Implementation of a Universal Screening Program for Postpartum Depression in the Primary Care Setting: A Doctor of Nursing Practice Project

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Abstract

Postpartum depression is a depressive disorder that occurs in the period after childbirth and can have significant and long-lasting negative impacts on mothers, infants, and families if not appropriately addressed. Screening is the first step in identifying women at risk for postpartum depression. Implementation of a postpartum depression screening program has significant impacts for the healthcare team, as well as patients and families. In addition to improving quality of life and outcomes for patients and families, the program increases awareness of postpartum depression, creates a standardized screening process for the clinic to follow, and facilitates compliance with current recommendations. Guided by the Iowa Model, the purpose of this project was to review the relevant literature regarding screening for postpartum depression and to implement an evidence-based postpartum depression screening program using a validated screening tool to increase identification of women at risk for postpartum depression. A review of the literature revealed consistently higher rates of screening and detection of postpartum depression using a validated screening tool; however, screening practices vary greatly in regards to timing, frequency, setting, and tools utilized, and existing recommendations from professional organizations offer inconsistent guidelines on screening programs. This project utilized the Edinburgh Postnatal Depression Scale for mothers who presented to well child checks in the family practice setting. Surveys were scored, and a clinical algorithm based on score was followed in order to determine next steps for diagnosis and management. Process and outcome variables were continuously analyzed in order to create a feasible, consistent, and sustainable screening program to identify women at risk for postpartum depression.

Keywords: postpartum depression, screening, well child check, Edinburgh Postnatal Depression Scale, evidence-based practice, Iowa Model

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Postpartum depression (PPD) is a serious mood disorder that can occur in women after childbirth, which can have a great effect on mental and physical health and well-being. Though many women experience the "baby blues" in the days following the birth of a child, with feelings of stress, sadness, anxiousness, loneliness, and fatigue, these feelings generally go away on their own within a few days to two weeks (National Institute of Mental Health [NIMH], n.d.). If the feelings do not go away, a woman may be experiencing PPD, with feelings of extreme sadness, anxiety, and exhaustion that may interfere with her ability to complete her daily activities or care for herself or her family. A mother may even have difficulty connecting with or feeling love for her baby (Office on Women's Health [OWH], 2017). These feelings can be mild or severe, can appear days to months after childbirth, and can last for many weeks or months, in some cases years, if not addressed. Up to one in seven women experience PPD (American Psychological Association [APA], n.d.).

Background and Significance

Postpartum depression is believed to result from a combination of physical and emotional factors, including hormone fluctuations, which lead to chemical changes and effects on the brain, causing mood swings (NIMH, n.d.). In the first 24 hours after birth, levels of estrogen and progesterone quickly return from their elevated state during pregnancy to normal levels, and this rapid change may lead to depressive symptoms (OWH, 2017). Additionally, levels of thyroid hormone may experience sudden changes, and abnormal thyroid hormone levels may also cause depression. Aside from hormonal changes, women are often exhausted after childbirth and during the newborn and infancy stages due to broken sleep patterns and are unable to get

adequate rest and sleep, which can lead to feelings of depression. Other common emotional factors that may lead to feelings of depression include feeling overwhelmed with caring for a new baby, stress from a change in routine and lack of personal time, doubts about parenting ability, and issues with body image after pregnancy.

Common symptoms of PPD include the following: feeling restless or moody; feeling sad, hopeless, or overwhelmed; feeling overly anxious, worrying too much, or experiencing panic attacks; frequent crying spells; lack of interest in or connection with the baby; fatigue or lack of energy; sleeping or eating too little or too much; difficulty focusing or with memory; feelings of worthlessness or guilt; withdrawing from friends, family, and social activities; experiencing headaches or other body aches that don't improve; thoughts of self-harm or harming the baby (APA, n.d.; NIMH, n.d.; OWH, 2017). Though PPD can affect any woman after birth, some women may be more at risk for PPD. Those at greater risk include women with a personal or family history of depression (especially during pregnancy), lack of a support system, younger than 20, substance abuse problems, financial problems, or a baby with special needs (APA, n.d.).

Left untreated, PPD can have lasting effects on both mother and baby. Mothers may have long-lasting depression, find it difficult to care for their own or their baby's needs, and have a higher risk of attempting suicide (Kurtz, Levine, & Safyer, 2017). Researchers believe that children of mothers with PPD may experience delays in language development, behavior problems, emotional instability, problems adjusting and coping, and a higher risk of obesity. It is therefore incumbent on providers who care for postpartum women and their infants to have the knowledge, skill, and procedures in place to both screen for and recognize PPD in these women in order to ensure the best possible care for the mother and her child. A literature review by França and McManus (2018) on the frequency, trends, and antecedents of maternal depression

recommended that PPD screening by primary care physicians, to include pediatricians during well-child checks (WCC), begin soon after birth and continue for the entire first year after birth. Despite this, there is no standard method among care providers and various care provider types of administering PPD screening, and rates of screening overall are very low (Goldin Evans, Phillippi, & Gee, 2015).

The *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) is a handbook containing descriptions and symptoms used by providers to guide the diagnosis of mental disorders (APA, 2019). The most recent edition, the *DSM*-5, recognizes the diagnosis of depression during the postpartum period as "Major Depressive Disorder (MDD) with peripartum onset" ("Depressive Disorders," 2013; Segre & Davis, 2013). This peripartum onset specifier encompasses the period during pregnancy through the first four weeks after birth. O'Hara and McCabe (2013), noted that there was no specific evidence to support this limitation to the four-week timeframe, as there is a lack of consensus on the timeframe that actually constitutes the postpartum period, in terms of research; however, many research studies, clinical practices, professional organizations, and experts in the field use timeframes that extend up to one year to define the postpartum period (Stuart-Parrigon & Stuart, 2014). The American College of Obstetricians and Gynecologists (ACOG) (2018) states that perinatal depression includes depressive episodes occurring during pregnancy or within 12 months after delivery. O'Hara and McCabe reported that some studies noted the overall structure of depression in the postpartum period is very similar to depression experienced outside the postpartum period, while other studies revealed evidence that PPD was a distinctly different phenomenon and that some women are particularly susceptible to PPD. Additionally, there is a concern that certain women may experience depressive symptoms only in this peripartum period due to the extreme hormonal

changes that accompany late pregnancy and the weeks after delivery, so limiting diagnosis to the four-week time period after delivery may result in over-diagnosis of PPD. As such, it is unclear whether the onset specifier of four weeks after birth is sufficient to define PPD, and depression is particularly complicated in this time period due to the previously stated hormonal, mental, and emotional risk factors.

Conceptual Model for Evidence-Based Practice

This project uses the Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care© (Iowa Model) as a conceptual framework. The Iowa Model serves as a guide for implementation of evidence-based practice (EBP) at the organizational level (Iowa Model Collaborative, 2017). The model describes a multi-step process for implementation, presented as an algorithm that includes several decision points as well as feedback loops (see Figure 1). The first step emphasizes choosing an area of focus based on triggering issues or opportunities, which can include clinical or organizational issues, new evidence, and agency requirements or regulations, followed by defining the question or purpose of the project. The first decision point comes after this, and if the topic is considered a priority for the organization, the next steps are to form a team and to assemble, appraise, and synthesize evidence. The second decision point is determined by the presence of sufficient evidence, which leads to designing and piloting the practice change dictated by the evidence. The last decision point asks if the change is appropriate for adoption into practice, and an affirmative answer leads to integration and sustainment of the change, followed by dissemination of results. Strengths of this model include considering input from all parties affected, including the system, providers, nurses, and patients, as well as the step of piloting a practice change prior to formally making the decision to implement the change (Schaffer, Sandau, & Diedrick, 2012). As a guide for implementation of

EBP, the Iowa Model encourages continuous analysis of process and outcome variables to encourage adoption of a practice change. Process variables are those variables which are part of the pilot of the practice change, and outcome variables are changes that occur as a result of the pilot and evidence-based practice change. Permission was granted to use this framework by the University of Iowa Hospitals and Clinics (see Appendix A).

Identify Triggering Issues/Opportunities

In summary of the triggering issues, PPD is a serious problem that affects up to 15% of postpartum women within the first year after childbirth that can have a significant negative impact on both mother and child. Screening is important in identifying those at risk for PPD and is a highly recommended practice, but most clinicians and practices have not implemented universal screening protocols using validated screening tools (Goldin Evans et al., 2015). PPD screening programs in the primary care setting are feasible and effective in identifying PPD. Studies have shown that the use of a screening protocol to detect women at risk for PPD has led to a decrease in overall prevalence of PPD and an increase in remission rates and treatment responses (O'Connor, Rossom, Henninger, Groom, & Burda, 2016). Though ACOG, the American Academy of Pediatrics (AAP), and the US Preventive Services Task Force (USPSTF) all emphasize that it is important to have adequate support and referral resources, treatment plans, and follow-up for women who are identified as being at risk for PPD prior to implementing a screening plan (ACOG 2018; Rafferty, et al., 2019; USPSTF, 2019), screening alone, without additional treatment, has also demonstrated benefit (O'Connor et al.). No adverse effects or harms of screening for PPD have been identified. A study by Walker, Im, and Tyler (2013) found that 95.7% of mothers surveyed indicated that they would welcome or not mind a

discussion regarding symptoms of depression at their child's well visit, yet fewer than half the women reported having actually discussed it with a provider.

Purpose and Clinical Question

The purpose of this project was to review the relevant literature regarding screening for PPD and to implement and evaluate an evidence-based postpartum depression screening program using an appropriate validated screening tool during well-child appointments from birth up to one year of age in the primary care/family practice setting. The primary aim of the project was to increase identification of women at risk for PPD in a primary care setting. Secondary aims were to determine staff compliance in administering the screening, to increase the rates of standardized PPD screening at WCCs, and to identify any barriers to the evidence-based practice change. All fundamental elements of this project were guided by the following clinical question: ***In the primary care setting, does implementation of a postpartum depression screening program using a validated screening tool, compared to no standard method of screening, increase identification of women at risk for postpartum depression in postpartum women presenting for well-child checks between birth and 12 months post-birth?***

Form a Team

This project was conducted within a rural, private, family practice which has two primary care clinics in central Virginia. The clinics see a combined total of 60-70 patients per day, of all age ranges, from newborn to elderly. The practice employs one family practice physician, two physician assistants (PA), and two family nurse practitioners (FNP), who are supported by a staff of nurses, medical assistants, and ancillary/administrative support staff. It is also a clinical teaching site for medical students, PA students, and FNP students. Approval and support for the project was obtained from the clinic stakeholders, including the primary physician, who served

as the practice mentor, and the practice manager (see Appendix B). The project took place in cooperation with all providers and clinic staff. The project was also completed with the guidance and support of the project lead's faculty advisor, second reader, and coordinator of data analysis.

