Volume 72, Number 9
OBSTETRICAL AND GYNECOLOGICAL SURVEY

CME REVIEW ARTICLE 00

CHIEF EDITOR'S NOTE: This article is part of a series of continuing education activities in this Journal through which a total of 36 *AMA PRA Category 1 Credits*™ can be earned in 2017. Instructions for how CME credits can be earned appear on the last page of the Table of Contents.

It Is Time for Routine Screening for Perinatal Mood and Anxiety Disorders in Obstetrics and Gynecology Settings

Eynav Elgavish Accortt, PhD* and Melissa S. Wong, MD†

*Assistant Professor and †Fellow, Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA

Importance: Women are 2 to 3 times more likely than men to experience depression in their lifetime, and the greatest risk occurs during the reproductive years. As an obstetrics and gynecology physician or provider, you will likely encounter women who are at risk of development or relapse of a mental disorder during this vulnerable time.

Objective: The aim of this review is to examine theory and research on mood and anxiety disorders during the perinatal period with an emphasis on screening recommendations.

Evidence Acquisition: A PubMed and PsycINFO search for English-language publications about perinatal mood and anxiety disorders and screening was performed and included studies on subtopics.

Results: The literature reviewed suggests that perinatal mood and anxiety symptoms are prevalent and have significant consequences, and best practices for early detection are through routine depression and anxiety screening in the obstetrics setting. This includes overcoming barriers to care and use of liaison services to potentially reduce risk.

Conclusions and Relevance: High-quality prenatal care systems should develop the capacity for depression and anxiety risk assessment and treatment. Providers should routinely screen using validated screening tools, provide maternal mental health education, and be aware of the various medical, psychological, and complementary approaches for treating mood and anxiety disorders, to best guide and refer patients. The use of this practice will increase the quality of life in pregnant women with depression and anxiety and may help to reduce the likelihood of adverse birth outcomes, postpartum mental health problems, and adverse effects on offspring.

Target Audience: Obstetricians and gynecologists, family physicians.

Learning Objectives: After completing this activity, the learner should be better able to name 3 adverse birth outcomes related to prenatal symptoms of depression and anxiety; identify symptoms, prevalence, and consequences of depression and anxiety in pregnancy and postpartum; and contrast and apply reliable, valid, and widely used screening tools to assess for depression and anxiety and practice appropriate referral for this population.

All authors, faculty, and staff in a position to control the content of this CME activity and their spouses/life partners (if any) have disclosed that they have no financial relationships with, or financial interests in, any commercial organizations pertaining to this educational activity.

Correspondence requests to: Eynav Elgavish Accortt, PhD, Department of Obstetrics and Gynecology, Cedars-Sinai Medical Center, 8635 W 3rd St, 280 West Tower, Los Angeles, CA 90048. E-mail: Eynav.accortt@cshs.org.

Perinatal mood and anxiety disorders are heavily stigmatized and often overlooked disorders that are treatable once identified. Yet 50% of all persons with perinatal mood and anxiety disorder are never identified.[1] According to Postpartum Progress, approximately 950,000 American women self-report postpartum depressive symptoms annually.[2,3] However, this is likely

an underestimate, given that this does not include women who had a miscarriage or fetal loss, women with prenatal mood disorders, or women with other perinatal mood disorders such as postpartum psychosis or obsessive-compulsive disorder (OCD). To put this number in perspective, each year more women will be affected by postpartum depression (PPD) than diabetes (approximately 800,000)[4] or breast cancer (approximately 232,000).[5] In fact, PPD is the most common complication associated with pregnancy and childbirth, with significantly more cases than gestational diabetes. Nonetheless, all women receiving prenatal care are screened for diabetes, but pregnant and postpartum women are rarely routinely screened for depression.

The perinatal period is an opportune time for mental health screening and education because of the frequency of contact with health care providers. Unfortunately, rates of diagnosis and treatment for perinatal depression are low in medical settings, despite the fact that new parents are often highly motivated to seek help in effecting change for the sake of their offspring.[6–8] The perinatal period thus provides clinicians with a unique opportunity to consider universal psychosocial assessment as part of mainstream prenatal and postnatal care.[9] Early identification and treatment of psychosocial morbidity are especially important in relation to the functioning of the family unit and the critical parent-infant relationship with potential to positively impact the health of the next generation.

Routine depression screening and referral have been supported by randomized controlled trials (RCTs) in primary care[10] and in pediatric settings.[11] To our knowledge, RCTs have not been conducted in the obstetric setting, despite the fact that screening, education, and referral programs in obstetric settings have been well accepted by patients during the perinatal period.[12,13] Overall, mental health care might be most acceptable if provided as part of routine obstetric care.[14,15] In 2015, the American Congress of Obstetricians and Gynecologists (ACOG) recommended that clinicians screen patients at least once during the perinatal period for depression and anxiety symptoms. Screening must be coupled with appropriate follow-up and treatment when indicated, and systems should be in place to ensure follow-up for diagnosis and treatment.[16] Recognizing the importance of early detection of mental health disorders in the perinatal period, the US Preventive Services Task Force (USPSTF) made perinatal depression screening recommendations, adding that data are lacking on both the accuracy of screening and the benefits and harms of treatment in pregnant women. They highlight that continued research is needed to assess barriers to establishing adequate systems of care and to investigate how these barriers can be overcome.[17]

Although less often discussed, perinatal anxiety disorders have significant overlap with perinatal mood disorders and can often manifest earlier. The main objective of this review is to evaluate what is known about depression and anxiety disorders in the perinatal period, including prevalence rates, key maternal and child outcomes, most reliable and valid screening tools, empirically validated interventions, and barriers to care. A second objective is to propose a multicomponent (screening, education, and referral) program for preventive intervention in the obstetric setting. The aim is to reduce the burden of PPD and anxiety by early identification of women with perinatal mood and anxiety disorder risk factors or symptoms and the application of therapeutic interventions as appropriate.

PRENATAL PERIOD

Depression During Pregnancy

Prenatal depression is common, with rates ranging between 12% and 22%, twice that in the general female population.[18–21] Symptoms of depression can differ significantly from person to person and range from irritability to suicidal ideation. To receive a clinical diagnosis, one must meet some, but not necessarily all, of the specified criteria. According to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, a major depressive disorder (MDD) is characterized by 1 or more major depressive episodes that are persistent and abnormally depressed mood states that last at least 2 weeks. An episode is generally accompanied by a significant general loss of interest and loss of the ability to experience pleasure. Cognitive symptoms and disturbed physical functions include depressed mood, loss of interest or pleasure, significant weight gain or loss, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or guilt, lack of concentration or indecisiveness, thoughts of death, or suicidal ideation.[22] The signs and symptoms of depression during pregnancy are essentially indistinguishable from MDD during other times in a woman's life. Certain symptoms, however, are more significant in pregnancy because they impact the pregnancy itself. Poor appetite is a classic example. Although this can become a problem for anyone with depression, it is particularly concerning when a pregnant woman is not gaining weight or may even in fact be losing weight, because of the impact on the fetus. The same applies for substance use, sleep disorders, and suicidality. Depression during pregnancy has been associated with poorer maternal health behaviors[23] and risk of PPD.[24]

Anxiety During Pregnancy

Whether depressed or not, pregnant women often have concerns about the health of their babies, labor and delivery, and the maternal role and responsibilities.[25] These concerns are known in the literature as pregnancy-specific anxiety. Although psychiatric diagnoses of generalized anxiety disorder (GAD) and other anxiety disorders such as panic disorder or OCD might be relatively rare among women during the prenatal period, subjective emotional states indicative of anxiety—characterized by worry and tension—are far more common and are likely to have a negative effect on maternal behavior. Generalized anxiety disorder manifests as excessive anxiety and worry more days than not for at least 6 months. People with a diagnosis of GAD find it difficult to control their worries to an extent that interferes with their normal function. Their anxiety is associated with at least 3 of the following 6 symptoms: restlessness (feeling keyed up or on edge), being easily fatigued, difficulty concentrating, irritability, muscle tension, and sleep disturbance.[22] It is critical to note that many of the symptoms of GAD overlap with depression, complicating the diagnosis of either disorder.[26]

Prenatal Epidemiology

In 1 study, mood and anxiety disorders were present in 14% of 1795 pregnant women, of which most were undiagnosed and untreated. More specifically, anxiety disorders were found in 6.6% of those patients. Furthermore, the women with psychiatric disorders reported significantly more somatic symptoms such as nausea, fatigue, and dizziness and more pronounced fear of childbirth.[19] Ross and McLean[27] systematically reviewed the medical literature and broke down prevalence of prenatal and postpartum anxiety into 4 specific anxiety disorders. They found that the most prevalent disorder diagnosed in pregnancy, with a rate of 8.5%, was GAD.[27] Panic disorder, OCD, and posttraumatic stress disorder (PTSD) diagnoses were much less prevalent, with rates of 1.4% to 2%, 0.2% to 1.2%, and 0% to 8.1%, respectively. In 2 additional studies, anxiety symptoms during pregnancy follow a U-shaped pattern, with very high symptoms during the first and third trimesters.[20,28] Lee et al[20] reported significantly higher rates than did Ross and McLean,[27] with anxiety symptoms at 54% and depression symptoms at 37%, when measured by the Hospital Anxiety and Depression Scale once during each trimester and 6 weeks postpartum.[20] This underlines the significance of subsyndromal symptoms of depression and anxiety throughout the perinatal period.

