Maternal Depression Screening in a Primary Pediatric Practice

by

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Abstract

Problem: Perinatal depression is the most common complication of pregnancy. Despite best practice recommendations for standardized postpartum depression screenings in primary care, many pediatric practices do not screen leading to missed identification of potentially depressed postnatal mothers.

Purpose: The purpose of this QI project is to answer the question, "Does postpartum depression screening utilizing the Edinburgh postpartum depression screen (EPDS) during infant well visits in the pediatric primary setting increase detection and referral rates of maternal depression?"

Methods: The QI project was implemented from August 2020 to December 2020 at a pediatric primary practice in the mid-Atlantic region of Maryland. Preparation for the project included staff education on the incidence and impact of perinatal depression, EPDS administration and scoring, and the referral process for at-risk women. The EPDS was embedded as a required task in the electronic health record (EHR) for one through six-month well-infant visits. Mothers completed the paper screen and nursing staff entered the screen answers into the electronic health record. Providers reviewed the score of the screen and referred the women scoring in the at-risk range to community mental health resources. Well infant charts were reviewed weekly for the duration of the project and audited for screen completion, scores, provider reviews of results and documentation of provision of referral information.

Results: Findings confirmed this screening intervention increased identification of at-risk mothers dramatically. Over the course of the project, 584 post-partum women presented to the office with their infant for well checks. Maternal screens for depression increased from zero documented screens to an average weekly rate of 95.9% (n = 560). Reviews of weekly screens averaged 92.7% (n + 521). The percentage of women scoring 10 or more on the EPDS during the

project was 9.8% (n=55) which indicates at-risk for depression. Of those 55 women, 89% (n = 49) had documented provision of referral resources.

Conclusions: Utilizing the Edinburgh Postnatal Depression Score tool leads to an improved identification process to assist mothers in receiving mental health treatment for depression.

Introduction

The American College of Obstetrics and Gynecology (ACOG) reports perinatal depression as the most common complication of pregnancy affecting 10% of all women in the postpartum period (ACOG, 2018) impacting more than 180,000 new mothers annually in the United States (O'Connor et al., 2019). The American Academy of Pediatrics (AAP) lists costly and inappropriate medical care, early cessation of breastfeeding, family dysfunction and increased risk of child abuse and neglect as consequences of undiagnosed maternal depression (Earls et al., 2019). Routine maternal medical care is limited in the postpartum period leading to missed diagnoses. The AAP recommends formal screening with a validated tool at the 1-6-month well infant visits to improve detection (Earls et al., 2019) but the focus practice was not following these guidelines. Partners at the practice listed time constraints, focus on pediatric topics, staff discomfort with screening and reimbursement concerns as contributing factors to the lack of maternal screening in the practice.

The purpose of this QI project was to implement the Edinburgh Postpartum Depression Scale (EPDS), at the 1, 2, 4 and 6-month well-infant visits at a pediatric primary care practice and provide referral resources to mothers who score 10 or more indicating at risk for depression. A copy of the EPDS tool with scoring criteria is found in Appendix 1. Expected outcomes were mothers presenting for infant well checks would receive a paper copy of the screen to complete, nursing staff would enter the screen into the electronic health record and providers would assess

the generated score and distribute community resource guides to mothers scoring at risk. It was anticipated this practice change would increase identification and referral for maternal depression leading to improved outcomes for mothers, infants and families.

Literature Review

The evidence review provided a synthesis to support the practice change of implementing maternal depression screening using the Edinburgh postnatal depression screen in a pediatric setting for this QI project. The review included studies which supported the use of the EPDS screen as an appropriate tool for the QI project, the improvement in identification of maternal depression utilizing a validated tool and the effectiveness of utilizing maternal depression screens in the pediatric setting. The quality of evidence was determined utilizing the Melnyk and Fineholt-Overholt's (2015) quality of evidence rating system and Newhouse's (2017) Quality of Evidence rating system (Table 1 & 2). Studies included systematic reviews, randomized control trials and other quantitative research studies (Table 3). All of the studies were graded in the A to B level which indicates strong support for the findings (Table 4).

The EPDS tool was created by Cox et al. in 1987 with the flagship study indicating strong sensitivity (86%) and specificity (78%) of the tool to identify maternal depression. The tool has been translated into numerous languages and applied to various population with a wide range of results. With English speaking women, the tool demonstrated to be reliable and valid during pregnancy (Berginka et al., 2011) and postpartum (Myers et al., 2013, O'Connor et al., 2016) with specificity and sensitivity in the 80-90% range noted in the systematic review.

Identification rates of women experiencing depression increased dramatically with the implementation of standardized screening tools versus routine interviews in many systematic reviews and studies. Carroll et al (2013) found rates of positive screens doubled following an

implementation using a validated screening tool. Systematic reviews conducted by Myers et al. (2013) and O'Connor et al. (2016) evaluated several depression screening tools for maternal depression and noted that all studies utilizing validated tools increased the rate of identification of depression. Not only did validated tools increase the rate of identification of depression, but Emerson et al found extending the use of the EPDS tool from 1-4 months to 1-6 months continued to be useful in detecting undiagnosed depression in postpartum mothers.

Multiple studies indicate the successful integration of maternal depression screening into the pediatric primary care setting is feasible and effective. In a systematic review Van der Zee-van den Berg et al. (2017) found evidence of increased detection and referral rates following the implementation of standardized validated screening tools in pediatric primary care settings. Similarly, Emerson et al. (2018), Carroll et al. (2013) and O'Connor et al. (2016) reported statistically significant improvement in identification of postpartum depression when screening was implemented in pediatric primary care settings. The evidence supported the use of the EPDS as a valid tool to detect maternal depression in the primary pediatric setting and was an appropriate implementation for this QI project.

Theoretical Framework

Kurt Lewin's change theory (see Figure 1) proposed that individuals are influenced by restraining forces that counter change and push for status quo versus driving positive forces for change. Tension between the two lead to equilibrium. Change Theory consisted of a three-stage model of change known as unfreezing-change-refreezing model that required prior learning to be rejected and replaced. Behavior wass defined as "a dynamic balance of forces working in opposing directions." The three concepts of Change Theory were driving forces which push in

the direction of change, restraining forces which counter the driving force and equilibrium where the forces are equal.