Assemble, Appraise, and Synthesize Body of Evidence

Assemble the Relevant Literature

A comprehensive review of the existing literature related to screening for PPD was conducted in PubMed, CINAHL, Cochrane Library, PsychNet, and Web of Science databases. A PICOT format based on elements of the key clinical question was used to guide the literature search.

Population: postpartum women who are presenting with their infants to primary care for WCCs

Intervention: implementation of a screening program for PPD using a standardized PPD screening tool

Comparison: no standard method of screening

Outcome: increase detection of women at risk for PPD

Time: between birth and 12 months post-birth

The search terms *"postpartum depression," "postnatal depression," "screening," "diagnosis," "family practice," "general practice," "primary care,"* and *"well child check"* were used in all databases to ensure a comprehensive search. Year of publication was restricted to the past five years (2014-present) in order to reflect the most up to date literature, recommendations, and practices, as several position statements regarding screening of postpartum depression have been issued during this time frame. The search was also restricted to English language, full text, United States geographic location, and academic journals as respective databases allowed. A brief grey literature search was conducted using Google Scholar

to assess for publication bias, with the same limitations. Sites of stakeholder organizations, to include national bodies and professional organizations, were reviewed for published practice guidelines and position statements regarding screening for PPD. Articles that described or investigated any aspect of postpartum depression screening of all levels of evidence were included.

A medical librarian was consulted for assistance with search strategy to ensure inclusion of all pertinent articles. The resulting search terms generated a high number of articles that did not meet inclusion criteria, but narrowing the search further resulted in exclusion of pertinent articles. For this reason, the decision was made to conduct a hand review of the initial comprehensive search results to ensure no relevant research was systematically excluded. A total of 622 items were identified from the databases, and an additional five were identified through the grey literature and reference list search. After removal of duplicates, 564 items remained. Titles were screened and any titles in question of inclusion advanced to an abstract review for relevance. Inclusion criteria included a focus on screening for depression in the postpartum period from 0-12 months, use of a standardized screening tool to detect PPD, US-based population, and adults 18 years or older. During this process, 547 items were excluded because they did not meet the stated inclusion criteria. Seventeen items remained, and the full texts were reviewed for relevance with all levels of evidence included. Five articles were excluded because they did not focus on analysis of a screening tool. Twelve items were retained for analysis. Figure 2 illustrates the PRISMA format utilized.

The literature search initially yielded 564 unique items. After title and abstract review, 12 items were read in full, and seven of these were included in the final analysis. Five additional items were added for analysis after a grey literature search and searching the reference lists of

selected articles, to include two reports from policy-making bodies. From the 12 items analyzed, only one article was a randomized control trial (RCT). Three were cohort studies, with one of the three being quasi-experimental. Three were quality improvement projects. Two systematic reviews were analyzed, and the remaining three items were appraisals of current evidence or current practice recommendations from national professional organizations.

Appraisal and Synthesis

Level of Evidence. The evidence level and quality of the items retained from the search were evaluated using the Johns Hopkins Nursing Evidence-Based Practice criteria (Dang & Dearholt, 2017) (see Figures 3.1 and 3.2), with copyright permission granted by the Institute for Johns Hopkins Nursing (see Appendix C). Only one RCT was reviewed, which yielded level I evidence and good (B) quality. One quasi-experimental study was reviewed, which yielded level II evidence of good (B) quality. All other studies were level III or below, though they were of high (A) or good (B) quality. Two systematic reviews filled in some gaps, but they were specific to elements of the search, such as current screening practices and screening tools, rather than specific interventions related to PPD screening. Tables 1 and 2 summarize the results of the literature review.

Screening practices. Goldin Evans et al. (2015) completed a systematic review of 11 research studies that explored the screening practices of physicians for PPD. They found that, despite current recommendations, among pediatricians, OB/GYN physicians, and family practitioners, three in 10 physicians rarely or never screened for PPD, and some only screened if the mother volunteered her symptoms. Of the providers that did screen, the majority did not use a formal, validated screening tool, but instead used symptom review and clinical judgement. Though almost all of the providers felt a responsibility to identify PPD, most were not confident

in their skills to recognize it or screen for it. Reported barriers to screening included time constraints, inadequate training, and inadequate mental health services. Of the three types of providers, pediatricians were the least likely to screen and least comfortable with the screening and detection process.

Screening tools. Almost all the articles analyzed noted that there are multiple validated screening tools for PPD that are considered effective with both high sensitivity and specificity, which are widely available. Rafferty, Mattson, Earls, and Yogman (2019) discussed several of these tools, including Edinburgh Postnatal Depression Scale (EPDS), which is specifically designed to screen for PPD. The EPDS has been validated many times, as evidenced by a review conducted by the USPSTF of 23 studies that examined its accuracy (O'Connor et al., 2016). Other depression screening tools not specific to PPD discussed included the Patient Health Questionnaires (PHQ-2, PHQ-9) and Beck Depression Inventory-II (BDI-II). Olin et al. (2016) conducted a systematic review on PPD programs and found that the EPDS was the most commonly used screening tool to identify those at risk for PPD. Most studies included in this synthesis used the EPDS (Mgonja & Schoening, 2017; Schaar & Hall, 2013; Sorg, Coddington, Ahmed, & Richards, 2019). One study reported using a combination of the EPDS and PHQ-9 (Yawn, Bertram, Kurland, & Wollan, 2015), one study used only the PHQ-9 (Avalos, Raine-Bennett, Chen, Adams, & Flanagan, 2016), and one study used the PHQ-2 to prompt further evaluation (Carroll, Biondich, Anand, Dugan, & Downs, 2013).

Timing, frequency, and setting. The timing, frequency, and clinical setting of screening, as well as the method of screening, varied greatly from study to study. Sorg et al. (2019) primarily followed the recommendations of the AAP in their QI project, using the EPDS to screen at the 1-, 2-, and 6-month WCC in a pediatric primary care clinic. Mothers were given

a laminated version of the screening to fill out during the intake process, and responses were put into the electronic medical record. Schaar and Hall (2013) implemented routine screening using the EPDS at multiple OBGYN clinics, though timing and frequency of screening were not outlined specifically, nor was method of screening. Mgonja and Shoening (2017) screened all mothers at any WCC from birth to 12 months at a primary care clinic. Mothers were given a paper EPDS form to complete while they waited for the physician. Avalos et al. (2016) conducted a retrospective study of a screening program using the PHQ-9 which screened women twice during pregnancy and once postpartum at three months at OBGYN visits. Patients were asked to complete a paper screening at the time of rooming. Yawn et al. (2012) conducted screening for postpartum women using a combination approach with both the EPDS and PHQ-9 at the start of the study, and then again at 6- and 12-months postpartum at family medicine practices. Survey packets containing screening questionnaires were mailed to participants with stamped return envelopes, and data were recorded at a central study site. Carroll et al. (2013) screened mothers of children aged 0-15 months seen at a primary care clinic at three-month intervals using PHQ-2 paper forms completed at the time of check-in.

Though no two studies had the same procedures, all studies demonstrated similar outcomes. All showed that implementation of a routine screening program for PPD using a validated screening tool resulted in higher rates of screening and detection of PPD. Studies also suggested benefit from repeated screening at varying intervals (Yawn et al., 2012), and that routine administration of PPD screening improves treatment outcomes at 12 months (Yawn et al., 2015).

Discussion. This literature review and synthesis broadly examines the recommendations and the practices of screening for maternal PPD in adult women. Several studies reviewed

demonstrated great variance in the methods, timing, frequency, and setting of screening for PPD; however, it is universally agreed upon that the practice of screening for PPD is vital for the well-being of both mother and infant, and that screening ultimately results in better outcomes, especially when appropriate care or treatment for PPD is given. Evidence has suggested that screening for PPD may reduce depressive symptoms and PPD prevalence (O'Connor et al., 2016). Despite this, there is no consensus among professional organizations for guiding when and how to screen women for PPD (Ukatu, Clare, & Brulja, 2018).

In 2016, the USPSTF released its recommendation for depression screening, to include postpartum women. The USPSTF recommended screening with a grade of B, which means that there is a high likelihood of moderate net benefit of providing screening and that providers should screen (USPSTF, 2018). ACOG (2018) released an interim update of the committee opinion which gives recommendations on screening for PPD. ACOG recommended that any obstetric providers complete a full assessment of mood and emotional well-being, including screening for PPD with a validated screening tool, during at least one postpartum visit. ACOG does not specify timing or frequency of screening, nor does it endorse a specific tool to be used for screening. In a recent technical report from the AAP (Rafferty et al., 2019), it was noted that multiple professional bodies, including the AAP, now recommend routine screening for PPD. The AAP recommends screening of the mother at the 1-, 2-, 4-, and 6-month WCC. AAP does not recommend a specific screening tool but notes that the EPDS and PHQ-9 are the most commonly used with high accuracy. The American Academy of Family Physicians (AAFP) does not endorse a specific screening schedule or tool, but it acknowledges and supports the recommendations of the aforementioned organizations, as well as notes that family physicians are important in the identification and treatment of patients with PPD (Langan & Goodbred,

2016). A review of screening recommendations and programs by Kurtz et al. (2017) recommended screening up to one year, as some symptoms of PPD can be delayed or present for one year or longer. In support of these recommendations, some insurances, to include Medicaid, cover the cost of screenings, and it is recommended that both government and private insurance cover this practice (França & McManus, 2018).

There are multiple validated screening tools for PPD, including the EPDS, Postpartum Depression Screening Scale (PDSS), PHQ-9, BDI-II, Center for Epidemiologic Studies Depression Scale, and Zung Self-rating Depression Scale (Casanova et al., 2019). The most commonly used are the EPDS and PHQ-9, which have both demonstrated high sensitivity and specificity for detecting PPD (O'Connor et al., 2016). Both are free, quick and easy to administer, and available in multiple languages. There is no consensus among the medical community regarding which tool is best and most accurate in screening for PPD (Ukatu et al., 2018), but O'Connor et al. note that evidence supporting the accuracy of the PHQ-9 in postpartum women was very limited compared to evidence supporting the EPDS. Resulting scores from either tool should be coupled with clinical judgement, and it may be advantageous for the provider or setting administering the tool to choose the one with which they are more comfortable and familiar in order to facilitate the best outcomes for the patient. Similar to the procedures used in the study completed by Yawn et al. (2012), the AAFP suggests the use of a two-step screening strategy, using the EPDS first to identify women at risk for PPD, followed by the PHQ-9 to further evaluate and classify severity of depression (Langan & Goodbred, 2016). This is similar to the process used by family practice providers to identify MDD in patients who are not postpartum.