Outcomes Associated With Prenatal Depression and Anxiety

A subset of women who experience prenatal symptoms of depression or anxiety experiences worsening of depressive symptoms postpartum,[29] and many are at higher risk of subsequent episodes of both postpartum and depression later in life.[30] There is an increased risk of marital problems, and the rate of paternal depression is higher.[31] Maternal depression and anxiety first diagnosed during pregnancy were also strongly associated with preeclampsia.[32,33] Furthermore, prenatal maternal depression and anxiety are associated with increased risk of adverse birth outcomes, including preterm labor, preterm birth (PTB), low birth weight (LBW), and intrauterine growth restriction,[34–37] although more rigorous research is needed to differentiate specific predictive effects on birth outcome.[38] Rates of PTB and LBW are disproportionately high among some subgroups in the US population. For example, African Americans have roughly twice the rates of most other groups even after controlling for socioeconomic status and other confounding factors. African American women also have higher rates of prenatal and PPD compared with other racial groups in the United States,[39–41] which may be a contributor to their higher risk of adverse pregnancy outcomes.

Growing and convincing evidence indicates that stress and pregnancy-specific anxiety in expecting mothers prospectively predict a wide range of neurodevelopmental consequences in their children, even into adolescence. Some of the outcomes linked to prenatal anxiety include attention regulation and mental and motor development in the first year of life,[42,43] infant temperament (ie, fear),[44] negative behavioral reactivity to novelty in infants and 12-month mental development,[45,46] behavioral and emotional problems at 4 to 7 years,[47,48] decreased gray matter density on magnetic resonance imaging scan in 6- to 9-year-olds,[49] and impulsivity, externalizing, and processing speed in adolescents.[50–53] In addition to developmental outcomes, evidence indicates that maternal stress and anxiety predict major mental disorders in offspring.[54] Thus, exploring the effects of reducing stress, anxiety, and pregnancy anxiety specifically on developmental outcomes is an active and important frontier in perinatal research.

Prenatal Health Behaviors

Recommendations made to pregnant women by their physicians rarely include advice for the management of depression and anxiety (Table 1). Depression and anxiety cause negative changes in health behaviors that are currently recommended for pregnant women

TABLE 1
Recommended Health Behaviors for Managing Symptoms of Depression and Anxiety

Health Behavior	Intervention	Sources*
Relaxation and stress reduction	Progressive muscle relaxation Breathing exercises Mental or visual imagery	Manzoni et al[55]
Sleep	Go to bed and wake at regular times Use bed only to sleep, not study or watch TV Get regular physical exercise in the late afternoon or early evening Allow a wind-down time before bedtime Avoid alcohol, caffeine, or nicotine Go to bed only when you are sleepy If you do not fall asleep within 30 min, get up and go to another dimly lit room and read until you are sleepy (no computer or TV)	Ho et al,[56] Koffel et al[57]
Physical activity	Three times per week for at least 45 min is helpful in promoting well-being and lifting mood Consider prenatal yoga (not contact sports)	ACOG,[58] Herring et al,[59] Krogh et al[60]
Diet and nutrition	Eating healthy and well-balanced meals throughout the day, not skipping meals	ACOG,[61] Lai et al[62]
	Prenatal vitamin supplements including omega-3 fatty acids and vitamin D from the sun	Anglin et al[63]
Medical adherence	Attending visits as recommended by care provider and adhering to any regimens prescribed	DiMatteo et al[64]
Complementary and alternative medicine	Tell your health professional about any complementary or alternative treatments (meditation, acupuncture, yoga, etc) or medicines (such as homeopathic or herbal remedies) you are taking or thinking of taking	Chen et al,[65] Newham et al[66]

*Sources include any additional reading related to the topic, not necessarily related to pregnancy and postpartum.

and produce increases in new unhealthy behaviors.[67] For example, higher prenatal maternal depressive symptoms were prospectively associated with an unhealthy diet, both during pregnancy and the postnatal period, and associated with higher child dysregulation up to the age of 7 years.[68] Lobel et al[69] studied an ethnically diverse sample of 279 women and found that those who were experiencing the greatest pregnancy-specific distress were more likely to smoke cigarettes during pregnancy and as a result to deliver an LBW infant. Related results were obtained in a cohort of more than 900 low-income Mexican-origin women giving birth for the first time. In this study, greater risk of PTB due to high stress was a function of alcohol and substance use, and poor health behaviors mediated the stress/PTB effects in that sample.[70]

In summary, prenatal depression and anxiety are common, and untreated symptoms can affect obstetric outcomes acutely as well as become chronic, leading to PPD and other long-term consequences.

POSTPARTUM PERIOD

Postpartum Depression

Mood disorders following childbirth are typically classified into 3 main categories or syndromes: (1) postpartum blues, (2) PPD, and (3) postpartum psychosis. These 3 syndromes differ with regard to their severity, incidence, timing of onset, and duration. Postpartum blues is a mild and usually transient mood disruption affecting women within the first 10 days after delivery. It is not typically thought to reflect psychopathology, and symptoms are not severe enough to impair functioning.[22,71] Postpartum psychosis is rare, affecting approximately 0.1% to 0.2% of women within the first 4 postnatal weeks.[22] Postpartum psychosis is considered a medical emergency that requires immediate treatment. Inpatient hospitalization is typically required, especially if suicidal or homicidal thoughts are present.[72,73] Onset and progression of postpartum psychosis are rapid. Postpartum psychosis is characterized by delusions, hallucinations, mood swings, confused thinking, and disorganized behavior that significantly impair functioning.[71,74] In this section, the focus is mainly on PPD, a serious mental health condition occurring after childbirth and characterized by emotional disturbance and behavioral changes, which often also features elements of postpartum anxiety.[75,76] Criteria for a major depressive episode and symptoms beginning in pregnancy, or within 4 weeks of delivery, must be met for a *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*

diagnosis of PPD.[22] This time frame is not used in most empirical work, where the postpartum period has been defined much more variably, often up to 1 year postpartum.[77] Symptoms of PPD are similar to depressive disorders at any time in life but may present in a specific way and with specific language (Fig. 1). Women who experience symptoms of depression postpartum may feel guilty or embarrassed by them and may also assume or hope that their symptoms will eventually subside without treatment.[76]

Postpartum Anxiety

Differentiating between depression and other mood disorders in the postpartum period is critical to ensuring that the most appropriate treatment is selected. In 1 study, one third of the women had PPD and an anxiety disorder 3 months after delivery.[78] Depending on the particular domain of anxiety being considered in another study, 10% to 50% of women reporting anxiety symptoms endorsed comorbid depressive symptoms at 8 weeks postpartum.[79] Treatment for these women could differ than that for those who endorsed only symptoms of depression or only symptoms of anxiety. Similarly, differentiating postpartum psychosis from postpartum OCD or PPD is an important clinical step. For example, a new mother might have thoughts of hurting her baby. The mother with OCD will be upset by these thoughts and devise intricate plans to avoid harming her baby. However, in a woman with postpartum psychosis, no such insight occurs, these thoughts are the same as any others, and immediate intervention is critical.

Postpartum Epidemiology

The prevalence of PPD as distinct from postpartum blues or related conditions ranges between 10% and 15% of all new mothers in industrialized societies.[8,78] A meta-analysis estimated that 19.2% experience depressive symptoms within the first 3 months postpartum, with 5% diagnosable with major depression.[80] Anxiety is also quite common postpartum.[81] Bener et al[82] reported rates of 18.6% for depressive symptoms, 13.1% for symptoms of anxiety, and 8.7% for stress in 1659 Arab women during their postpartum period. Matthey et al[83] reported similar psychological morbidity in a sample of 408 women expecting their first child. They found that 17% experienced PPD, and 13% experienced postpartum anxiety. A population-based survey of 4,366 Australian women reported rates of 12.7% for anxiety and 17.4% for depression.[84] Slight differences in prevalence rates can be attributed to the ethnic and racial differences in the populations and whether diagnoses were made (as opposed to symptom screening only).