The unfreezing stage, or creating problem awareness, involved finding strategies to allow people to let go of entrenched, unproductive patterns. Unfreezing methods included increasing the driving force, decreasing the restraining force or using a combination of the two. In this QI project the unfreezing of attitudes to not screen for maternal depression was challenged with education to staff, nurses and providers on the effect depression has on the entire family including the infant, education on the screening tool and buy-in from staff on the need for change. The change or moving stage involved a process to alter thoughts, feelings or behavior in ways to help productivity through seeking alternatives, showing change benefits and decreasing negative forces. This was achieved by supporting staff as the new screen was implemented in the practice with problems and concerns being identified and addressed as needed. The refreezing or integration stage involved integrating and cementing the new more productive patterns and establishing them as the new standard of care. This was done through embedding the screen in the EHR and utilizing reminders to encourage compliance along with dissemination of data as the project progressed.

Methods

The setting for this QI project was a pediatric primary care office and the population was mothers of infants aged 1-6-months presenting for well infant care. All mothers with infants receiving routine care, fitting the previous description, were included in the project. Infants accompanied by fathers or caregivers other than the mother were excluded from the numbers. The project was submitted through the local institutional review board (IRB) and determined to be non-human subject research. The implementation team consisted of the project leader and

champions from all sections of the office including nursing, billing, and providers. The intervention was the implementation of a validated postpartum depression screening tool into the well infant visit at the practice. The first step was embedding the Edinburgh Postnatal Depression Score tool into the electronic health record. The flow of the well visits was adjusted to fit the screening time in. The front desk staff provided a paper screen for mothers to fill out, the nursing staff entered the screen into the computer which generated a score and the providers reviewed the score and provided community mental health resource lists to mothers scoring in the at-risk range. The structure, process and outcome measures used to track implementation progress include training rates of staff, rates of eligible mothers screened, percentage of screens reviewed by providers and percentage of positive screens given referral resource information.

Training was a combination of group instruction, individual coaching, and practice patients' screens to enter in the computer. Implementation tools and teaching aids (Appendix 2) and a teaching evaluation form (Appendix 3) were utilized for the training sessions. Audits were performed weekly for percentages achieved for the above measures. When screens were not entered into the EHR, nurses were re-educated on documentation of refusals or caregivers, other than mother, presenting with infants. Emails were sent out to providers weekly at the start of the project with percentage of screens reviewed and reminders to document reviews. When mothers scored 10 or more on the screen, audits of documentation of referral resources were assessed. If no documentation was noted, providers were notified of screen score and need to follow up with these mothers. Data analysis used descriptive statistics for X and utilized run charts to compare the percentage of eligible mothers screened, documentation of provider reviews and documentation of at-risk mothers receiving resource information. Audits were performed without patient identifiers. All infants were rekeyed to identify only by date of visit and order listed in the

schedule. If an at-risk mother did not have resource provision documented, providers were either notified through secured messaging or in person for need to follow up.

Results

The results for this project included both structure and process data. The structure measurement was the percentage of staff trained. This included seven pediatricians, four nurse practitioners and 22 members of the nursing staff which is composed of both registered nurses and medical assistants. All regular full and part-time staff were trained and completed the evaluation form.

Process measures included the percentage of women screened, percentage of screen reviews documented and percentage of documented counseling for positive screens (Figure 2, 3, & 4). The total number of women presenting with their infants for well checks during the implementation phase was 584. There was no distinction made between mothers with or without previous screens. Due to the frequency of well visits in the first six months, mothers may have received multiple screens during the QI project duration. The percentage of mothers screened (n=560) was calculated over the 16 weeks of the implementation. The weekly percentage rates of completed screening of mothers fitting the inclusion criteria ranged from 87.5-100% with a mean of 95.9%. The percentage of weekly screen reviews documented (n=521) ranged from 76.9 to 100% with a mean of 92.7%. Lower screening and review weeks were associated with the occurrence of COVID-19 in a provider in the office. Fifty-five of the 560 screened mothers scored ten or more on the EPDS tool indicating at-risk for depression, with a positivity rate of 9.8%. Of the 55 women with a score of 10 or more, 49 had documentation of counseling or referral provision in the electronic health record. The weekly range of documentation of positive screen intervention was 0-100% with an overall mean of 89%.

The addition of the billing charge for the maternal depression screen led to an unexpected benefit. The office was reimbursed $16,064 for maternal depression screens over the time span of the Quality Improvement project.

Discussion

The results of this project demonstrate a clear association between formal screening and improved identification of maternal depression. The rate for maternal depression in the study mirror findings from other publications and statistics from the American College of Obstetricians and Gynecologists at 10%. The COVID-19 pandemic complicated implementation. Due to the pandemic, the waiting room was not utilized decreasing opportunities to complete screens early in the visit. There was insufficient time between the mothers receiving the paper screen, being escorted to the exam room, and nursing staff preparing the infant for the exam. This initial delay affected the entire screening flow with delays in screen completion leading to late entry of screens into the electronic health record, with missed in-person reviews by providers with mental health resource provision. Often providers were reviewing completed screens long after the exam visit. This led to a barrier to providing timely counselling and referrals once the mother left the office.

Still another barrier involved one of the pediatricians in the office contracting COVID-19 during the implementation phase. This caused an upheaval in the flow of the practice with all staff getting testing and schedules requiring adjustments. Screen completion and review percentages decreased for that week. Documentation of provider counseling varied, in part because of completion and COVID issues. There was a higher number of missing documentations for scores at the cut-off range of 10, some of which were charted as normal. After noting the trend with COVID barriers, several adjustments were made in the screening and

review process to improve completion rates. After week four, the paper screens were entered in the EHR and given to providers, to increase opportunities for review. Providers were reminded of cut-off scores and nurses circled scores of 10 or greater on paper screens.

Implementation of AAP maternal screening guidelines to other primary pediatric practices should result in the same positive outcomes. Generalizability may be harder to determine from this QI study due to the location and patient population. The pediatric practice is in a high-income area of Maryland and there are no Medicaid patients. This may indicate a gap in addressing the members of the most vulnerable populations. Mothers from lower income areas face more challenges for themselves and their families including food and housing insecurity, transportation challenges and access to health care. These challenges in the postpartum period may increase the risk of postpartum depression and may not be adequately represented in this project.

Conclusion

The results of this Quality Improvement project indicate that the use of a validated screening tool, such as the EPDS, improves the detection of maternal postpartum depression. Early identification of maternal depression with distribution of mental health resources can lead to improved health outcomes for mothers, infants, and families. Implementation of maternal depression screening in the primary pediatric setting is feasible, increases identification of at-risk mothers and facilitates delivery of community mental health resources.

Strengths of the project included buy-in from all departments of the practice. Champions stepped in with advice for improvements and encouraged adherence. The QI project leader was a long-time employee of the practice with strong ties leading to cooperation and collaboration among employees during project planning and implementation.