Though any trained provider can administer a PPD screening using a validated screening tool, literature included in this review suggests that the pediatric primary care provider is best poised to screen mothers for PPD because they are the ones who have the most frequent contact with the mother, if she is the person who brings her infant to WCCs. A mother often only sees her OBGYN for follow-up one time after delivery, but a pediatric primary care provider often sees a mother as frequently as eight to 10 times within the first year of a child's life (Waldrop, Ledford, Perry, & Beeber, 2018). However strategic this position may be, multiple barriers have been identified. Goldin Evans et al. (2015) examined PPD screening practices by pediatricians, OBGYNs, and family practitioners, and they found that pediatricians were actually the least likely to assess for PPD with a screening tool, instead using clinical judgement, but also the least confident in their skills to recognize PPD. Pediatricians also cited several barriers to screening, including lack of time, inadequate training or knowledge, and lack of ancillary services, such as mental health, for referral. In the studies that implemented a screening intervention in any type of clinic to include pediatrics, the importance of education of staff on PPD and screening prior to implementation was noted (Mgonja & Schoening, 2017; Schaar & Hall, 2013; Sorg et al., 2019). Waldrop et al. (2018) suggested that the key to consistent practice change and compliance, as well as overcoming barriers, is following a clinical decision support algorithm when a mother screens positive, just as algorithms are followed for other disease processes. One such algorithm was developed by Yawn et al. (2012) as a tool to facilitate diagnosis, follow-up, and management of PPD. This algorithm has since been adopted for use and recommended by the AAFP.

Significant gaps exist in the current literature, and a limitation is that there is a great need for additional research, including more RCTs and experimental studies of high quality; however, Waldrop et al. (2018) notes that, because screening recommendations are already in place from

several professional organizations, it is difficult to justify performing additional RCTs because withholding best care practices in order to have a control or comparison group would be unethical. Additional literature, such as statements from national bodies, was included, but it filled in gaps related to recommendations only and not to processes. Though universal screening is recommended, further research is needed on how to implement screening protocols in the most effective way possible (Stuart-Parrigon & Stuart, 2014), especially in the primary care setting. There are relatively few studies on PPD management in primary care, and most of those found were related to pediatric primary care. Since it was noted that pediatricians are the least comfortable in screening for and responding to mothers with PPD but have the most frequent access to the population, research is needed to determine how barriers to screening can be overcome to provide this much-needed service for and care of these mothers.

It is important to note that there are additional special populations for which PPD screening may be appropriate. Evidence suggests that adolescent mothers may experience PPD at higher rates than adult women (Kurtz et al., 2017), and the EPDS has been highly accurate in this population, though a lower cutoff score than the score, recommended for adult women may be ideal (Venkatesh, Zlotnick, Triche, Ware, & Phipps, 2014). Paternal PPD is a relatively new topic for which there is not yet much high-quality research, but it can be a significant problem for families, and anticipatory guidance should be provided to fathers and families (Musser, Ahmed, Foli, & Coddington, 2012). Several studies investigating post-adoption depression using interviews, the EPDS, and other depression screening tools have found that adoptive parents are at significant risk of depression similar to PPD once the child has been placed in their home (Foli, 2010). Close monitoring of transgender men who have given birth for risk of PPD is important, as baseline depression and suicide rates are higher than average in this population, and

certain risk factors for PPD, including lack of support, are frequently reported (Obedin-Maliver & Makadon, 2016). All these special populations are currently under-screened, underdiagnosed, and undertreated, so providers should complete a thorough assessment and provide education on PPD to these parents. More high-quality research is needed on risk of PPD and screening for these populations, and providers who screen for PPD should remain current on emerging research and new recommendations.

After fully reviewing the current evidence, a thorough risk/benefit assessment was conducted. Though Level I evidence was limited to one RCT of good quality, additional Level II III, and V studies of good quality, as well as several systematic reviews, have consistently shown significant benefit to the practice of screening for PPD in various settings. This consistency in positive research findings, along with the endorsement and recommendation for PPD screening by multiple high-level stakeholder organizations, suggests a high potential for benefit with little to no identified risk. Based on this assessment, it was concluded that there was sufficient evidence to pilot the practice change.

Design and Pilot the Practice Change

Setting and Sample

The pilot was conducted within a rural primary care clinic and was implemented with full support and collaboration of all providers and clinic staff. Seventeen individual screening opportunities that met inclusion criteria were identified through schedule review. All adult postpartum women presenting with a child for a WCC were targeted for the practice change, with a goal of offering screening to 100% of women 18 years of age or older who fell between birth and 12 months postpartum. Patients with a previous diagnosis of depression or who were currently under treatment for depression were not excluded, as this was an implementation of

evidence-based practice. It was acknowledged that inclusion of this population falls outside the standard definition of screening, but the project team felt that it was important to assess mental health stability and adequacy of treatment in this population, as well as to inquire about suicidal ideation, especially since women with a personal history of depression are at increased risk for PPD. Though PPD screening may be appropriate and is likely beneficial for adolescent mothers, fathers, transgender parents, and adoptive parents, further research is needed to determine the best methods. For this reason, these special populations were excluded from this pilot.

Measures

The Edinburgh Postnatal Depression Scale was the primary tool used to identify women at risk for PPD (see Figure 4). The EPDS is specific for PPD and includes questions about anxiety symptoms, in addition to depressive symptoms and suicidality (Cox, Holden, & Sagovsky, 1987). It asks questions about how a mother has been feeling for the past seven days. Since its development, Cox, Holden, and Henshaw (2014) have found that it is sensitive to changes in the severity of depression over time by comparing scores from interviews at different time periods, which has resulted in an increase of its use as an outcome measure in recent studies. It was originally validated in women who were six to eight weeks postpartum, but a recent review found its use validated in some studies up to 26 weeks postpartum and notes that it is used at 12 months and beyond in many clinical settings (O'Connor et al., 2016). Studies have demonstrated a sensitivity of 0.76 to 0.96 and a specificity of 0.81 to 0.99 (Ukatu et al., 2018). Various cutoff scores have been used, but a cutoff score of 10 or greater is most commonly used to identify women at risk for PPD. An affirmative answer to question 10 regarding the thought of harming oneself requires immediate attention. Based on the calculated EPDS score, the PHQ-9 may be used for further assessment of depression risk. The PHQ-9 (see Figure 5), with a

sensitivity of 0.79 to 0.85 and a specificity of 0.88 to 0.92 (Ukatu et al.), is often used in the general population for detecting depression other than postpartum. It asks questions about how a person has been feeling over the past two weeks (PRIME-MD, 1999). The total score indicates depression severity, ranging from minimal depression to severe depression. An affirmative answer to question nine regarding thoughts of being better off dead or hurting oneself requires immediate attention. It is important to note that neither tool is diagnostic of PPD, but both can be used along with clinical judgement of a licensed provider in order to identify mothers suffering from depression and in need of intervention or referral. Both tools may be reproduced without permission as long as copyright is respected.

Procedures

In order to ensure the protection of human subjects, the project was submitted to the University of Virginia's Institutional Review Board (IRB) for an official determination of evidence-based practice, not human subjects research. No personal or identifying information was retained in the project, and project implementation did not negatively interfere with usual care.

Immediately prior to implementation, education based on the literature regarding PPD, use of the EPDS, and use of the clinical support algorithm was presented to clinic providers, staff, and students. The project lead completed face to face education with as many individuals as possible, and printed material was provided to those who were unable to receive the education in person. Additional education sessions and printed material were also provided to any staff or students who arrived after the initial session but during the implementation period. A total of 20 team members received training on the screening program.

During the pilot, the clinic schedule was reviewed by the project lead weekly for any upcoming WCCs for children between birth and 12 months. On days with those appointments, the project lead was on site for consultation and oversight of processes. On several days, the project lead could not be on site, so screening material was pre-staged, and a clinic staff member was asked to facilitate screening. This offered an opportunity to assess compliance of the clinic staff without being prompted by the project lead and provided insight on barriers to adoption and sustainability.

After rooming and the initial assessment of the patient by the nurse or medical assistant, the mother was given a paper copy of the EPDS survey, as well as a brief explanation of the purpose of the tool, and asked to complete the survey while waiting for the provider. If the mother was not present at the appointment, the survey was not administered. The survey was collected and responses reviewed by the student provider or licensed provider with the project lead. If a student collected the survey, it was reviewed with the licensed provider prior to discussion with the participant.

Upon review of survey responses, a score was calculated, indicating whether or not the mother was at risk for PPD based on the EPDS. In accordance with current AAFP recommendations, once the score was calculated, the provider consulted the AAFP-provided clinical support algorithm. The algorithm recommended a pathway based on the EPDS score, coupled with clinical judgement of the provider, to aid in assessment, diagnosis, and plan (AAFP, n.d.) (see Figure 6). Based on this algorithm, an EPDS score of less than 10 with no suicidal ideation received usual care, which included discussion of signs and symptoms of PPD, an educational pamphlet, and a recommendation to follow-up immediately if there were any concerns. As suggested by the clinical support algorithm, an EPDS score greater than or equal to

10 without suicidal ideation had an additional assessment using the PHQ-9, administered by the provider. Continuing down the algorithm based on the PHQ-9 score, using shared decision making with the mother and with the health and safety of the mother and infant in mind, the provider took the next recommended steps, which included referrals, counseling, and/or pharmacologic treatment. An EPDS score of greater than 19 or a positive response to question 10 regarding suicidal ideation warranted use of the immediate action protocol (IAP), which is also provided by the AAFP (see Figure 7) and includes a suicide risk assessment and steps for immediate referral for care by a mental health professional. Any mother with a score of 10 or greater was given a follow-up plan, consisting of phone calls and/or return office visits, as well as rescreens to reassess risk for PPD and/or assess adequacy of treatment at subsequent visits.