Rates of depression and anxiety are even higher if women experience an adverse perinatal complication or outcome, such as preeclampsia or PTB, or have a baby in the neonatal intensive care unit (NICU).[85] Posttraumatic stress symptoms are particularly common after experiencing an adverse pregnancy outcome. For example, approximately 9% of women who experienced preeclampsia or PTB or had a baby in the NICU developed PTSD,[86] and estimates range from as high as 28% to 70% in some studies.[87] The disparity is likely due to the dramatic difference in the birth and postpartum experience for the NICU mom. Loss of control and privacy and an inability to care for or touch her newborn can cause the NICU mom (and father) to feel incompetent. This can lead to fear and anxiety about bringing the baby home and parenting in general.[87] Experiencing a major obstetric hemorrhage, severe preeclampsia, or intensive care unit/obstetric high-dependency unit admission was also associated with increased postpartum PTSD symptoms in a recent study in a large sample.[88] Increased risk of major depression (40%–50%) that is comorbid with PTSD can lead to decreased maternal-infant bonding and other long-term adverse mental and physical health repercussions for the mother, child, and family.

It is very important to note that women who have a fetal loss, such as miscarriage and stillbirth, are especially susceptible to PPD and postpartum PTSD. According

Symptoms of PPD:	The Language of PPD:
Insomnia	*Everything is an effort* = lethargy
Sadness	*I want to cry all the time* = tearfulness
Weight loss/gain	*I am a failure as a mother, woman and wife* = guilt, diminished self-esteem
Feelings of inadequacy	*I think everyone would be better off without me* = suicidal thinking
Inability to cope	*I will never be myself again* = hopelessness
Memory loss	*I'm losing it* = despair
Hopelessness	*I am on an emotional roller coaster* = mood lability
Fear of being left alone	*I am all alone and no one understands* = isolation and withdrawal
Confusion and disorientation	*I feel like I'm in a fog* = disorientation, confusion
Overwhelming anxiety	*I have made a terrible mistake* = anxiety, regret, remorse
Difficulty concentrating	*No one has ever felt as bad as I do after giving birth* = helplessness
Emotionally detached from infant	*I'm just going through the motions* = detached

FIG. 1. Symptoms and language of PPD.

to a recent systematic review of data from 48 studies, PTSD or posttraumatic symptoms (PTSs) occur after nonmedical (PTSD, 12.6%) and medical termination of pregnancy (PTSs ranged from 41% to 64%), miscarriage (PTSs, 11%–68%; 88% for recurrent miscarriage), perinatal loss (no prevalence rates reported), and stillbirth (PTSD, 21%).[89] Shorter length of gestational age was also associated with an increased likelihood for diagnosis of PTSs or PTSD. Demographic factors such as maternal age, gestational age, lower education, and a history of previous physical or sexual trauma are significant risk factors for the development of PTSs or PTSD after loss. Prior history of mental health problems and current depression, anxiety, and perinatal grief are also risk factors.[89]

Postpartum Outcomes

When a mother is experiencing depression, the mother-infant relationship may suffer, and infants are at increased risk of developing insecure attachment and psychopathology.[90–93] In their recent review, Yim et al[76] explained that adverse consequences of PPD include adverse effects on the newborn's cognitive, behavioral, and emotional development, known to last at least until the early school years.[94–98] Furthermore, other children in the family may be affected by a mother's depressive symptoms. Maternal involvement in play and physical care of younger children might be diminished, and older children may experience a lack of interest in their school progress, social activities, and friends.[90] Recurrent maternal depression is associated with increased risk of depression in adolescents, whereas rates of anxiety disorders in children of mothers with PPD are elevated regardless of subsequent maternal depression,[99] suggesting a distinct neurobiological pattern of these disorders when they occur during the perinatal period.[100]

Experiences of postpartum depressive or anxiety symptoms not only create difficulties in a mother's ability to care for her baby but also may interfere with other close relationships.[101] If not resolved, relationship conflicts may lead to a loss of social networks and subsequent isolation. Most research on the impact of PPD on significant others focuses on male partners, and maternal depression has been associated with father's depression.[31] Depression in fathers in the postpartum period is also associated with the later development of mental health disorders in their children, independent of maternal depression.[102] In contrast to women, in whom crying and intense sadness are often associated with depression, men who develop peripartum depression tend to experience symptoms such as irritability, self-isolation, overworking, substance use, and hopelessness.[103] This complex series of consequences supports the need to consider the full family context and facilitate support for the entire family unit.[104] Until women are routinely screened, educated, and properly referred to behavioral health and support for these problems, the entire family unit will suffer.

SCREENING IN HEALTH CARE SETTINGS AND BARRIERS

Clinical Screening

Currently, the detection of depression and anxiety disorders during the perinatal period relies on clinical judgment and skill of medical providers involved in the general care of women. However, many providers are often uncomfortable asking questions about mental health, do not have the time to ask, or do not have access to referral resources in their areas. Routine screening for depression and anxiety in prenatal and postpartum health care, however, has been widely recommended by medical and public health organizations, such as ACOG[16] and the USPSTF.[17] The aim of the process is not necessarily to form a diagnosis, but rather to identify women who may need further follow-up. In 2015, the Council on Patient Safety in Women's Health Care convened an interdisciplinary work group to develop an evidence-based patient safety bundle to address maternal mental health. The published commentary provides valuable information to assist with implementation of the bundle and includes resources, links to toolkits, and a list comparing depression screening tools.[105]

Controversy exists over which screening tools should be used, the cutoffs that should be adopted for identifying women at risk, the need for available and affordable or reimbursed expert clinicians to follow up on women who score above thresholds to establish diagnoses, and the availability of affordable and efficacious treatments for those who have established diagnoses.[106] For these patients, there is a need for well-designed education in mental health for patients, families, and providers. Furthermore, using appropriate screening tools for pregnancy-specific anxiety and anxiety and depressive symptoms in pregnancy stands to provide potentially important benefits for mothers and their children. The following sections provide guidance on screening for medical providers, especially in the field of obstetrics and gynecology.

Depression Screening Tools

Well-validated, reliable, and short screening tools are available for prenatal and PPD screening, and these scales are practical and cost-effective to widely screen

for depression risk among pregnant or postpartum women. The most frequently used screening instrument for PPD is the Edinburgh Postnatal Depression Scale (EPDS), which has been used around the world and is translated into many languages.[107] Unlike traditional depression screening scales, this 10-item scale excludes most somatic symptoms typical in the postpartum period (eg, weight, appetite, and sleep changes) and therefore may be the best for this population. However, many other screening instruments designed to assess depression more generally do include somatic questions, in particular the 9-item Patient Health Questionnaire (PHQ), which has often been used in medical (obstetric-gynecological) settings and includes a suicide item, which is particularly important.[108] In order to take into account the additional somatic symptoms in pregnancy/postpartum, the cutoff score is usually increased from 10 to 13, for example. Other scales used more often in research settings include the Center for Epidemiologic Studies–Depression Scale[109] and the Beck Depression Inventory.[110] Additional instruments were specifically developed to assess less severe depressive symptoms in the first postpartum days such as the Blues Scale.[111] The most useful reviews on measures used to screen for and detect PPD include discussion of their pros and cons and often provide information on reliability and validity.[112–114]

Anxiety and PTSD Screening Tools

Although there is no agreement about the best general anxiety screening tool, the 3 anxiety items from the EPDS are commonly used as an anxiety measure, have been validated for use, and are referred to as the EPDS-3.[115] This measure has shown some promise as a stand-alone screen for depression as well.[116,117] A brief (5-item) continuous measure, the Overall Anxiety Severity and Impairment Scale, has been validated to assess symptoms across anxiety disorders, with multiple anxiety disorders and with subthreshold anxiety symptoms, and therefore is gaining use in research settings.[118] Despite its demonstrated importance, pregnancy-specific anxiety is a relatively new concept in maternal and child health research.[25] Finally, the Impact of Events Scale has been used to assess for PTSD symptoms and can be especially useful after an adverse perinatal outcome.[119]

Best Time to Screen

The American Congress of Obstetricians and Gynecologists recommends that clinicians screen patients for depression and anxiety symptoms at least once during the perinatal period with a standardized, validated tool.[16] They add that it is best to perform psychosocial screening at least once each trimester to increase the likelihood of identifying important issues and reducing poor birth outcomes. The American Academy of Pediatrics has also suggested that pediatric practices screen mothers for depression preferably at every well-baby visit in the pediatrician's office.[120] Taken together, these committees suggest that the best practice would be to screen women for depression and anxiety at least once during pregnancy (ACOG) and once postpartum (American Academy of Pediatrics).

