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TITLE:

Improving Screening Practices for Postpartum Depression in a Pediatric Primary Care Setting Through Provision of Provider Education and Knowledge of Referral Options

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Abstract

Postpartum depression (PPD) is a significant mental health phenomenon occurring in 10-30% of women in the first year after childbirth. Its sequelae impacts the mother, her children, and family unit. Postpartum depression causes anhedonia, impairs the mother's ability to care for herself and her children, and can lead to impaired childhood developmental progression. Screening for PPD can identify its symptoms, allow for prompt referral to appropriate support and treatment resources, and minimize its associated negative outcomes. Although several professional healthcare organizations promote routine screening practices, evidence shows these recommendations are not being consistently implemented thus creating missed opportunities to address this important clinical issue. Pediatric primary care providers are uniquely positioned to screen postpartum mothers for symptoms of depression by virtue of their frequent encounters at well-baby visits during the twelve months of infancy. However, data show a lack of knowledge about referral resources, uncertainty about legal liability, concerns regarding reimbursement, and time constraints are barriers preventing the practice of routine PPD screening. This pilot project addressed these barriers by building upon existing evidence surrounding successful PPD screening programs in the pediatric primary care setting. Through facilitation of specialized education and training of pediatric practice personnel, knowledge and comfort regarding safe PPD screening was assessed and a formal, evidence-based screening process implemented. The experience generally improved attitudes towards and understanding about PPD screening and inspired an effective and sustainable routine screening program at the investigational site.

Keywords: postpartum depression, screening, pediatrics, Edinburg Postnatal Depression Scale

Improving Screening Practices for Postpartum Depression in a Pediatric Primary Care Setting Through Provision of Provider Education and Knowledge of Referral Options

Introduction

Postpartum depression (PPD) is a variation of major depressive disorder (MDD) that occurs in women who have recently given birth and is generally diagnosed during the first year of newborn life (DelRosario, Chang, & Lee, 2013). It is estimated to occur in 10-20% of postpartum women and considered to be the most common medical problem they face (Sheeder, Kabir, & Stafford, 2009). Despite its relatively common nature, PPD remains a significant public health concern. It can impact the well-being of the mother, the development of her children, and the cohesiveness of the family unit (American Academy of Pediatrics [AAP], 2017).

Primary care providers (PCPs) play an important role in identifying symptoms of PPD and its sequelae and can potentially minimize and manage complications of this stigmatized illness women are unlikely to self-report. Mothers tend to present to their infant's PCP many more times in the child's first year of life than they do to their own general or obstetric-gynecologic (OB-GYN) provider (Olin et al., 2016), making pediatric PCPs (PPCPs) uniquely positioned to screen for PPD frequently during the time period it is most likely to occur (Earls, 2010). Evidence supports many PPCPs are not routinely or consistently implementing this American Academy of Pediatrics (AAP)-recommended screening practice (Kerker, et al., 2016), creating missed opportunities to recognize this important public health problem. Further, evidence suggests implementing routine PPD screening in the pediatric primary care setting significantly increases detection rates and subsequent treatment referral (Carroll, Biondich, Anand, Dugan, & Downs, 2013). This project facilitated education and training of pediatric providers about PPD screening and implemented a formal screening process to promote and

sustain consistent screening in a local private practice setting. The goal of the project was to increase the number of mothers of infants 0-12 months of age screened for PPD and maximize opportunities for support service referral through a specialized regional consortium for at-risk mothers.

Background and Significance

Postpartum Depression

The American Psychiatric Association (APA) defines PPD as a variant of MDD with onset occurring in the immediate postpartum period or up to one year after childbirth and diagnosable by the same criteria as MDD in the APA's (2015) *Diagnostic and Statistical Manual of Mental Disorders-V*. It is considered a discrete phenomenon from the much milder and more fleeting "baby blues" that come and go with hormonal changes in the first few days after a woman gives birth (US Department of Health and Human Services [USDHH], 2017). The features of PPD differ only slightly from MDD in that emotions center around the associated responsibilities of caring for an infant. Mothers who develop PPD will experience dysthymia and hopelessness, loss of interest in activities, changes in appetite, and sleep disturbances, fatigue, problems concentrating, and inappropriate guilt (APA, 2013). They feel emotionally disconnected from their infants and/or other children, withdraw from their partners and other family members, and experience anger and resentment toward loved ones. Mothers also often feel guilty for harboring these negative feelings and begin to doubt their parenting ability. In more severe cases, a mother may struggle with thoughts of wanting to harm her child(ren) or herself to relieve her perceived overwhelming burdens (Friedman & Resnick, 2007). Maternal suicide, while rare, is considered a leading cause of death in postpartum women in the United States (Viguera, 2016).

Any woman who has given birth in the last twelve months is at risk for PPD regardless of race, age, religion, socioeconomic status, education level, marital status, or country of residence (Ko, Rockhill, Tong, Morrow, & Farr, 2017). However, certain personal and demographic factors are associated with greater risk including history of mental illness or substance abuse, low socioeconomic status, poor marital or partner relationship, teen age, unwanted or complicated pregnancy/birth, and low education level (United States Preventive Services Task Force [USPSTF] & Siu, 2016; Viguera, 2016).

Negative Outcomes of Postpartum Depression

Clinically significant symptoms of PPD impair normal functioning and cause distress in sufferers, limiting the emotional availability of mothers to their infants and family. When left unrecognized or untreated, PPD can lead to significantly poorer outcomes for the mother as well as her children and family (Netsi, et al., 2018). In addition to the sadness, hopelessness, and low energy characteristic of clinical depression, a mother's compromised emotional state will unintentionally influence her child's physical and emotional development. Infants in the care of mothers with PPD experience disruptions to optimal health care maintenance and impaired progression through certain developmental milestones (Farías-Antúnez, Xavier, & Santos, 2018) including detrimental effects on language and social development (Earls, 2010). Evidence also shows infants and young children of mothers with PPD can suffer suboptimal infant weight and length gain during the first year (Farías-Antúnez et al., 2018) as well as impaired maternal bonding, earlier cessation of breastfeeding, and poorer adherence to preventive health and safety measures such as car seat use (Farías-Antúnez et al., 2018; Viguera, 2016).

The adverse effects of PPD are not limited to the mother-infant dyad, however. Maternal depression also impacts the mother's other children in differing ways at varying stages of their

development and, when applicable, her partner relationship (Netsi et al., 2018). In its most severe presentation, PPD can lead to child neglect, abuse, and if it progresses, postpartum psychosis, filicide, and/or maternal suicide. Some estimates posit that over one third of filicides occur during pregnancy or the first postpartum year, and most filicidal mothers have existing depression, psychosis, or previous treatment for mental illness (Friedman & Resnick, 2007). Fortunately, evidence demonstrates that like many variations of major depression, PPD is very responsive to available treatments (Olin et al., 2016). Through counseling, support groups, peer support, and/or pharmacotherapy, symptoms of PPD can be significantly ameliorated and the consequences minimized. To initiate treatment referral, though, mothers must be willing to talk honestly about their feelings and health care providers must be willing to ask the right questions at the right times.

History of Postpartum Screening Guidelines

In the late 1990s and early 2000s, mental health care in general gained more attention in the political and institutional realms, earning it inclusion as a priority in *Healthy People 2010* (USDHH, 2000) and subsequently *Healthy People 2020* (USDHH, 2010). As health care professionals recognized the ripple effects of PPD on families and society, the relatively small body of research that existed surrounding PPD began to grow in the early 2000s. In 2010, the AAP formally acknowledged the unique opportunity for PPCPs to frequently screen for PPD and included new best practice guidelines in *Bright Futures* (AAP, 2017). Mothers have more face-to-face contact with their PPCP in the first year postpartum and arguably develop more trusting relationships with them than their own PCPs (Chaudron et al., 2004). Health care professionals across many disciplines recognize the gaps and opportunities for addressing PPD and its impact on public health. In addition to the AAP, the United States Preventive Task Force (USPSTF &

Siu, 2016), American College of Obstetricians and Gynecologists (ACOG, 2015), Association of Women's Health Obstetric and Neonatal Nurses (AWHONN, 2015), and National Association of Pediatric Nurse Practitioners (NAPNAP, 2011) have published recommendations for PPD screening, though none are as specific as those put forth by the AAP.

Current AAP guidelines recommend screening mothers for PPD using a validated screening tool at the 1-month, 2-month, 4-month, and 6-month well-child visits (AAP, 2017). Data collected since publication of the 2010 guidelines, however, indicates most PPCPs are not implementing routine PPD screening (Kerker et al., 2016; Waldrop, Ledford, Perry, & Beeber, 2018). Successful PPD screening systems have been implemented in pediatric primary care settings, ranging from large, hospital-affiliated offices to small, privately-owned practices (Olin et al., 2016). Research further shows routine screening programs reliably increase rates of PPD recognition and pre-conceived and organized referral processes are essential to ensuring the best possible outcomes for the mother, child, and family (Carroll et al., 2013; Olin et al., 2016; Waldrop et al., 2018).

Integrating Postpartum Depression Screening into Pediatric Primary Care

Since publication of the AAP's best practice guidelines in 2010, the body of literature and knowledge about PPD screening in pediatric settings has grown. Some studies show a nadir in PPD symptoms around 4-months of age, followed by a resurgence at the 6-month visit (Sheeder et al., 2009). Other evidence suggests PPD symptoms may persist as late as the child's first birthday, prompting some researchers to recommend screening up to 12 months of age (Mgonja & Schoening, 2017; Sheeder et al., 2009) a practice supported by the definition of PPD as diagnosable throughout the first year after childbirth (APA, 2015).

Reducing or eliminating missed opportunities for PPD detection should increase rates of provider referral by those who practice standardized screening for all women in the first postpartum year. By identifying at-risk mothers, providers can facilitate or refer for treatment to reduce the risk for associated adverse outcomes. Based on current knowledge regarding the impact of PPD on childhood development, intervening in a timely fashion could, over time, decrease occurrence of behavior and mental health problems in children, reduce rates of separation and divorce, and lower rates of depression and suicide, the most common cause of death in postpartum women (Mgonja & Schoening, 2017).

Needs Assessment

Prevalence estimates of PPD vary between studies depending on sample scope and the applied diagnostic tool. Depending on the source, estimates in the United States range between 9-25% (Agency for Healthcare Research & Quality [AHRQ], 2013; AAP, 2017; AWHONN, 2015; Drake et al., 2014; Olin et al., 2016; Waldrop et al., 2018) and roughly correlate with rates of depression in women who are neither postpartum nor pregnant (Viguera, 2016). Other sources estimate the point prevalence of PPD in the first postpartum year as high as 30% (AAP, 2017; AHRQ, 2013), revealing variable definitions based on symptom severity and duration. In New Jersey, the 2013 Pregnancy Risk Assessment Monitoring System (PRAMS) (PRAMS, n.d.) published 9.4% of women self-reported symptoms of PPD (n = 925, 95% CI = 7.6-11.6%), roughly matching the rate of 11.7% across all PRAMS-monitored states across the country.

Many women who experience symptoms of depression during the postpartum year are ashamed to admit their feelings for fear of how it will reflect on their ability to parent (Chaudron et al., 2007). Certain socio-cultural beliefs look down upon women who harbor negative feelings around the child-rearing experience, making mothers reluctant to disclose their concerns. To

minimize the number of missed cases, PPCPs should be proactive by implementing routine, formal PPD screening (AAP, 2017; AHRQ, 2013) and referral (Carroll et al., 2013; Waldrop et al., 2018). However, data show fewer than half of AAP members surveyed are actually doing so (Kerker et al., 2016) and the keys to successful screening are twofold: (a) targeted training for providers and (b) collaboration with behavioral health resources (Olin et al., 2016).

Current Need of Investigational Site

At the proposed investigational site, PPD screening was performed during the first (newborn) visit and on an as-needed basis at the discretion of the PPCP during subsequent visits. The screening method at the newborn visit was informal and entailed the provider asking the postpartum mother if she had been experiencing any depression or mood problems since delivering her child. If the mother admitted to depressive feelings, the provider asked her permission to notify her PCP or obstetrical provider for further assessment, monitoring, and treatment. If she denied negative psychological symptoms, the infant's chart reflected the mother passed the maternal depression screening assessment. Based on office practice, the mother would not be asked about her own mental health at future well-infant visits unless she expressed concerning words or behaviors during the encounter. Additionally, there was no specialized assessment tool used by practice personnel to assess for PPD symptoms at the newborn or subsequent visits. Aside from routine role-specific clinical training relevant to each discipline from PPCP to front desk reception, there existed no specialized training available to staff regarding PPD screening, referral approaches, or its clinical significance to pediatric practice.

Based on chart review of October 2017 (the one-month period planned to be used for data comparison to evaluate project outcomes), 65 well-infant (0-12 months of age) visits occurred at the investigational site. Five of those encounters (7.7%) were newborn visits and therefore met

the existing criterion for maternal depression screening at the investigational site. Of the five newborn visits where screening was indicated, only four (80%) had documentation in the electronic health record (EHR) indicating the mother passed informal screening and one did not reflect whether an inquiry about PPD had occurred. These data reflect a relatively high rate of PPD screening for those mothers considered candidates under the previous approach. This method, however, omitted 92.3% of mothers based on the APA's current diagnostic timeframe, the first year of an infant's life (APA, 2013). Additionally, informal screening is not standard of care and a validated PPD screening tool is needed to reduce the occurrence of false negative responses easily confounded by variations in question phrasing by PPCPs.

Problem and Purpose Statement

Depression in the first year postpartum is experienced by many women and can result in adverse outcomes impacting not only the mothers themselves, but also their children, families, and communities. While responsive to many treatment modalities, social stigma and misconceptions surrounding PPD discourage women from discussing or even recognizing symptoms. Screening for PPD by PCPs is now recommended by many professional organizations. It has not yet, however, emerged as standard practice, in part due to lack of familiarity among providers regarding how to appropriately approach PPD screening. Pediatric PCPs are presented with frequent opportunities to screen for PPD, perhaps more than any other health care professional. This project implemented a comprehensive, consistent, safe, and thorough PPD screening system in a pediatric primary care setting that included provider education and training, use of a validated assessment tool, and well-established referral plan for positive screenings.

Clinical Questions

Does specialized clinical education for practice personnel about PPD, screening approaches, referral, and crisis management for mothers of infants (0-12 months of age) presenting to a private pediatric primary care office in northern New Jersey for well-infant care improve PPD screening and detection rates?

Does PPCP-directed education and training regarding screening and crisis management improve the knowledge and comfort levels of PPCPs and practice personnel regarding routine PPD screening and enhance the likelihood of maintaining an ongoing screening and referral practice in the targeted setting?

Aims and Objectives

Aim 1:

- Enhance knowledge and comfort among the practice personnel about PPD etiology, clinical significance, screening, referral, and crisis management.

Objectives.

  - Facilitate a specialized education and training program to consenting practice personnel.
  - Assess knowledge of practice personnel pre- and post-education using an assessment tool developed by the Primary Investigator (PI).
  - Assess comfort level of practice personnel in implementing a routine PPD screening and referral program pre- and post-training using the PI-developed assessment tool.

Aim 2:

- Increase PPD screening and referral rates of mothers who present for well-infant care using a validated, standardized assessment tool, and a community-based referral resource.

  Objectives.

  - Educate practice personnel regarding the newly-proposed screening program.
  - Educate and train practice personnel regarding application of the validated screening tool.
  - Establish process to identify mothers eligible for screening prior to each practice day.
  - Offer screening tool to all mothers meeting screening criteria.
  - Calculate rates of mothers offered screening versus those who complete screening as well as those who are referred, if indicated.
  - Establish data collection process to track adherence to the new screening method.

Aim 3:

- Promote sustainability of the new PPD screening system.

  Objectives.

  - Obtain informal feedback from practice personnel through presentation of program outcomes regarding perceived successes and barriers of the screening program.
  - Amend existing screening system to address identified problems or concerns and promote long-term sustainability.