Data Collection and Analysis

The pilot took place in the fall of 2019 and was overseen by the practice mentor and DNP advisor. Data was collected and analyzed throughout the pilot using Excel and SPSS Statistics, version 26. The surveys were retained by the site for entry into the participant's electronic medical record (EMR). Data from the surveys was de-identified and retained on Excel spreadsheet by the project lead for analysis. As this was an EBP project, the primary goal was to continuously analyze process and outcome variables to encourage adoption of the program into practice. Process variables in this project included chart audits, staff compliance, and assessment of barriers to the practice change. Chart audits were performed to assess for compliance. Missed opportunities for screening, with reasons, were recorded in order to determine barriers to the screening program and prevent future missed opportunities. Outcome variables included increased identification of women at risk for PPD and improved PPD management strategies. Chart audits collected data regarding further assessment beyond the survey or follow-up plan as

decided upon by the provider, as well as to ensure an appropriate follow-up plan was in place, as per the recommended standard of care.

In accordance with the Iowa Model, procedures were periodically modified based on clinical site team feedback and continuous evaluation of process and outcome variables during the implementation period in order to ensure eligible women were screened consistently and to enhance adoption of the screening program. The first few weeks of the implementation period were intended to be a learning and transition period, leading to consistency and eventual adoption of the practice change. Data collection continued for a total period of 10 weeks, with a goal of finishing the pilot with >90% compliance with screening protocol. After the pilot ended and all data was recorded, descriptive statistics in the form of frequencies expressed by measures of central tendency and percentages were used to describe the relationships between variables and a summary of data.

Results

Characteristics of sample. Seventeen screening opportunities meeting the inclusion criteria were identified during the implementation period (see Table 3). There were 11 unique participants and six repeat participants, but rescreens were treated as unique screening opportunities since the screening program was designed to target eligible women each time they presented. The age range of the participating mothers was 19 to 40 years, with an average age of 30.2 years. The age range of infants presenting was two weeks to nine months, with an average age of 5.2 months.

Screening process. Of the 17 identified screening opportunities, 14 screenings were offered and completed, and there were three missed opportunities, leading to an overall compliance rate of 82.35%. Though this is below the desired goal of >90%, the site had no identifiable screening

program or use of a validated screening tool prior to this pilot, and nine of 10 weeks showed compliance rates of 100% (see Figure 8). EPDS scores ranged from zero to 13. The mean EPDS score was 5.5, median was 5, and mode was 4. There was one positive screening result with a score of 13, indicating this patient was at risk for PPD and required further evaluation. The PHQ-9 yielded a score of 25, indicating severe depression.

Within this population at this particular practice, one in 14, or 7.14%, of mothers were considered to be at risk for PPD. The most commonly answered questions on the EPDS survey were questions three, four, and six, which asked about blaming oneself unnecessarily, feeling anxious or worried, and ability to cope, respectively. At least nine mothers score higher than a zero on these questions, indicating that they experienced each of these to varying degrees.

Discussion

Implementing EBP changes can be a challenging process. The Iowa Model uses an algorithm which outlines this process from identifying an issue to integration and sustainment of a practice change, but individual organizational dynamics and practices can heavily influence procedures and adoption of these practice changes. The original goal of this project was to continue screening and data collection until four to six consecutive weeks after the initial learning and transition period with screening compliance rates >90% were recorded. The overall compliance rate was consistently 100% for most of the pilot but fell to below 90% during the last two weeks, with all three missed screening opportunities occurring over a period of one week during which the project lead was unable to be on site. This reinforces the need for linking practice change and stakeholder priorities, as well as identifying change agents (e.g., unit champions), as recommended in the Iowa Model's *Implementation Strategies for Evidence-Based Practice* (Cullen & Adams, 2012). Due to the site's operational dynamics and the

workload of the staff, there was limited ability to appoint a clinic staff member to fulfill this role during the implementation period. Instead, the project lead took on this role, which resulted in some missed screening opportunities when the project lead was not on site. Compliance rates would have likely been higher with a specifically appointed change agent who could have been on site consistently. Additionally, more face-to-face education sessions with providers, students, and staff would have increased awareness, interest, and knowledge, which is another key piece of implementing EBP changes (Cullen & Adams). As compliance did not decrease until the end of the pilot, consideration should also be given to providing refresher training after an initial pilot period in order to reemphasize the goals and priorities of the program, as well to address questions or confusion team members may have experienced along the way. Other strategies such as having participants complete the survey electronically prior to the appointment, or the front desk staff providing the survey at the time of check-in, may also increase compliance.

Clinic staff members and students, who were key in offering and scoring the EPDS, reported that the program was easy to follow, did not add significant time to the well-child visit, and was valuable to the participants. In only one instance did a caregiver other than the mother present with the child (rendering that visit ineligible). This emphasizes the feasibility and acceptability of a universal PPD screening program in the primary care setting, which supports the findings of previous investigators (Mgonja & Shoening, 2016; Sorg et al., 2019). None of the mothers who were offered the survey declined to complete it, which indicated that women are open to discussion regarding PPD and assessment and surveillance of their risk, supporting the findings of Walker, Im, and Tyler (2013) regarding the willingness of new mothers to discuss depressive symptoms with their child's pediatric provider.

In the United States, the prevalence of PPD is estimated to be up to 15%, or approximately one in seven women. For this project, prevalence of PPD as indicated by an EPDS score >10 was 7.1%, with only one of 14 women having a positive screen, or scoring higher than 10. This may be attributed to the relatively small number of screening opportunities, as well as the short time frame for implementation. A larger number of screenings over a longer period of time may have yielded more positive screening results. There was one incomplete screen on which one mother failed to answer question three regarding blaming oneself unnecessarily. This participant was not prompted by the student or provider to complete the screen, but there is a possibility that her answer to this question could have resulted in a positive screen, which would have increased the overall prevalence to 14.3%.

The mother who screened positively was a young mother who lacked a consistent support system and had an extensive mental health history, including history of depression from a young age. This supports the factors that increase the risk of PPD listed by the APA (n. d.), which include women with a personal or family history of depression (especially during pregnancy), lack of a support system, younger than 20, substance abuse problems, financial problems, or a baby with special needs. The participant had also been diagnosed with PPD at her six-week follow up after delivery by her OBGYN and prescribed antidepressant medication, which she had been taking consistently. This information was not disclosed by the patient prior to the EPDS or the PHQ-9, which indicated severe depression, but was offered in subsequent discussion and counseling. This encounter stressed the importance of not excluding patients with a history or current diagnosis of depression from screening, as discussion and shared decision making with this patient determined that her current treatment was inadequate. Appropriate medication changes and follow-up were arranged based on the results of the screening protocol.

The recommendations given by professional bodies for timing and frequency of PPD screening vary widely. This project did not demonstrate correlation of EPDS with infant age, as high and low EPDS scores were found on both ends of the infant age range (see figure 9). Though not considered a positive screen for this project, four women had borderline positive total EPDS scores of eight or nine, indicating a need to closely monitor for further or worsening PPD symptoms and conversion to a positive score on a subsequent rescreen. Two participants were rescreened at subsequent appointments after the first encounter. One resulted in a decreased score from eight to two over two months, and one resulted in an increased score from six to nine. Rescreening mothers at consistent intervals offers opportunities to identify trends in scores, offering insight into those who may be more or less at risk as time passes. Though no participant in this project had a 12-month old infant, the rescreen which resulted in an increased score was at the nine-month WCC, confirming that there may be value in screening for PPD up to one year after delivery. This supports the recommendation by Kurtz et al. (2017) that screening continue at varying intervals up to one year, as well as the study by Yawn et al. (2015) that found that rescreening at six and 12 months can identify additional women who have previously screened negative on their baseline screen.

An individual item analysis of the participants' EPDS surveys in this project revealed a significantly higher average score for the questions concerning postpartum anxiety than the questions for depressive symptoms. Questions three, four, and five on the EPDS are specific to anxiety, which can be a strong component of and risk factor for PPD. The average anxiety score per question was 0.87, and the average score for the remaining questions was 0.38. On average, eight of 13 mothers answered each of these questions with a score greater than zero, while an average of four mothers answered each of the remaining questions with a score greater than zero.

Of note, individual items were not available for one survey, though the total score was known. This has great clinical significance as some research has suggested that the 10-question EPDS may be abbreviated to a three-question version (EPDS-3) using the three questions that evaluate anxiety with a sensitivity of 95% and a negative predictive value of 98% (Kabir, Sheeder, & Kelly, 2008). The former study, along with a study by Bodenlos, Maranda, and Deligiannidis (2016), identified a large number of additional subjects who were at risk for PPD than were identified by the 10-question EPDS. The conciseness and reliability of the EPDS-3 may appeal to healthcare providers designing and implementing PPD screening programs, especially in the primary care setting.

Strengths and Limitations

The most significant strength of the project was that it incorporated the most updated research and practice recommendations, and provided valuable education for providers, clinic staff, students, and patients, thus translating EBP into practice. It used a frequently validated screening tool and required minimal resources, but may result in a simple, feasible practice change with a potentially large beneficial impact on the target patient population. Implementation and sustainment relies heavily on team and interprofessional collaboration, which ultimately results in better outcomes for patients and families. Additionally, 100% of patients meeting inclusion criteria were targeted, rather than a small sample. As previously discussed, though recommendations exist and drive EBP, there is a lack of high-quality research regarding screening for PPD. Additional limitations included a limited implementation or pilot timeframe, small number of participants, and a lack of historical data on clinic PPD screening practice for comparison and analysis. The constant rotation of new students posed a challenge, as it was difficult and cumbersome to find opportunities to provide education for each person,

which likely played a role in the missed opportunities for screening that occurred given the students' heavy responsibility in the patient care process. This project site had little variance in demographics, so lessons learned during the pilot may not be applicable to all practice settings.

Integrate and Sustain the Practice Change

Based on the feasibility and acceptability of the program, clinical significance of outcomes, and potential for large impact on the patient population, it was determined that the change is appropriate for adoption into practice.

Implications for Practice

Implementation of a PPD screening program has significant impacts for the healthcare team, as well as patients and families. Initially, the program served to increase awareness and knowledge of how to identify women at risk for PPD and pathways to follow in the event of a positive screen. It created a standardized process by which to screen and follow-up, which facilitates consistency, resulting in fewer missed opportunities to screen. Additionally, with this screening program, the project site will be compliant with current recommendations from multiple national organizations regarding screening for PPD. By identifying women at risk for PPD, quality of life and outcomes for patients and family will likely be greatly improved, as it has been proven that PPD leads to feelings of extreme sadness, anxiety, and exhaustion which may hinder a mother's ability to care for or bond with her infant or complete activities of daily life, and may lead to suicidal ideations and suicide attempts (OWH, 2017). A universal screening program at WCCs may also help mitigate any stigma still associated with PPD and will prompt a discussion if a mother is too afraid or uncomfortable to initiate discussion of her feelings on her own, or is unable or unlikely to make or attend an appointment for herself. Screening for PPD at

WCCs may be especially important and impactful in a rural setting where mothers may not follow-up for themselves after birth or be seen often by other physicians.

