinellas county  (13)
I work within Sarasota county (14)

Q2 Age (years)

- under 20 (16)
- 20-29 (4)
- 30-39 (6)
- 40-49 (8)
- 50-59 (10)
- 60 and older (12)

Q3 Race

- White (1)
- Black (2)
- Asian (3)
- Other, please describe: (4) ______________________________________________________________
Q4 Ethnicity
- Hispanic (1)
- Non-Hispanic (2)

Q5 Profession
- Physician (1)
- Advanced Practice Provider (2)
- Nurse (4)
- Midwife (7)
- Social Worker (5)
- Other, please describe: ________________________

Q43 Are you currently a trainee (student, resident, fellow, intern)?
- No (3)
- Yes, please describe: ________________________

Display This Question:
If Q43 = No
Q44 Number of years in profession, post training (e.g. since residency, fellowship, internship or clinical rotations):

________________________________________________________________

Display This Question:
If Q5 = Physician

Q6 Physician Specialty

☐ Obstetrics (1)

☐ Obstetrics, Maternal Fetal Medicine specialist (2)

☐ Psychiatry (3)

☐ Family Medicine (4)

☐ Other, please describe: (5)

________________________________________________________________

Display This Question:
If Q5 = Physician

Or Q5 = Advanced Practice Provider

Q8 Do you have a Buprenorphine waiver?

☐ No (1)

☐ Yes, since (year): (2) ________________________________________________

________________________________________________________________
Q15 Please select the locations in which you work with pregnant or postpartum women:

- [ ] Outpatient medical setting (4)
- [ ] Inpatient Antepartum (7)
- [ ] Inpatient Labor and Delivery (5)
- [ ] Inpatient Postpartum (6)
- [ ] Other Inpatient setting, please describe (8)

________________________________________________

- [ ] Social Service Agency or other Community-Based setting (9)
- [ ] In-Home (10)
- [ ] Jail (11)
- [ ] Other Outpatient setting, please describe (12)

________________________________________________

Display This Question:

If Q15 = Inpatient Antepartum
Or Q15 = Inpatient Labor and Delivery
Or Q15 = Inpatient Postpartum
Or Q15 = Other Inpatient setting, please describe

Q14 These questions will address the hospital at which you work.
Name of Hospital
Please select the hospital at which you do the most deliveries or provide clinical care for the highest number of opioid-exposed pregnancies and answer all of the following questions in relation to your work at this hospital.

▲ Adventhealth North Pinellas (4) ... Other (21)

---

**Display This Question:**

If Q15 = Inpatient Antepartum  
Or Q15 = Inpatient Labor and Delivery  
Or Q15 = Inpatient Postpartum  
Or Q15 = Other Inpatient setting, please describe

Q19 Are you aware of physicians/providers with outpatient buprenorphine waivers at your hospital?

- Yes (1)
- No (3)
- Unsure (2)

---

**Display This Question:**

If Q19 = Yes

Q20 Are you aware of any outpatient buprenorphine providers at your hospital who accept pregnant women?

- Yes (1)
- No (2)
- Unsure (3)

---

**Display This Question:**

If Q5 = Nurse
Q10 Current Nurse Role

- Staff nurse (1)
- Administrative nurse (2)
- Discharge coordinator (3)
- Nurse midwife (5)
- Other, please describe: (4) __________________________________________________

Display This Question:
If Q5 = Advanced Practice Provider

Q11 Current Advanced Practice Provider Role

- Physician Assistant (1)
- Nurse Practitioner (2)
- Other, please describe: (3) __________________________________________________

Q12 Number of years in current role

________________________________________________________________________
Q42 In your current role, are you responsible for clinical guidelines (e.g. creation, implementation, training, measurement)?

- No (4)
- Yes, please describe: (1) ________________________________

Display This Question:
If Q5 = Physician
Or Q5 = Advanced Practice Provider
Or Q5 = Midwife
And Q6 ≠ Psychiatry

Q13 Approximate number of deliveries performed/assisted by you in the previous calendar year (i.e. 2019):

- None (4)
- 1-9 (5)
- 10-19 (12)
- 20-39 (6)
- 40-59 (7)
- 60-79 (8)
- 80-99 (9)
- 100 or more (10)
Q18 Does your hospital have an obstetric residency program?