Review of Literature

Addressing maternal depression in pediatric care settings first appeared in the literature in the late 1980s (as cited in Chaudron, Szilagyi, Campbell, Mounts, & McInerny, 2007). Current literature searches regarding PPD screening approaches in relevant databases reveals the majority of published evidence and commentary has appeared in the last 15-20 years. This project established a successful and sustainable PPD screening program in a pediatric office setting with characteristics derived from recommendations in relevant literature. As such, the literature search was aimed at unveiling barriers to screening and identifying effective screening methods that affect PPD screening practices in PPCP offices. The search included research databases as well as relevant grey literature including clinical guidelines and diagnostic manuals. Database search terms included *postpartum, maternal, perinatal, depression, screening, pediatric, well-child, well-visit,* and *primary care.* Using Boolean connectors, the search was performed using CINAHL, PubMed, Ovid-Medline, and PsycInfo and results were restricted to include articles from the last fifteen years (2003-2018). A total of 807 articles were produced from the initial search.

Inclusion criteria limited search results to peer-reviewed journal articles and periodicals published in the English within the last fifteen years. After eliminating duplicate results, article abstracts were evaluated and/or eliminated based on applicability to the project focus. Fifteen articles and papers were then critiqued for evidentiary support, including three systematic reviews with meta-synthesis or -analysis, one randomized control trial, three non-experimental studies (descriptive cross-sectional surveys and quality improvement designs), two expert committee opinions, four organizational position statements, one set of clinical practice

guidelines, and a quasi-experimental cohort study (Appendix A). Synthesis of the key concepts identified in the literature are presented below.

Barriers to Screening

A cross-sectional, descriptive study by Kerker et al. (2016) analyzed data from Periodic Surveys administered by the AAP to its members several times a year regarding their practice patterns, including surveillance of maternal mental health. Survey data from 2004 and 2013 were compared to reflect trends in practice before and after the AAP's 2010 publication of its formal guidelines and recommendations for routine PPD screening. Survey responses showed PPCPs who routinely screen for child/adolescent depression and those who believe that social/familial factors fall within the scope of their responsibility were more likely to be screening for maternal depression. However, the proportion of PPCPs who reported usually *inquiring* (informally assessing) or *screening* (with a validated tool) for PPD remained relatively low across the two survey timeframes (33% in 2004 to 44% in 2013). A more reassuring finding showed the prevalence of *screening* specifically increased from only 5% in 2004 to 26% in 2013.

Further analysis by Kerker et al.(2016) also showed PPCPs who had specific training in adult *DSM* diagnostic criteria were more likely to inquire about or screen for PPD in 2004, and that this proportion of providers increased by only 15% between the two survey time periods. In addition to suboptimal mental health education and training, the literature identifies time constraints, reimbursement concerns, and fear of ethical/legal liability as major screening barriers that must be addressed (Chaudron et al., 2007; Earls, 2010; Mgonja & Schoening, 2017; Waldrop et al., 2018).

Education and training. An expert clinical report published by the AAP in 2010 (Earls, 2010) (before publication of its clinical guidelines for PPD screening) acknowledged the unique

role of the PPCP in approaching the discussion of maternal mental health in the pediatric setting and identified inadequate provider training as a major barrier. A quality improvement project and program conducted by Mgonja & Schoening (2017) similarly concluded that insufficient education of office personnel regarding the study's goals was a barrier to optimizing screening compliance.

Time constraints. A perceived inadequacy of time to implement safe, effective screening is cited as a barrier by many providers (Mgonja & Schoening, 2017; Chaudron et al., 2004; Waldrop et al., 2018). Although the benefits of screening undeniably outweigh the risks (Chaudron et al., 2004), repeated screenings over many consecutive visits may be considered excessive in busy practice settings. According to a systematic review with meta-synthesis by Waldrop et al. (2018) of seven PPD screening programs in PPCP settings, the relatively low rates of positive screening cases (20%) translates to a manageable amount of extra time needed to provide informal counseling and referral. Despite this, Mgonja & Schoening's (2018) project showed time constraints were still cited as a barrier to screening in 21.3% of missed opportunities.

Reimbursement concerns. In addition to the above, some PPCPs believe the time spent on PPD screening is not reimbursable (Waldrop et al. 2018). In a systematic review with meta-synthesis, Olin et al. (2016) points to reimbursement issues as a deterrent to provider screening. However, Earls (2010) posits that, because PPD screening is endorsed by the USPSTF, it is reimbursable by Medicare and Medicaid using the Current Procedural Terminology (CPT) code for "Administration of caregiver-focused health risk assessment instrument… for the benefit of the patient, with scoring and documentation, per standardized instrument" (AAP Division of Health Care Finance, 2016).

Legal and ethical concerns. A special article published in the AAP's journal *Pediatrics* in 2007 discussed the legal and ethical concerns faced by PPCPs when approaching PPD screening as well as the risks and benefits of doing so (Chaudron et al., 2007). The authors summarized many PPCPs are reluctant to shift the focus of care to a non-patient (the child's mother) and ask questions that may invoke difficult emotions. They fear negative fallout from addressing an uncomfortable topic and may anticipate asking about PPD will alienate clientele or cause unintended consequences for the child (Chaudron et al., 2007). The authors discussed providers may be unsure how to intervene when a mother screens positive and have liability concerns about worst case scenario outcomes where crisis management is warranted. Despite these challenges, the article concludes that the benefits of routine screening outweigh the risks so long as PPCPs refer mothers who screen positive to specialized adult providers for formal diagnosis, treatment, and follow-up. Regardless, there remain differing opinions among pediatric providers regarding the appropriateness of PPD screening during their primary care encounters. Earls (2010), in an expert opinion paper from The Committee of Psychosocial Aspects of Child and Family Health under the AAP, theorized that PPD screening falls within the scope of the PPCP because it is a part of assessment of a child/patient's psychosocial context. In contrast, Olin et al.'s (2016) summary shows that legal concerns regarding breach of Health Insurance Portability and Accountability Act (HIPAA) laws persist among PPCPs because the mother is not under their direct care.

Effective Screening Methods

Identifying the features of safe and effective PPD screening programs is essential to successful implementation. Aside from using a validated screening tool (USPSTF, 2016), other key components of effective screening include provider training and education, developing a

formal screening plan, establishing a referral algorithm, and utilizing specialized referral resources and literature (Carroll et al., 2013; Sheeder et al. 2009; Waldrop, et al., 2018).

Provider education and training. In a recent appraisal of current literature of existing PPD programs, Olin et al. (2016) concluded that targeted training to providers and integration of behavioral health services are crucial to successful screening in PPCP settings. Indeed, two-thirds of the programs reviewed by Olin et al. (2016) occurred in pediatric offices, reinforcing the appropriateness of this screening context. The authors emphasized the role of the PPCP is to identify the likelihood of a degree of a depressive state in the mother (not to diagnose) and then collaborate with allied health professionals for formal evaluation and treatment.

Defined screening plan. A randomized control trial of 3,520 patient visits at a PPCP clinic by Carroll and colleagues (2013) showed implementing a clinical decision support system for PPD screening significantly increased the identification rate of mothers with suspected depression, thereby increasing opportunities for specialized referral. Similarly, a non-experimental descriptive study by Sheeder et al. (2009) showed electronic cuing of providers to implement screening enhanced compliance to 98% in a Colorado clinic for children of young mothers. The presence of a small, dedicated clinical personnel team helped to achieve a 100% referral rate for positive screen cases (Sheeder et al., 2009). A historical cohort study by Chaudron et al. (2004) also showed screening rates increased to a statistically significant level when a formal screening plan is in place, as opposed to using clinical judgment alone.

Screening and referral algorithm. Waldrop and associates (2018) described the specific features of successful PPD screening systems in PPCP settings to include a clinical decision support algorithm, validated screening tool, and referral algorithm for varying interventions based on screening cutoff scores. When referral to an allied mental health professional is

indicated, a "warm handoff" or informal transfer of care to that provider is prudent. The authors proposed that a one-time investment in developing a referral resource plan unique to the practice setting as well as provision of personnel training will establish a foundation for a safe and successful routine screening program (Waldrop et al., 2018). Additionally, a cohort study by Chaudron et al. (2004), expert opinion by Chaudron et al. (2007), and the AAP (2017) emphasize the importance of ensuring there is a referral plan in place for delivery of non-stigmatized support and encouragement to mothers.

Educational and referral handouts. In the randomized control trial by Carroll et al. (2013), the presence of educational materials and referral handouts made providers feel more comfortable in referring sooner rather than later. It was noted, even at encounters that were randomized *not* to screen for PPD, providers often elected to offer handouts to mothers.

Screening frequency. The National Association of Pediatric Nurse Practitioners (2011), AWHONN (2015), ACOG (2015), USPSTF (with Siu, 2016), and AAP (2017) formally support routine PPD screening by a PCP at least once in the postpartum period. The AAP's PPD screening recommendations include a call for more screening occurrences than any other professional guideline to date. The *Bright Futures* (AAP, 2017) recommendations, however, do not extend beyond the 6-month well-infant visit despite PPD being defined by the APA as occurring within the first full year after childbirth. In light of this, a recent quality improvement project published by Mgonja & Schoening (2017) tested the utility of screening mothers for PPD up to and including the 12-month well-baby visit. Two of the five positive screening results in their study occurred during the 12-month visit, a finding that supports the utility of screening for PPD beyond the 6-month well-visit.

Project Summary

Based on comprehensive review of the literature surrounding PPD screening barriers and facilitators, this project was developed to address each of these key elements in a small, privately owned pediatric primary care setting in suburban New Jersey that does not currently have a systematic screening process in place for PPD. The project began with education of practice personnel and training about PPD screening and referral plan followed by administration of a new screening approach utilizing of a formal assessment tool at well-baby visits. The anticipated outcome was to achieve higher rates of evidence-based PPD screening methods resulting in better detection of symptoms and timely, appropriate referral for support and/or treatment. At project completion, data regarding knowledge retention post education and project implementation were assessed and modification recommendations made to enhance the process and ensure sustainable formal screening in this practice setting.

Theoretical Framework: Plan-Do-Study-Act

The Model for Improvement (Associates in Process Improvement, 2017) is a theoretical model for knowledge translation adaptable to health care settings of varying levels of complexity. The model poses three broad questions to sharpen the focus of a quality improvement initiative:

What Are We Trying to Accomplish?

The ultimate goal of the project was to increase rates of PPD screening, detection, and treatment referral.

What Change Can We Make That Will Result in Improvement?

Pediatric PCPs are qualified and uniquely positioned to screen for PPD during face-to-face encounters with mothers of infants presenting for routine examinations. It was theorized that implementing a sustainable system in a pediatric practice aimed at screening 100% of this

population would increase rates of PPD recognition and treatment in local environments. Further, utilizing locally available referral resources tailored to the regional community would increase the likelihood that women who screen positive would be appropriately directed to avenues for support and treatment. Finally, it was hypothesized that educating health care staff regarding the epidemiology and consequences of PPD would promote implementation and adherence of consistent screening, thereby creating a more comprehensive environment of care for pediatric patients and families at the practice.

How Will We Know That a Result is an Improvement?

Any single positive screening occurrence would be an opportunity to guide a child's mother toward the path of self-care and recovery. Because many pediatric PCPs currently screen for PPD on a case-by-case basis determined by clinical judgment, improvement in practice quality would be reflected by an increase in the number of mothers screened for PPD in comparable timeframes before and after facilitation of provider education and training. In theory, the rate of occurrence within any given practice setting should roughly match that of the general population, about 10%. Additionally, feedback from practice personnel was used gauge the success of project implementation. Staff knowledge and feelings about PPD screening and their comfort level in discussing it with patients were expected to improve after practicing a routine screening protocol.

Plan-Do-Study-Act

The next phase of the Model for Improvement (Associates in Process Improvement, 2017) details the specific steps entailed in carrying out an improvement initiative. The four phases of the Plan-Do-Study-Act cycle loosely correlate with the phases of the scientific method: hypothesis development (plan), data collection (do), data analysis (study), and drawing

conclusions for future projects (act). The phases of project implementation for this investigation are detailed in the Methods section.

Methodology

Study Design

This non-experimental quality improvement initiative was aimed at increasing the rates of PPD screening through a systematic approach including clinical education regarding PPD, screening, and referral. A non-experimental design was appropriate to the clinical topic at hand because it would be unethical to randomly select which mothers would be screened for PPD and which would not. The act of screening for depression is aimed at identifying and addressing psychological distress, presenting options for how to address it, and supporting those who suffer. Therefore, all mothers meeting the inclusion criteria described below underwent the proposed screening intervention. The office clinicians continued to screen those who do not meet inclusion criteria (e.g. sick visits) according to the pre-existing practice approach of screening for PPD at newborn visits and on an as-needed basis. Rates of actual screening and subsequent referral under the newly proposed system were compared to screening that occurred during a similar time frame prior to project implementation.

Setting and Population

The project was implemented at a private pediatric medical practice in Bergen County, New Jersey (see Appendix B). At the time the project was implemented, the office was staffed by the following practice providers: three PPCPs (physicians and advance practice nurses [APNs]), two certified medical assistants, five non-certified clinical support personnel (including undergraduate nursing students), one office manager, and advanced practice nursing students. In addition to routine well- and sick-child visits, the office held weekly prenatal open houses for

expecting parents and there were approximately 800 well-baby visits annually. According to current AAP guidelines, providers routinely screen for mental health issues such as autism and adolescent depression and anxiety using validated screening tools.

Interventions

The Partnership for Maternal and Child Health of Northern New Jersey (The Partnership), a state-based agency and resource for maternal and child health services, provided a one-hour education and training session regarding the PPD screening and referral process to practice staff. The Partnership's Perinatal Mood Disorders Initiative (PPD Program) is dedicated to increasing awareness about PPD among providers as well as mothers. The provider-focused training program is aimed at increasing comfort in safely and appropriately implementing screening in more health care settings, thereby increasing the likelihood that screening will occur. The PPD Program also serves as a referral center that connects mothers to locally accessible sources of support including group or individual counseling, pharmacotherapy, and crisis intervention. The provider training program included specific details regarding how and when to refer mothers to The Partnership's services and resources. Consenting practice personnel were asked to complete an assessment to determine their general knowledge and comfort regarding PPD screening and referral at baseline.

After practice personnel at the site underwent training and education from The Partnership, a one-month investigational period began. During this period, every mother presenting to the office for a well-infant visit (0-12 months of age) was asked to complete the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden & Sagovsky, 1987). The interventions were carried out in a stepwise manner (see Appendix C for project timeline):

1. The PI obtained informed consent from practice personnel (providers, clinical assistants, and office manager; Appendix D) to attend an educational session and participate in pre- and post-intervention assessments (Appendix E) based on presentation materials provided by The Partnership and the overall project experience.

2. Consenting personnel attended a one-hour education and training session presented by The Partnership focused on the safe and effective implementation of the EPDS for PPD screening, how to select an appropriate referral resource for positive screenings, and how to address extreme cases/crises (Appendix F).

3. The one-month project implementation period began the first business day after all consenting personnel underwent education and training by The Partnership.

4. A brochure for The Partnership was made available in the reception area throughout the investigational period (Appendix G).

5. The PI prescreened scheduled patient visits the evening prior to the next business day to identify the visits that (if the birth mother was present) met inclusion criteria for PPD screening.

6. For those visits that met initial inclusion criteria, the receptionist or medical assistant verified the infant was accompanied by his/her birth mother at the time of check-in and offered the EPDS (Appendix H) to complete while in the waiting area. The mother was informed completion of the survey was voluntary and the PPCP would answer any questions she had about it during the visit.

7. If EPDS completion was declined or the infant was accompanied by someone other than the birth mother, this was noted on the Data Collection Sheet (Appendix I).