Sustainability Plan

Maintaining a universal screening program for PPD is a relatively simple process that has the potential to greatly improve quality of life and overall outcomes for both mothers and infants. The screening program requires very few resources, takes a minimal amount of time, and does not negatively impact patient care. With appointment of a change agent or unit champion, the project site will likely be able to sustain this program and may cater the specific details, such as when and how often to screen, as well as the clinical support algorithm, to fit its individual needs and demands. Paramount to the success of the screening program will be to identify a program champion who will oversee procedures, provide education to rotating staff, maintain resource material, and carefully audit for compliance to the specific guidelines of the program, as determined by the project site. Additional recommendations for sustainability include incorporation of educational material and program procedures into the orientation process for new students and staff, providing ongoing reports on progress and improvement in compliance rates, and evaluating periodically for the need for protocol revisions. Brief program refresher training every two to three months could serve to reinforce the goals and priorities of the program, as well as to incorporate any new research or recommendations. To improve compliance rates, addition of the EPDS into the EMR and a prompt on the WCC template to note screening results and plan would be invaluable to providers and staff.

Disseminate Results

Program information, project findings, and sustainability recommendations were presented to the practice site, and data and tools remained with the clinic so that it may continue

the program. A full manuscript of the project report will be submitted to the University of Virginia School of Nursing as part of the requirements for completion of the Doctor of Nursing Practice program, as well as submitted to Libra, the University's scholarly institutional repository. A manuscript will be submitted to the *Journal of the American Association of Nurse Practitioners (JAANP)* for publication based on journal guidelines for submission.

Conclusion

Postpartum depression is a significant problem affecting women, infants, and families after childbirth. Undiagnosed and untreated PPD can be detrimental to quality of life, infant bonding, and relationships and increases risk of suicide and infanticide. Though evidence exists recommending routine PPD screening, and guidelines from many professional organizations prescribe it, screening is still not being completed consistently, thoroughly, or accurately, and barriers such as lack of education, time, resources, and referral pathways have been cited. This EBP project demonstrates the feasibility and effectiveness of implementing universal PPD screening using a validated screening tool in the primary care environment. The recommended schedule of WCCs potentially increases the frequency of encounters with mothers, thereby providing more opportunities for screening. Primary care providers have a responsibility and are optimally poised to screen for, identify, and treat PPD, improving mental health care and outcomes and promoting well-being for mothers and infants.

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Table 1

Summary of Literature Review: Quantitative Analysis

Study Reference (Author, Year)	Design	Subjects and Setting and Data Collection Period	Intervention, Control/Comparison	Study Outcomes	Level of Evidence and Quality Grade (Johns Hopkins)	Limitations
Sorg, M., et. al (2019).	QI project	116 mothers of infants presenting for 1-, 2-, or 6-month WCC at a nurse-managed federally-qualified health center in northern Indiana during January 1 - March 31, 2018.	Screening for PPD at all WCC using the EPDS vs. usual practice of asking "Maternal depression: yes or no?"	Implementation of a standardized screening tool (EPDS) to screen for PPD resulted in an improvement in screening rates.	V; B	Low level of evidence. Not focued in family practice setting. Limited sample that was not likely representative of the general population.
Schaar, G. L., & Hall, M. (2013).	QI project	415 postpartum women from nine OB/GYN practices representing 22 obstetricians in the Indiana metropolitan area over 3 months	Routine screening for PPD at postpartum OBGYN appointments using the EPDS vs. usual care (no specific screening regimen or tool)	Education and implementation of routine PPD screening using the EPDS tool resulted in increased screening of patients and planned change/continuation of practice for most providers.	V; B	Low level of evidence. Not focued in family practice setting. Limited sample that was not likely representative of the general population.
Mgonja, S., & Schoening, A. (2017).	QI project	36 mothers of infants presenting for WCC from birth-12 months in a private faith-based primary care clinic in the Midwest over 9 weeks	Screening for PPD at all WCC using the EPDS vs. usual care of no formal screening protocol	Education on PPD and use of the EPDS tool resulted in high staff compliance with screening and supports screening of mothers at WCC up to 12 months .	V; B	Short time frame. Non-generalizable results. Low level of evidence.
Yawn, B. P., et. al (2015).	Retrospective cohort study	1432 women across 16 states from 21 family medicine practices enrolloed in the TRIPPD study who initially screened negative for PPD over 12 months	n/a (substudy using quesitonnaires from a previous study)	Repeated PPD screening beyond the first few weeks postpartum of women who have previously screened negative can identify new cases of women at risk for PPD.	III; B	Many of the study of the initial sample were lost to attrition prior to the substudy, which could have altered outcomes. Screening only identifies those at risk, not a clinically confirmed diagnosis.
Avalos, L. A., et. al 2016).	Retrospective cohort study	97,678 women 18 and older at Kaiser-Permanente Northern California between 2007 and 2014	n/a (looking at data from implemenation of a universal perinatal depression screening program)	Implementation of a universal perinatal depression screening program resulted in a signficant increase in rates of screening.	III; B	Limited to one geographic location so findings may not be generalizable. Screening was not limited to postpartum timeframe.
Yawn, B. P., et. al (2012).	Comparison cohort study (quasi-experimental)	1897 postpartum women from 28 family medicine research network practices in 21 states between March 1, 2006 and August 31, 2010	use of EPDS and PHQ-9 scores to assess for PPD at baseline, 6, and 12 months vs. usual care (no scores from screening tools available)	Routine administration of a PPD screening tool resulted in a significant increased in the diagnosis of PPD and suggested a positive impact of treatment at 12 months postpartum.	II; B	Large percentage of participants lost to follow-up. Screening was completed by mail, not in the clinic setting, and relied on participants to mail back and survery and providers to check these results and follow-up on them.
Carroll, A. E., et. al (2013)	RCT	3250 families with at least one child between 0 nd 15months seen in a primary care clinic in Indiana between October 2007 - July 2009	2 question screening for PPD symptoms with tailored physician prompt in EMR vs. no 2 question screening administered with generic physician prompt recommending screening	The use of a automated, standardized screening tool with questions asked directly of mothers resulted in a significant increase of detection of symptoms of suspected PPD and those referred for depression.	I; B	Results do not align with those expected based on other literature. Findings have limited generalizability. Screening process was automated and did not use a PPD specific tool..

Note. PPD = postpartum depression; WCC = well child check; EPDS = Edinburgh Postpartum Depression Scale; PHQ-9 = Patient Health Questionnaire 9; EMR = electronic medical record

Table 2

Summary of Literature Review: Qualitative Analysis

Study Reference (Author, Year)	Type of Element	Summary of Relevant Material	Level of Evidence and Quality Grade (Johns Hopkins)
Waldrop, J., et. al (2018).	Literature review	Using a PPD screening tool results in an increase in screening frequency and can result in an increase in detection of PPD. Creating a clinical decision support algorithm may help with consistent practice change and implementation.	V; A
Goldin Evans, M., Phillippi, S., & Gee, R. E. (2015).	Systematic review	1/3 of providers rarely or never assess for PPD, though most felt a responsibility to identify PPD.. The most common method of detecting PPD was clinical judgement with only 1/4 of providers routinely using a screening tool. Perceived barriers to screening include time constraints, inadequate knowledge, and lack of support services.	III; A
Olin, S.-C. S., et. al (2016).	Systematic review	The EPDS was the most common screening tool used in pediatric primary care, but timing and frequency of screening varied significantly among practices. Screening and identification of PPD can results in improved health and subsequent reduction in PPD. Evidence suggests feasibility of screening and managing PPD in pedatric primary care.	III; A
Rafferty, J., Mattson, G., Earls, M. F., & Yogman, M. W.. (2019).	Technical Report	Organizations such as the AAP, ACOG, and the USPSTF have found compelling evidence that screening of postpartum depression has great benefit and recommend it as a practice at postpartum and/or well child visits. Pediatric providers are well-positioned to implement PPD screening and to provide or refer for treatment when indicated. The EPDS is considered an effective screening tool in the postpartum population..	IV; A
American College of Obstetricians and Gynecologists (ACOG) (2018).	Committee Opinion	It is recommended that all providers who care for women in the postpartum period screen for postpartum depression with a validated screening tool during the comprehensive postpartum visit. Evidence suggest that even screening alone without treatment or referral can have clinical benefit.	IV; B

Note. PPD = postpartum depression; EPDS = Edinburgh Postpartum Depression Scale

Table 3

Sample Characteristics

Participant Number	Project Week	Child Gender	Child Age (Months)	Mother Age (Years)	EPDS Administered	EPDS Score
1	1	F	2	29	Y	9
2	1	M	0.5	33	Y	8
3	1	F	4	40	Y	4
4	2	F	4	19	Y	13
5	3	M	7	28	Y	6
6	4	M	9	32	Y	7
7	5	M	6	31	Y	4
8	6	M	5	35	Y	1
9	7	F	0.5	29	Y	8
10	8	F	9	32	Y	2
11	8	M	2	33	Y	2
12	9	F	1	29	N	n/a
13	9	F	4	29	N	n/a
14	9	F	6	40	N	n/a
15	10	M	9	27	Y	4
16	10	F	6	26	Y	0
17	10	M	9	29	Y	9