Costs and Evidence for Clinical Effectiveness of Perinatal Mental Health Screening

Depression increases health care costs and decreases the productivity of women affected, as well as the well-being of their offspring. To identify women who may require treatment, it is imperative to screen for women at risk. An extensive recent review of RCTs on screening for depression in adult populations concluded that screening reduces the risk of persistent depression[121] and PPD specifically,[122] and it is encouraging that the USPSTF recommended routine depression screening on the basis that the potential benefits outweigh the risks.[17]

The stigma of mental illness is of concern but will not be overcome by ignoring the existence of mental illness. Only by actively working with women, acknowledging their needs, and lobbying the government for change in policies can we advance psychological care within obstetric services.[123] A step in the right direction is Clark's recently passed legislation, the “Bringing Postpartum Depression Out of the Shadows” Act.[124] This Act will provide states with federal grants for developing and maintaining programs for better screening and treatment of PPD. Importantly, screening programs must be cost-effective. Attempts to evaluate costs in adult depression have put savings at $10,000 to $35,000 per depressed person per year.[125,126] The cost of screening, if introduced into routine care, is significantly lower, and a recent cost-effectiveness analysis[127] concluded that PPD screening is cost-effective and should be considered as part of usual perinatal care.

Health Care System and Barriers

The single greatest barrier to perinatal depression treatment is detection. Attempts to implement universal screenings within the hospital setting have proven to be difficult, in part because of the complexities associated with changing clinical protocols.[128] The implementation of the Health Information Technology for Economic and Clinical Health Act, electronic health records, and adding clinical decision support has

resulted in digital collection of patient data and should facilitate the changes in clinical protocols required to detect and treat perinatal depression.[129] These technologies should sufficiently address this primary barrier at the practitioner level. Given that specific recommendations about psychosocial assessment and depression screening are challenging, there is no doubt that these must be devised locally, depending on existing resources and models of care,[9] as well as local barriers to care.

Austin and Highet reviewed several common mental health screening barriers that women and their families may face in clinical settings.[130] One barrier is the lack of knowledge women report to make an objective distinction between normal symptoms of distress associated with motherhood and distress that warrants the professional help of a clinical psychologist.[128] A second barrier is attitudinal, a reluctance of some women to undertake assessment or to disclose emotional problems to health professionals.[131,132] This attitude may lead to a lack of motivation to seek treatment and fears of stigma attached to having emotional problems or of the baby and/or other children being removed if the woman is diagnosed as having a mental health disorder.[128,133,134] Women experiencing symptoms may therefore initially minimize or hide symptoms if they feel they need to preserve an image of themselves as competent mothers.[135]

Cultural differences can also be barriers. Patients are often from a diverse set of cultures and may not feel comfortable in an unfamiliar setting. For example, more-acculturated Latinas have been shown to worry more about the baby's development, whereas less acculturated Latinas worry more about the hospital delivery experience and whether they will be harmed.[136,137] Cultural awareness among health professionals should be a high priority. Although it is impractical to take a single approach to perinatal mental health care, taking a family-centered approach and having regard for the physical, mental, social, spiritual, and cultural aspects of a woman and her community may assist women to feel safe in health care interactions and would go a long way to minimize cultural barriers and provide all patients with the mental health help they need.[130]

Of concern are also the barriers to service, which may be real or perceived. Often, women choose to avoid accessing services because of their concern about unhelpful responses from health professionals, including having their feelings dismissed or trivialized, and negative prior experiences leading to lack of trust in health professionals. A potential increase in stress and pregnancy anxiety has been postulated to be due to too brief provider-patient interactions and poor communication.[70] Communication problems and the perception that health professionals may not appreciate the impact of mental health disorders in the perinatal period may also be barriers to seeking help.

These important barriers must be addressed in clinical settings. Initiating routine mental health screening by properly trained staff will reduce stigma because all women are being treated in the same way—with a focus on wellness, as opposed to disorder. Initiating educational programs along with the screening programs will increase knowledge on the topic and provide information about symptoms that are no longer normal adjustment to motherhood. Service barriers can often be removed when consultations are a regular and routine part of the screening program. Finally, providing referral information about trained professionals who can diagnose and provide treatment is a required step. If consultation with a mental health provider is indicated, services such as social work or psychiatric consultation liaison services within the same hospital or a home nurse visit that focuses on the postpartum woman's physical and mental well-being can overcome an additional transportation barrier.

Diagnosing and Consultation Liaison Services

All patients who screen positive for depression do not have MDD. Subsyndromal depression can cause impairment; however, treatment approaches differ, and it is important to make this distinction. Critically, a screening tool such as the EPDS is not a diagnostic tool and approximately only 1 in 2 positive screens has an actual diagnosis of depression. Diagnosis requires a full mental health assessment. An overall approach of integrating mental health screening, diagnosis, and treatment into routine perinatal care is therefore ideal.[138] Consultation liaison services encourage and facilitate collaboration between the services at a hospital, thus acting as a bridge allowing for identification, planning, and communication.[130] When conducted properly, primary health care professionals such as general practitioners, midwives, and maternal and child health nurses, as well as specialists such as obstetricians (OBs), neonatologists, and pediatricians, can utilize these services to refer patients to the appropriate expert after they have been identified as at risk though proper screening. Well-functioning liaison services are particularly useful for patients who require management of high-risk medical conditions during the perinatal period and are therefore at higher risk of depression and anxiety.[139] The goal of consultation liaison services is to use a team approach by drawing upon diverse expertise to

properly diagnose and then provide the best mental health treatment during and following pregnancy.[130]

INTERVENTIONS

When clinical screening and diagnosis indicate that a woman is experiencing elevated symptoms of depression or anxiety during pregnancy or postpartum, knowing how and when to intervene becomes critical. This can be done through preventive approaches, evidence-based pharmacological treatments, and empirically validated psychological and complementary treatments. These include social support and stress-reduction interventions such as progressive muscle relaxation, yoga and meditation, and psychological therapies such as cognitive behavioral therapy (CBT). Ideally, biopsychosocial treatments would integrate approaches to maximize benefits. The perinatal period is an ideal time for instituting a collaborative or integrated care model that treats both the medical and mental health needs of a woman and her family under one roof.[138] When that is not possible, it is best for medical practitioners to be aware of the empirically supported treatments available and properly refer to outside mental health providers.

Evidence-Based Pharmacological Treatments

Although there are risks associated with the use of medications during pregnancy, it should not be assumed that it is always better to avoid medication. According to Stowe et al,[140] "Exposure always occurs, be it to treatment or illness." Untreated mental health disorders in this period can significantly affect the physical and mental well-being of the woman, the fetus/infant, significant other(s), and family.[141] For example, untreated depression is associated with an increased rate of obstetric complications, stillbirth, suicide attempts, LBW infants, and lack of postpartum specialist care for the infant.[142] Medications are especially important when a woman has used them for many years, when the illness significantly impairs functioning, if suicidality becomes a concern, and when specific comorbidities exist, including bipolar disorder and psychosis, for example.[143] Therefore, weighing all the possibilities and risks with one's health care provider is essential.

A detailed account of all the potential antidepressant medications and their uses during pregnancy is beyond the scope of this review, but given the prevalence of use of selective serotonin reuptake inhibitors (SSRIs) during the perinatal period, specific considerations regarding their use are discussed here. Concerns regarding the use of SSRIs have typically fallen into 3 broad categories: potential for teratogenicity in early pregnancy use, for adverse obstetric outcomes including PTB in the second and third trimesters, and for poor neonatal adaptation syndrome following use near the time of delivery.

With regard to concerns for teratogenicity, there are now a number of large prospective studies, and most of the evidence suggests no association between any particular SSRIs and birth defects.[144–147] The exception may be paroxetine, which in a recent analysis of the National Birth Defects Prevention Study was found to have a higher association than other SSRIs with cardiac defects, anencephaly, and abdominal wall defects.[148] It is also worth noting that the absolute risk increase for any given malformation remains extremely low, with odds ratios typically in the 1.3 to 1.5 range. Given that the baseline rate of cardiac malformation in patients with no depression or medication exposure is 0.5% to 0.7%, this would mean an increase to 0.7% to 0.9% among treated patients,[149] a very small risk increase compared with the 68% rate of relapse during pregnancy among women who discontinue pharmacotherapy.[150]

More recently, observational studies have suggested an increase in risk of PTB and LBW, although reports have been conflicting. Studies of these particular outcomes highlight the importance of choosing the appropriate control group when assessing the effect of a medication exposure, that is, that the control group should be affected, untreated women. When the comparison group has been with depressed mothers without antidepressant exposure, the differences have either disappeared[151] or been clinically insignificant (eg, 3 days' difference in Ross et al., 2013).[152]

Poor neonatal adaptation syndrome is described as agitation, restlessness, and at times poor feeding or metabolic regulation, which has been found to be 5 times as likely to occur in those infants exposed to SSRIs. The symptoms tend to be mild and self-limited, although more severe cases have been described. The etiology of poor neonatal adaptation syndrome is unknown, indeed even whether it is due to a withdrawal of the SSRIs or to a relative toxicity or due to neither. As a result, the best method for avoiding this remains unknown, and the current recommendations do not suggest decreasing the dose of antidepressant with the intent of avoiding this complication. It is likewise reassuring that long-term impacts on the infant's neurodevelopment have not been shown.