8. The PPCP scored the EPDS and initiated discussion about the results with the infant's birth mother during the visit.

9. If the score was < 10, the EDPS score was filed in the patient chart by the provider with no need for referral.

10. If the score was ≥ 10 or there was a positive response to EPDS item 10, the PPCP offered referral to support through The Partnership's services and with the mother's permission, contacted the mother's PMD or obstetrical care provider to make him/her/them aware of the positive screening and referral.

11. If at any time the score and/or behavior suggested a need for crisis intervention (the mother expressed any ideation of harming herself, her child, or others), providers were to respond as per The Partnership's crisis management plan.

12. Practice personnel filed the completed EPDS in the infant's paper chart and the PPCP documented the mother's score, discussion and/or counseling/referral in the EHR.

13. If the EPDS was completed, the PPCP billed for the service using CPT code 96161, "Administration of caregiver-focused health risk assessment instrument… for the benefit of the patient, with scoring and documentation, per standardized instrument" (AAP Division of Health Care Finance, 2016).

14. In the week following the one-month implementation period, consenting practice personnel completed an assessment regarding their sustained knowledge and comfort regarding PPD screening (Appendix E).

15. After data collection and analysis, including pre- and post-assessments, the PI met with practice personnel to discuss project results. Barriers and successes of the

screening program were discussed, and recommendations made to amend the program as needed so it weaves seamlessly into standard office practice.

Outcome Measures

Pre-/Post-postpartum Training Clinician Knowledge Assessment. Prior investigations have demonstrated PCPs may not be screening for PPD as recommended due to ethical, legal, and time constraint concerns (Kerker et al., 2016; Waldrop et al., 2018). Postpartum depression screening education and training provided to clinical staff by The Partnership was aimed at quelling some of these concerns. Therefore, it was relevant and useful to assess the knowledge and comfort level of clinical staff regarding PPD screening practices both before and after delivery of this specialized training.

Within the week preceding delivery of The Partnership's training and educational presentation, a ten-item questionnaire was administered to consenting practice personnel to assess baseline knowledge and attitudes toward PPD screening. The survey questions were presented as Likert-style answer options assessing the level of comfort personnel felt in approaching PPD screening with regard to the barriers documented in literature review such as ethical/legal liability, reimbursement, and approach to crisis management (Appendix E). Participants were asked to complete the survey when the PI was not present in the office and placed the completed forms in a designated folder kept at the investigational site. The same ten-item questionnaire was completed by participating personnel, again when the PI was not present, within the week following the one-month implementation period and then placed in the same folder. Pre- and post-implementation responses were discernable by a circle indicated by the respondent on the hardcopy survey (Appendix E). The PI did not collect the folder or review any

questionnaire responses until the end of the investigational period and when all participants verbally confirmed they had submitted one survey for each time period. Pre- and post-implementation survey responses were then compared to draw conclusions about changes in personnel attitudes reasonably attributable to the combined impact of The Partnership's training and the firsthand experience of practicing routine PPD screening with a pre-determined referral plan in place.

Chart Review. To assess the impact the new screening method had on the rate of screening of postpartum mothers within the project practice setting, a retrospective chart review was performed in April 2018. In order to produce the Needs Assessment portion of this pilot project proposal, the PI manually assessed the practice's patient schedule in the EHR for each day of a one-month period (October 2017). The EHR color-codes patient visits according to visit type (well-visit versus sick-visit) and includes the child's age in the schedule block. The number of well-infant (≤ 12 months of age) visits seen in the office in October 2017, the number of documented PPD inquiries performed, the outcome of the inquiry, and any indication of referral or other action taken was noted. Sixty-five historical charts were reviewed from October 2017 for the project needs assessment to establish baseline (pre-implementation) data for comparison to implementation period outcomes and eventually draw conclusions about the impact of this pilot project. No additional retrospective chart review was required after screening implementation.

Data Collection Sheet. For the purposes of tracking the project's goals to its practical outcomes, opportunities for PPD referral during the implementation period were tracked on a central Data Collection Sheet (Appendix I) stored securely at the front desk of the practice. One of the practice's full-time certified medical assistants worked closely with the PI to identify and

record patient encounters considered potential opportunities for offering the EPDS. These were assigned an ordinal number on the Collection Sheet and further identified by the date of the patient visit and age of the infant in months. Other information on the Collection Sheet included whether or not the birth mother was present at the visit (which determined EPDS eligibility), whether the EPDS was completed, score, the nature of any referral action taken, and any miscellaneous comments that may have explained discrepancies in adherence to the project protocol. The Data Collection Sheet precluded the need to perform retrospective chart review at the completion of the intervention time period, as the pertinent information relevant to the project was collected in real time with the assistance of practice personnel.

Edinburgh Postnatal Depression Scale. The EPDS (Appendix H) was considered the preferred tool for assessment of depressive symptoms in postpartum women, with sensitivities and specificities for PPD ranging from 80-90% based on systematic review of literature (Viguera, 2016). The scale is composed of ten questions about the respondent's (mother's) feelings over the previous seven days. Four answer choices are possible for each question to indicate the frequency or severity of each emotion described, and scores for each question range from 0-3 points, with higher scores representing more severe or frequent symptoms suggestive of PPD. Score interpretation guidelines vary slightly across relevant literature, with some investigators, including the tool's authors (Cox et al., 1987) defining a positive screening result as ≥ 10, or any score that includes a positive response to question 10 regarding thoughts of self-harm. Scores greater than 20 warrant strong consideration of crisis management measures (Earls, 2010). Additionally, any response other than "Never" to the final item, "The thought of harming myself has occurred to me…" necessitates further exploration by the clinician and possible implementation of the crisis intervention plan through resources identified by The Partnership.

The scale was modified slightly for this investigation to request infant age so the PI did not have to access EHR data to detect trends in PPD symptoms correlating to an infant's stage of development.

Non-emergent scoring. For mothers who screened positive (EPDS score ≥10 and/or a positive response to item 10), the provider, with the mother's consent, contacted The Partnership's Emotional Health Phone Support (EHPS) referral program. The EHPS then contacted the mother by phone and, at her request, connected her with local mental health services as deemed appropriate by referral specialists. The Partnership conducted ongoing telephone follow-up with consenting mothers to monitor their status and progress in utilizing available resources to address PPD.

Emergent scoring. In instances of a positive response to the final question item, the clinician was to interview the mother about the thoughts, feelings, and possible actions behind her answer to that specific question. Specifically, the clinician was to determine if the mother had a plan in place for self-harm. The clinician was to inquire about thoughts of harming her infant or other children in the household. Should the mother admit to a plan, a suicide hotline, mobile crisis unit, or 911 emergency services was to be contacted by the office on behalf of the mother. She would be reassured her child would not be taken away from her by child protective services or immigration agents, but a responsible adult family member or trusted caretaker would need to come to the office to retrieve the child temporarily and/or accompany the mother to the next stage of crisis management, perhaps at a local emergency room. If the mother denied a true plan for self-harm or child abuse and with her consent, the office would contact The Partnership's referral center on her behalf to initiate follow-up management of her symptoms.

The EPDS score was meant to serve as an initial screening tool for PPD, not a basis for diagnosis or consent for counseling and treatment from the mother. As with any validated clinical assessment tool, the diagnostic use of the EPDS is not overridden by professional clinical judgment. The provider's assessment of the mother and child during the visit may include evidence that supports or contradicts the EPDS findings. Women who screened positively and were deemed likely to be experiencing PPD were asked permission to notify her PCP of the findings so ongoing monitoring could be implemented by that provider.

Benefits/Risks

The benefits of more frequent and thorough PPD screening to the population at large are more theoretical than directly measurable. Earls (2010) and other health care professionals attest to the highly treatable nature of PPD once recognized. With extensive evidence as to the adverse outcomes of PPD including, but not limited to, maternal psychosis or suicide, stunted infant social development, earlier breastfeeding cessation, and marital strains (Farías-Antúnez et al., 2018; Mgonja & Schoening, 2017; Sheeder et al., 2009), the presumptive benefits of preventing these outcomes are undeniably significant. Although the project did not go so far as to directly assess these benefits, the increased rates of screening and referral under the system reflected more attempts to address PPD and potentially enhance the well-being of more mothers and families. The USPSTF (with Siu, 2016) estimates with moderate to high certainty that the net benefit of screening for depression, including during the perinatal period, is moderate to substantial, especially when considering long-term sequelae of the disease.

In asking questions about emotions and the mental health of an infant's mother during a pediatric primary care visit, there is an inherent risk of triggering the experience of unpleasant feelings, which could potentially leave her feeling overwhelmed at a time she is actively caring

for her infant. However, the project protocol provided the mother a chance to address her survey responses directly with her baby's provider during the office visit that followed. Because of previous training by experts from The Partnership, providers knew how to respond to the mother's emotional expression and had tools on hand to direct her to health care professionals who could focus more exclusively on her well-being.

There are risks involved in disrupting the normal workflow of a longstanding practice, so the practical considerations of screening administration were refined and tailored based on identified barriers in the implementation phase. Unforeseen obstacles that created missed screening opportunities or unfavorable parent experiences were examined in post-implementation discussion between the PI and practice clinicians and protocol changes recommended to reduce these risks and weave routine PPD screening into the daily workflow of the office.

Subject Recruitment

Practice personnel. Participation of all practice personnel at this small practice site was essential for successful implementation of this quality improvement project. Permission to use the site was granted by its chief operating officer and medical director who also serves as a team member for this project (Appendix B). Convenience sampling was utilized because participants were identified by virtue of their employment at the investigational site. Personnel were approached individually by the PI within the two weeks before The Partnership's presentation to verbally describe the proposed project and its anticipated positive outcomes. This explanation immediately preceded provision of the Informed Consent (Appendix D) to each potential participant by the PI. Each was informed they were not required to sign or decline immediately (as described further in Consent Procedures below).

Inclusion criteria. All practice personnel were considered potential participants in this screening initiative as their respective roles impacted the screening process during patient check-in, clinical assessment, filing of relevant documentation, and/or billing for the visit. As such, all personnel were approached for voluntary consent to participate in the training sessions offered by The Partnership.

Exclusion criteria. Because of the small size of the practice site and potential involvement of each team member in the screening process, no practice personnel were excluded from being asked for consent to participate in project implementation.

Mothers. Convenience sampling was used to recruit mothers for voluntary completion of the EPDS if they presented to the investigational site during the screening implementation period.

Inclusion criteria. Birth mothers of infants (0-12 months of age) who presented for a well-infant visit were asked to complete the EPDS. Birth mothers were identified by the receptionist who performed patient registration. The receptionist asked the caregiver presenting with the infant, "Are you your baby's birth mother?" and offered the EPDS for voluntary completion to women who responded affirmatively.

Exclusion criteria. Non-birth mothers (even if biological) and adoptive mothers or surrogates were not screened because they are inherently not subject to the hormonal factors that contribute to PPD (Viguera, 2016). Birth mothers who met inclusion criteria but presented for sick-visits were assessed at the provider's discretion. Although the EPDS is available in multiple languages, only mothers who read and spoke English were asked to participate. Additionally, any mother that documented or demonstrated impaired cognition was excluded.

Consent Procedures

Practice personnel. All provider and non-provider staff at the investigational site were presented with an Informed Consent (Appendix D) form to participate in implementation of a new PPD screening approach during the proposed time period. In the two-week period prior to The Partnership's presentation, each potential participant was asked to review the consent form without the PI present. The PI personally meet with potential participants at the practice site to answer any clarifying questions and/or address concerns about the content of the consent form. The PI also clarified the provision of participants' last four digits of their cellular phone numbers on the surveys was only to ensure anonymity of responses and track collection of a survey data both before and after the screening implementation period. Finally, the PI reminded participants project participation was voluntary and withdrawal optional at any time with prompt notification of the PI so any necessary adjustments to the project implementation could be made accordingly.

Mothers. The EPDS is the PPD screening gold standard in both hospitals and primary care settings including pediatric offices (AHRQ, 2013; Viguera, 2016) and a procedure for which consent would not be obtained outside of a research or other investigational context. Therefore, a waiver of informed consent was requested and granted by the Institutional Review Board for mothers to complete the EPDS voluntarily. Additionally, any referral the PPCP may deem appropriate would require verbal consent with the exception of crisis management.

Project Costs, Resources, and Compensation

As a non-profit organization, The Partnership provides educational programs and literature free of charge to providers who wish to refer patients. The PI provided attendees of the educational and training programs with coffee and sandwiches, the cost for which was $172.96. Brochures (Appendix G) available for reprint (www.partnershipmch.org) were reproduced and made available for all parents at the expense of the investigational site. Additionally, EPDS

screening tools, PPCP pre-and post-implementation questionnaires, and screening and referral resource binder were funded by the PI at a cost of less than $10.

There were no personnel costs associated with this quality improvement effort. No clinical or office staff participants were compensated above their normal wages for voluntary participation in this initiative. Mothers who agreed to participate were not paid or asked to pay to complete the EPDS screening tool. The PI, project chair, and project co-chair were not compensated monetarily or otherwise for the time and work relevant to development and implementation of the project. Projected and final project costs are presented in Appendix J.

Timeline

The proposed screening system was implemented over a one-month period. Clinical staff were educated and trained through The Partnership's program the day before screening implementation began. Comparison data gathered through retrospective chart review reflected a one-month period from the preceding calendar year, October 2017. Initial efforts were to implement screening during the same corresponding month of October 2018 to control for the seasonal stressors that could potentially influence symptoms of depression, including the amount of sunlight and social events such as the back-to-school season. Ultimately, however, implementation was delayed until December 2018.

Following the screening implementation period, data were analyzed and summarized by the PI. Project results were shared with practice personnel during the month after implementation and providers were informally surveyed for feedback regarding the successes and shortcomings of the program design. Based on this input, the PI proposed modifications to the screening approach in collaboration with providers to ensure its sustainability moving forward. A summary of the project timeline is available in Appendix C.

Evaluation Plan

Data Maintenance and Security

Practice personnel were asked to provide the last four digits of their cellular phone number on their pre- and post-implementation survey forms to track that the same personnel were surveyed at each time period. Survey responses (Likert-style numerical answers) were transferred to electronic format by the PI into a Microsoft Excel (version 16.14.1) spreadsheet without the associated four-digit identifiers. Edinburgh Postnatal Depression Scale scores were documented in the pediatric patient chart and EHR. No hardcopies of the completed EPDS were stored personally by the PI. Hard copies of personnel assessment responses were stored in the office of the Project Chair and will be destroyed within five years of project completion according to Rutgers University Information Technology Policy. Personnel assessment responses were viewed only by the PI and not associated with names or other personal identifiers. Original hardcopies of all collected consent forms will remain in the office of the Project Chair for five years after publication and presentation of the project before being destroyed.

Data Analysis

Provider surveys. Quantitative data analysis was performed using Microsoft Excel (version 16.14.1). For statistical comparison of practice personnel opinions and comfort with PPD screening pre- and post-intervention, means of the ordinal data obtained from Likert-scale survey responses were calculated. Individual survey responses were compared between the pre- and post-intervention time periods as well as a comparison of total score change. Due to the

small sample size for PPCP responses, a test for statistical significance was not feasible and as such, only descriptive statistics were used.

Screening occurrences. Rates of PPD screening and referral pre- and during project implementation were compared through simple measures of frequency reflected by percentages. From the data derived from the pre- and post-implementation periods, the number of eligible screening candidates were compared to the number of actual screenings implemented under the two screening approaches in addition to the actual number of referrals made.

Results

Practice Personnel

Project implementation occurred over the one-month period of December 2018 immediately following a provider-oriented presentation by The Partnership that provided an overview of screening methods and referral options. Eleven practice personnel consented to participate in the presentation and subsequent screening implementation. Participants were comprised of four pediatric providers (three physicians and one advanced practice nurse), two certified medical assistants, four front desk non-certified assistants, and the office manager. All but three of the 11 participants completed a pre- and post-implementation survey regarding their knowledge, beliefs, and comfort regarding PPD and screening practices. Response data from three participants could not be used to assess change between the two time periods because the individuals were no longer working at the office during post-implementation survey administration.