- Yes (1)
- No (4)
- Unsure (5)

Q21
These questions will address the level of implementation of evidence-based practices at the hospital at
which you work.
Please indicate the extent to which you currently do the following:

<table>
<thead>
<tr>
<th>A) Assess all pregnant women for substance use disorders. (1)</th>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Very Often (4)</th>
<th>Always (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B) Utilize validated screening tools to identify drug and alcohol use. (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C) Incorporate a screening, brief intervention, and referral to treatment (SBIRT) approach in the maternity care setting. (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D) Ensure that screening for polysubstance use among women with opioid use disorder occurs, either by you or someone else. (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Display This Question:

If Q15 = Inpatient Antepartum
And Q15 = Inpatient Labor and Delivery
And Q15 = Inpatient Postpartum
And Q15 = Other Inpatient setting, please describe

Q22 Please indicate the extent to which you currently do the following:
<table>
<thead>
<tr>
<th>E) Screen and evaluate all pregnant women with opioid use disorder for commonly occurring co-morbidities. (5)</th>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Very Often (4)</th>
<th>Always (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| F) Ensure that screening for infectious diseases (e.g. HIV, Hepatitis and sexually transmitted infections) occurs, either by you or someone else. (6) |
|---|---|---|---|---|---|
| | | | | | |

| G) Ensure that screening for psychiatric disorders, physical and sexual violence occurs, either by you or someone else. (7) |
|---|---|---|---|---|---|
| | | | | | |

| H) Ensure that resources and interventions for smoking cessation are provided, either by you or someone else. (8) |
|---|---|---|---|---|---|
| | | | | | |


1) Match treatment response to each woman's stage of recovery and/or readiness to change. (9)

Display This Question:

If Q15 = Inpatient Antepartum
Or Q15 = Inpatient Labor and Delivery
Or Q15 = Inpatient Postpartum
Or Q15 = Other Inpatient setting, please describe
Please indicate whether there are any policies or protocols that address these recommendations at your hospital or on your unit.

<table>
<thead>
<tr>
<th>Policies/protocols exist (1)</th>
<th>No policies/protocols exist (2)</th>
<th>Unsure whether policies/protocols exist (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Assess all pregnant women for substance use disorders. (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) Utilize validated screening tools to identify drug and alcohol use. (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C) Incorporate a screening, brief intervention, and referral to treatment (SBIRT) approach in the maternity care setting. (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D) Ensure that screening for polysubstance use among women with opioid use disorder occurs, either by you or someone else. (4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Display This Question:**

If Q15 = Inpatient Antepartum  
Or Q15 = Inpatient Labor and Delivery  
Or Q15 = Inpatient Postpartum  
Or Q15 = Other Inpatient setting, please describe
Q25 Please indicate whether there are any policies or protocols that address these recommendations at your hospital or on your unit.

<table>
<thead>
<tr>
<th>E) Screen and evaluate all pregnant women with opioid use disorder for commonly occurring co-morbidities. (5)</th>
<th>Policies/protocols exist (1)</th>
<th>No policies/protocols exist (2)</th>
<th>Unsure whether policies/protocols exist (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F) Ensure that screening for infectious diseases (e.g. HIV, Hepatitis and sexually transmitted infections) occurs, either by you or someone else. (6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G) Ensure that screening for psychiatric disorders, physical and sexual violence occurs, either by you or someone else. (7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H) Ensure that resources and interventions for smoking cessation are provided, either by you or someone else. (8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I) Match treatment response to each woman’s stage of recovery and/or readiness to change. (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q26 Do you have any comments about the presence of policies or protocols that address recommendations regarding screening of pregnant women with opioid use disorder at your place of work?
Q27 The following questions are regarding implementation of the Alliance for Innovation in Maternal Health (AIM) "Obstetric Care for Women with Opioid Use Disorder" bundle. Please view the following AIM bundle components regarding obstetric care for women with opioid use disorder. The entire AIM patient care bundle can be viewed through visiting this link (to prevent disruption to the survey, please open the link in a new internet browser tab).