Changes made in the office workflow, structure, and processes will increase sustainability. An office policy is in place to include maternal depression screens in well infant visits and new staff will be trained on the procedure during orientation. Structural changes included embedding EPDS in the EHR, making screens a required nursing task for well-infant visits, and embedding reimbursement codes in the chart. Although increasing funds for the office was not a consideration for the project, there is a huge demand on pediatric providers' time with small profit margins for practices. Income to the practice makes screening feasible and pay for itself.

Next steps should include follow-up for mothers who scored in the at-risk range to assess if they are utilizing the community mental health resources supplied. Although this is an important aspect of care, there may be resistance from providers since it is one more task in an already overburdened workload. Depression and mental health conditions have increased during the COVID-19 pandemic in both adults and children. Other possible future QI projects for the practice could include expanded depression screening for children and family members utilizing practice resources.

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Table 1: ***Levels of evidence***

Melnyk's Levels of Evidence

Level 1 - Systematic review & meta-analysis of randomized controlled trials; clinical guidelines based on systematic reviews or meta-analyses

Level 2 - One or more randomized controlled trials

Level 3 - Controlled trial (no randomization)

Level 4 - Case-control or cohort study

Level 5 - Systematic review of descriptive & qualitative studies

Level 6 - Single descriptive or qualitative study

Level 7 - Expert opinion

Melnyk, B.M. & Fineout-Overholt, E. (2015). "Box 1.3: Rating system for the hierarchy of evidence for intervention/treatment questions" in *Evidence-based practice in nursing & healthcare: A guide to best practice (3rd ed.)* (pp. 11). Philadelphia, PA: Wolters Kluwer Health.

Table 2: *Quality of evidence*

Johns Hopkins Nursing Quality of Evidence Appraisal

Grade	Nomenclature	Definition for Research Evidence	Definition for Non-Research Evidence
A	High	Consistent results, sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence	Expertise is clearly evident
B	Good	Reasonably consistent results, sufficient sample size, some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence	Expertise appears to be credible
C	Low/Major Flaw	Little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn	Expertise is not discernable or is dubious

Newhouse, R.P. (2017) Johnson Hopkins nursing quality of evidence appraisal in Dang, D. and Dearholt, S. (3rd Ed) *Johns Hopkins Nursing Evidence Based Practice: Model and Guidelines* (pp. 207), Sigma Theta Tau International

Table 3: *Evidence Review Table Maternal Depression Screening*

Citation: Myers ER, Aubuchon-Endsley N, Bastian LA, Gierisch JM, Kemper AR, Swamy GK, Wald MF, McBroom AJ, Lallinger KR, Gray RN, Green C, Sanders GD.(2013) Efficacy and Safety of Screening for Postpartum Depression. Comparative Effectiveness Review 106. AHRQ Publication No. 13-EHC064-EF. Rockville, MD: Agency for Healthcare Research and Quality; www.effectivehealthcare.ahrq.gov/reports/final.cfm.					Level I
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
"The purpose of this systematic review (SR) was to evaluate the comparative diagnostic accuracy, benefits, and harms of available screening instruments for postpartum depression"	Systematic review (SR) without meta-analysis conducted by a panel comprising clinical, content and methodological experts on maternal depression and screening	**Search strategy**: A search was performed in PubMed, Embase, PsycINFO, and the Cochrane Database of Systematic Reviews. Search terms included "Pregnancy","depression", "Postpartum", "Screen" with synonyms included. Two investigators screened for inclusion, abstracted data, performed quality rating, applicability rating and evidence grading. A simulation model was used to estimate the effects of screening for PD on overall balance of benefits and harms All reasons for inclusion and exclusion were documented. **Eligible Studies:** Randomized control trials and observational studies reporting screening instrument performance characteristics or the effects of screening for postpartum depression in a population of pregnant women or women during the first 12 months after delivery.	**Control**: No control interventions were used **Intervention**: use of a validated clinical interview or diagnostic instrument to confirm the diagnosis of depression in all screen positive and a sample of screen negative clients for each screening tool. **Protocol**: Not applicable in SR critique	**Dependent Variable**: Sensitivity and specificity of the screen tool to accurately identify postpartum depression **Measure:** Sensitivity and specificity of different screen tools.	**Level of Measurement:** No more than 2 studies provided results for the same test at the same threshold. Heterogeneity of setting, patient population and choice of threshold prevented formal synthesis. **Outcome Data Retrieval:** Researchers grouped screening analysis by the screening tool used. **Analysis:** 11 studies with a total of 3,456 subjects provided sensitivity and specificity of the Edinburgh Postnatal Depression Scale. The EPDS had an 80-90% range for sensitivity and specificity with moderate strength of evidence (CI 95%). Strength of evidence domains labeled the screen as consistent, direct with precise specificity and imprecise sensitivity. **Conclusions**: Although the ideal characteristics of a screening test for

		Excluded: (1) Full text unavailable, (206) Abstract only, (72) Not RTC or not appropriate observational design, (167) Not population of interest, (33) Wrong economy, (129) Intervention/timing wrong, (129) No comparator of interest, (476) No outcome of interest, (35) Published prior to 2004 **Included**: 40 studies represented in 45 publications including randomized control trials, prospective cohort, pre/post-intervention and cross sectional studies. All studies were from high income countries with all reporting on women and 1 including fathers. Studies assessing screening performance were evaluated using the Quality Assessment of Diagnostic Accuracy Studies-2 **PRISMA**: Included detailed decision making process for exclusion/inclusion of selected studies for the systematic review. **Power analysis**: Not applicable to SR review.			postpartum depression, including sensitivity, specificity, timing, and frequency, have not been defined, the EPDS had the largest number of studies demonstrating sensitivity and specificity for maternal depression identification The USPSTF recommends screening for depression in adults when adequate resources are available to ensure appropriate services. **SR Bias Risk:** Medium risk of bias for the EPDS screening tool
Citation: van der Zee-van den Berg, A.I., Boere-Boonekamp, M.M., IJzerman, M.J., Haasnoot-Smallegange, R.M., & Reijneveld, S.A. (2017) *Screening for Postpartum Depression in Well-Baby Care Settings: A Systematic Review.* Modern Child Health J 21:9-30 DOI 10.1007/s10995-016-2088-8					Level I
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results