Note. EPDS = Edinburgh Postnatal Depression Scale

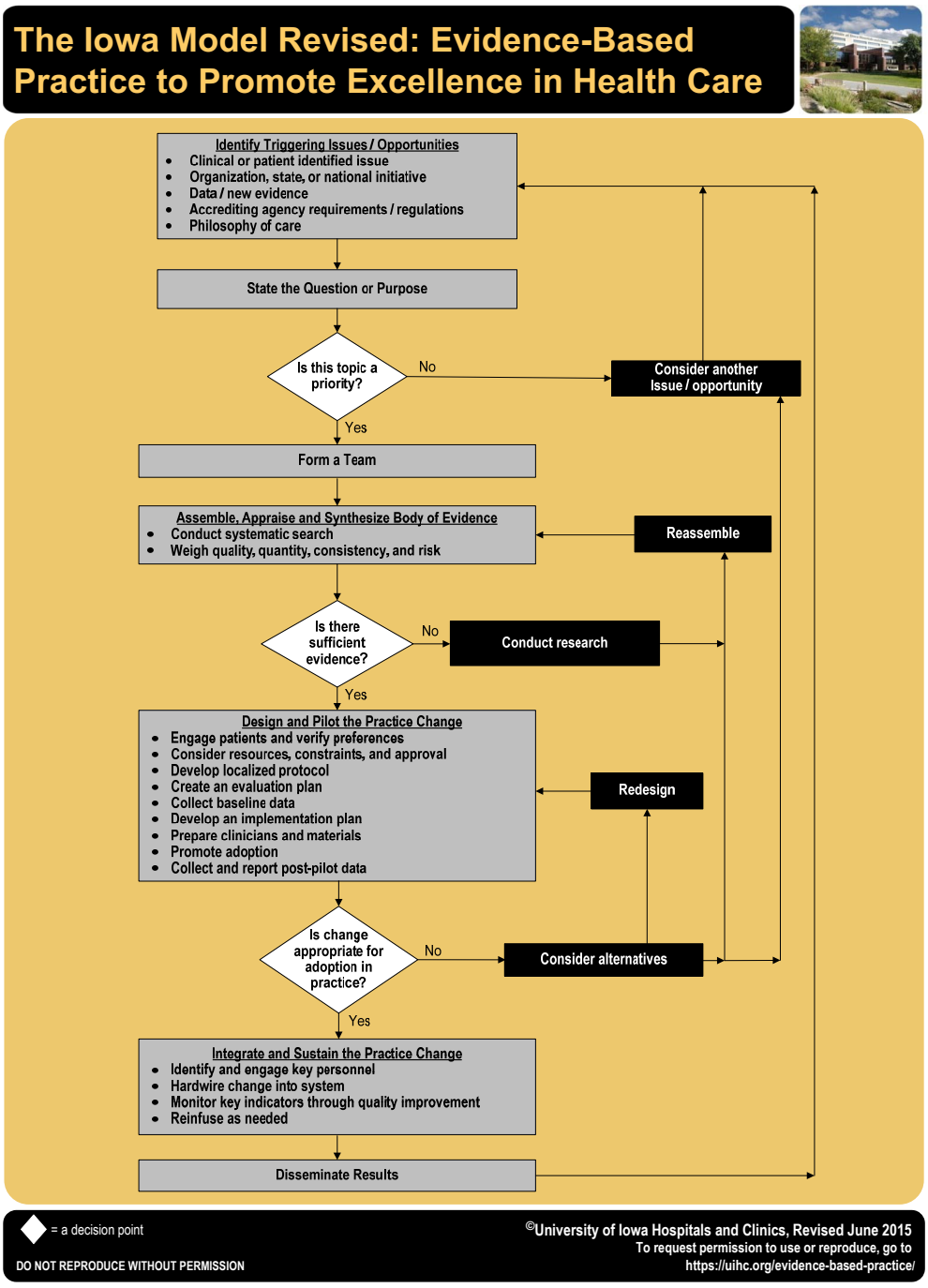


Figure 1. The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care. Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223. Reprinted with permission.

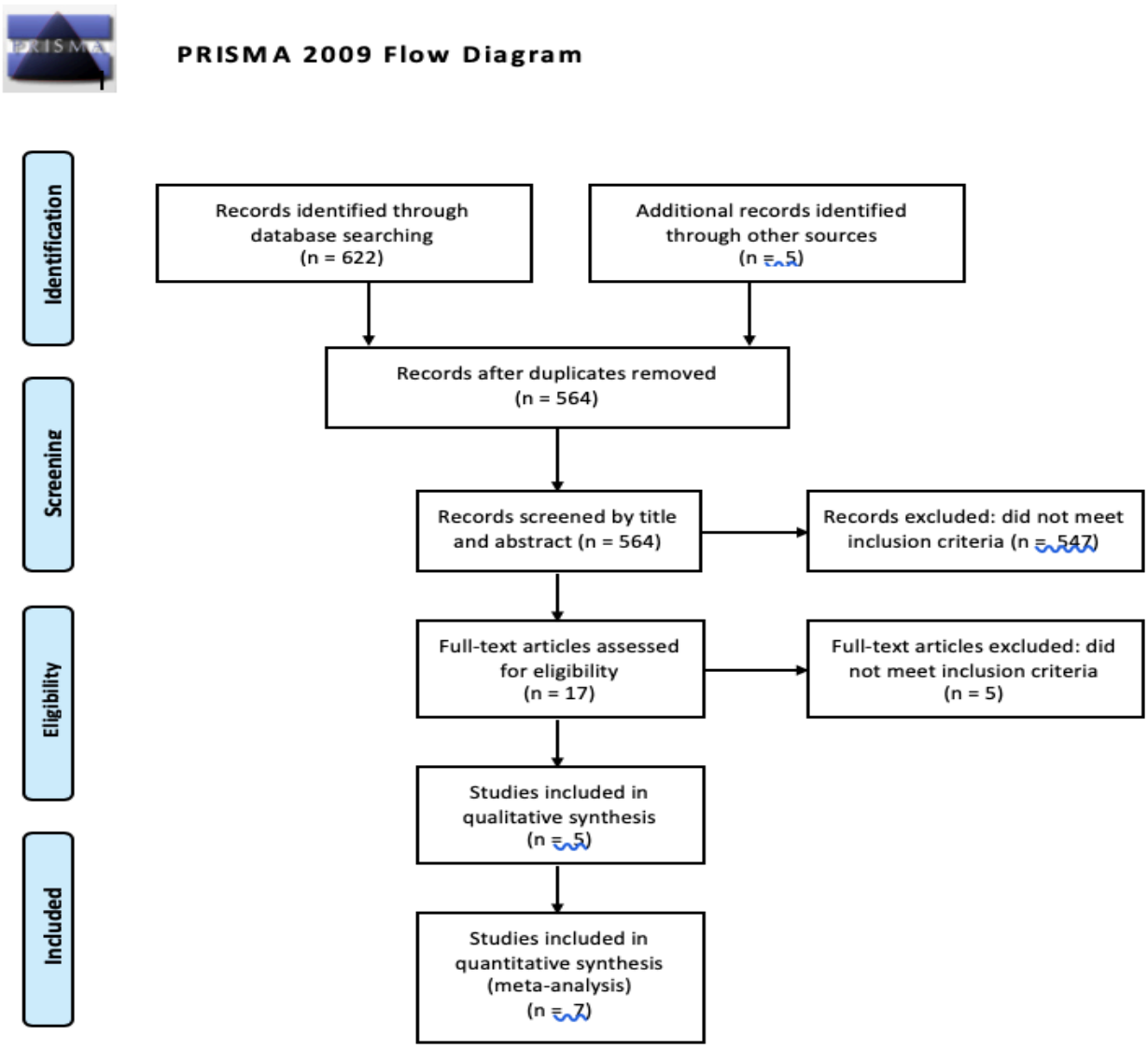


Figure 2. PRISMA flowchart outlining search and selection of articles. Adapted "*P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement" by D. Moher, A. Liberati, J. Tetzlaff, D.G. Altman, 2009, The PRISMA Group, PLoS Med 6(6): e1000097.

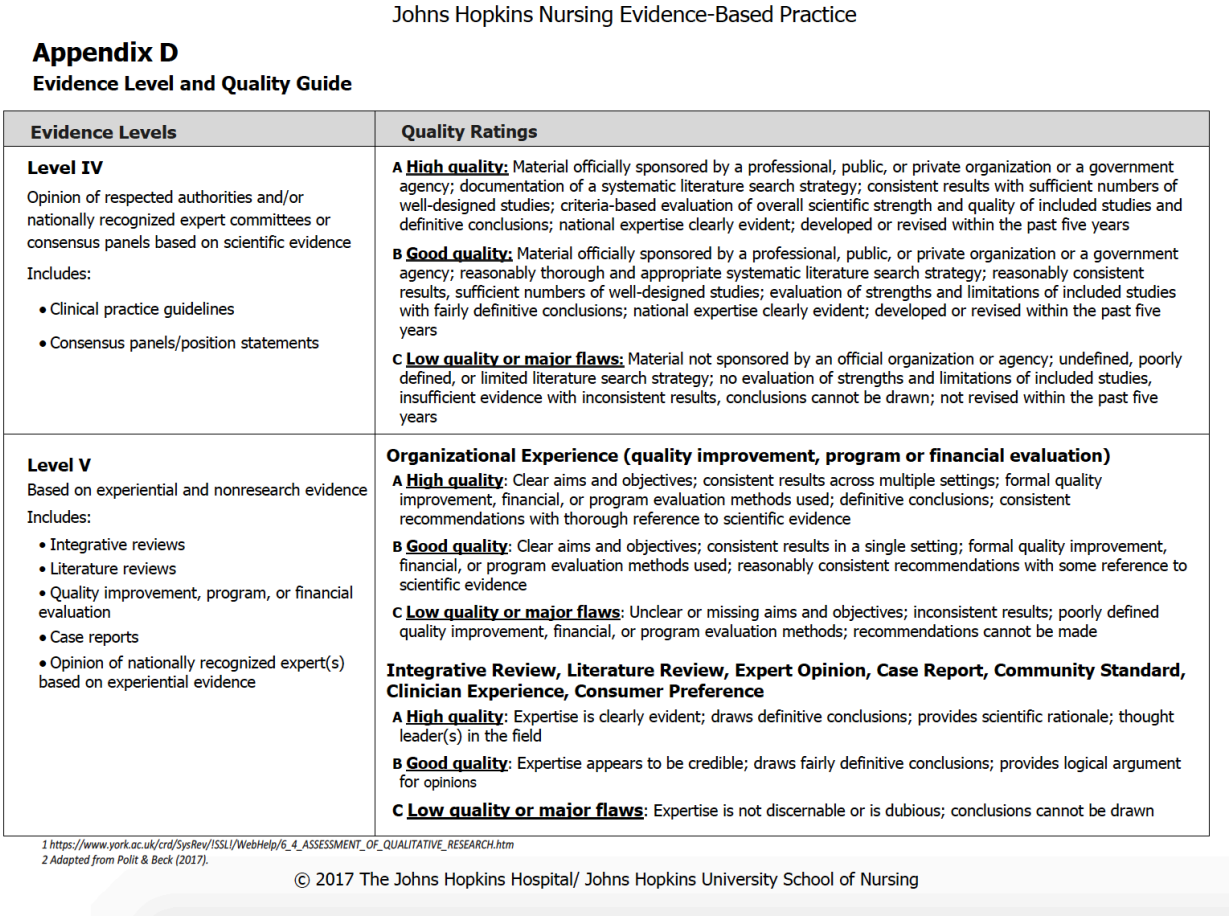
Johns Hopkins Nursing Evidence-Based Practice