Ultimately, decisions regarding the use of any medication in pregnancy should be approached from the paradigm of shared decision making between a patient and her provider. The choice of antidepressant therapy depends on a number of factors. For example, use of sertraline (Zoloft) is recommended for depression treatment during pregnancy and postpartum and is

especially safe while breastfeeding, although it is not recommended if the woman is also anxious. Paroxetine (Paxil) has not been recommended during pregnancy because of concerns for fetal cardiac malformations but is highly recommended in the postpartum period, especially for anxiety, and is considered best for breastfeeding.[143] New medications are constantly researched, while older drugs are found to be safe/unsafe in the perinatal period; therefore, it is critical to keep up to date and refer complicated cases to a reproductive psychiatrist.

Empirically Validated Psychological Treatments

Stress Reduction

Despite mounting evidence that stress and anxiety during pregnancy present physical and mental health risks to the mother and the baby, very few stress-reduction programs designed for pregnant women have been tested in well-controlled trials. Progressive muscle relaxation, yoga, and meditation may be helpful for improving maternal psychological well-being and perinatal outcomes, particularly when used in conjunction with conventional prenatal care.[153]

Cognitive Behavioral Therapy

Some of the most rigorous studies have tested the efficacy of CBT for depression in pregnancy or postpartum. Cognitive behavioral therapy is an empirically supported treatment for anxiety and depression and is more effective than no treatment or placebo controls.[154] This form of therapy is short term and involves learning a set of cognitive and behavioral problem-focused skills (as few as 6 sessions over 3 months). Cognitive behavioral strategies are adapted to each individual client's idiosyncratic thoughts, behaviors, and physical reactions. A major component is cognitive restructuring in which clients are taught to identify their maladaptive thinking styles and to replace them with more evidence-based and coping-oriented thinking. For example, a pregnant woman might replace catastrophizing thoughts about labor with problem-solving strategies involving visualization skills. Together with somatic strategies including progressive muscle relaxation training and breathing retraining, this therapy can be particularly helpful during the perinatal period.[155,156]

Other psychotherapeutic approaches include interpersonal psychotherapy and emotion-focused therapy, among others; however, the literature testing these in depressed or anxious women in the perinatal period is limited.[157] Interpersonal psychotherapy, for example, focuses on the role transition that occurs with motherhood and helps process the losses that accompany any change in role. A new mother may need interpersonal support as she moves into her new identity of motherhood, and some research supports this intervention during the perinatal period.[158–161] Furthermore, partner-assisted interpersonal psychotherapy has been shown to be effective for perinatal depression in a "proof-of-concept" study of 10 couples.[162]

Social Support

For years, researchers have speculated that pregnant women who experience stress, depression, or anxiety should be provided with more social support. Supportive interventions such as nurse visitors to the home, support groups, and other forms of support have been mounted but with little success with respect to PTB or LBW.[163] A notable exception is work by Norbeck et al,[164] who recruited low-income African American women who were at high risk of having babies with LBW. The social support intervention included a combination of telephone calls and home visits providing informational support to help to recognize signs and symptoms of pregnancy complications and provide information about the utilization of local services and emotional support to enhance the existing social network and reduce stress. The authors reported a significant reduction in LBW rates.[164] In addition, CenteringPregnancy, which is an evidence-based prenatal care intervention, has as 1 component supportive peer interaction, and it has been shown to reduce PTB effectively and is widely implemented.[165]

Complementary Therapies

Complementary and alternative medical (CAM) treatments are mind/body treatments that are biopsychological in nature. For example, mindfulness refers to a process that develops a mental state of awareness and acceptance of present moment experiences, including one's current sensations, thoughts, bodily states, and environment. In addition to inducing states of relaxation, mindfulness emphasizes not "getting caught up" in emotional reactions and has been shown to aid in moderating emotional reactivity and speeding recovery from unpleasant emotional experiences.[166] Four uncontrolled pilot trials of mindfulness training for pregnant women have found positive effects, including improvements in perceived stress, depressive symptoms, anxiety, and reports of physical pain.[167–170] A recent systematic review and meta-analysis was conducted with 17 studies of mindfulness-based interventions (MBIs) in the perinatal period, including both controlled trials (n = 9) and pre-post uncontrolled studies (n = 8).[171] Pre-post analyses showed significant improvements following MBIs for

depression, anxiety, stress, and mindfulness outcomes with small to medium effect sizes (g = 0.36–0.51). The overall effect of the MBIs on the studies' primary outcome or intervention target was medium (g = 0.56). The meta-analysis, however, did not identify any significant benefits of MBIs on mindfulness or symptoms of depression, anxiety, or stress in comparison to control conditions.[171]

Other CAM approaches include acupuncture and medications, such as homeopathic or herbal remedies; however, the literature testing these in depressed or anxious women in the perinatal period is only now emerging. In a recent study, pregnant patients did better with acupuncture versus massage or no treatment.[172] In a review of CAM treatments for women in general, effectiveness data were mixed. Omega-3 fatty acids seemed to help reduce anxiety if given in very specific (3 mg) doses, and after 3 weeks of light therapy, depression scores improved by 49%.[173] In addition, multimodal interventions that may include massage, aromatherapy, music therapy, movement, and exercise to increase healthy behaviors (Table 1) have been shown to help prevent symptoms of depression and anxiety. This evidence is a growing body of work with more documentation for some than other components, but offering women the chance to explore the options with full information is warranted.

IMPLEMENTING A PERINATAL MENTAL HEALTH PROGRAM

The most effective mental health screening programs during pregnancy and postpartum should result in low rates of false-positive results, sufficient and effective education for women about the meaning of screening results, immediate consultation if screening reveals risk, high rates of referral to treatment with proven evidence-based interventions, and clinical follow-up. Cedars-Sinai Medical Center (CSMC) is a large, Jewish, urban, nonprofit tertiary health care facility located in Los Angeles, Calif. Since April 2014, the hospital has routinely screened all admitted patients for depression (with the PHQ-2), making it one of the first US hospitals to do so.[174] In a recent quality improvement analysis of 1 month of hospital-wide data, approximately 7% of the 4700 patients screened (329 patients) endorsed 1 of the 2 PHQ items and required further assessment with the final 7 items of the PHQ-9. Approximately 1% of the 4700 total (47 patients) were found to be at risk of suicide, which would have been hard to detect in the past, and were provided with immediate help.[175] However, very few of the 329 patients who required further questioning were from labor and delivery unit admissions, which was surprising, given the prevalence rates of perinatal depression. Cedars-Sinai Medical Center has an ethnically diverse obstetric population, and approximately 7000 babies are delivered at CSMC each year. Identifying women at risk of depression from obstetric units is a top priority. In April 2017, the postpartum unit and maternal-fetal care unit began routine depression screening within 1 to 2 days after a woman delivers her baby. A couple of changes were made to the hospital-wide screening program to better serve the obstetric population: (1) screening is now conducted after a woman has her baby, not upon admission to the labor and delivery unit when there is less time to spend on questions; and (2) all 9 items of the PHQ are assessed at once (not only the PHQ-2) by a nurse specifically trained in perinatal mental health and education. The full PHQ-9 has shown high reliability and validity as a depression screening tool in the perinatal period.[108,176] Although the EPDS is the criterion standard for PPD screening, our team decided to use the PHQ-9 to maintain continuity across CSMC departments and because the EPDS and PHQ-9 scores are concordant for most postpartum women.[177] This systematic approach that inquires about several possible symptoms will help identify women with high levels of distress who may have otherwise gone undetected.