"The purpose of this systematic review was to examine the evidence on the effectiveness of screening for Postpartum depression during Well-baby care compared to no screening, regarding mother and child outcomes"	Systematic review without meta-analysis performed in the Netherlands by professionals from the University of Medical Center, Groningen Netherlands. Quality of studies was assessed through application of the Quality Assessment tool for Quantitative studies	**Search strategy:** A search was performed by first author in Scopus, PsychInfo and CINAHL up to May 2014 using main concepts of "postpartum depression", "early identification" and "well- baby care setting" with synonyms included. Two authors independently assessed the eligibility of the resulting publications in 3 steps: titles, abstracts according to inclusion and exclusion and full text readings. All reasons for inclusion and exclusion were documented. **Eligible Studies:** 40 **Excluded:** (9) no control group, (8) effect screening not investigated, (5) insufficient outcome measures, (5) no well baby setting, (4) sample too small, (2) review **Accepted:** 6 studies which met criteria of the Quality Assessment Tool for Quantitative Studies which assesses selection bias, study design, confounders, blinding, data collection method, withdrawals and dropouts **PRISMA**: Findings reported according to PRISMA statement which was cited.	**Control:** No screening, generic questions on depression or standard service only. **Intervention**: Isolated screening or screening as part of a more comprehensive prevention or intervention strategy using a validated screening instrument for depression **Intervention fidelity**: Not applicable to SR critique	**Dependent Variable:** Primary outcomes depended on study design. Studies with screening-only used documented depressive symptoms and referrals. Others used rates of elevated scores on the screening instrument at the time of intervention. The studies with screening and intervention used the screening instrument as a pre- and post-intervention measure **Measure**: The EPDS screening tool scores were used in 5 studies with a score $\geq$ 10 indicating depression in 4 and a score of 12 in the last indicating a positive screen. One study adapted a 2 question depression screen and one study used the Patient Health Questionnaire 9 as a secondary tool for	**Level of Measurement:** A narrative synthesis was undertaken. Studies were reviewed for a shared summary effect measure like risk ratio or odds ratio expressing the effect of screening on primary outcomes such as an improvement of depression scores. **Outcome Data Retrieval:** The extracted data were not pooled or analyzed statistically because of small number of studies, the difference in the compared interventions and the heterogeneity of the outcome measures and time frames. **Analysis:** The effect on the detection rate of PPD was quantified in 3 of the 6 studies. The RR for detection in 2 studies were 5.3 (8.5%/1.6%) and 4.8 (29%/6%). Improvement in the rate of referral had an OR of 2.06 (95% incidence interval 1.08-3.93). RR was also presented for referral to social work and receiving treatment. **Conclusions:** There is limited but promising evidence for the effectiveness of screening for PPD on maternal health outcomes

				positive screens with a score ≥ 10 indicative of postpartum depression.	**SR Bias Risk:** Reporting bias may have influenced the outcomes as the studies included only reported positive effects of screen
Citation: Carroll, A., Biondich, P., Anand, V., Dugan, T. & Downs, S.M. (2013) A randomized control trial of screening for maternal depression with a clinical decision support system. *J Am Med Inform Assoc.* 20:311-316 doi:10.1136/amiajnl-2011-000682					Level II
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
The purpose of this study was to determine if automated screening and just in time delivery of testing and referral materials at the point of care promotes universal screening referral rates for maternal depression	Non-blinded, interventional randomized control trial	**Sampling Technique:** Convenience **Eligible participants:** Families presenting with a child age 0-15 months seen in the clinic. **Excluded**: Report that some patients excluded from study but no numbers or reasons provided **Accepted**: 3,520 infant mother pairs **Control:** 1,186 **Intervention:** PSF: 1167 JIT: 1167 **Power analysis**: 1200 subjects required in each group to meet 80% Beta, .05 Alpha and moderate effect size. Power analysis numbers close but not met leaving small chance for Type II error **Group homogeneity**: No significant differences between	**Control Protocol:** No screening questions asked of mothers and generic prompt given to provider to screen mother for depression. **Intervention Protocol**: Computerized system followed rule set to screen diagnose and recommend care for maternal depression using 2 question validated screen tool (PHQ-2). Three computer prompts for intervention groups: -Generic prompt if no information from screen -PSF (pre-screener form): Tailored prompt to the provider alerting to risk and recommendation to assess for depression if either question answered "yes" -JIT (just in time): Tailored prompt with inclusion of a	**Dependent Variable:** Provider suspicion of maternal depression diagnosis and referral for assistance. **Measure:** Suspected postpartum depression diagnosis. No instrument or tool was used for control group. Validated 2 question postpartum depression tool was utilized for the PSF study and the PHQ9 depression screen plus the 2 question tool was utilized in the JIT intervention group.	**Statistical Results:** Screen positive for depressed mood Control group- 14 (1.2%) PSF- 103 (8.8%) JIT- 101 (8.7%) Referred for depression: Control group-1.2% (OR 2.06, 95% CI 1.08-3.93) PSF & JIT-2.4% (OR2.06, 95% CI 1.08-3.93) Only Odds ratio reported in statistical evaluation.

		groups with respect to race, sex or number of visits.	guided handout to the provider for further evaluation Using PHQ9 and next steps and an education handout about maternal depression and community resources for treatment for mothers **Treatment Fidelity:** Use of CHICA (Child Health Improvement through Computer Automation) system is a decision support and EMR for pediatric health surveillance and disease management. The interface collects responses to generated questions and creates clinical reminders using algorithm. The two intervention protocols were not kept independent as study progressed. In the PSF group, providers copied and used the handouts from the JIT group when depression screen positive.		
Citation: Berginka,,V. Kooistrab, L., Lambregtse-van den Berg, M.P., Wijnend, H., Buneviciuse, R., van Baar, A. & Pop, V. (2011) Validation of the Edinburgh Depression Scale during pregnancy. *Journal of Psychosomatic Research.*70(4): 385-389					Level IV
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results