Clinical Bundle Components:
Every provider/clinical setting
- Assess all pregnant women for Substance Use Disorders.
- Utilize validated screening tools to identify drug and alcohol use.
- Incorporate a screening, brief intervention and referral to treatment (SBIRT) approach in the maternity care setting.
- Ensure screening for poly-substance use among women with Opioid Use Disorder.
  Screen and evaluate all pregnant women with Opioid Use Disorder for commonly occurring co-morbidities.
- Ensure the ability to screen for infectious disease (e.g. HIV, Hepatitis and sexually transmitted infections).
- Ensure the ability to screen for psychiatric disorders, physical and sexual violence.
  Provide resources and interventions for smoking cessation.
- Match treatment response to each woman’s stage of recovery and/or readiness to change.

Each of the following statements refers to these AIM bundle clinical recommendations for screening pregnant women with opioid use disorder. For each statement, please select the response that best indicates your agreement or disagreement on a three-point scale from strongly agree to strongly disagree.
The following questions relate to your own knowledge and beliefs:

<table>
<thead>
<tr>
<th></th>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am familiar with these recommendations. (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I agree with these recommendations. (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>These recommendations are evidence-based. (3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following these recommendations is part of an obstetrician’s role. (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff members other than the obstetrician are not best suited to follow these recommendations. (5)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Q29 The following questions relate to your perception of related skills and costs/benefits:**

<table>
<thead>
<tr>
<th></th>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is not easy to act on these recommendations. (16)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>There are particular skills involved in implementing these recommendations. (15)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>I need to develop the skills necessary to follow these recommendations. (1)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>I am confident that I can follow these recommendations. (9)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>I am not well equipped to follow these recommendations. (10)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Implementing these recommendations will be beneficial for <strong>me</strong>. (11)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Implementing these recommendations will be beneficial for <strong>my patients</strong>. (12)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Implementing these recommendations will be beneficial for <strong>my hospital or employer</strong>. (13)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>The costs of following these recommendations outweigh the benefits. (14)</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Q30 The following questions relate to incentives and motivation.</td>
<td>Agree (1)</td>
<td>Neither agree nor disagree (2)</td>
<td>Disagree (4)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>I am motivated to act on these recommendations. (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are not incentives for following these recommendations. (15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following these recommendations is something I usually do. (17)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am likely to remember to follow these recommendations in the future. (18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are things I need to do before I can follow these recommendations. (21)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are not things that help to prompt me to follow these recommendations. (22)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q32 The following questions relate to your patients and billing.

<table>
<thead>
<tr>
<th></th>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are particular types of patients for whom acting on these recommendations is more difficult. (28)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I worry that following these recommendations might harm my relationships with my patients. (29)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have more important things to discuss with my patients during pregnancy than these recommendations. (30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If women are on methadone, I am more likely to follow these recommendations with them. (33)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not familiar with billing codes for these recommendations. (31)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are financial barriers to following these recommendations. (32)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q31 The following questions relate to your work environment, medical system and colleagues:
There are environmental factors or resources that **help me** follow these recommendations. (27)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are environmental factors or resources that **hinder me** from following these recommendations. (28)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The systems in place **support me to follow** these recommendations. (1)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The systems in place **keep me from following** these recommendations. (21)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If I had Electronic Medical Record (EMR) prompts, I would be more likely to follow these recommendations. (22)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

People I work with follow these recommendations (e.g. other physicians/nurses). (23)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Others I work with **support me to follow** these recommendations. (24)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I feel pressure to implement these recommendations. (25)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I think staff at other hospitals outside of this one do not follow these recommendations. (26)

<table>
<thead>
<tr>
<th>Agree (1)</th>
<th>Neither agree nor disagree (2)</th>
<th>Disagree (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q33 Are there any other factors that you think might impact screening of pregnant women that haven't been covered in this survey?

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Q34 Do you have anything else to add about screening?

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

*Display This Question:*

If Q15 = Inpatient Antepartum
Or Q15 = Inpatient Labor and Delivery
Or Q15 = Inpatient Postpartum
Or Q15 = Other Inpatient setting, please describe
Q35 Does your hospital have any written policies (including policies, procedures, care pathways, written order sets, electronic medical record prompts, etc.) regarding clinical management or screening of pregnant women with opioid use disorder (i.e. addressing any of the elements of the AIM clinical bundle)?