Likert-style question responses ranged from 1 (strongly disagree) to 5 (strongly agree) with 0 representing ‘not applicable.’ Three of 10 questions (items 6, 7, and 8) were reverse scored for data analysis so that higher scores reflected generally greater knowledge, comfort, and

support surrounding the phenomenon of PPD and its screening practices. The possible total survey scores ranged from zero to 50. The average pre-implementation total survey score was 32.75 (n = 8), and the post-implementation score was 38.50 (increase of 5.75; Table 1).

Mothers

Sixty-seven eligible well-infant visits occurred during the pilot screening period. Only three visits were excluded because the biological mother was not present for the encounter. Of the 67 screening opportunities, the EPDS was completed by 33 mothers (49.3%). Four of the 33 mothers screened had EPDS scores ≥ 10 indicating a positive screen (12.1%) and two of those 4 (50%) were referred to specialized services to address PPD (Table 2). Two of mothers who screened positive had infants who were 9-months old and the others were 4- and 6-weeks of age respectively.

Aim 1

Although the small sample size of this pilot project limits the ability to assess the statistical power of its impact, changes in survey responses from practice personnel can be used to determine whether the educational presentation and screening experience effected knowledge and attitudes towards PPD and screening. The aggregate increase in average score of 5.75 (17.6% increase) between the pre- and post-implementation periods suggests the project experience improved comfort and awareness regarding PPD screening among practice personnel. Changes in responses among individual participants was assessed by matching the last four digits of each respondent's telephone number written on the survey. Ranging between a one and 18-point (2.63-78.26%) increase, all participant scores increased on the post-implementation survey and no respondents expressed a decline in comfort and knowledge about PPD screening after having participated in the project.

Comparison of individual response items on the survey suggests participants benefitted from the experience in some areas more than others. For example, all question items produced an increase in average response score in the post-implementation period except for item 6, which reflected comfort with the time constraints of practicing routine PPD screening. The average response for this question declined from 2.50 to 2.38 (a decline of 4.8% after reverse scoring of raw response data).

Aim 2

The number of mothers considered potential candidates for PPD screening at the investigational site was increased substantially through the project protocol. Prior to implementation, practice providers were informally inquiring about PPD symptoms in mothers presenting at the newborn visit only. Of the 65 well-infant visits that occurred in the one-month comparison period, there were five newborn visits (7.7%). The project protocol broadened the criteria for PPD screening to include all visits during the child's first year of life. Of the 70 total well-infant visits occurring during project implementation, 67 were eligible for screening because the biological mother was present (95.7%). By expanding the screening parameters to meet the timeframe during which PPD is considered diagnosable by the APA (2013), the number of mothers who underwent screening increased approximately thirteen-fold. Although the parameters for screening greatly increased the raw number of mothers who were considered candidates for PPD screening, the rate of actual occurrences of such remained higher in the comparison period, during which PPD inquiry occurred at four out of the five (80%) newborn visits. During project implementation, screening occurred at only 33 of 67 (49.2%) possible encounters.

Prior to the pilot project, the investigational site did not have a clearly-defined referral plan in place for situations in which a mother expressed symptoms or feelings suggestive of PPD. Rather, with her permission, the provider would reach out to the mother's obstetrical care provider to make him/her/them aware of the issue for follow-up. There were no PPD inquiries in the pre-implementation chart review period that resulted in "positive" results warranting referral or follow-up. However, the increased rate of formal screening during the implementation period produced four positive EPDS scores (≥ 10). One of these mothers was referred to The Partnership's Emotional Health Phone Support program to connect her with community-based resources for mental health support and check in with her periodically to assess her well-being. Another mother was referred directly to a well-regarded local resource with which the provider was familiar. The project protocol increased the opportunities to identify mothers experiencing symptoms of PPD and demonstrated a referral rate of 50%. The remaining two mothers with positive screening results declined referral and given the limits of the program, no details regarding the discussion between the mother and provider were accessible to the PI for analysis. No referrals occurred in the pre-implementation comparison period because there were no detections of PPD symptoms through informal inquiry at newborn visits.

Aim 3

Following the end of the one-month implementation period, practice personnel were informally surveyed for feedback regarding the project experience. All responding participants expressed satisfaction with mothers' responses to the EPDS screening process and had no negative experiences in administering or discussing the tool. Time and routine change were cited as constraining factors in successfully screening 100% of mothers who were potential candidates. Individuals who were long-standing employees at the practice admitted to a greater

struggle adhering to the project protocol than some newer team members. Overall, participants demonstrated an intention to continue PPD screening more universally at the practice moving forward using the EPDS.

The chart-flagging process was identified as the phase of workflow at the practice that needed to be tailored for improved screening compliance. The medical assistants stated they will revise their chart preparation process to pre-load paper charts for well-baby visits with a hardcopy of the EPDS at the beginning of each practice day. As the office actively moves away from paper charting to more exclusive electronic medical record keeping, this strategy will likely have to be modified in the future. The practice's Chief Medical Officer stated that, ideally, the EPDS will eventually be administered electronically to mothers and data integrated into the EHR.

Discussion and Recommendations

The outcome of this pilot project for quality improvement reflected a rate of PPD symptom detection of about 12% (four of 33 screening occurrences) which falls within the estimated rate of PPD occurrence nationally (10 to 30%). Opportunities for screening increased more than thirteen-fold under this screening process by broadening the timeframe beyond the newborn visit and through the first 12 months postpartum. Two mothers screened positive on the EPDS at their infant's 9-month well-visit, demonstrating the utility of screening beyond the AAP's (2017) 6-month postpartum recommendation. Interestingly, a similar investigation by Mgonja & Schoening (2017) also found mothers who screened positive for PPD as late as the 12-month visit. These findings correlate with the APA's (2013) diagnostic timeframe for PPD which extends across the first full postpartum year. Data produced by this project and others strongly

support providers (and not only pediatric providers) evaluate for and address PPD symptoms throughout the first year postpartum.

Although the project design significantly increased the number of mothers considered candidates for screening, a little more than half of the opportunities were missed due to human error. In post-implementation discussion with providers and staff, the biggest barrier to screening compliance was remembering to include the screening/screening tool into routine workflow. The initial project design proposed avoiding this by flagging patient charts for potential screening eligibility on a case-by-case basis the evening before each practice day. This strategy proved challenging to implement because the PI was not on-site daily and did not have remote access to the EHR. In lieu of the PI, a self-assigned on-site project champion (one of the medical assistants) took a lead role in identifying opportunities for screening each day according to the project criteria. Providers also made an effort to include the screening as part of their well-infant assessment which, according to the providers, came more naturally to those who had previous experience in routine PPD screening at other practice sites.

The lack of a consistent, uniform way to identify and execute screening caused variations in screening compliance based on the specific combination of personnel working at the practice on any given day. Future initiatives of this nature should approach implementation of a revised pre-screening approach by addressing barriers to organizational change. There exist several theories surrounding effective approaches to adopt health-promoting practices within healthcare organizations summarized by Batras, Duff, and Smith (2016). One concept, published by Everett Rogers (2003a) and referred to as Diffusion Theory, describes the factors that facilitate or inhibit the adoption of new innovation within an organization. The investigational site for this project had several important facilitators to adopting the expanded PPD screening method under Rogers'

theory. The small office size contributed to the interconnectedness of personnel, allowing ideas to flow more easily between team members. The change proposed had the support of centralized leadership (the Chief Medical Officer) who promoted the innovation at the site. Finally, complex organizational systems are generally more challenging environments in which to implement change according to Rogers (2003a), but the small size of the practice site created a minimally complex system in which to introduce a new innovation.

According to Rogers (2003b), the barriers to change are equally important when considering the shortcomings of project implementation. Although a change advocate, or champion, emerged naturally at the site and became the primary influencer over screening implementation, the champion was not in a leadership role and/or in a position to influence adoption of the change behavior among all personnel. Further, there was no formalization of the screening practice through policy and accountability to encourage more consistent implementation. Pre-selecting a change champion in a leadership position and formalizing the procedure within the practice may have produced higher levels of screening compliance. The exact method of achieving formalization could have been discussed with the Chief Medical Officer prior to project implementation or process tailored to match the unique workflow of the office through trial and error and/or collaboration with staff as demonstrated by Mgonja & Schoening (2017). In their investigation, the successes and barriers to screening were evaluated every two weeks during the nine week project and strategies were modified to improve screening compliance. A similar approach applied to the project would likely have necessitated a longer timeframe for implementation and/or more manpower with flexibility to execute collaborative meetings and discussions with practice personnel. It may, however, have yielded more robust compliance.

Implementing more universally-applicable, routine PPD screening was generally well-regarded by practice personnel who underwent specialized education and training from The Partnership. The small sample size of participants who completed pre- and post-implementation surveys (n = 8) prevents formal statistical analysis of the size of the impact the training and screening experience had regarding personnel attitudes and comfort with screening. However, comparison of questionnaire data using descriptive statistics demonstrates an overall increase in score by 17.6% from pre- to post-implementation reflects an improvement in comfort, knowledge, and attitude toward routine PPD screening practices. The only item in the survey for which there was a decline in average Likert-scale response in the post-implementation period asked about comfort with the amount of time required to implement screening. Time constraints are a well-recognized barrier to PPD screening identified in literature on the topic (Chaudron et al., 2004) despite some arguments that screening is only time-consuming if referral is indicated (Waldrop et al., 2018). However, time constraint concerns were also verbally expressed by practice personnel during pre- and post-implementation discussions. Likewise, the study by Mgonja & Schoening (2017) also documented time as a limiting factor reported by pediatric providers in implementing PPD screening. In both investigations, however, these concerns were raised during the relatively short timeframe during which the study was implemented, a period of weeks as opposed to months or longer. Rogers (2003a) posits it takes months or even years for an organizational innovation to become a seamless part of the system workflow. One could argue the perception of time as a limiting factor in screening implementation may become less significant as the practice becomes more habitual in the office culture and workflow. Future investigations should assess the knowledge, attitudes, and practices of personnel at the site

initially and monthly, tapering to biannual and annual, intervals after initial introduction of the routine screening method so any necessary process modifications can be made early and often.

Impact on Healthcare Quality and Safety

The Patient Protection and Affordable Care Act (ACA) of 2010 encouraged a shift in focus within the health care industry to preventive health care and increased attention to mental health surveillance and treatment. Use of the EPDS for PPD symptom detection and referral aligns with the goals of the ACA (2010) and creates opportunities to treat a manageable mental health condition with well-documented negative impacts on women and families (Chaudron et al., 2004; Farías-Antúnez, 2018; Netsi et al., 2018; Waldrop, 2018). This quality improvement project and similar past investigations (Carroll et al., 2013; Chaudron et al., 2004; Mgonja & Schoening, 2017; Sheeder et al., 2009) found that increasing the parameters for PPD screening produced more opportunities for screening, more positive screening results, and therefore, more opportunities for specialized referral. This evidence supports efforts to increase the number of providers who screen for PPD and expand the timeframe for screening through the first 12 postpartum months.

It is essential to note a pre-determined referral plan for positive screenings is essential to the safety and success of a PPD screening program and improves provider comfort (Carroll et al., 2013; Kerker et al., 2016; Waldrop et al., 2018). In in project, personnel survey responses reflected an increase in knowledge about referral resources from the pre- to post-implementation period. This is attributed to the specialized education and training furnished prior to screening implementation and the availability of referral tools during the project period. Lack of PPD education to providers and practice personnel regarding PPD was a noted limitation in the project by Mgonja & Schoening (2017) and was intentionally addressed in this initiative. With

knowledge of appropriate referral options, appropriate treatment and follow-up can be facilitated. Although the impact of referral was beyond the scope of this project, increased rates of referral theoretically lead to better management of PPD, potentially diminishing its negative impacts on mothers, their families, and society.

Policy Implications/Translation

None of the mothers offered the EPDS during the project implementation declined to complete the screening tool, aligning with trends in existing research which suggest mothers are generally open to discussing PPD with their infant's pediatrician (Chaudron et al., 2004; Earls, 2010; Mgonja & Schoening, 2017; Olin et al., 2016). Although practice personnel at the investigational site initially expressed concern about the ethics and legality of screening non-patients, 100% maternal compliance for those offered screening suggests the effort was well-received by mothers. Participating in an educational presentation that addressed some of the ethical and legal concerns of PPD screening also lent confidence to providers and staff in approaching it as an evidence-based practice to enhance quality of care. This project design can be roughly replicated to encourage the adoption of routine PPD screening at PPCP offices. The inclusion of specialized education and training are essential to addressing the screening barriers described in the literature (Kerker et al., 2016) and anecdotally. Such educational programs are available to providers throughout the state of New Jersey through the consortium of The Partnership and its counterparts in the central and southern parts of the state (Central Jersey Family Health Consortium and Southern New Jersey Perinatal Cooperative, respectively). These organizations serve as resources for referral options and telephone follow-up for mothers in addition to their provider-oriented services.

Currently, there are no federal laws mandating screening for PPD. New Jersey is one of about a dozen states that has enacted laws and/or developed task forces to address issues of perinatal depression. As of early 2019, New Jersey law (New Jersey Revised Statutes § 26:2-175, 2013) mandates PPD screening occur prior to hospital discharge after childbirth (Postpartum Support International, n.d.). Professional organizations of healthcare providers from relevant specialties have developed their own best-practice guidelines for the frequency of PPD screening, including OB/GYNs (ACOG, 2015) and women's health nurses, nurse practitioners, and midwives (AWHONN, 2015). Surprisingly, however, no recommendations are as specific as those of the AAP (2017) that recommend screening at defined intervals in the postpartum period using a validated tool and pre-determined referral plan. However, the AAP's screening recommendation extends only through the sixth postpartum month despite a growing body of evidence (including the project at hand) which demonstrates the utility of screening through the first 12 months (Mgonja & Schoening, 2017; Sheeder et al., 2009). In the interest of maximizing the number of screening and referral opportunities, more pediatricians should adopt the practice of safe, routine, and more universal PPD screening that extends throughout the APA's (2013) timeframe for the emergence and diagnosis of PPD symptoms. To align with and encourage that practice among pediatric providers, the AAP should modify its recommended intervals for screening at well-child visits to include the first full postpartum year.

Although referral resources vary from state to state, pediatric providers can utilize the website of Postpartum Support International (n.d.), an organization of volunteers who advocate for perinatal mental health awareness and serves as a central guide to regional resources across the country and internationally. Postpartum Support International offers a 24/7 help line and links callers with locally available sources of support, including organizations like The

Partnership as well as private practitioners who specialize in PPD treatment. Its website is an invaluable resource for health care providers across disciplines who wish to start a PPD screening program with a safe and reliable referral plan.

Dissemination/Professional Reporting

The final report of this pilot project for quality improvement will be submitted to the investigational site, allowing practice personnel to review the positive impact of this PPD screening initiative. Ideally, it will serve to further encourage the adoption of the routine PPD screening practice as a permanent part of office workflow. Additionally, it will be submitted to The Partnership for review by its professional staff to reinforce the positive impact of the organization's work and acknowledge its contribution to this initiative. A draft abstract of the project proposal was submitted to the journal *Pediatric Nursing* and was well-received. A revised manuscript will be submitted to that journal for publication consideration. The PI plans to explore other relevant venues for possible dissemination of the project findings, especially those that speak to an audience of PPCPs who may be inspired by the outcomes discussed here. The project will also be presented to graduate nursing students and faculty at Rutgers School of Nursing Doctor of Nursing Practice Poster Day.

Limitations

Several limitations became apparent with the design and implementation of this pilot project that should be addressed in future initiatives. First, the small size of the private pediatric practice selected produced a small sample of practice personnel to undergo the educational intervention and associated pre- and post-implementation surveys. The total number of personnel surveyed initially in the pre-implementation period was eleven, but three of these individuals were no longer working at the practice during the post-implementation period and thus their

survey data were not included in analysis. The small sample limited the ability to perform a *t*-test to assess the statistical significance of the change in survey scores from the pre- to post-implementation period.