Appendix D

Evidence Level and Quality Guide

Evidence Levels	Quality Ratings
Level I Experimental study, randomized controlled trial (RCT) Explanatory mixed method design that includes only a level I quaNtitative study Systematic review of RCTs, with or without meta-analysis **Level II** Quasi-experimental study Explanatory mixed method design that includes only a level II quaNtitative study Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis **Level III** Nonexperimental study Systematic review of a combination of RCTs, quasi-experimental and nonexperimental studies, or nonexperimental studies only, with or without meta-analysis Exploratory, convergent, or multiphasic mixed methods studies Explanatory mixed method design that includes only a level III quaNtitative study QuaLitative study Meta-synthesis	**QuaNtitative Studies** **A High quality**: Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence. **B Good quality**: Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence. **C Low quality or major flaws**: Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn. **QuaLitative Studies** No commonly agreed-on principles exist for judging the quality of quaLitative studies. It is a subjective process based on the extent to which study data contributes to synthesis and how much information is known about the researchers' efforts to meet the appraisal criteria. *For meta-synthesis, there is preliminary agreement that quality assessments of individual studies should be made before synthesis to screen out poor-quality studies*[1]. **A/B High/Good quality** is used for single studies and meta-syntheses[2]. The report discusses efforts to enhance or evaluate the quality of the data and the overall inquiry in sufficient detail; and it describes the specific techniques used to enhance the quality of the inquiry. Evidence of some or all of the following is found in the report: • Transparency: Describes how information was documented to justify decisions, how data were reviewed by others, and how themes and categories were formulated. • Diligence: Reads and rereads data to check interpretations; seeks opportunity to find multiple sources to corroborate evidence. • Verification: The process of checking, confirming, and ensuring methodologic coherence. • Self-reflection and scrutiny: Being continuously aware of how a researcher's experiences, background, or prejudices might shape and bias analysis and interpretations. • Participant-driven inquiry: Participants shape the scope and breadth of questions; analysis and interpretation give voice to those who participated. • Insightful interpretation: Data and knowledge are linked in meaningful ways to relevant literature. **C Low quality** studies contribute little to the overall review of findings and have few, if any, of the features listed for high/good quality.

Figure 3.1. Johns Hopkins Nursing Evidence Level and Quality Guide, levels I-III. Dang, D., & Dearholt, S. (2017). *Johns Hopkins nursing evidence-based practice: model and guidelines.* 3rd ed. Indianapolis, IN: Sigma Theta Tau International. Reprinted with permission.



Johns Hopkins Nursing Evidence-Based Practice

Appendix D

Evidence Level and Quality Guide

Evidence Levels	Quality Ratings
Level IV Opinion of respected authorities and/or nationally recognized expert committees or consensus panels based on scientific evidence Includes: • Clinical practice guidelines • Consensus panels/position statements	A **High quality:** Material officially sponsored by a professional, public, or private organization or a government agency; documentation of a systematic literature search strategy; consistent results with sufficient numbers of well-designed studies; criteria-based evaluation of overall scientific strength and quality of included studies and definitive conclusions; national expertise clearly evident; developed or revised within the past five years B **Good quality:** Material officially sponsored by a professional, public, or private organization or a government agency; reasonably thorough and appropriate systematic literature search strategy; reasonably consistent results, sufficient numbers of well-designed studies; evaluation of strengths and limitations of included studies with fairly definitive conclusions; national expertise clearly evident; developed or revised within the past five years C **Low quality or major flaws:** Material not sponsored by an official organization or agency; undefined, poorly defined, or limited literature search strategy; no evaluation of strengths and limitations of included studies, insufficient evidence with inconsistent results, conclusions cannot be drawn; not revised within the past five years
Level V Based on experiential and nonresearch evidence Includes: • Integrative reviews • Literature reviews • Quality improvement, program, or financial evaluation • Case reports • Opinion of nationally recognized expert(s) based on experiential evidence	**Organizational Experience (quality improvement, program or financial evaluation)** A **High quality**: Clear aims and objectives; consistent results across multiple settings; formal quality improvement, financial, or program evaluation methods used; definitive conclusions; consistent recommendations with thorough reference to scientific evidence B **Good quality**: Clear aims and objectives; consistent results in a single setting; formal quality improvement, financial, or program evaluation methods used; reasonably consistent recommendations with some reference to scientific evidence C **Low quality or major flaws**: Unclear or missing aims and objectives; inconsistent results; poorly defined quality improvement, financial, or program evaluation methods; recommendations cannot be made **Integrative Review, Literature Review, Expert Opinion, Case Report, Community Standard, Clinician Experience, Consumer Preference** A **High quality**: Expertise is clearly evident; draws definitive conclusions; provides scientific rationale; thought leader(s) in the field B **Good quality**: Expertise appears to be credible; draws fairly definitive conclusions; provides logical argument for opinions C **Low quality or major flaws**: Expertise is not discernable or is dubious; conclusions cannot be drawn

1 https://www.york.ac.uk/crd/SysRev/!SSLI/WebHelp/6_4_ASSESSMENT_OF_QUALITATIVE_RESEARCH.htm
2 Adapted from Polit & Beck (2017).

Figure 3.2. Johns Hopkins Nursing Evidence Level and Quality Guide, levels IV and V. Dang, D., & Dearholt, S. (2017). *Johns Hopkins nursing evidence-based practice: model and guidelines.* 3rd ed. Indianapolis, IN: Sigma Theta Tau International. Reprinted with permission.

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, not at all

*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

Figure 4. Edinburgh Postnatal Depression Scale (EPDS).

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: _____ **DATE:** _____

Over the last *2 weeks,* how often have you been bothered by any of the following problems?
(use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so figety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3
		add columns	+	+

(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card). TOTAL:

10. If you checked off *any problems,* how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?

- Not difficult at all _____
- Somewhat difficult _____
- Very difficult _____
- Extremely difficult _____

Figure 5. Patient Health Questionnaire (PHQ-9).

Figure 5. Diagnosis and Follow-up of PPD for intervention practices

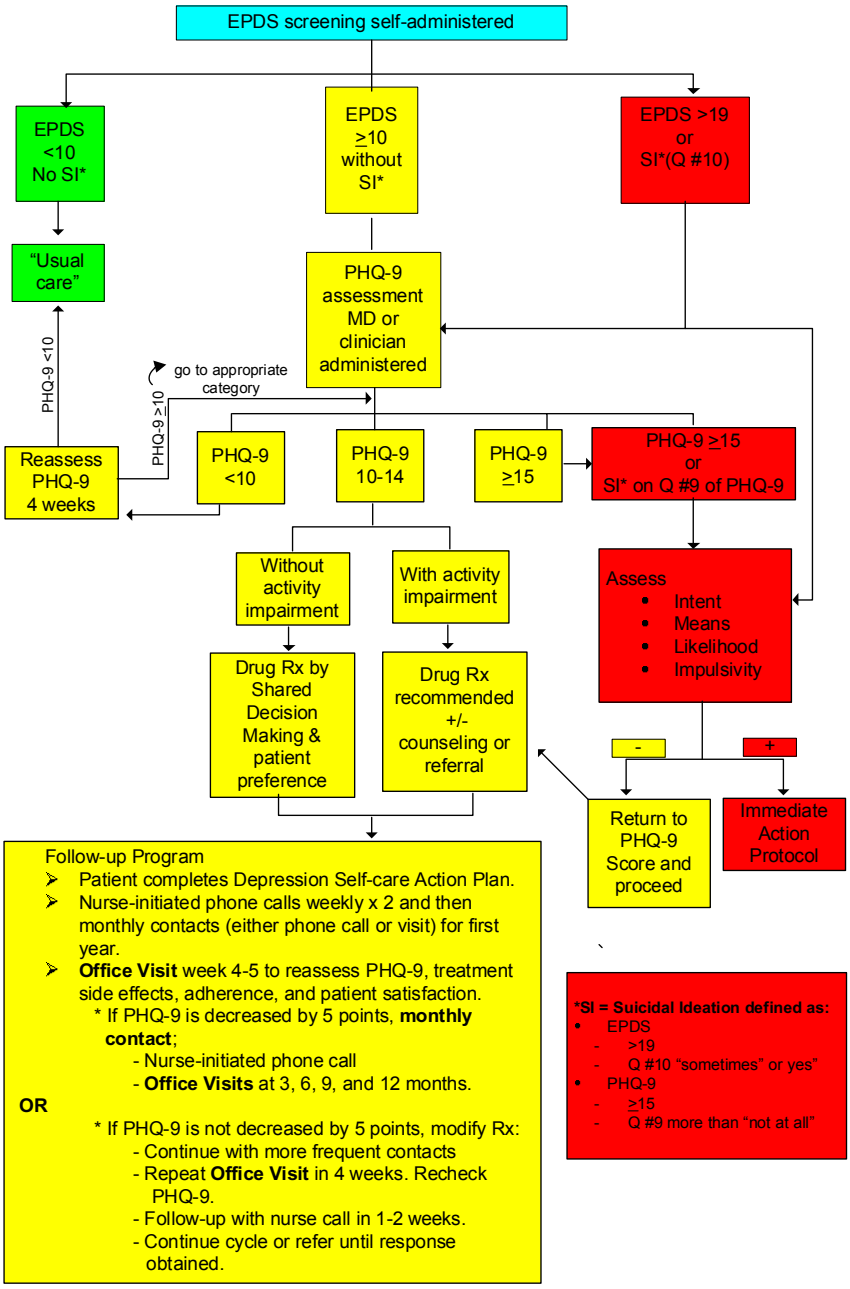
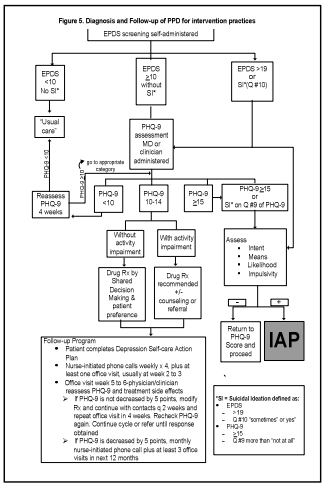


Figure 6. Clinical Support Algorithm for Administration of EPDS. American Academy of Family Physicians (n.d.). Postpartum Depression Toolkit. Retrieved from https://www.aafp.org/patient-care/nrn/studies/all/trippd/ppd-toolkit.html

This form will be individualized to each site based on state laws and regulations and will be tailored to each practice.