Once women at risk of depression are identified in the postpartum unit or maternal-fetal care unit, trained nurses provide education specific to postpartum mental health and provide local mental health referrals (Maternal Mental Health NOW, MMHN, Postpartum Support International). The nurse may also consult a social worker or psychiatrist. Cedars-Sinai Medical Center has several strengths, which include (1) nurses trained to effectively and compassionately screen, educate, and refer postpartum patients; (2) a small but supportive social work department who can follow up with at-risk women in the unit; and (3) expert consultation and liaison psychiatric services to follow up with severe cases, including suicidal ideation and psychotic episodes, and prescribe medications if needed. In addition to engaging these departments in the hospital, nurses enter the woman's screening score in the electronic medical record and telephone the OB if the patient screens high and/or endorses suicidal thoughts. Specific recommendations for OB follow-up, which include screening at first postpartum visit or sooner, have also been made. An extensive quality improvement study is underway to assess program feasibility and effectiveness in identifying women at risk, providing them education and referrals, and investigating whether OB follow-up is occurring with severe cases. Data regarding quality of nurse mental health training, perceived barriers,

and process outcomes are also being collected using structured surveys. The systematic examination of this program will allow documentation of what works well and what barriers are specific to the organization and highlight the ongoing need for effective mental health care in obstetric settings.

CONCLUSIONS

Depression and anxiety are common during pregnancy and the postpartum period. Screening with instruments that have been validated for use during and after pregnancy is merited at least once in pregnancy and at least once during the postpartum period. Practitioner attention to symptoms that are displayed in pregnancy is recommended and may be a preceptor for a screening. Together, such practices may enable early detection, referral, and timely treatment to potentially reduce risk of adverse birth outcomes, especially LBW and PTB, and can certainly help to reduce risk of PPD if treated. Nonpharmacological treatments for depression, such as CBT and complementary treatments, can produce symptom relief with minimal adverse effects, and pharmacological treatments should not be ruled out where evidence suggests they are safe and when prescribed and monitored safely. Mental health programs that include routine depression and anxiety screening, education, consultation, and referral to treatment should be a part of comprehensive care for all pregnant women to achieve better birth and postpartum outcomes.

ACKNOWLEDGMENTS

We thank Sarah Kilpatrick, MD, PhD, Ada Elgavish, PhD, and Alison Ross, LMFT for their comments and suggestions on an early draft of this paper.

REFERENCES

1. Gjerdingen DK, Yawn BP. Postpartum depression screening: importance, methods, barriers, and recommendations for practice. *J Am Board Fam Med*. 2007;20:280–288.
2. Stone K. How many women get postpartum depression? The statistics on PPD. 2010. Available at: http://www.postpartumprogress.com/how-many-women-get-postpartum-depression-the-statistics-on-ppd. Accessed May 19, 2017.
3. CDC. Prevalence of self-reported postpartum depressive symptoms—17 states, 2004–2005. 2008. Available at: https://www.cdc.gov/mmwR/preview/mmwrhtml/mm5714a1.htm. Accessed May 19, 2017.
4. DeSisto C, Sharma A, Kim S. Prevalence estimates of gestational diabetes mellitus in the United States, pregnancy risk assessment monitoring system (PRAMS), 2007–2010. *Prev Chronic Dis*. 2014;11:E104.
5. DeSantis C, Jemal A, Bryan L, et al. Breast cancer statistics, 2013. *CA Cancer J Clin*. 2013;64:52–62.
6. Chaudron L, Wisner K. Perinatal depression screening: let's not throw the baby out with the bath water! *J Psychosom Res*. 2014;76:489–491.
7. Thombs B, Arthurs E, Coronado-Montoya S, et al. Depression screening and patient outcomes in pregnancy or postpartum: a systematic review. *J Psychosom Res*. 2014;76:433–446.
8. Le Strat Y, Le Foll B, Dubertret C. Prevalence and correlates of major depressive episode in pregnant and postpartum women in the United States. *J Affect Disord*. 2011;135:128–138.
9. Austin M. Marcé international society position statement on psychosocial assessment and depression screening in perinatal women. *Best Pract Res Clin Obstet Gynaecol*. 2014;28:179–187.
10. Wells K, Sherbourne C, Schoenbaum M, et al. Impact of disseminating quality improvement programs for depression in managed primary care. *JAMA*. 2000;283:212–220.
11. Van der Zee-van den Berg AI, Boere-Boonekamp MM, IJzerman MJ, et al. Screening for postpartum depression in well-baby care settings: a systematic review. *Matern Child Health J*. 2016;21:9–20.
12. Kingston DE, Biringer A, McDonald SW, et al. Preferences for mental health screening among pregnant women. *Am J Prev Med*. 2015;49:e35–e43.
13. Segre LS, Siewert RC, Orengo-Aguayo RE. Depression management by NICU nurses: mothers' views. *Clin Nurs Res*. 2016;25:273–290.
14. Feeley N, Bell L, Hayton B, et al. Care for postpartum depression: what do women and their partners prefer? *Perspect Psychiatr Care*. 2016;52:120–130.
15. Melville JL, Reed SD, Russo J, et al. Improving care for depression in obstetrics and gynecology. *Obstet Gynecol*. 2014;123:1237–1246.
16. Committee on Obstetric Practice. The American College of Obstetricians and Gynecologists Committee Opinion no. 630. Screening for perinatal depression. *Obstet Gynecol*. 2015;125:1268–1271.
17. Siu AL; US Preventive Services Task Force (USPSTF), Bibbins-Domingo K, et al. Screening for depression in adults. *JAMA*. 2016;315:380–387.
18. Bennett HA, Einarson A, Taddio A, et al. Prevalence of depression during pregnancy: systematic review. *Obstet Gynecol*. 2004;103:698–709.
19. Andersson L, Sundström-Poromaa I, Bixo M, et al. Point prevalence of psychiatric disorders during the second trimester of pregnancy: a population-based study. *Am J Obstet Gynecol*. 2003;189:148–154.
20. Lee AM, Lam SK, Sze Mun Lau SM, et al. Prevalence, course, and risk factors for antenatal anxiety and depression. *Obstet Gynecol*. 2007;110:1102–1112.
21. McDonald SW, Lyon AW, Benzies KM, et al. The All Our Babies pregnancy cohort: design, methods, and participant characteristics. *BMC Pregnancy Childbirth*. 2013;13(suppl 1):S2.
22. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Association; 2013.
23. Zuckerman B, Amaro H, Bauchner H, et al. Depressive symptoms during pregnancy: relationship to poor health behaviors. *Am J Obstet Gynecol*. 1989;160:1107–1111.
24. Burt VK, Stein K. Epidemiology of depression throughout the female life cycle. *J Clin Psychiatry*. 2002;63:9–15.
25. Guardino C, Dunkel Schetter C. Understanding pregnancy anxiety: concepts, correlates, and consequences. *Zero to Three*. 2014;34:12–21.
26. Generalized Anxiety Disorder (GAD) | Anxiety and Depression Association of America (ADAA). ADAA.org. 2014. Available at: http://www.adaa.org/understanding-anxiety/generalized-anxiety-disorder-gad. Accessed February 24, 2014.
27. Ross LE, McLean LM. Anxiety disorders during pregnancy and the postpartum period: a systematic review. *J Clin Psychiatry*. 2006;67:1285–1298.
28. Teixeira C, Figueiredo B, Conde A, et al. Anxiety and depression during pregnancy in women and men. *J Affect Disord*. 2009;119:142–148.
29. McCall-Hosenfeld JS, Phiri K, Schaefer E, et al. Trajectories of depressive symptoms throughout the peri- and postpartum