The final sample of eight personnel was composed of two providers, two medical assistants, the office manager, and three front desk representatives. Some of the survey questions were considered not applicable to non-provider respondents (such as those relating to comfort discussing of PPD with mothers or concerns for reimbursement) which prompted some to answer "0" for "not applicable" and others to answer "3" for "neutral/unsure." This affected final scores and diminished the reliability of the survey responses. The validity and reliability of the assessment tool used to measure practice personnel knowledge and attitudes about PPD should be examined and refined before applying it to future projects of this nature. Also, it may be useful to assess provider and non-provider responses separately, perhaps even with separate questionnaires to better understand and discriminate factors influencing screening from each unique perspective.

The sample size could be expanded by including multiple pediatric practices and examining the differences regarding how the PPD screening experience is received in more diverse settings. Broadening the scope of the project would necessitate more time and financial resources from the investigator(s). For this pilot study, a single investigational site was selected by approaching a pediatric provider with a reputation of openness to preventive care measures and proactive quality improvement. Due to hesitancy from many PPCPs to adopt PPD screening practices (Kerker et al., 2016), a key feature essential to this type of initiative is to educate providers about the negative impacts PPD can have for pediatric patients (Farías-Antúnez, 2018; Netsi et al., 2018). Future investigators should supplement the content of The Partnership's (or

presentations by similar organizations as needed) educational presentation to include statistics surrounding the developmental and behavioral impacts of maternal depression for children and families.

Finally, it is important to note the use of a single investigational site naturally limited the demographic makeup of patients and parents who presented to the office during the screening period. The practice is located in suburban northern New Jersey among middle- to upper-middle class neighborhoods and the office does not accept Medicaid. Given that certain demographic factors are known to influence the likelihood of experiencing PPD (DelRosario et al., 2013; Viguera, 2016; Bina & Glasser, 2019), screening outcomes may or may not vary in regions with different predominant demographics. Additionally, this project did not collect maternal demographic information such as age, race, income, partner status, and education level that may or may not correlate with greater or lesser incidence of PPD. These factors would be valuable to explore in future investigations as it may inform which pediatric offices are likely to have mothers at highest risk for PPD.

The influence of seasonal and situational stressors on maternal depression should also be considered. The initial project design aimed to compare outcomes during identical months in separate calendar years to control for the effects of seasonal fluctuations in rates of depressive symptoms. For example, data from the comparison month of October 2017 may have reflected the stresses of the back-to-school season for mothers with other children, whereas data from the implementation month of December 2018 may reflect emotional challenges that occur during the holiday season. Future investigations should control for these influences or explore them further.

Conclusion

This pilot project for quality improvement demonstrated a rate of symptom detection that falls within estimated rate of PPD occurrence nationally, suggesting evidence-based screening methods can be feasibly and safely implemented in pediatric primary care to meet and exceed the guidelines suggested by the AAP (2017). Facilitation of specialized knowledge and training to practice personnel generally improved the level of collective comfort in approaching PPD screening by addressing barriers reported in the literature. Concerns among practice personnel about the ethical/legal liabilities of and reimbursement for screening a non-patient can be addressed through targeted education and training of pediatric providers and practice personnel. Perception of time constraints as a barrier may worsen or persist until a new screening protocol is fully integrated into the organizational workflow. The influence of a change champion in a position of leadership at a given practice may expedite this shift in culture.

Use of a validated assessment tool, broadened screening parameters, and a pre-determined referral plan established a safe and efficacious protocol that contributed to more instances of PPD symptom detection, discussion, and referral to support in this investigation. Collaboration with specialized, regional health consortia was essential to the success of this project and should be considered a cornerstone of any successful mental health screening program. Every instance of positive PPD screening is an opportunity to refer a mother for support and treatment, potentially improving outcomes for herself and her children. Future endeavors surrounding this topic should include a variety of pediatric primary care sites to assess the successes and limitations of the project methods in offices of different sizes and patient/parent demographics. Ideally, this study design can be tailored to align with the workflow

of any pediatric health care setting and contribute to a more widespread practice of PPD screening among PPCPs.

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Appendix A
Table of Evidence

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
1	Waldrop, J., Ledford, A., Perry, L. C., Beeber, L. S. (2018)	Systematic review with meta-synthesis" Combination of RCT, quasi-experiments, quality improvement projects, and qualitative study of feasibility	7 published articles describing the implementation of PPD screening within the pediatric primary care setting, in the Unites States, in English language. Articles selected from a comprehensive literature search across CINAHL, PubMed, and PsychInfo on the topic of PPD screening in the pediatric care setting.	All reports showed an increase in PPD screening rates when a program aimed at screening compliance was implemented, with most programs also increasing the rate of PPD detection and referral. Establishing a clearly-defined referral algorithm for positive PPD screenings can encourage providers' willingness to screen. Time required to screen, counsel, and refer cases of PPD is considered a barrier to screening, but low rates of occurrence (as high as 20%) suggest that the extra time, when needed, should not be an excessive burden on the workflow of an office practice. A "warm handoff" of care from the pediatric provider to the clinician who will address PPD directly can enhance likelihood of the mother's follow-up with referred services.	Quality of reviewed reports was considered low to moderate by the authors, with only 1 randomized control trial (RCT) included.	Level III Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
2	Sheeder, J., Kabir, K., Stafford, B. (2009)	Non-experimental, descriptive study	199 mothers aged 12- to 21-years-old presenting to a pediatric clinic for children of young mothers of low socioeconomic status within an urban teaching hospital in Colorado. Only mothers presenting with their child for well-baby visits from ages 0- to 6-months were screened for PPD with the Edinburgh Depression Scale (EPDS). No PPD screening system existed before the study was implemented. 387 total screenings occurred over a 10-month study period (many mothers screened more than once).	Overall PPD prevalence in screened mothers (20.1%) roughly matched national averages (10-20%). Electronic cues for providers enhance screening compliance (98% in this study, compared to much lower rates for past studies that did not involve electronic medical records. A small and dedicated clinic staff team is more likely to achieve 100% referral rate for positive PPD screenings. Mothers showed higher EPDS scores at the child's 2-month visit, then a nadir at the 4-month visit, and a resurgence at 6-months.	Study conducted at one site with only young mothers and at a clinic with a small, cohesively organized staff that included a social worker, perhaps biasing for success over clinics with different demographics. Burden of program implementation on staff was not assessed. Mothers' rates of follow-up with referral services was not measured.	Level III Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
3	Chaudron, L. H., Szilagyi, P. G., Kitzman, H. J., Wadkins, H. I. M., Conwell, Y. (2004)	Quasi-experimental cohort study (historical, not randomized, control group)	220 patient charts randomly selected at a large pediatric primary care practice within a teaching hospital in New York State between1999 and 2001. 110 well-child visit charts randomly selected from a 10-month time period before a universal PPD screening program was implemented. Compared to 110 charts from a 10-month period after program implementation. Well-child visits included 0 through 12-months of age	Only 46% of eligible mothers were screened in this busy clinical setting, with the deficit attributed to clerical errors, patient non-compliance, and not enough time to implement consistent institutional change. A statistically significant increase in PPD detection occurred when a screening system was in place, as opposed to when clinical judgment alone was used to detect PPD. With low overall rates of PPD occurrence, it is important to screen more than once during the first year of a child's life. Rates of referral of mothers with PPD to social workers increased with the screening system in place but still remained much lower than rates of PPD detection, suggesting a problematic referral process at this clinic.	The burden of the program on both the office staff and the mothers was not measured or analyzed. The sample sizes are relatively small, limiting reliability of statistical analyses.	Level II Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
4	Carroll, A. E., Biondich, P., Anand, V., Dugan, T. M., Downs, S. M. (2013)	Randomized control trial	3520 mothers of children ages 0-15 months at a pediatric clinic visit at a 48-provider clinic in Indiana. 1186 in the control group and 1167 in each of two intervention groups. One intervention electronically prompted providers to assess for maternal depression if mom answered 'yes' to 1 of 2 prescreening questions in the waiting room. The other intervention included the actions of the first but also encouraged educational/referral handouts to mothers who screened positively. Control group had no electronic prompts.	Automated screening algorithm for clinical decision support dramatically increased rates of PPD recognition and referral, perhaps because burden is lifted off of clinic office staff. Presence of educational/referral handouts made providers feel more comfortable about referring sooner than later. Some in the no-handout intervention group chose to implement the handouts anyway.	Limited generalizability of findings to automated computer applications different from the specific one used in this investigation. Overall rates of suspected maternal depression (1.2-2.4%) were lower than most larger-scale estimates of PPD rates (10-20% nationally). Providers may have inadvertently biased results by utilizing handouts when not assigned to handout group.	Level I Quality: High

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
5	Kerker, B. D., Storfer-Isser, A., Stein, R. E. K., Garner, A., Szilagyi, M., O'Connor, K. G., Hoagwood, K. E., Horowitz, S. M. (2016)	Cross-sectional, descriptive study (non-experimental)	457 non-trainee members of the American Academy of Pediatrics (AAP) responded to a provider survey in 2004 and 321 responded in 2013. Surveys were administered by mail. Questions asked about their practices for identifying, referring, and treating maternal depression. The AAP's recommendations about PPD screening were published in 2010, so the survey years were meant to reflect provider trends before and after the publication.	Fewer than half of pediatricians surveyed reported that they usually screen for PPD in their practice in both survey years. In the 2013 survey, there was a stronger correlation between provider beliefs that their practice should address social and emotional issues and actually implementing that belief through PPD screening. In the 2004 survey, a greater proportion of providers who reported regularly screening for PPD had formal training in mental health diagnoses. In 2013, the proportion was smaller, suggesting that screening practices are becoming more universal beyond only those providers with specialized mental health education.	Surveys were not administered to pediatricians who are not AAP members. Low survey response rates (less than 50% both years) limited sample sizes. Providers with a pre-existing interest in PPD may have been more likely to respond to the survey.	Level III Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
6	Mgonja, S., Schoening, A. (2017)	Quality improvement project and program appraisal, (on-research)	36 consenting mothers of infants ranging in age from 7 days to 12 months presenting for well-child visits with their child's pediatrician during a 9-week study period were screened for postpartum depression (PPD) during the visit. At a private, faith-based primary care clinic in the Midwest that included pediatric primary care services.	5 positive results out 35 eligible screenings (14.3%), reflecting estimated rate of PPD occurrence in the US (10-20%). 21.3% screening opportunities missed due to time constraints of administering screening tool in the waiting room (e-mail pre-visit may increase screening consistency). Office staff should be educated about PPD to enhance compliance with screening practices. Only 1 mother refused to participate – most women are willing to talk about PPD. 2 of 5 positive results occurred when the child was 12 months of age, reinforcing importance of screening beyond 6-mo. Plan-Do-Study-Act framework enhanced efficacy of screening program with each cycle of analysis.	Relatively short study timeframe and small sample size, limiting generalizability of results Not all staff members were adequately trained by the investigators about PPD and the study's goals, potentially effecting screening compliance	Level V Quality: Low, due to small sample size and no pre/post intervention comparison of outcomes

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
7	Olin, S. S., Kerker, B., Stein, R. E. K., Weiss, D., Whitmyre, E. D., Hoagwood, K., Horwitz, S. M. (2016)	Systematic review with meta-synthesis	18 articles meeting inclusion criteria from a MEDLINE and Google search that produced 1091 total records. Selected articles described 18 unique programs designed to screen for and refer women with PPD in pediatric primary settings, family care settings, and general health clinics	Two-thirds of programs evaluated occurred in pediatric care settings, suggesting that they are ideal contexts for PPD screening. Very few programs entailed a diagnostic interview following a positive PPD assessment tool result. Women were less likely to follow-up with referrals if formal PPD diagnosis was a precursor to care provision. Brief interventions by the screening provider were better received, especially in less complex PPD cases. Evidence-based psychosocial interventions delivered by staff in the pediatric primary care setting can facilitate timely, non-stigmatized delivery of support and encouragement. Legal and reimbursement issues still deter some providers from pursuing screening and management of mothers who are not under their direct care.	Only 6 articles reviewed included outcome data to demonstrate efficacy of the PPD screening method	Level III Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
8	Farias-Antunez, S., Xavier, M. O., Santos, I. S. (2018)	Systematic review with meta-analysis of cohort and case-control studies	20 articles selected for review from almost 10,000 database search results. Topic focused on impacts of PPD on a child's physical and psychological growth and development.	Impact on children of maternal depression is significant in the first year of life and is more measureable than impacts on development after 12 months of age. Maternal depression negatively effects infant's growth curve progression (height and weight) in the first 12 months of life, secondary to detriments in feeding and nurturing behaviors provided by the mother, who is often the primary caretaker. Use of validated screening tools is comparably effective in identifying PPD as a formal diagnostic interview with a mental health care professional.	Quantitative summarization of data was not performed due to the diverse variety of data collected across various studies. Inherent publication bias favors studies whose findings were considered significant enough to publish and disseminate widely. Arguably, other studies relevant to the topic could not be evaluated if they did get published and/or appear in a widely-used database.	Level III Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
9	American Academy of Pediatrics, edited by Hagan, J. F., Shaw, J. S., Duncan, P. M. (2017)	Clinical practice guidelines	Not applicable	Citing recommendations from the United States Preventive Services Task Force (USPSTF), the AAP recommends screening for maternal depression at the 1-, 2-, 4-, and 6-month well-child visit. Maternal depression is recognized as a detriment to the mother as well as the developing child and the family unit. Anticipatory guidance about PPD should be provided at the prenatal pediatrician visit. There are several validated tools available for PPD screening, including the EPDS and the Patient Health Questionnaire-2 (PHQ-2) and the PHQ-9. A provider who identifies PPD should provide support to the mother through referral for treatment, as well as assess the impact of PPD on the child.	Not applicable	Level IV Quality: High

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
10	Chaudron, L. H., Szilagyi, P. G., Campbell, A. T., Mounts, K. O., & McInerny, T. K. (2007)	Expert opinion	Not applicable	Pediatricians are responsible for assessing many factors that impact the overall well-being of their patients (including social, familial, financial circumstances). PPD screening aligns with the same rationale of optimizing a child's developmental well-being. Providers face ethical and legal considerations in implementing PPD screening: Screening may make mothers fearful of "punishment" for their feelings and resistant to seek further care for their child or themselves. HIPAA laws are viewed as a barrier to asking the mother about her well-being (can only be done with her consent). Recognition of PPD through screening can prevent secondary and tertiary adverse outcomes for the mother, child, and family. Benefits of screening outweigh risks.	Providers must be adequately trained on PPD and screening approaches before attempting to implement screening. A systematic screening approach should be developed by each provider (with a screening tool and standardized plan for frequency, documentation, and education relevant to screening). Providers should know referral resources before screening.	Level V Quality: High

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
11	Earls, M. F. (on behalf of The Committee of Psychosocial Aspects of Child and Family Health under the American Academy of Pediatrics; 2010)	Expert committee opinion	Not applicable	Pediatric providers are uniquely positioned to screen for PPD due to longitudinal relationships with children/families. PPD screening is within the scope of pediatric practice because it is part of assessment of a child's psychosocial context. Adequately addressing PPD can quell behavioral problems in children during early development. Use of the EPDS for PPD screening is endorsed by the USPSTF and is reimbursable under Medicare and Medicaid. Cases of mild PPD can be addressed with brief interventions and support from the pediatric provider. Moderate to severe cases should be referred out. Early Intervention for the child should be considered if developmental delay is detected.	Not applicable	Level IV Quality: High