The purpose of this study was to determine both the predictive validity and concurrent validity of the EDS tool, a modified EPDS tool for Dutch women, in a large unselected sample of pregnant women at the three semesters of pregnancy	A prospective cohort study using a sample of pregnant women already enrolled in a large antenatal thyroid screening study to compare the results of the Edinburgh depression screen with a composite international diagnostic interview for psychiatric diagnosis.	**Sampling Technique:** Convenience **Eligible participants:** 1,507 pregnant women were invited to participate **Excluded**: Any ethnicity other than Caucasian. Women without appropriate knowledge of Dutch language **Accepted**: 1,113 eligible, 1,085 completed questionnaires, 113 lost to follow-up, 127 not correctly completed questionnaires. Data analysis completed for 845 women **Control group:** No control group **Power analysis**: Not applicable with cohort study :	**Control Protocol:** None **Intervention Protocol**: Completion of 10-item EDS tool in each trimester of pregnancy along with a short version Composite International Diagnostic Interview (CIDI), a structured diagnostic interview developed to obtain data needed to make a psychiatric diagnosis according to DSM criteria. **Treatment Fidelity:** Interviews were administered by one midwife for 2/3 women and by 5 experienced psychology students for 1/3 women. Interviewers were blinded to EDS scores and received extensive training. The CIDI included an anxiety and somatization subscale from the SCL-90 which is a validated tool with appropriate psychometric characteristics.	**Dependent Variable:** Predictive and concurrent Reliability and validity of EDS tool **Measure:** Reliability analysis of the EDS was performed by Cronbach alpha. Test-retest reliability used Pearson's correlation coefficients (2-tailed)	**Statistical Results:** EDS Cronbach's α coefficient per trimester were 0.82, 0.83, and 0.84, respectively. Test–retest reliability, the correlations between the EDS scores were as follows: between 12 and 24 weeks' gestation, r=0.61 (P<.01); between 12 and 36 weeks, r=0.55 (P<.01); and between 24 and 36 weeks, r=0.63 (P<.01). For all three trimesters, significant high correlations (r>0.50; P<.001) between the EDS and the SCL-90 anxiety and somatization subscales were found.
Citation: O'Connor,,E., Rossom, R.C.,Henninger, M., Groom,H.C. & Burda,B.U. (2016) Primary care screening for and treatment of depression in pregnant and postpartum women evidence report and systematic review for the US Preventive Services Task Force. *JAMA.* 315(4): 388-406					Level I
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
"To systematically review the benefits and harms of	Systematic review (SR) including randomized or	**Search strategy**: A search was performed for synthesized literature and guidelines related to depression screening and	**Control**: No control interventions were used **Intervention**: use of a validated clinical interview	**Dependent Variable**: Sensitivity and specificity of the	**Level of Measurement:** No more than 2 studies provided results for the same test at the same

depression screening and treatment, and accuracy of selected screening instruments, for pregnant and postpartum women"	nonrandomized clinical trials conducted in primary care settings without meta-analysis conducted by a panel comprising clinical, content and methodological experts on maternal depression and screening	treatment in MEDLINE, PubMed, PsycINFO and Cochrane Collaboration registry of Controlled trials, reference and government websites through January, 2015 Two investigators independently assessed for inclusion, abstracted data, performed quality rating, applicability rating and evidence grading using "depression, postpartum" search terms. Study selection was separated into key question areas for benefit and harm of screening, diagnostic accuracy of the PHC and EPDS, and benefits of treatments. All reasons for inclusion and exclusion were documented. **Eligible Studies:** Randomized control trials and observational studies reporting screening instrument performance characteristics or the effects of screening for postpartum depression in a population of pregnant women or women during the first 12 months after delivery. **Excluded**: (1) Full text unavailable, (206) Abstract only, (72) Not RTC or not appropriate observational design, (167) Not population of interest, (33) Wrong economy, (129) Intervention/timing wrong, (129) No comparator of	or diagnostic instrument to confirm the diagnosis of depression in all screen positive and a sample of screen negative clients for each screening tool. **Protocol**: Not applicable in SR critique	screen tool to accurately identify postpartum depression **Measure:** Sensitivity and specificity of different screen tools.	threshold. Heterogeneity of setting, patient population and choice of threshold prevented formal synthesis. **Outcome Data Retrieval:** Researchers grouped screening analysis by the screening tool used. **Analysis:** 11 studies with a total of 3,456 subjects provided sensitivity and specificity of the Edinburgh Postnatal Depression Scale. The EPDS had an 80-90% range for sensitivity and specificity with moderate strength of evidence (CI 95%). Strength of evidence domains labeled the screen as consistent, direct with precise specificity and imprecise sensitivity. **Conclusions**: Although the ideal characteristics of a screening test for postpartum depression, including sensitivity, specificity, timing, and frequency, have not been defined, the EPDS had the largest number of studies demonstrating sensitivity and specificity for maternal depression identification The USPSTF recommends screening for depression in adults when adequate

		interest, (476) No outcome of interest, (35) Published prior to 2004 **Included**: 40 studies represented in 45 publications including randomized control trials, prospective cohort, pre/post-intervention and cross sectional studies. All studies were from high income countries with all reporting on women and 1 including fathers. Studies assessing screening performance were evaluated using the Quality Assessment of Diagnostic Accuracy Studies-2 **PRISMA**: Included detailed decision making process for exclusion/inclusion of selected studies for the systematic review. **Power analysis**: Not applicable to SR review.			resources are available to ensure appropriate services. **SR Bias Risk:** Medium risk of bias for the EPDS screening tool
Citation: Emerson, M.R., Matthews, T.L. & Struwe, L. (2018) Postpartum Depression Screening for New Mothers at Well Child Visits. *MCN.* 43(3):139-145. DOI:10.1097/NMC.00000000000426					Level IV
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
The three purposes of this study was to determine the prevalence of mothers who scored in the at-risk range using the Edinburgh Postnatal Depression Screen at each of the 2-,4-,	A prospective cohort study design where mothers were screened using EPDS at the 6-month well child visit. Previous scores from the 2- and 4-month visits were	**Sampling Technique**: Convenience **Eligible Participants:** Postpartum women who were not pregnant by self-report, literate, age 19 or more, and attending a 6-month well check with their infant. 65 potential participants: 6 declined screening and 16 inadvertently not screened.	**Control Protocol:** No screen at the 6-month well visit **Intervention Protocol:** EPDS screening at the 6-month well child visit **Treatment Fidelity**: With participation agreement, a consent was obtained, the EPDS was given to the mother to complete and	**Dependent Variable:** Prevalence rate of postpartum depression. Referrals following positive screen at 6-month visit **Measure:** The EPDS is a 10-item screening tool	**Statistical results:** Prevalence and incidence rates along with rate of PPD documentation were the only reported statistical analysis provided for the 2-, 4-, and 6-month well child visits. Prevalence: 2m: 0.1, 4m: 0.13, 6m:.0.14

and 6-month visits in a pediatric outpatient visit, examine feasibility factors relative to extending the current standards of care for PPD screening and examine visit documentation for at-risk mothers	collected from the EHR. Feasibility factors and clinical team feedback about adding a 6-month time frame were assessed using data collected and survey responses.	**Excluded:** Sick visits **Accepted:** 43 postpartum women **Control:** No control group **Power analysis:** Not applicable in cohort study	given to clinical team member, the team member scored the EPDS, if score ≥10 the EHR flagged to inform pediatric health provider, and provider to discuss score and document visit details.	created specifically for postpartum women with a score of ≥ 10 indicating a positive screen and at-risk mother Referral rate to Patient care coordinator or outside source	Incidence: 2m: 0.1, 4m:0.05, 6m: 0.05 Documentation: 2m:0.88, 4m: 0.93, 6m:0.73 Prevalence studies support the inclusion of a 6-month PPD screen for mothers of infants Clinical team survey response rate was 42.3% Out of the 6 positive screens at the 6-month visit, 4/6 were referred to the patient care coordinator who is a licensed clinical social worker.