period: results from the first baby study. *J Womens Health (Larchmt)*. 2016;25:1112–1121.
30. Cooper PJ, Murray L. Course and recurrence of postnatal depression. Evidence for the specificity of the diagnostic concept. *Br J Psychiatry*. 1995;166:191–195.
31. Paulson JF, Bazemore SD. Prenatal and postpartum depression in fathers and its association with maternal depression: a meta-analysis. *JAMA*. 2010;303:1961–1969.
32. Kurki T, Hiilesmaa V, Raitasalo R, et al. Depression and anxiety in early pregnancy and risk for preeclampsia. *Obstet Gynecol*. 2000;95:487–490.
33. Qiu C, Williams M, Calderon-Margalit R, et al. Preeclampsia risk in relation to maternal mood and anxiety disorders diagnosed before or during early pregnancy. *Am J Hypertens*. 2009;22:397–402.
34. Davalos DB, Yadon CA, Tregellas HC. Untreated prenatal maternal depression and the potential risks to offspring: a review. *Arch Womens Ment Health*. 2012;15:1–14.
35. Grote N, Bridge J, Gavin A, et al. A Meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine growth restriction. *Arch Gen Psychiatry*. 2010; 67:1012.
36. Szegda K, Markenson G, Bertone-Johnson E, et al. Depression during pregnancy: a risk factor for adverse neonatal outcomes? A critical review of the literature. *J Matern Fetal Neonatal Med*. 2013;27:960–967.
37. Ding X, Wu Y, Xu S, et al. Maternal anxiety during pregnancy and adverse birth outcomes: a systematic review and meta-analysis of prospective cohort studies. *J Affect Disord*. 2014; 159:103–110.
38. Accortt EE, Cheadle AC, Dunkel Schetter C. Prenatal depression and adverse birth outcomes: an updated systematic review. *Matern Child Health J*. 2014;19:1306–1337.
39. Howell E, Mora P, Leventhal H. Correlates of early postpartum depressive symptoms. *Matern Child Health J*. 2005;10: 149–157.
40. Orr S, Blazer D, James S. Racial disparities in elevated prenatal depressive symptoms among black and white women in eastern North Carolina. *Ann Epidemiol*. 2006;16:463–468.
41. Segre L, O'Hara M, Losch M. Race/ethnicity and perinatal depressed mood. *J Reprod Infant Psychol*. 2006;24:99–106.
42. Huizink AC, de Medina PG, Mulder EJ, et al. Coping in normal pregnancy. *Ann Behav Med*. 2002;24:132–140.
43. Huizink AC, de Medina PG, Mulder EJ, et al. Psychological measures of prenatal stress as predictors of infant temperament. *J Am Acad Child Adolesc Psychiatry*. 2002;41:1078–1085.
44. Bergman K, Sarkar P, O'Connor T, et al. Maternal stress during pregnancy predicts cognitive ability and fearfulness in infancy. *J Am Acad Child Adolesc Psychiatry*. 2007;46:1454–1463.
45. Davis E, Sandman C. The timing of prenatal exposure to maternal cortisol and psychosocial stress is associated with human infant cognitive development. *Child Dev*. 2010;81:131–148.
46. Davis E, Snidman N, Wadhwa P, et al. Prenatal maternal anxiety and depression predict negative behavioral reactivity in infancy. *Infancy*. 2004;6:319–331.
47. O'Connor TG, Heron J, Golding J, et al. Maternal antenatal anxiety and children's behavioural/emotional problems at 4 years. Report from the Avon Longitudinal Study of parents and children. *Br J Psychiatry*. 2002;180:502–508.
48. O'Connor TG, Heron J, Golding J, et al. Maternal antenatal anxiety and behavioural/emotional problems in children: a test of a programming hypothesis. *J Child Psychol Psychiatry*. 2003;44: 1025–1036.
49. Buss C, Davis E, Muftuler L, et al. High pregnancy anxiety during mid-gestation is associated with decreased gray matter density in 6–9-year-old children. *Psychoneuroendocrinology*. 2010;35: 141–153.
50. Mennes M, Stiers P, Lagae L, et al. Long-term cognitive sequelae of antenatal maternal anxiety: involvement of the orbitofrontal cortex. *Neurosci Biobehav Rev*. 2006;30:1078–1086.
51. van den Bergh BR, Mennes M, Stevens V, et al. ADHD deficit as measured in adolescent boys with a continuous performance task is related to antenatal maternal anxiety. *Pediatr Res*. 2006;59:78–82.
52. van den Bergh B, Marcoen A. High antenatal maternal anxiety is related to ADHD symptoms, externalizing problems, and anxiety in 8- and 9-year-olds. *Child Dev*. 2004;75:1085–1097.
53. van den Bergh BR, Mulder EJ, Mennes M, et al. Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: links and possible mechanisms. A review. *Neurosci Biobehav Rev*. 2005;29:237–258.
54. Khashan A, Abel K, McNamee R, et al. Higher risk of offspring schizophrenia following antenatal maternal exposure to severe adverse life events. *Arch Gen Psychiatry*. 2008;65:146–152.
55. Manzoni GM, Pagnini F, Castelnuovo G, et al. Relaxation training for anxiety: a ten-years systematic review with meta-analysis. *BMC Psychiatry*. 2008;8:41.
56. Ho FY, Chung KF, Yeung WF, et al. Self-help cognitive-behavioral therapy for insomnia: a meta-analysis of randomized controlled trials. *Sleep Med Rev*. 2015;19:17–28.
57. Koffel EA, Koffel JB, Gehrman PR. A meta-analysis of group cognitive behavioral therapy for insomnia. *Sleep Med Rev*. 2015;19:6–16.
58. Exercise during pregnancy—ACOG. Available at: http://www.acog.org/Patients/FAQs/Exercise-During-Pregnancy. Accessed May 19, 2017.
59. Herring MP, O'Connor PJ, Dishman RK. The effect of exercise training on anxiety symptoms among patients: a systematic review. *Arch Intern Med*. 2010;170:321–331.
60. Krogh J, Nordentoft M, Sterne JA, et al. The effect of exercise in clinically depressed adults: systematic review and meta-analysis of randomized controlled trials. *J Clin Psychiatry*. 2011;72:529–538.
61. Nutrition During Pregnancy—ACOG. Available at: http://www.acog.org/Patients/FAQs/Nutrition-During-Pregnancy. Accessed May 19, 2017.
62. Lai JS, Hiles S, Bisquera A, et al. A systematic review and meta-analysis of dietary patterns and depression in community-dwelling adults. *Am J Clin Nutr*. 2014;99:181–197.
63. Anglin RE, Samaan Z, Walter SD, et al. Vitamin D deficiency and depression in adults: systematic review and meta-analysis. *Br J Psychiatry*. 2013;202:100–107.
64. DiMatteo MR, Lepper HS, Croghan TW. Depression is a risk factor for noncompliance with medical treatment: meta-analysis of the effects of anxiety and depression on patient adherence. *Arch Intern Med*. 2000;160:2101–2107.
65. Chen K, Berger C, Manheimer E, et al. Meditative therapies for reducing anxiety: a systematic review and meta-analysis of randomized controlled trials. *Depress Anxiety*. 2012;29:545–562.
66. Newham JJ, Westwood M, Aplin JD, et al. State-trait anxiety inventory (STAI) scores during pregnancy following intervention with complementary therapies. *J Affect Disord*. 2012;142:22–30.
67. Taylor SE, Repetti RL, Seeman T. Health psychology: what is an unhealthy environment and how does it get under the skin? *Annu Rev Psychol*. 1997;48:411–447.
68. Pina-Camacho L, Jensen SK, Gaysina D, et al. Maternal depression symptoms, unhealthy diet and child emotional-behavioural dysregulation. *Psychol Med*. 2015;45:1851–1860.
69. Lobel M, Cannella DL, Graham JE, et al. Pregnancy-specific stress, prenatal health behaviors, and birth outcomes. *Health Psychol*. 2008;27:604–615.
70. Dunkel Schetter C, Prentice J, Lu M, et al. *Psychosocial stress and preterm delivery in pregnant women of Mexican origin and descent*. Los Angeles, CA: University of California; 2010.
71. Nonacs R, Cohen LS. Postpartum mood disorders: diagnosis and treatment guidelines. *J Clin Psychiatry*. 1998;59(suppl 2):34–40.
72. Gale S, Harlow BL. Postpartum mood disorders: a review of clinical and epidemiological factors. *J Psychosom Obstet Gynaecol*. 2003;24:257–266.
73. Grigoriadis S, Romans S. Postpartum psychiatric disorders: what do we know and where do we go? *Current Psychiatry Reviews*. 2006;2:151–158.