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
12	Committee on Obstetric Practice (American College of Obstetricians and Gynecologists; 2015)	Position Statement	Not applicable	Clinicians should screen postpartum mothers at least once during the perinatal period using a validated screening tool and have a plan in place to initiate treatment, make referral, and ensure follow-up for diagnosis and treatment. Acknowledges variety of adverse outcomes associated with PPD and as well as its responsiveness to many treatment modalities. Provides a list of validated screening tools for PPD and/or general depression, including statistics for sensitivities and specificities of tools.	States that data is limited on the positive effects of PPD screening on improving outcomes. Does not elaborate on specific recommendations for systematic referral, treatment, and follow-up methods. Does not define when the (minimal) one screening occurrence should occur.	Level IV Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
13	Association of Women's Health, Obstetric, and Neonatal Nurses (2015)	Position Statement	Not applicable	Legislation and public health initiatives are needed to reduce stigma, address barriers to screening, and increase research into PPD, including: - Culturally-tailored public health campaigns to increase awareness and treatability of PPD. - Increased access to mental health coverage through better insurance coverage of perinatal mood disorders. - Continuing specialized education and training for nurses and providers on assessing and intervening on PPD. - Broader and more numerous community networks aimed at supporting postpartum mothers - More extensive research to assess changes and patterns of postpartum mental health symptoms across the entire perinatal period.	Statement makes recommendations on actions for nurses, rather than providers, to take – no timeline, frequency, or tool for screening is specifically cited. Generally recommends screening in any health care environment that involves mothers or children (too broad).	Level IV Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
14	National Association of Pediatric Nurse Practitioners (2011)	Position Statement	Not applicable	- Pediatric Nurse Practitioners should be skilled in screening care givers for maltreatment/abuse potential, including PPD. - Observe infant/mother dyad for behaviorally appropriate signs of healthy bonding and nurturing during all encounters. - Utilize multidisciplinary family-parent-child approach wherein all family members are considered to be contributing to a child's health. - Know how to use formal screening tools and be aware of referral resources. - Engage in continuing education about mental health assessment and intervention for infants, parents, and families. - Begin education on optimal infant care and bonding strategies in the prenatal period. - Collaborate with other mental health care experts to increase public awareness and policy development for PPD	No specific recommendations provided on timing, frequency, or tool used for PPD screening (position statement has broader focus).	Level IV Quality: Good

Article No.	Author(s), Date	Evidence Type	Sample/Size/Setting	Findings Relevant to Topic	Limitations	Evidence Quality
15	United States Preventive Services Task Force & Siu, A. L. (2016)	Position Statement	Not applicable	- Depression screening in adults is assigned a Grade B recommendation for practice according to the USPSTF: there is high certainty that the net benefit of screening is moderate, or there is moderate certainty that the net benefit is moderate to substantial - When screening, adequate systems must be in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up. - There are many risk factors for depression associated with pregnancy and childrearing. - Several assessment tools are named, including the EPDS. - Any adult who has not been screened in the past for depression should be formally screened. Going forward, screening should be performed based on clinical judgment and consideration of risk factors. - Clinicians should used evidence-based interventions for pregnant or breastfeeding moms.	Recommendations only apply to adults aged 18 or over. No specific timeline is given for when and how often to screen women in the perinatal period. Specifics of "adequate systems" for diagnosis, treatment, and referral that should precede any screening encounter are not described.	Level IV Quality: High

Appendix B
Site Letter of Support

[redacted]

February 28, 2018

Sharon Anderson, DNP, NNP-BC, APNG
Project Committee Chair
Rutgers School of Nursing
65 Bergen St., Suite 1126E
Newark, NJ 07107

Dear Dr. Anderson,

I have discussed with Laura Avery the postpartum depression project proposal to be carried out at my practice, Rutherford Pediatrics, in Rutherford, New Jersey. I understand that Ms. Avery is conducting this project as a part of her requirements for the Doctor of Nursing Practice program, Family Nurse Practitioner track, at Rutgers School of Nursing, and will have the opportunity to present her findings in other venues.

I understand the Institutional Review Board (IRB) at Rutgers will ensure the privacy, confidentiality, and well-being of participants involved in Ms. Avery's study. Additionally, I am aware that Ms. Avery will be under the advisement of an academic project committee, the members of which will be in regular contact with her.

I do not have any major concerns about the proposed project's intent and general design. Details of methods will be determined through discussion and collaboration with Ms. Avery in order to align with the goals of the study as well as my practice's continued success and service to our patients.

Any additional questions or concerns can be addressed by contacting my office.

Sincerely,

Dr. Grace Beez, MD

Dr. Marisa Mendes, MD

Dr. Bhabi Rai

[redacted]

Appendix C
Project Timeline

Improving Screening Practices for Postpartum Depression in a Pediatric Primary Care Setting Through Provision of Provider Education and Knowledge of Referral Options: Project Timeline				
Task Description	**Planned Start**	**Planned Finish**	**Actual Start**	**Actual Finish**
Project research and concept development	January 2017	January 2018	June 2017	March 2018
Proposal development	January 2018	May 2018	February 2018	August 2018
Project site recruitment	January 2018	January 2018	January 2018	February 2018
Chart review for pre-implementation data	March 2018	March 2018	April 2018	April 2018
Identification of education/training method	March 2018	March 2018	April 2018	May 2018
IRB approval attainment	May 2018	August 2018	August 2018	October 2018
Administration of pre-project implementation participant surveys	September 2018	September 2018	November 2018	December 2018
Implementation of provider education & training	September 2018	September 2018	November 2018	December 2018
Implementation of new routine screening system	October 1, 2018	October 31, 2018	November 2018	December 2018
Administration of post-project implementation participant surveys	November 2018	November 2018	December 2018	January 2019
Data review and analysis	November 2018	November 2018	January 2019	February 2019
Prepare for dissemination of project findings	January 2019	February 2019	February 2019	March 2019
Disseminate findings to DNP team	March 2019	March 2019	April 2019	April 2019

Appendix D
Consent for Project Participation from Practice Personnel

RUTGERS
School of Nursing

CONSENT TO TAKE PART IN A RESEARCH STUDY

TITLE OF STUDY: Improving Screening Practices for Postpartum Depression in a Pediatric Primary Care Setting Through Provision of Provider Education and Knowledge of Referral Options
Principal Investigator: Laura Avery, RN, BSN, CPN

This informed consent form provides information about a research study and what will be asked of you if you choose to take part in it. If you have any questions now or during the study, if you choose to take part in it, you should feel free to ask them and should expect to be given answers you completely understand. It is your choice whether to take part in the research. Your alternative to taking part is not to take part in the research.

After all of your questions have been answered and you wish to take part in the research study, you will be asked to sign this informed consent form. You are not giving up any of your legal rights by agreeing to take part in this research or by signing this consent form.

Who is conducting this research study?
Ms. Laura Avery is the Principal Investigator of this research study. A Principal Investigator has the overall responsibility for the conduct of the research. However, there are often other individuals who are part of the research team.

Ms. Avery may be reached at (973) 865-9606 and averylk@sn.rutgers.edu.

Ms. Avery or another member of the study team will also be asked to sign this informed consent. You will be given a copy of the signed consent form to keep.

Why is this study being done?
This quality improvement project seeks to implement a program of consistent postpartum depression (PPD) screening in a pediatric primary care setting to meet and exceed the screening guidelines suggested by the American Academy of Pediatrics and other professional organizations. Using methods recommended in relevant research, including education and training of practice personnel, use of a specialized screening tool, and establishment of a referral plan, the program will potentially reduce missed opportunities to identify maternal depression and make appropriate referral.

Who may take part in this study and who may not?
[redacted] is the sole investigational site for this project with the approval of its Medical Director and Project Team Member, Dr. Grace Becz. All currently employed personnel working in the physical office at [redacted] will be asked to participate in this project, including clinical students on temporary assignment, as each role in the office may have some level of participation in carrying out its implementation. Vendors, consultants, and other business-related visitors to the office may not take part in the project.

Why have I been asked to take part in this study?
Your participation in this project is being requested because you are an employee of [redacted] and your role at the practice overlaps with one or more steps required to carry out the proposed intervention.

How long will the study take and how many subjects will take part?
The implementation will occur over a 30-day period beginning the start of the week after your participation in an educational/training presentation given by a representative from The Partnership for Maternal and Child Health of Northern

New Jersey (The Partnership). The one-hour presentation will discuss postpartum depression, how to safely conduct screening, and how to refer mothers to The Partnership's services for follow-up. The maximum number of consenting participants is the current total number of staff members at [redacted] (roughly ten).

What will I be asked to do if I take part in this study?

All consenting participants will be asked to view a 1-hour presentation by The Partnership. You will be asked to complete a 10-item survey on your knowledge and attitudes about PPD screening before the presentation and again after the 30-day implementation period is over. Additionally, depending upon your function in the office, your role in the project will include the following:

Medical Assistants and Front Desk Receptionists

- Identify potential screening opportunities for PPD by asking women presenting with infants (0-12 months of age) for a well-child visit if they are the birth mother of the infant.
- Offer birth mothers to voluntarily complete the Edinburgh Postnatal Depression Scale (EPDS), which they will review with their child's physician or nurse practitioner during the visit.
- Complete the Data Collection Form provided by the Principal Investigator to track the number of well-infant visits, whether or not a screening opportunity occurred, whether the EPDS was completed, the EPDS score, referral action taken by the clinician, and any relevant comments.
- Ensure that brochures for The Partnership are available in the reception area and clinical office area for parent review regardless of the nature of their visit or their decision to complete the EPDS.

Clinical Providers (Pediatricians, Nurse Practitioners, and supervised clinical students)

- Score the EPDS during the patient/parent encounter and briefly discuss the outcome of the assessment with the mother.
- As appropriate to the EPDS score and related discussion, offer the mother various services for referral and follow-up on her symptoms of PPD through The Partnership, including crisis intervention if necessary.
- Indicate completion of the EPDS on the billing form for the patient visit.

Billing/Administrative Personnel

- Add "EPDS" to the list of billable procedures on the office's standard billing form, under CPT code 96161, to reflect administration of caregiver-focused health risk assessment instrument to benefit the patient.
- Process CPT code 96161, when indicated, for insurance reimbursement of EPDS administration.

What are the risks and/or discomforts I might experience if I take part in this study?

Research shows some pediatric practices have apprehensions about routine PPD screening due to concerns about legal or ethical dilemmas that may arise if a non-patient (a child's mother) admits to feelings of clinical depression or thoughts of harming herself or others. Because this is a known barrier to screening, the topic will be directly addressed in the provider-oriented education and training from PMCH. To ensure safe and effective screening practices, you will have access to appropriate referral resources for women who screen positive for PPD and you will also be educated on crisis management for rare extreme circumstances.

Are there any benefits to me if I choose to take part in this study?

The benefits of taking part in this study may be to contribute to more comprehensive patient care. Maternal depression effects the entire family unit and can impair mother-infant bonding, conflict with adherence to child safety practices, and stunt a child's social and cognitive development. By facilitating detection of PPD and referral to specialized support and treatment, you will be contributing to the betterment of your pediatric patient's nurturing conditions. There is no financial compensation for your participation.

However, it is possible that you may not receive any direct benefit from taking part in this study.

What are my alternatives if I do not want to take part in this study?

If you choose not to take part in this study, you will not be expected to offer the EPDS to birth mothers checking-in for well-infant visits (as a medical assistant or receptionist), score and discuss the EPDS during the visit (as a clinician), or process billing for the EPDS (as an administrative/billing representative). The Principal Investigator asks that these variations in project implementation be reflected on the Data Collection Sheet.

How will I know if new information is learned that may affect whether I am willing to stay in the study?
During the course of the study, you will be updated about any new information that may affect whether you are willing to continue taking part in the study. If new information is learned that may affect you after the study or your follow-up is completed, you will be contacted.

Will there be any cost to me to take part in this study?
No, there will be no monetary costs required for your participation in this project.

Will I be paid to take part in this study?
No, you will not be paid to take part in this study.

How will information about me be kept private or confidential?
All efforts will be made to keep your personal information in your research record confidential, but total confidentiality cannot be guaranteed. Your name will not be required on your completed surveys. Instead, the survey will ask for the last 4-digits of your phone number so that the Principal Investigator can ensure that she obtains both a pre-implementation and post-implementation survey from each participant without associating names to specific survey responses. Completed surveys will not be reviewed by the Principal Investigator until after completion of the 30-day implementation period and receipt of all post-implementation surveys.

What will happen if I do not wish to take part in the study or if I later decide not to stay in the study?
It is your choice whether to take part in the research. You may choose to take part, not to take part or you may change your mind and withdraw from the study at any time.

If you do not want to enter the study or decide to stop taking part, your relationship with the study staff will not change, and you may do so without penalty and without loss of benefits to which you are otherwise entitled.

You may also withdraw your consent for the use of data already collected about you, but you must do this in writing to Ms. Laura Avery at averylk@sn.rutgers.edu.

Who can I call if I have questions?

If you have questions about taking part in this study, you can call the Principal Investigator, Ms. Laura Avery, at (973) 865-9606, or the Project Chair, Dr. Sharon Anderson, DNP, NNP-BC, APNG at (973) 972-6659.

If you have questions about your rights as a research subject, you can call the IRB Director at:
Newark HealthSci (973) 972-3608 or the Rutgers Human Subjects Protection Program at (973) 972-1149 in Newark.

AGREEMENT TO PARTICIPATE

1. Subject consent:

I have read this entire consent form, or it has been read to me, and I believe that I understand what has been discussed. All of my questions about this form and this study have been answered. I agree to take part in this study.

Subject Name:_____

Subject Signature:_____ Date:_____

2. Signature of Investigator/Individual Obtaining Consent:

To the best of my ability, I have explained and discussed all the important details about the study including all of the information contained in this consent form.

Investigator/Person Obtaining Consent (printed name):_____

Signature:_____ Date: _____

Appendix E

Practice Personnel Questionnaire (Pre-/Post-Screening Implementation)

RUTGERS School of Nursing

Practice Personnel Assessment Regarding Postpartum Depression (PPD) Screening

Please circle one to indicate when you are completing this survey:

Pre-Screening Implementation or **Post-Screening Implementation**

Please answer the following ten (10) questions by selecting one of these response options:

0 – Not applicable 1 – Strongly disagree 2 – Disagree 3 – Neutral/Unsure 4 – Agree 5 – Strongly agree

Write your answer in the blank space before each question.

___ **1. I believe mothers should be screened for PPD at well-child visits throughout the first twelve months of the infant's life.** (AAP, 2017; Carrol et al., 2013; Sheeder et al., 2009; Mgonja & Schoening, 2017)

___ **2. I can accurately describe the defining symptoms and features of PPD.** (APA, 2015)

___ **3. I can accurately state the estimated rates of PPD occurrence in the general population.** (Viguera, 2016)

___ **4. I understand the physical and psychological impacts that PPD can have on a child.** (Farías-Antúnez, S., Xavier, M. O., & Santos, I. S. (2018)

___ **5. I feel comfortable initiating discussions about PPD with my patient's mother.** (Kerker et al., 2016)

___ **6. I have concerns about the time required to implement more frequent, routine PPD screening.** (Kerker et al., 2016)

___ **7. I have concerns about insurance reimbursement for time spent on PPD screening.** (Kerker et al., 2016; Earls, 2010)

___ **8. I have concerns about the ethical and/or legal implications of screening a non-patient.** (Kerker et al., 2016; Chaudron et al., 2007)

___ **9. I know what resources to refer to when a mother screens positively for PPD or shows symptoms.** (Waldrop et al., 2018)

___**10. I know what to do when a mother admits to thoughts of self-harm.** (Earls, 2010)

For response tracking purposes, please provide the last 4 digits of your cellular phone number here: _____

Version 3/09.13.18

Appendix F

Education and Training Presentation to Health Care Professionals Furnished by The Partnership

Partnership for Maternal & Child Health OF NORTHERN NEW JERSEY

Postpartum Depression Education

BY: YVELISSE GONZALEZ, MSW, LSW
PERINATAL MENTAL HEALTH COORDINATOR
PARTNERSHIP FOR MATERNAL AND CHILD HEALTH OF NORTHERN NEW JERSEY
12/3/18

1

Partnership for Maternal and Child Health of Northern New Jersey

- The Partnership for Maternal and Child Health of Northern New Jersey, Inc. is a non-profit 501(c)(3) organization of health care professionals and consumers dedicated to providing education and increasing community awareness by facilitating collaboration among the private sector, the public sector, and maternal and child health care providers for the delivery of high quality coordinated maternal and child health care.