Citation: 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. Vol 159, 782-786	Level II

Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
"The purpose of this study was to assess the validity of a self-report scale to detect mothers who were depressed following childbirth	Validation study of 84 mothers using the research diagnostic criteria for depressive illness	Following an initial pilot study where 21 items from several screening tools were chosen by the authors as appropriate for the detection of depression, they extensively interviewed mothers to assess for wording, acceptability and likelihood of detecting postnatal depression. Thirteen items were developed after these interviews and validity of this scale was assessed with a sample of 63 mothers. After assessing validity and reliability, the authors chose to eliminate three	**Control**: twelve mothers not identified as possibly depressed were included in the study **Intervention**: Mothers filled out the EPDS screen and then were interviewed in their homes by author using Goldberg's Standardized Psychiatric Interview (SPI). **Protocol**: EPDS were completed and was then placed in a sealed envelope so that the interviewer	**Dependent Variable**: Sensitivity and specificity of the screen tool to accurately identify postpartum depression **Measure:** Sensitivity and specificity compared to the Research diagnostic criteria clinical diagnosis of Definite Major Depressive Illness.	**Statistical results:** Threshold score of 12/13 identified all women with confirmed diagnosis and 2/3 with probable diagnosis. Sensitivity was 86% and specificity was 78%

		more items to increase specificity Sample: 84 mothers living in Edinburgh who were taking part in a study to determine effectiveness of counselling by health visitors. These women had all been identified as potentially depressed by health visitors. **Power analysis**: Not performed.	remained blind to the score while subsequently administering the SPI. .The criteria used for the diagnosis of a depressive illness were the Research Diagnostic Criteria of Spitzer et al.	Threshold score of 12/13 identified all women with confirmed diagnosis and 2/3 with probable diagnosis. Sensitivity was 86% and specificity was 78%	

Table 4: *Evidence rating Maternal Depression Screening*

Evidence Based Practice Question (PICO): Does postpartum depression screening utilizing the Edinburgh postpartum depression screen during infant well visits in the pediatric primary setting increase detection and referral rates of maternal depression?			
Level of Evidence	**# of Studies**	**Summary of Findings**	**Overall Quality**
II	**1**	Carroll et al. found a doubling in the number of diagnosis of postpartum depression 4: and referrals for the intervention group which used a validated screening tool over the control group which used a general question about depression. The intervention groups were split into groups with interventions following screening but the rates were comparable.	B, the study was close to the power analysis needed with randomized, controlled design. The two intervention group interventions blurred as the study progressed due to providers using the resources from the most involved intervention to assist the less resourced intervention. This did not affect the control group or change the screening results. The tool used was the PHQ-2 and the PHQ-9 which differed from the other studies.
I	**3**	Myers et al. (2013) addressed multiple factors for maternal depression screening. The focus on screening tools for diagnostic accuracy demonstrated that the Edinburgh Postpartum Depression screen was an appropriate screening tool with a specificity and sensitivity in the 80-90% range. O'Connor et al. (2016) addressed multiple factors for maternal screening and treatment to include the benefits and harms of depression screening and treatment, and accuracy of selected screening instruments, for pregnant and postpartum women" Van der Zee-van den Berg et al. (2017) found evidence to support the effectiveness of postpartum depression screening during well infant visits. Detection rates and rates of referral improved following implementation of the screening tool. EPDS tool was used in 5 of the studies	A/B, the review had a large sample size for the screening criteria with 11 studies for EPDS. Meta-analysis could not be performed due to the heterogeneity of the setting, patient population and choice of threshold but the analysis demonstrated strong sensitivity and specificity of the tool. Most studies cohort or cross-sectional studies. Conclusions reported need for more research. A/B, the review had a large sample size a total of 3,456 subjects provided sensitivity and specificity of the Edinburgh Postnatal Depression Scale. The EPDS had an 80-90% range for sensitivity and specificity with moderate strength of evidence (CI 95%). Strength of evidence domains labeled the screen as consistent, direct with precise specificity and imprecise sensitivity. B, although the outcomes were promising, there were a limited number of studies. A narrative synthesis was the only analysis performed due the small number of studies, the varied interventions and outcome measures. Validated instruments such as the EPDS led to a higher detection of mothers with depressive symptoms. Half of the studies were RCT without blinding.

III	**1**	Cox et al. (1987) created the EPDS rating tool using a subject pool of 84 postpartum women, some of whom had been identified as possible depressive disorder. The EPDS tool findings were compared to the expert interviews using the established standards for diagnosis. They found he tool had sensitivity of 86% and a specificity of 78%	B Although the outcomes were promising; this was the flagship study for a new tool utilizing already identified mothers with depression. There was a control of 12 women not identified as depressed but the small sample size and skewed population indicated a need for more studies using larger sample sizes to validate the findings.
IV	**2**	Berginka et al. (2011) measured the validity of the EPDS during the three trimesters of pregnancy and compared the ratings with established anxiety and somatization scales. High correlations between the two were found in all three trimesters Emerson et al. (2018) was a prospective cohort study to assess the need of continuing the EPDS screening past the established protocol at the setting. Their study demonstrated a continued need for screening up to 6 months postpartum.	B This was a cohort study without randomization. Although these subjects were antenatal subjects and not the population for the project, the correlation demonstrating the effectiveness of the tool makes this a valuable addition to the data needed. B This study was another cohort study without randomization but does indicate the continued incidence of maternal depression at the 6-month postpartum time frame. This demonstrates the need to continue the practice to identify at risk mothers.