IMMEDIATE ACTION PROTOCOL (IAP)

Use this action plan if any of the following:



a. The EPDS score >19.
b. The answer to EPDS Q #10 (The thought of harming myself has occurred to me) is "sometimes" or "yes, quite often."
c. The PHQ-9 score is ≥15.
d. The answer to PHQ-9 Q #9 (Thoughts that you would be better off dead or of hurting yourself in some way) is greater than "not at all."
e. Clinical judgment suggests concern about suicide.

First step: Assess suicidal risk:

-This can be done by the primary care physician using the Suicide Risk Assessment Questions below.

Or

-By immediate (same day) referral to a mental health professional who has access to an inpatient psychiatric facility or referral to an emergency department. Establish a verbal "No Suicide Contract" for at least 24 hours. (See reverse side for Immediate Referral Resources.)

Suicide Risk Assessment: Examples of questions.

a. Intent – *You have said that you think about killing or harming yourself. Have you made any plans?* (Use the answers on the EPDS or PHQ-9 to lead into the first question.)
b. Means – *Can you describe your plans?* Or *How have you thought about killing yourself (your infant)?* (You will want to assess access to weapons, drugs or other methods she has concerned).
c. Likelihood – *Do you think you would actually harm or kill yourself*? (May be especially useful in those who state they think about but would never do it because it would leave their children without a mother or such reasons, or those who report no social support.)
d. Impulsivity – *Have you tried before?* Factors such as alcoholism, drug use, or a history of previous attempts that suggest impulsive behavior or episodes of reduced control.

If the response to any of these is positive, then referral to inpatient management is strongly recommended. Also establish a verbal "No Suicide Contract" for at least 24 hours. (See reverse side for Next Step Referral Resources.)

Patient not in the office:

If the clinician has a concern about active suicidal thought but the patient is not in the office:

-Ask to speak with another adult in the house to alert them to the situation.
-If no other person is available in the house and there is an immediate concern, keep the person on the phone and notify another staff member to dial 9-1-1.
-Do not disconnect the phone.
-Dispatch an ambulance/police and stay on the phone until someone arrives.
-Establish a verbal "No Suicide Contract" for at least 24 hours.

Names, addresses and telephone numbers for referral and support are on the reverse side.

Figure 7. Immediate Action Protocol (IAP). For use in conjunction with the clinical support algorithm. American Academy of Family Physicians (n.d.). Postpartum Depression Toolkit. Retrieved from https://www.aafp.org/patient-care/nrn/studies/all/trippd/ppd-toolkit.html

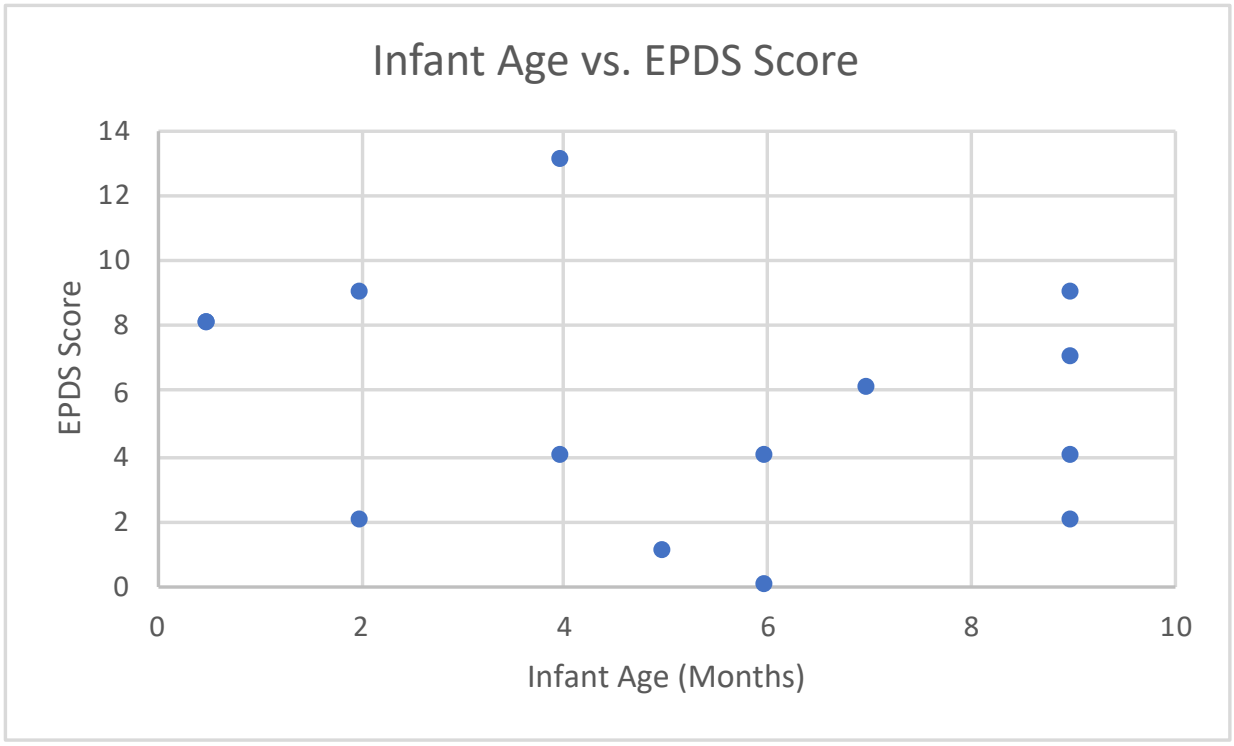


Figure 8. Infant Age vs. EPDS Score.

Appendix A

Email permission to use The Iowa Model Revised

Kimberly Jordan - University of Iowa Hospitals and Clinics Inbox - se...z@virginia.edu June 3, 2019 at 13:37

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

To: Suzanne Laux,

Reply-To: Kimberly Jordan - University of Iowa Hospitals and Clinics

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Citation: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223*

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Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

Appendix B

Site Approval Letter

Raphine Medical Associates
60 Commerce Park Drive
Raphine, VA 24472

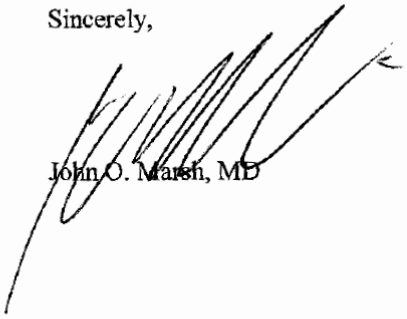
July 29, 2019

Suzanne Laux
c/o University of Virginia School of Nursing
225 Jeanette Lancaster Way
Charlottesville, VA 22903

Dear Suzanne:

This letter grants you permission to implement your Doctor of Nursing Practice scholarly Project, Implementation of a Universal Screening Program for Postpartum Depression in the Primary Care Setting, at Raphine Medical Associates during the fall of 2019.

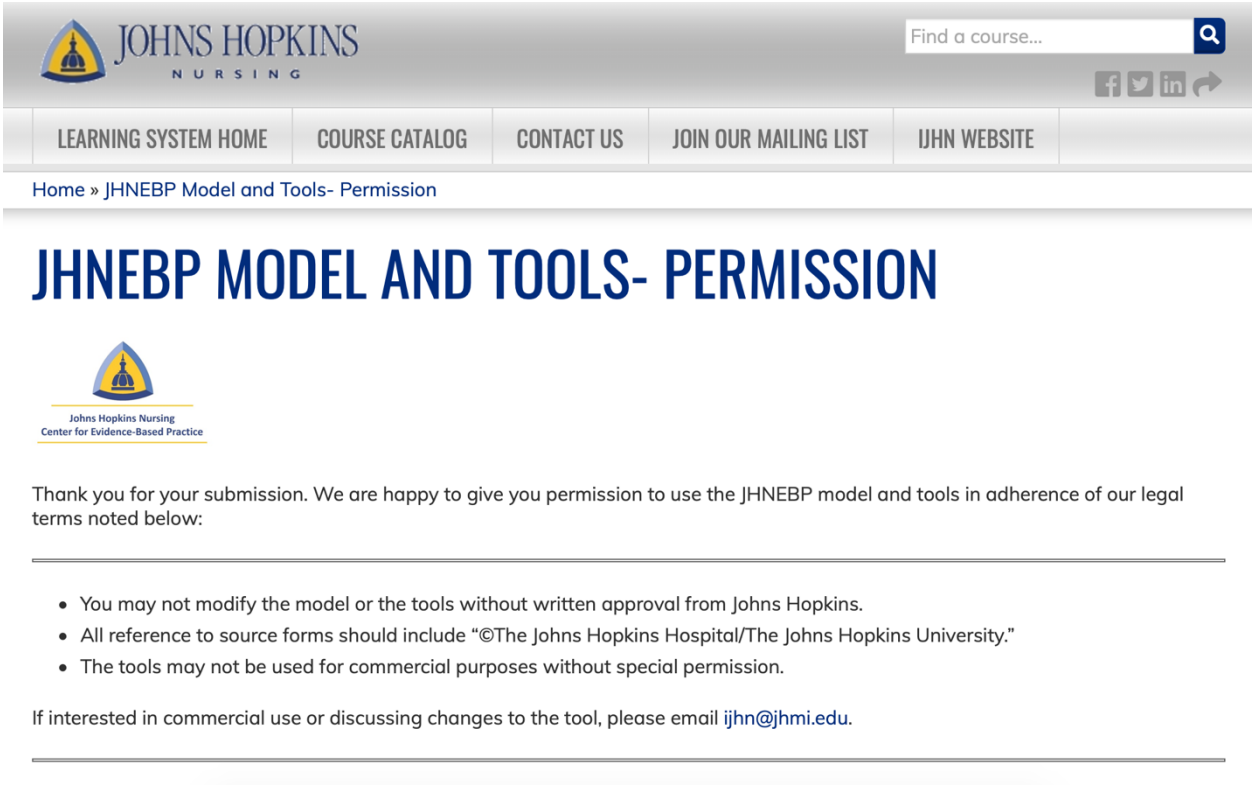
Sincerely,



John O. Marsh, MD

Appendix C

Permission to use the Johns Hopkins Nursing Evidence Based Practice Model and Tools



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Johns Hopkins Nursing
Center for Evidence-Based Practice

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