Office Locations:
1. Newark
2. Irvington
3. Jersey City
4. Dover
5. Paterson

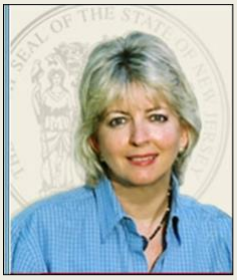
2

Overview:

- N.J.S.A. 26: 2-175 et seq.
- Risk Factors
- Overview of Postpartum Mood Disorders
- Screening
- Treatment & Resources
- How to talk with women about their Emotional Health

3

History behind the NJ Postpartum Depression (PPD) Screening Law:



4

New Jersey Law-Prenatally

- The PPD Screening Legislation was enacted by the Senate and General Assembly and approved on April 13, 2006.
- The Act, P.L. 2006, c. 12 amends N.J.S.A. 26: 2-175 et seq. and took effect on October 10, 2006.
- Physicians, nurse midwives and other licensed health care professionals providing prenatal care to women shall provide:
  1. Education to women and their families about PPD.
  2. Screen all patients for signs and symptoms of PPD.

5

Screening:

Prior to Discharge from hospital:	After mom is home from the hospital:
Screen new mothers for PPD symptoms prior to discharge Provide new mothers and fathers and other family members with information about PPD, including its symptoms, methods of coping and treatment resources Include fathers and other family members in both the education and treatment processes to help them better understand the nature and causes of PPD	Screen new mothers for PPD symptoms at the first few postnatal check-up visits

6

Postpartum Mood Disorders:

Disorder	Incidence	Treatment	Presentation
Maternity Blues	26 to 85%	Support and Reassurance	Mood labiality, heightened reactivity, tearfulness; Symptoms should start to go away within the second week
Adjustment Disorder	About 20%	Support, reassurance, psychotherapy and/or New Mom's Group	Emotional and behavioral response to an identifiable stressor
Postpartum Psychosis	0.2%	Hospitalization; antipsychotics; mood stabilizers; benzodiazepines; antidepressants; ECT	Delusions, hallucinations, disorganized speech, disorganized behavior, symptoms are typically related to the infant, often with a religious flavor, mania

7

Postpartum Depression:

- 10-20% of women are affected
- May need medication and/or therapy, PPD group.
- A woman can begin to show symptoms as early as her last trimester of pregnancy until the baby reaches the age of one.

8

Risk Factors for PPD:

- Prenatal depression / history of depression
- Prenatal anxiety / history of anxiety
- Experiencing stress in life
- Teen pregnancy
- Lack of social support
- Marital satisfaction / relationship
- Socioeconomic factors
- Obstetrical complications
- History of trauma
- Difficult pregnancy / birth of baby

9

Non-contributing Factors to PPD:

- Level of education
- Number of children
- Length of relationship with partner
- Gender of the child

10

Symptoms of PPD:

- Sadness or down mood
- Diminished interest / pleasure
- Appetite problems or unexplained weight change
- Sleep problems
- Agitation and anxiety
- Fatigue or low energy
- Feeling worthless or guilty
- Suicidal or infanticide ideation
- Feelings of being a bad mother
- Obsessive tendencies

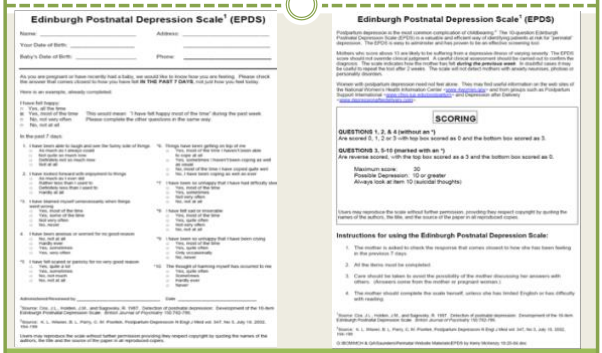
11

Symptoms of PPD in a mom who has a child with special needs:

- Dwelling constantly on what is on her "plate"
- Feeling overwhelmed
- Sense of loss
- Helplessness
- Sense of failure

12

Edinburgh Postnatal Depression Scale:


Edinburgh Postnatal Depression Scale[1] (EPDS)

Name: Address:

Your Date of Birth:

Baby's Date of Birth: Phone:

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

Here is an example, already completed:

I have felt happy:
- Yes, all the time
- Yes, most of the time This would mean: 'I have felt happy most of the time' during the past week.
- No, not very often Please complete the other questions in the same way.
- No, not at all

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - As much as I always could
   - Not quite so much now
   - Definitely not so much now
   - Not at all
2. I have looked forward with enjoyment to things
   - As much as I ever did
   - Rather less than I used to
   - Definitely less than I used to
   - Hardly at all
3. I have blamed myself unnecessarily when things went wrong
   - Yes, most of the time
   - Yes, some of the time
   - Not very often
   - No, never
4. I have been anxious or worried for no good reason
   - No, not at all
   - Hardly ever
   - Yes, sometimes
   - Yes, very often
5. I have felt scared or panicky for no very good reason
   - Yes, quite a lot
   - Yes, sometimes
   - No, not much
   - No, not at all
6. Things have been getting on top of me
   - Yes, most of the time I haven't been able to cope at all
   - Yes, sometimes I haven't been coping as well as usual
   - No, most of the time I have coped quite well
   - No, I have been coping as well as ever
7. I have been so unhappy that I have had difficulty sleeping
   - Yes, most of the time
   - Yes, sometimes
   - Not very often
   - No, not at all
8. I have felt sad or miserable
   - Yes, most of the time
   - Yes, quite often
   - Not very often
   - No, never
9. I have been so unhappy that I have been crying
   - Yes, most of the time
   - Yes, quite often
   - Only occasionally
   - No, never
10. The thought of harming myself has occurred to me
    - Yes, quite often
    - Sometimes
    - Hardly ever
    - Never

Administered/Reviewed by: Date

[1]Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. British Journal of Psychiatry 150:782-786.

[2]Source: K. L. Wisner, B. L. Parry, C. M. Piontek. Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002. 194-199

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Edinburgh Postnatal Depression Scale[1] (EPDS)

Postpartum depression is the most common complication of childbearing.[2] The 10-question Edinburgh Postnatal Depression Scale (EPDS) is a valuable and efficient way of identifying patients at risk for "perinatal" depression. The EPDS is easy to administer and has proven to be an effective screening tool.

Mothers who score above 11 are likely to be suffering from a depressive illness of varying severity. The EPDS score should not override clinical judgment. A careful clinical assessment should be carried out to confirm the diagnosis. The scale indicates how the mother has felt during the previous week. In doubtful cases it may be useful to repeat the scale a fortnight later. The scale will not detect mothers with anxiety neuroses, phobias or personality disorders.

Women with postpartum depression need not feel alone. They may find useful information on the web sites of the National Women's Health Information Center <www.4woman.gov> and from groups such as Postpartum Support International <www.chss.iup.edu/postpartum/> and Depression after Delivery <www.depressionafterdelivery.com/>

SCORING

QUESTIONS 1, 2, & 4 (without an *)
Are scored 0, 1, 2 or 3 with top box scored as 0 and the bottom box scored as 3.

QUESTIONS 3, 5-10 (marked with an *)
Are reverse scored, with the top box scored as a 3 and the bottom box scored as 0.

Maximum score: 30
Possible Depression: 10 or greater
Always look at item 10 (suicidal thoughts)

Instructions for using the Edinburgh Postnatal Depression Scale:

1. The mother is asked to check the response that comes closest to how she has been feeling in the previous 7 days.
2. All the items must be completed
3. Care should be taken to avoid the possibility of the mother discussing her answers with others. (Answers come from the mother or pregnant woman.)
4. The mother should complete the scale herself, unless she has limited English or has difficulty with reading.

[1]Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. British Journal of Psychiatry 150:782-786.

[2]Source: K. L. Wisner, B. L. Parry, C. M. Piontek. Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002. 194-199

© MCMXCIV A Girl Goes Home/Perinatal Website Materials/EPDS by Kerry McKinstry 10-25-06.doc

13

Instructions for EPDS:

- The mother is asked to underline the response that comes closest to how she has been feeling in the previous 7 days.
- All ten items must be completed.
- Care should be taken to avoid the possibility of the mother discussing her answers with others.
- The mother should complete the scale herself, unless she has limited English or has difficulty with reading.
- EPDS is available in at least 35 different languages.

14

False Negatives Despite Screening:

- Inaccurate self-report
- Undiagnosed mood disorders
- Denial of illness
- Fear of involvement of child protection agencies
- Ability to mask symptoms especially if highly functional
- Motherhood myth

15

Speaking to Mom About Her Emotions:

16

Questions to Ask:

- How have you been feeling?
- How have things been going for you at home?
- How are you sleeping?
  - Can you sleep when the baby sleeps?
  - Can you nap?
  - Do you sleep 4-5 hours a night?
- Are you having any unusual or scary thoughts about yourself or the baby?
- Who helps you at home? How often are they there?
- Do you have periods of time when you enjoy the baby?

17

Key Messages:

- Being a mother is a hard job.
- You are not alone.
- Depression is a very common experience during and after pregnancy.
- It is important for you to know that depression is serious, you are not alone and there is help. Being depressed does not mean you are a bad mom, only that you need help.
- What you are experiencing is in fact real and not just in your head.
- No matter how bad you may be feeling once you get the level of care you need, you will start to feel better. PPD does NOT last forever and is 100% treatable.

18

Key Messages for a Parent with a Special Needs Child:

- Reassure them they are doing everything they possibly can for their child.
- "Raising a child with special needs is going to be a roller coaster ride, Remember as you ride you are going to come to loops and twists; enjoy the good times, but don't be surprised by the bad. Where you are isn't where you are going to stay."
- Important to look back and revel in your child's progress.

19

Importance of Self Care:

- If self care is not done, it can lead to:
  1. Stress
  2. Exhaustion
  3. Sense of being overwhelmed

- Self care is a great way to relieve anxiety.
- Caring for yourself is also caring for your child.

20

Ways a new mom can take care of herself:

- You do not have to be superwoman.
- Develop a support system.
- Ask for help and do not feel guilty about it.
- Dinner can be ANYTHING!
- Sleep when the baby sleeps and if you cannot sleep, rest.
- Find someone that you can trust to share your feelings with.
- http://www.mom2mom.us.com/- a 24 hour, 7 day a week helpline coordinated by UMDNJ-University Behavioral HealthCare. The helpline features peer support, telephone assessments, a network of referral services and support groups.
- Try to have some "me time" as much as possible.
- Shower and dress everyday.

21

Continued:

- Exercise.
- Listen to soothing music.
- Seek respite care for an afternoon, evening or weekend, at home or a licensed facility.
  1. Local chapters of national organizations that offer Parents Night Out, such as Easter Seals (www.easter-seals.com).
  2. ARCH National Respite Network (919-490-5577 or (www.archrespite.org/respitelocator).
  3. Campus Ministries or public service groups at colleges, where students may gladly volunteer to baby sit for kids as special as yours.
  4. Hospitals and Red Cross chapters that train providers of children with special needs.

22

What to do if a New Mom has taken care of herself and is still not feeling good:

- Therapy (Individual or Group)
- Medication
- Contact Obstetrician
- Contact the Partnership's Emotional Health Phone Support Program

23

Emotional Health Phone Support (EHPS)

A program providing a continuum of care during the perinatal period by conducting follow-up phone calls to at-risk mothers

Funded through the New Jersey Department of Health

24

Focus of the EHPS Program:

- To provide phone follow-up services to mothers at risk for developing symptoms of perinatal mood disorders and facilitate linkages to local community based mental health resources.
- To provide training, support and serve as a clearinghouse of information on perinatal mood disorders to entities in Northern New Jersey working with pregnant women and new mothers, including those who have experienced a perinatal loss.
- Referrals may be received from the 8 counties covered by the program. These are Bergen, Essex, Hudson, Morris, Passaic, Sussex, Union and Warren.
- The EHPS program is not of a clinical nature and no direct mental health counseling is provided.

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EHPS Referral Process:

- Referrals will be received on a confidential fax line Monday-Friday between regular business hours, excluding holidays.
- Referred clients will be contacted via phone by a Licensed Social Worker, Registered Nurse or Mental Health Counselor.
- High Risk Clients (+ EDPS and/or had consult with mental health professional) will receive initial call within 3 business days.
- All others (- EDPS and/or other reason for referral) will receive initial call with 5 business days .
- Phone contact is planned again with client's permission within 2 weeks of initial contact and again between 6-8 weeks after delivery.
- If no phone contact has been established with high risk clients a letter will be sent to client requesting her to call us.

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Types of Referrals Provided

- Speak up When You're Down Hotline
- Perinatal Mental Health Therapists
- Local Mental Health Community Resources
- New Mother's or PPD Support Groups
- Home Visitation and/or Parent Support Programs
- Other Community Based Programs as needed

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Emergent or Crisis Situations

Policy Statement: If client is at risk of hurting herself, other families members and or is showing signs of hallucinations and or delusions.

Protocol: If a Perinatal Mental Health Coordinator feels that mom is at risk of hurting herself, others, or is having hallucinations/delusions; mom will be automatically referred to the Psychiatric Emergency Screening Service (PESS Unit) closest to her.

http://www.nj.gov/humanservices/dmhs/services/centers/

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Speak Up When You Are Down Hotline:

- The 1-800-328-3838 Family Health Line is available for anyone requesting information or who would like to speak to a clinician.
- Phones are answered 24 hours a day/7 days a week.
- Calls can come from women experiencing distress, family members asking for information and clinicians requesting teaching materials.
- Once linked to a provider agency women can see a clinician for up to 12 therapy sessions for free.
- Program is for women who are underinsured, have no insurance or who have Medicaid.
- Immigration status does not matter.

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Questions?

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References:

- http://www.nj.gov/humanservices/dmhs/services/centers/
- http://www.dfwchild.com/Thrive/features/118/How-to-Handle-Your-Depression-and-Your-Childs-Special-Needs
- http://perinatal.anxietybc.com/moms-to-be/importance-self-care
- http://www.huffingtonpost.com/mia-redrick/mom-selfcare-is-nonnegoti_b_1171034.html
- http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1511503/
- https://www.lds.org/topics/disability/family/mothers?lang=eng
- http://out-of-sync-child.com/articlesinterviews/taking-care-of-yourself-when-your-child-has-special-needs/
- http://www.goodtherapy.org/blog/revisiting-self-care-for-special-needs-parent-0902134

Yvelisse Gonzalez, MSW, LSW
Perinatal Mental Health Coordinator
ygonzalez@partnershipmch.org
973-268-2280 x154

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Appendix G

Brochure for Support Resources, The Partnership for Maternal & Child Health (March 2018)

About Postpartum Mental Health

About 80% of women may experience mood swings and weepiness during the first 2-3 weeks after giving birth which is sometimes called "the baby blues". This is a normal adjustment period and resolves without any medical assistance. However, if your mood does not improve, you may be experiencing a postpartum emotional complication, such as postpartum depression (PPD) and/or anxiety, which is commonly experienced by 1 out of 7 new mothers.

Getting help early is very important for you and your family's wellbeing. Please talk with an informed health care provider as soon as possible if you feel the following:

- Tired, worried or anxious
- Worthless
- Irritable or angry
- You are not good enough
- Not bonding with your baby
- Have guilty thoughts
- Are unable to sleep or rest properly
- Are hopeless about the future

Please seek help from a mental health professional immediately if you are experiencing the following symptoms *

- Frequent frightening thoughts (also called intrusive thoughts), which may include fear of harming your baby
- Thoughts of ending your life

If you are experiencing a crisis, please call your health care provider, the NJ Hope Line at 1-855-654-6735 (24/7), 9-1-1 or go to the nearest emergency room so you can receive the help you need and deserve.