- Yes (1)
- No (4)
- Unsure (5)

Display This Question:
If Q35 = Yes

Q36 Please provide the best contact(s) from whom to request and obtain hospital/unit policies regarding clinical management of pregnant women with opioid use disorder.

- Contact 1 - Name: (1) ____________________________
- Contact 1 - Position: (7) ____________________________
- Contact 1 - Email: (2) ____________________________
- Contact 1 - Phone: (3) ____________________________
- Contact 2 - Name: (4) ____________________________
- Contact 2 - Position: (8) ____________________________
- Contact 2 - Email: (5) ____________________________
- Contact 2 - Phone: (6) ____________________________
Q37 Individuals who manage pregnant women with opioid use disorder in the inpatient or outpatient setting are being recruited for interviews as a part of this study. Interviews would take place at the date/time and location of your choice and would last for approximately 30-45 minutes.

Would you be willing to participate in such an interview?

- Yes (1)
- No (3)

Display This Question:
If Q37 = Yes

Q38 Please provide your contact information to set up an interview.

- Name: (1) ____________________________________________________________

- Telephone Number: (2) ________________________________________________

- Email address: (3) ____________________________________________________

- Preferred method of contact: (4)
  __________________________________________________

Q39 Thank you for your participation in this survey. Please contact the study PI at tfoti@usf.edu with any questions or comments. You may use the following link to share this survey with colleagues or other people who take care of pregnant women:

http://bit.ly/PregScreening

End of Block: Default Question Block
APPENDIX 5. POLICY ABSTRACTION FORM

Hospital ID: _____________________________________

<table>
<thead>
<tr>
<th>Clinical Bundle Components</th>
<th>Policy ID</th>
<th>Paste Related Policy Language Here</th>
<th>Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess all pregnant women for SUDs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilize validated screening tools to identify drug and alcohol use.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorporate a screening, brief intervention and referral to treatment (SBIRT) approach in the maternity care setting. Ensure screening for polysubstance use among women with OUD.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen and evaluate all pregnant women with OUD for commonly occurring co-morbidities. Ensure the ability to screen for infectious disease (e.g. HIV, Hepatitis and sexually transmitted infections (STIs)). Ensure the ability to screen for psychiatric disorders, physical and sexual violence.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide resources and interventions for smoking cessation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Match treatment response to each woman’s stage of recovery and/or readiness to change.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 6: ABSTRACTION OF WRITTEN HOSPITAL POLICIES

Hospital ID: Hosp01

Instructions: Review written hospital policy and any ancillary documents, screenshots, interviews and interview notes to determine the extent of fidelity with each clinical bundle component. Select full fidelity for hospital policies that are in full alignment with the clinical bundle component by marking an X in that column. Select no fidelity for the hospital policies that do not address the clinical bundle component in any way by marking an X in that column. Select partial fidelity for the hospital policies that address part of the clinical bundle component, or address the component for a certain segment of the patient population, by marking an X in that column. For any instance without full fidelity, comment on why the policy is not in full alignment with the clinical bundle component.