Figure 1: ***Kurt Lewin's Change theory***

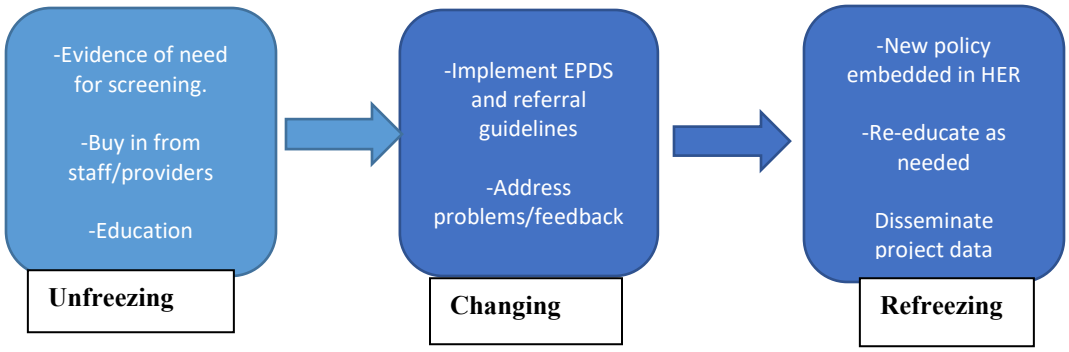


Figure 2: ***EPDS screen administration Run Chart***

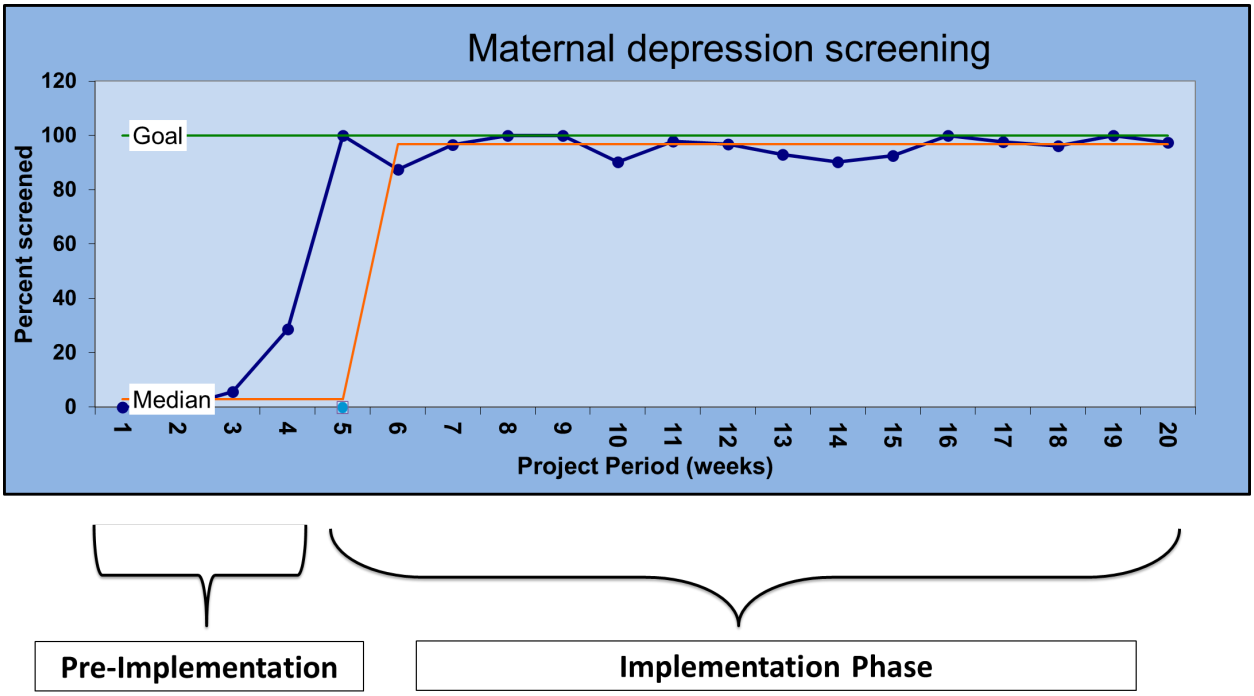


Figure 3: *Provider review of EPDS scores Run Chart*

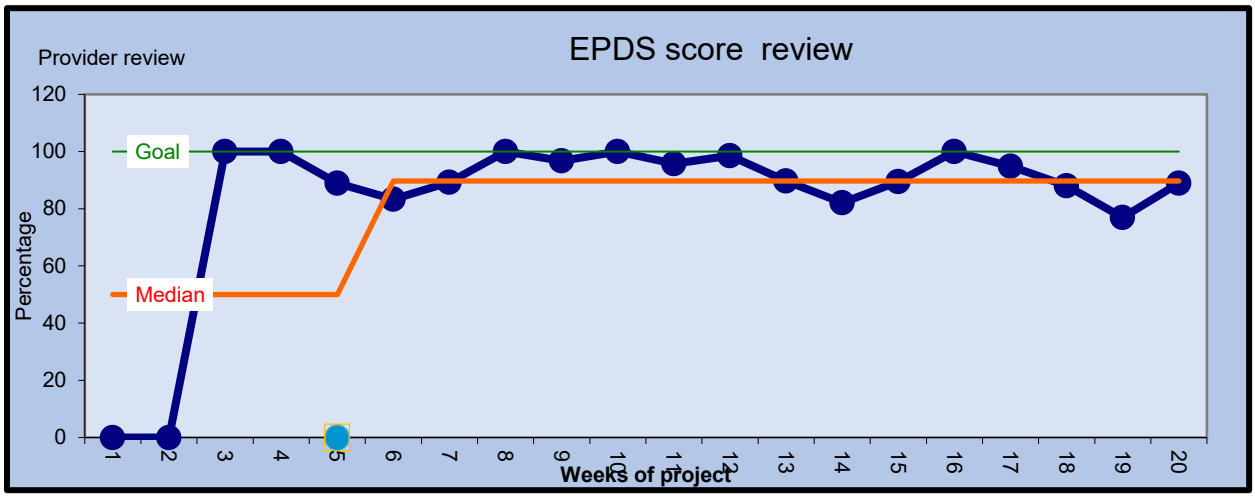
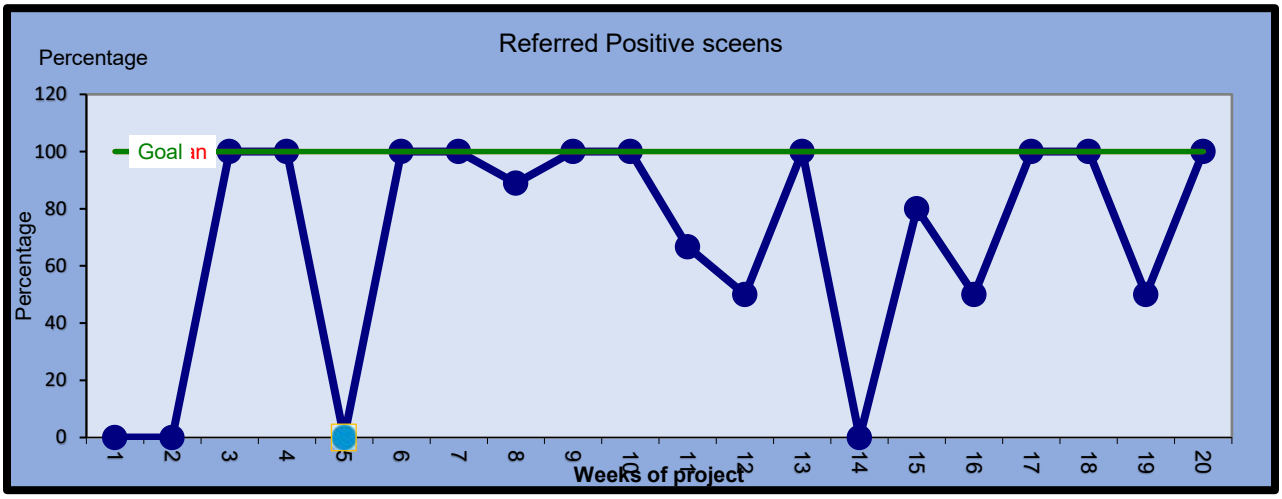