New Mom Tips for Self-Care

- Make sure you've scheduled your postpartum checkup with your obstetrician, midwife, or other health care provider. Talk to them about your feelings.
- Ask for support from family and friends. Consider receiving support in your home from a postpartum doula.
- Don't put pressure on yourself to do everything. Ask for help with caring for your baby and household chores.
- Try not to spend a lot of time alone. Have *helpful* family and friends over.
- Shower, get dressed and take a stroll with your baby.
- Talk to your health care provider and your baby's pediatrician about your concerns.
- Talk to other mothers and learn how they cope with their feelings.
- Join a new mothers' group or postpartum depression support group for added social support.

Perinatal Mental Health Resources

New Jersey's Postpartum Depression Helpline
"Speak Up When You're Down"
http://nj.gov/health/fhs/maternalchild/mentalhealth
24 Hours a day 7 days a week
1-800-328-3838

Partnership for Maternal and Child Health of NNJ
Ask to speak with a Perinatal Mental Health Coordinator
973-268-2280 Ext 104, 112 or 154
www.partnershipmch.org/programs/ppd

Postpartum Support International (PSI)
Provides a wealth of information on perinatal mental health. Weekly chats for mothers and fathers.
1-800-944-4PPD or www.postpartum.net

Partnership for Maternal & Child Health
OF NORTHERN NEW JERSEY

New Mothers' Support Group Listing in Northern New Jersey

Whether you're expecting, are a first time mom or this is your second or third time around, support groups are a wonderful way to build friendships and support with mothers who are sharing your experience.

Visit www.partnershipmch.org/programs/ppd or call 973-268-2280 Ext 104, 112 or 154 for support and more information

NJ Health
New Jersey Department of Health

BERGEN COUNTY

Hackensack UMC at Pascack Valley New Moms' Support Group 250 Old Hook Rd, Westwood, NJ 07675
Mother and Baby Unit in Family Lounge
3rd Wednesday & 2nd Saturday of the month 11:00-12:00pm
Registration required. Erica Cantatore 877-848-9355

Holy Name Medical Center New Moms' Group
718 Teaneck Rd, Teaneck, NJ 07666
1st and 3rd Thursday at 1:30pm
Ann Anderson & Renia Tsigaras 201-833-3153

The Valley Hospital "Speak Up When You're Down",
223 North Van Dien Ave, Ridgewood, NJ 07450
1st and 3rd Tuesday at 1:00pm (Call to verify schedule) and 2nd and 4th Tuesday night at 7:30pm
Please call, Trudy Heerema 201-447-8539

New Baby, New Emotions Group (Group for Teen Moms)
Zoe's Place, Garfield, NJ
Yvelisse Gonzalez, MSW, LSW 973-268-2280 x 154
Please call for group schedule & location

ESSEX COUNTY

Irvington Family Success Center/Healthy Start Program Hope For Mothers*
50 Union Ave, Ste 403, Irvington, NJ 07111
Fridays 10:30-12:30pm, Bilingual in English & Spanish
Alexandra Peña 973-268-2280 x 112;
Helene Closeil 973-371-1077

Saint Barnabas Medical Center
JCC Metrowest 760 Northfield Ave, West Orange, NJ 07052
New Mom's Circle: Mondays 10:00-11:30am registration required
Mommies Moods: Fridays 11:00-12:30pm
Lauren Meisels, PHD 973-322-5360

University Hospital Women to Women
140 Bergen St, C-level Newark, NJ 07103
Every Friday (English) 1:00-2:00pm
Gladys Martinez 973-972-5458

HUDSON COUNTY

Hackensack Meridian Health Palisades Medical Center New Mothers' Group 7600 River Rd, North Bergen, NJ 07047
Thursdays from 11:00-1:00pm, 1st floor auditorium
Robin Petrick IBCLC, ICCE or Jessica Cofone, LCSW
201-295-4823

HUDSON COUNTY (continued)

Hoboken University Medical Center New Moms' Support Group
308 Willow Ave, Hoboken, NJ 07030
Assumption Hall Every Wednesday 11:00-1:00pm
Call Carmen Baker-Clark, IBCLC 201-418-2690

MIDDLESEX COUNTY

JFK Medical Center - Postpartum Support Group
65 James St, Edison, NJ 08818
2nd Wednesday of the month, 1:00-3:00pm
Donna Weeks 732-744-5968

MORRIS COUNTY

Morristown Medical Center - New Moms Support Group
100 Madison Ave, Morristown, NJ 07960
Simon A Parent Ed Room, Two Fridays a month 10:00-11:30am
Sandye Rudnitzky, LCSW at 973-971-6791

St. Clare's Behavioral Health Postpartum & Perinatal Mood Disorders Support Group
50 Morris Ave, Room 320, Denville, NJ 07834
1st Wednesday of the month: 9-11:00am, 3rd Wednesday of the month:6:30-8:30pm *For information please call Central Evaluation & Referral Services 888-626-2111

PASSAIC COUNTY

St. Joseph's Regional Medical Center New Moms Group
703 Main St, Paterson, NJ 07503
Two Wednesdays a month at 10:00am
Audra Burton-Easterbrook 973-754-3361

UNION COUNTY

Overlook Medical Center Postpartum Depression Support Group
Outpatient Behavioral Health
46-48 Beauvoir Ave, Summit, NJ 07901
Thursdays at 10:30am. Pre-registration required.
Patricia Monaghan, Ed.S, LMFT, RN 908-522-4844

Bayway Family Success Center - Mom's Circle
688 Maple Ave,
Elizabeth, NJ 07022
Wednesdays 12:30-2:00pm, Bilingual in English & Spanish
Emily Murillo
908-289-0136

Grupos en Español (Groups in Spanish)

CONDADO DE BERGEN

Greater Bergen Head Start Esperanza para Madres*
100 Portland Ave, Bergenfield, NJ 07621
1er y 3er Miecoles del mes (1st & 3rd Wednesday) de 8:45-10:15am
Diana Cabezas 973-268-2280 Ext. 104

CONDADO DE ESSEX

Focus Family Success Center Esperanza para Madres*
441-443 Broad St, Newark, NJ 07102
Los Martes (every Tuesday) 11:30-1:00pm
Alexandra Peña 973-268-2280 x 112

Irvington Family Success Center/Healthy Start Program Esperanza para Madres*
50 Union Ave, Ste 403, Irvington, NJ 07111
Los Viernes (every Friday) 10:30-12:30pm, Bilingüe en Ingles y Español
Alexandra Peña 973-268-2280 x 112; Helene Closeil 973-371-1077

University Hospital
140 Bergen St, C-level, Newark, NJ 07103
3er Jueves del Mes (3rd Thursday of month) 10:00am-12:00pm
Gladys Martinez 973-972-5458

CONDADO DE HUDSON

Palisades Family Success Center Circulo para Nueva Madres
1408 New York Avenue, Union City, NJ 07087
Los Viernes (every Friday) 10:30-12:00pm Angela Gonzalez 201-758-8792

Liberty Family Success Center Circulo Para Nueva Madres
341 Kearny Avenue, Kearny, NJ 07032
Please call for schedule (Por favor llamar para el horario)
Bilingüe en Ingles y Español Esther Silva 201-622-2210

CONDADO DE MORRIS

Zufall Wellness Center Esperanza para Madres*
18 West Blackwell St, Dover, NJ 07801
Los Martes (every Tuesday) 9-11:00am (LL Training Room)
Diana Cabezas 973-268-2280 x104

CONDADO DE UNION

Bayway Family Success Center Circulo para Madres
688 Maple Ave, Elizabeth, NJ 07022
Los Miercoles de 12:30-2:00pm, Bilingüe en Ingles y Español
Emily Murillo 908-289-0136

Hillside Family Success Center Esperanza para Madres*
1100 Woodruff Ave, Hillside, NJ 07205
Los Miercoles (Wednesdays) de 11:00-1:00pm, Bilingüe en Ingles y Español
Diana Cabezas 973-268-2280 x104 o Patricia Peters-Martin 908-409-2962 x2

Last update March 2018

Appendix H

The Edinburgh Postnatal Depression Scale and Demographic Survey

Edinburgh Postnatal Depression Scale* (EPDS)

Mommy's name: _____
Baby's name: _____ Baby's age: _____

As you have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to have you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed:

I have felt happy:
☐ Yes, all the time
☑ Yes, most of the time This would mean: "I have felt happy most of the time" during the past week.
☐ No, not very often Please complete the other questions the same way
☐ No, not at all

In the past 7 days:

1. I have been able to laugh and see the funny side of things
☐ (0) As much as I always could
☐ (1) Not quite so much now
☐ (2) Definitely not so much now
☐ (3) Not at all

2. I have looked forward with enjoyment to things
☐ (0) Yes, most of the time
☐ (1) Yes, some of the time
☐ (2) Not very often
☐ (3) No, never

3. I have blamed myself unnecessarily when things went wrong
☐ (3) Yes, most of the time
☐ (2) Yes, some of the time
☐ (1) Not very often
☐ (0) No, never

4. I have been anxious of worried for no good reason
☐ (0) No, not at all
☐ (1) Hardly ever
☐ (2) Yes, sometimes
☐ (3) Yes, very often

5. I have felt scared or panicky for no very good reason
☐ (3) Yes, quite a lot
☐ (2) Yes, sometimes
☐ (1) No, not much
☐ (0) No, not at all

6. Things have been getting on top of me
☐ (3) Yes, most of the time I haven't been able to cope at all
☐ (2) Yes, sometimes I haven't been coping as well as usual
☐ (1) No, most of the time I have coped quite well
☐ (0) No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping
☐ (3) Yes, most of the time
☐ (2) Yes, sometimes
☐ (1) Not very often
☐ (0) No, not at all

8. I have felt sad or miserable
☐ (3) Yes, most of the time
☐ (2) Yes, quite often
☐ (1) Not very often
☐ (0) No, not at all

9. I have been so unhappy that I have been crying
☐ (3) Yes, most of the time
☐ (2) Yes, quite often
☐ (1) Only occasionally
☐ (0) No, never

10. The thought of harming myself has occurred to me
☐ (3) Yes, quite often
☐ (2) Sometimes
☐ (1) Hardly ever
☐ (0) Never

Administered/Reviewed by: _____ Date: _____

*Source: Cox, J.L., Holden, J.M., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry, 150*: 782-786.

Note: The authors grant permission for users to reproduce the scale providing they respect copyright by quoting the names of the authors, the title, and the source of the paper in all reproduced copies.

Appendix I

Data Collection Sheet

Data Collection Form: PPD Screening in Pediatric Primary Care

Primary Investigator: Laura Avery, RN, BSN, CPN

DATE	Case #	Birth mother present?	Infant's Age	Screening declined?	EPDS Score	Score >= 10?	Item 10 score 1,2, or 3?	Referral made?	Nature of referral	Notes

Appendix J

Summary of Project Costs

	Projected	Actual
Education and training program furnished by The Partnership for Maternal and Child Health of Northern New Jersey	$0	$0
Lunch and refreshments for participants during the education and training program	$200	$172.96
Components of referral resource binder, including Edinburgh Postnatal Depression Scale forms, educational slides and brochures from The Partnership for Maternal and Child Health of Northern New Jersey	$150	< $10 (Literature provided by The Partnership for Maternal and Child Health of Northern New Jersey at no cost; printing donated by investigational site)
Personnel costs	$0	$0
Total	**$350**	**$182.96**

Table 1

Practice Personnel Pre- and Post-Implementation Survey Responses by Item and Participant

Question #	Participant 1	2	3	4	5	6	7	8	Mean	Item # and Question Content
1 - Pre	4	5	5	3	5	5	3	5	4.38	
1 - Post	5	5	5	5	5	5	4	5	4.88	
1 - Change	1	0	0	2	0	0	1	0	0.5	1 = Belief mothers should be screened at well-baby visits
2 - Pre	3	3	3	3	4	4	3	3	3.25	
2 - Post	5	4	5	4	5	4	3	4	4.25	
2 - Change	2	1	2	1	1	0	0	1	1	2 = Can accurately describe PPD symptoms
3 - Pre	3	2	3	3	3	3	3	3	2.88	
3 - Post	3	2	5	4	5	3	3	4	3.63	
3 - Change	0	0	2	1	2	0	0	1	0.75	3 = Can state estimated PPD rates
4 - Pre	4	4	3	4	5	5	3	3	3.88	
4 - Post	5	4	5	5	5	5	3	4	4.50	
4 - Change	1	0	2	1	0	0	0	1	0.62	4 = Knowledge of PPD's impacts on children
5 - Pre	4	4	2	3	5	4	0	5	3.38	
5 - Post	5	4	4	3	5	4	0	5	3.75	
5 - Change	1	0	2	0	0	0	0	0	0.37	5 = Comfort discussing PPD with mothers
6 - Pre*	3	4	0	3	1	2	3	4	2.50	
6 - Post*	2	4	3	2	1	1	2	4	2.38	
6 - Change	-1	0	3	-1	0	-1	-1	0	-0.12	6 = Concerned about time required to screen
7 - Pre*	3	3	0	3	1	1	3	4	2.25	
7 - Post*	3	3	0	0	4	3	3	4	2.50	
7 - Change	0	0	0	3	3	2	0	0	0.25	7 = Concerned about insurance reimbursement
8 - Pre*	4	4	1	3	3	1	3	4	2.88	
8 - Post*	3	3	4	3	2	4	3	5	3.38	
8 - Change	-1	-1	3	0	-1	3	0	1	0.5	8 = Concerned about ethical/legal impact of screening
9 - Pre	4	4	3	3	3	3	3	5	3.50	
9 - Post	4	5	5	5	5	4	4	5	4.63	
9 - Change	0	1	2	2	2	1	1	0	1.13	9 = Knowledge of referral resources
10 - Pre	5	5	3	3	5	4	3	3	3.88	
10 - Post	5	5	5	4	5	5	3	4	4.50	
10 - Change	0	0	2	1	0	1	0	1	0.62	10 = Knowledge of crisis management
Total - Pre	37	38	23	31	35	32	27	39	32.75	
Total - Post	40	39	41	35	42	39	28	44	38.50	
Total - Change	3	1	18	4	7	7	1	5	5.75	
% Change	8.11%	2.63%	78.26%	12.90%	20.00%	21.88%	3.70%	12.82%	17.56%	

Note: Likert-scale responses ranged from 0 (not applicable), 1 (strongly disagree), 2 (disagree), 3 (neutral/unsure), 4 (agree), to 5 (strongly agree). *Asterisks indicate the responses for those items were reverse-scored for this data summary and analysis so higher scores reflect greater levels of comfort and knowledge consistently across all items. Green highlighting indicates an increase in a respondent's score from the pre- to post-implementation period, salmon highlighting indicates a decrease, and grey indicates no change.

Table 2

Comparison of Postpartum Depression Screening Opportunities and Occurrences Before and During Implementation

	Oct 2017 (Baseline)	Dec 2018 (Implementation)
# Well-Infant Visits	65	70
# Eligible for screening (% of total visits)	5* (7.7%)	67 (95.7%)
# Screening occurred & documented (% of eligible visits)	4 (80%)	33 (49.3%)
# Positive screenings (% of total screenings)	0 (0%)	4 (12.1%)
# Referrals made (% of positive screenings)	N/A	2 (50%)

**Note:* During the pre-implementation period (October 2017/Baseline), postpartum depression inquiry was performed at newborn well-visits and as needed according to clinical judgment. During the implementation period (December 2018), postpartum depression screening was considered for all well-infant encounters through the first year (0-12 months of age) and as needed according to clinical judgment.