<table>
<thead>
<tr>
<th>Clinical Bundle Component</th>
<th>Full Fidelity</th>
<th>Partial Fidelity</th>
<th>No Fidelity</th>
<th>Unknown</th>
<th>Source</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess all pregnant women for SUDs.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Written hospital policy</td>
<td>“At presentation, assess for any irregularities with prenatal care and verbally screen for substance use and document in the electronic health record.”</td>
</tr>
<tr>
<td>Utilize validated screening tools to identify drug and alcohol use.</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Written hospital policy</td>
<td>Verbal screen required, preferable to use 5Ps screening tool “...verbally screen for substance use, preferable using the 5 Ps screening tool...” Note: also includes criteria for urine drug testing.</td>
</tr>
<tr>
<td>Incorporate a screening, brief intervention and referral to</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Screening and referral to treatment addressed; brief</td>
</tr>
<tr>
<td>Ensure screening for polysubstance use among women with OUD.</td>
<td>X</td>
<td>Written hospital policy, brief interview notes</td>
<td>Written policy: only for patients who receive urine drug testing or social work evaluation. Brief interview notes: EMR prompts for recreational drug use (answer options are yes, no, not currently, never), does not address poly-substance use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen and evaluate all pregnant women with OUD for commonly</td>
<td>X</td>
<td>Brief interview notes</td>
<td>EMR screenings mentioned: caffeine, tobacco, alcohol, recreational drug use (plus screenings)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task</td>
<td>Status</td>
<td>Explanation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------</td>
<td>----------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Ensure the ability to screen for infectious disease (e.g., HIV, Hepatitis and sexually transmitted infections (STIs)). | X      | Brief interview notes  
TB and COVID were only infectious disease screens mentioned |
| Ensure the ability to screen for psychiatric disorders, physical and sexual violence. | X      | Brief interview notes  
Mental health (mood disorders, depression, postpartum depression, psych issues), human trafficking and domestic violence were the only related screens mentioned |
| Provide resources and interventions for smoking cessation.           | X      | Not addressed                                                             |
| Match treatment response to each woman’s stage of recovery and/or readiness to change. | X      | Not addressed                                                             |
Hospital ID: **Hosp02**

Instructions: Review written hospital policy and any ancillary documents, screenshots, interviews and interview notes to determine the extent of fidelity with each clinical bundle component. Select full fidelity for hospital policies that are in full alignment with the clinical bundle component by marking an X in that column. Select no fidelity for the hospital policies that do not address the clinical bundle component in any way by marking an X in that column. Select partial fidelity for the hospital policies that address part of the clinical bundle component or address the component for a certain segment of the patient population, by marking an X in that column. For any instance without full fidelity, comment on why the policy is not in full alignment with the clinical bundle component.

<table>
<thead>
<tr>
<th>Clinical Bundle Components</th>
<th>Full Fidelity</th>
<th>Partial Fidelity</th>
<th>No Fidelity</th>
<th>Unknown</th>
<th>Source</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess all pregnant women for SUDs.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Brief interview notes</td>
<td>Lacking written policy</td>
</tr>
<tr>
<td>Utilize validated screening tools to identify drug and alcohol use.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Brief interview notes</td>
<td>Lacking written policy</td>
</tr>
<tr>
<td>Incorporate a screening, brief intervention and referral to treatment (SBIRT) approach in the maternity care setting.</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Validate d screening tool</td>
<td>Lacking written policy; note on 5Ps screening tool to inform provider if any question is positive</td>
</tr>
<tr>
<td>Ensure screening for polysubstance use among women with OUD.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>EMR prompt screen shots</td>
<td>Drug use question allows multiple selections (amphetamines, amyl nitrate, anabolic steroids, barbiturates, benzodiazepines, cocaine, codeine, fentanyl, flunitrazepam, GHB, hashish, heroin, hydrocodone, hydromorphone, ketamine,</td>
</tr>
<tr>
<td>Task</td>
<td>X</td>
<td>EMR prompt screen shots</td>
<td>Social assessment includes homelessness or housing problems, transportation problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---</td>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen and evaluate all pregnant women with OUD for commonly occurring co-morbidities.</td>
<td>X</td>
<td>EMR prompt screen shots</td>
<td>Social assessment includes homelessness or housing problems, transportation problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure the ability to screen for infectious disease (e.g., HIV, Hepatitis and sexually transmitted infections (STIs)).</td>
<td>X</td>
<td>N/A</td>
<td>Not addressed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure the ability to screen for psychiatric disorders, physical and sexual violence.</td>
<td>X</td>
<td>EMR prompt screen shots</td>
<td>Social assessment includes domestic violence, history of sexual abuse/forced sexual contact, history of abuse/violence, little interest in doing things, feeling down, depressed or hopeless</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide resources and interventions for smoking cessation.</td>
<td>X</td>
<td>EMR prompt screen shots</td>
<td>EMR prompts include “counseling given” and comments, but do not fully</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address providing resources and interventions for smoking cessation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-------------------------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Match treatment response to each woman's stage of recovery and/or readiness to change.</td>
<td>X</td>
<td>N/A</td>
<td>Not addressed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>