Figure 4: ***Documentation of referral resources Run Chart***



Appendix 1: *Edinburgh Postnatal Depression Scale 1 (EPDS)*

Name: _____ Address: _____

Your Date of Birth: _____ _____

Baby¶s Date of Birth: _____ Phone: _____

_____

_____

As you recently had a baby, we would like to know how you are feeling. Please underline 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

No, not very often past week. 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	*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, have been coping as well as ever
2. I have looked forward to things with enjoyment As much as I ever did Rather less than I used to Definitely less than I used to Hardly at all	*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
*3. I have blamed myself unnecessarily when things have gone wrong Yes, most of the time Yes, some of the time Not very often No, never	*8. I have felt sad or miserable Yes, most of the time Yes, quite often Not very often No, not at all
4. I have been anxious or worried for no good reason No, not at all Hardly ever Yes, sometimes Yes, very often	*9. I have been so unhappy that I have been crying Yes, most of the time Yes, quite often Only occasionally No, never

*5. I have felt scared or panicky for no good reason Yes, quite a lot Yes, sometimes No, not much No, not at all	*10. The thought of harming myself has occurred to me Yes, quite often Sometimes Hardly ever Never

EDINBURGH POSTNATAL DEPRESSION SCALE (EPDS)

J. L. Cox, J.M. Holden, R. Sagovsky From: British Journal of Psychiatry (1987), 150, 782-786.

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)
4. The mother should complete the scale herself, unless she has limited English or has difficulty with reading.

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.

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

Appendix 2*: Implementation Tools and Aids*

Educational strategies at the start of the project included facts concerning maternal depression which staff members read to each other. These facts included:

Perinatal depression is the most common obstetric complication in the US with 180,000 new mothers affected annually

In Maryland 14% of new mothers report symptoms of depression and 8% receive a diagnosis of postpartum depression

Effects on the mother includes poor physical and psychological health, more relationship issues and increased risky behavior

Infants of others with postpartum depression my have failure to thrive, delayed development, poor sleep and behavior issues

Post-partum depression effects mother-infant interaction with early stopping of breast feeding, poor bonding, family dysfunction and increased risk of neglect and abuse

Nursing staff received practice completed EPDS screens and entered them into training patient charts in the electronic health record.

Providers reviewed the entered practice screens. And evaluated which screens needed to have referral material provided. These were screens with a score of 10 or more. Providers also received written instructions shown below.

Provider Information: Maternal Depression Screening

1. Maternal depression screening will begin on August 31, 2020 using the Edinburgh Postnatal Depression Scale. The front desk staff will provide mothers with a paper tool to fill out at check-in. The nursing staff will enter the answers into OP under the screening section.

2. OP will automatically generate a score from the answers entered and this will appear under screening results.

3. A score of 10 and above is considered at-risk. Providers need to review the score, evaluate if positive and document on the screening page.

4. If the mother scores in the at-risk level, community resources for support groups or therapists should be provided. There is a resource list at the nursing station and therapists are listed under mental health in the OP address book. The provision of resources should also be documented in the comment section of the screen.

Appendix 3: *Teaching Evaluation Tool*
Presentation title: Maternal Depression screening using EPDS tool

Upon completing this activity, please rate the extent to which you feel you are now able to perform the stated learner outcomes by circling the number that best reflects your ability:
Presenter (Name & Credentials):

Click or tap here to enter text.

1 = not at all 2 = slightly 3 = neutral 4 =well 5 = very well

Desired Learning Outcome 1: List the negative impacts maternal depression has on families	1	2	3	4	5
Desired Learning Outcome 2: Describe the process of maternal depression screening during the well infant visit	1	2	3	4	5
Desired Learning Outcome 3: Staff and providers will accurately enter and score the EPDS tool	1	2	3	4	5
Desired Learning Outcome 4: Providers will report the appropriate cutoff score for referring mothers with depression	1	2	3	4	5

Please rate the extent to which you agree with the following statements about the speaker

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

Was knowledgeable about the topic area	1	2	3	4	5
Had an effective presentation style	1	2	3	4	5
Used appropriate teaching strategies	1	2	3	4	5
Presented clearly and concisely	1	2	3	4	5

Please rate the extent to which you agree with the following statements by circling the number that best reflects your opinion:

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

Facilities were conducive to learning	1	2	3	4	5
Content was relevant to the desired learning outcomes	1	2	3	4	5
Content was consistent with the stated learning outcomes	1	2	3	4	5
Outcomes were met	1	2	3	4	5
This activity will improve or contribute to your nursing professional performance.	1	2	3	4	5
Teaching methods were effective for the content	1	2	3	4	5
Audiovisual/handout materials were effective	1	2	3	4	5

Before participating in this activity how knowledgeable were you of the information discussed in today's activity?

1 = No knowledge
2 = Some knowledge

3 = Know it very well

Were the activity disclosure provided to you prior to the start of the activity? ☐Yes ☐No

Please tell us two aspects or your work/behavior that will change as a result of today's learning
1.

2.

Your views on our course are important. Please add any other comment/s you wish to share:

Suggestions for future topics:

Template created by The University of Maryland Medical Center

Appendix 4: *Audit Tool*

Date of well visit	De-identified PT ID	EPDS performed Yes=1, No=0	EPDS score	Referral made Yes= 1, No=0