74. Sit D, Rothschild AJ, Wisner KL. A review of postpartum psychosis. *J Womens Health (Larchmt)*. 2006;15:352–368.
75. Zelkowitz P, Milet T. The course of postpartum psychiatric disorders in women and their partners. *J Nerv Ment Dis*. 2001;189:575–582.
76. Yim IS, Tanner Stapleton LR, Guardino CM, et al. Biological and psychosocial predictors of postpartum depression: systematic review and call for integration. *Annu Rev Clin Psychol*. 2015;11: 99–137.
77. Horowitz J, Goodman J. A longitudinal study of maternal postpartum depression symptoms. *Res Theory Nurs Pract*. 2004;18:149–163.
78. Reck C, Struben K, Backenstrass M, et al. Prevalence, onset and comorbidity of postpartum anxiety and depressive disorders. *Acta Psychiatr Scand*. 2008;118:459–468.
79. Wenzel A, Haugen EN, Jackson LC, et al. Anxiety symptoms and disorders at eight weeks postpartum. *J Anxiety Disord*. 2005;19:295–311.
80. Gavin NI, Gaynes BN, Lohr KN, et al. Perinatal depression: a systematic review of prevalence and incidence. *Obstet Gynecol*. 2005;106(5 pt 1):1071–1083.
81. Fairbrother N, Janssen P, Antony M, et al. Perinatal anxiety disorder prevalence and incidence. *J Affect Disord*. 2016;200: 148–155.
82. Bener A, Gerber LM, Sheikh J. Prevalence of psychiatric disorders and associated risk factors in women during their postpartum period: a major public health problem and global comparison. *Int J Womens Health*. 2012;4:191–200.
83. Matthey S, Barnett B, Howie P, et al. Diagnosing postpartum depression in mothers and fathers: whatever happened to anxiety? *J Affect Disord*. 2003;74:139–147.
84. Yelland J, Sutherland G, Brown S. Postpartum anxiety, depression and social health: findings from a population-based survey of Australian women. *BMC Public Health*. 2010;10:771.
85. Tahirkheli NN, Cherry AS, Tackett AP, et al. Postpartum depression on the neonatal intensive care unit: current perspectives. *Int J Womens Health*. 2014:6:975–987.
86. Beck CT, Gable RK, Sakala C, et al. Posttraumatic stress disorder in new mothers: results from a two-stage U.S. national survey. *Birth*. 2011;38:216–227.
87. Lefkowitz D, Baxt C, Evans J. Prevalence and correlates of posttraumatic stress and postpartum depression in parents of infants in the neonatal intensive care unit (NICU). *J Clin Psychol Med Settings*. 2010;17:230–237.
88. Furuta M, Sandall J, Cooper D, et al. The relationship between severe maternal morbidity and psychological health symptoms at 6–8 weeks postpartum: a prospective cohort study in one English maternity unit. *BMC Pregnancy Childbirth*. 2014;14:133.
89. Daugirdaitė V, van den Akker O, Purewal S. Posttraumatic stress and posttraumatic stress disorder after termination of pregnancy and reproductive loss: a systematic review. *J Pregnancy*. 2015;2015:646345.
90. Murray L, Cooper P. The impact of postpartum depression on child development. *Int Rev Psychiatry*. 1996;8:55–63.
91. Misri S, Kendrick K. Perinatal depression, fetal bonding, and mother-child attachment: a review of the literature. *Curr Pediatr Rev*. 2008;4:66–70.
92. Murray L. The development of children of postnatally depressed mothers: evidence from the Cambridge longitudinal study. *Psychoanal Psychother*. 2009;23:185–199.
93. Tronick E, Reck C. Infants of depressed mothers. *Harv Rev Psychiatry*. 2009;17:147–156.
94. Grace S, Evindar A, Stewart D. The effect of postpartum depression on child cognitive development and behavior: a review and critical analysis of the literature. *Arch Womens Ment Health*. 2003;6:263–274.
95. Feldman R, Granat A, Pariente C, et al. Maternal depression and anxiety across the postpartum year and infant social engagement, fear regulation, and stress reactivity. *J Am Acad Child Adolesc Psychiatry*. 2009;48:919–927.
96. Fihrer I, McMahon C, Taylor A. The impact of postnatal and concurrent maternal depression on child behaviour during the early school years. *J Affect Disord*. 2009;119:116–123.
97. Milgrom J, Westley D, Gemmill A. The mediating role of maternal responsiveness in some longer term effects of postnatal depression on infant development. *Infant Behav Dev*. 2004;27: 443–454.
98. Moehler E, Brunner R, Wiebel A, et al. Maternal depressive symptoms in the postnatal period are associated with long-term impairment of mother-child bonding. *Arch Womens Ment Health*. 2006;9:273–278.
99. Halligan S, Murray L, Martins C, et al. Maternal depression and psychiatric outcomes in adolescent offspring: a 13-year longitudinal study. *J Affect Disord*. 2007;97:145–154.
100. Pawluski J, Lonstein J, Fleming A. The neurobiology of postpartum anxiety and depression. *Trends Neurosci*. 2017;40:106–120.
101. Priest S, Barnett B. Perinatal anxiety and depression: issues, outcomes and interventions. In: Sved-Williams A, Cowling V, eds. *Infants of Parents With Mental Illness: Developmental, Clinical, Cultural and Personal Perspectives*. 1st ed. Bowen Hills, Australia: Australian Academic Press; 2008.
102. Ramchandani P, Psychogiou L. Paternal psychiatric disorders and children's psychosocial development. *Lancet*. 2009;374:646–653.
103. Kim P, Swain JE. Sad dads: paternal postpartum depression. *Psychiatry (Edgmont)*. 2007;4:35–47.
104. Matthey S, Barnett B, Kavanagh DJ, et al. Validation of the Edinburgh Postnatal Depression Scale for men, and comparison of item endorsement with their partners. *J Affect Disord*. 2001;64:175–184.
105. Kendig S, Keats JP, Hoffman MC, et al. Consensus bundle on maternal mental health: perinatal depression and anxiety. *J Midwifery Womens Health*. 2017;62:232–239.
106. Dunkel Schetter C, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry*. 2012;25:141–148.
107. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry*. 1987;150:782–786.
108. Spitzer R, Williams J, Kroenke K, et al. Validity and utility of the PRIME-MD Patient Health Questionnaire in assessment of 3000 obstetric-gynecologic patients: the PRIME-MD Patient Health Questionnaire Obstetrics-Gynecology Study. *Am J Obstet Gynecol*. 2000;183:759–769.
109. Radloff L. The CES-D Scale: a self-report depression scale for research in the general population. *Appl Psychol Meas*. 1977;1:385–401.
110. Beck AT, Ward CH, Mendelson M, et al. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4:561–571.
111. Kennerley H, Gath D. Maternity blues. I. Detection and measurement by questionnaire. *Br J Psychiatry*. 1989;155:356–362.
112. Boyd R, Le H, Somberg R. Review of screening instruments for postpartum depression. *Arch Womens Ment Health*. 2005;8: 141–153.
113. Austin MP, Lumley J. Antenatal screening for postnatal depression: a systematic review. *Acta Psychiatr Scand*. 2003;107:10–17.
114. Austin M, Kingston D. Psychosocial assessment and depression screening in the perinatal period: benefits, challenges and implementation. In: Sutter Dallay A, Glangeaud-Freudenthal N, Guedeney A, et al, eds. *Joint Care of Parents and Infants in Perinatal Psychiatry*. 1st ed. Cham, Switzerland: Springer International Publishing; 2016:167–195.
115. Matthey S, Fisher J, Rowe H. Using the Edinburgh Postnatal Depression Scale to screen for anxiety disorders: conceptual and methodological considerations. *J Affect Disord*. 2013;146: 224–230.
116. Kabir K, Sheeder J, Kelly L. Identifying postpartum depression: are 3 questions as good as 10? *Pediatrics*. 2008;122: e696–e702.
117. Bodenlos K, Maranda L, Deligiannidis K. Comparison of the use of the EPDS-3 vs. EPDS-10 to identify women at risk for peripartum depression [3K]. *Obstet Gynecol*. 2016;127:89S–90S.

118. Norman S, Hami Cissell S, Means-Christensen A, et al. Development and validation of an Overall Anxiety Severity and Impairment Scale (OASIS). *Depress Anxiety*. 2006;23:245–249.
119. Horowitz M, Wilner N, Alvarez W. Impact of Event Scale: a measure of subjective stress. *Psychosom Med*. 1979;41:209–218.
120. Earls M. Incorporating recognition and management of perinatal and postpartum depression into pediatric practice. *Pediatrics*. 2010;126:1032–1039.
121. O'Connor E, Rossom R, Henninger M, et al. *Screening for Depression in Adults: An Updated Systematic Evidence Review for the US Preventive Services Task Force: Evidence Synthesis No. 128*. 1st ed. Rockville, MD: Agency for Healthcare Research and Quality; 2016.
122. O'Connor E, Rossom RC, Henninger M, et al. 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*. 2016;315:388–406.
123. Buist AE, Barnett BE, Milgrom J, et al. To screen or not to screen—that is the question in perinatal depression. *Med J Aust*. 2002;177:S101–S105.
124. Bringing Postpartum Depression Out of the Shadows Act of 2015 (2015—H.R. 3235). *GovTrackus*. 2015. Available at: https://www.govtrack.us/congress/bills/114/hr3235. Accessed December 2, 2016.
125. Schoenbaum M, Unützer J, Sherbourne C, et al. Cost-effectiveness of practice-initiated quality improvement for depression: results of a randomized controlled trial. *JAMA*. 2001;286:1325–1330.
126. Simon G, Manning W, Katzelnick D, et al. Cost-effectiveness of systematic depression treatment for high utilizers of general medical care. *Arch Gen Psychiatry*. 2001;58:181–187.
127. Wilkinson A, Anderson S, Wheeler SB. Screening for and treating postpartum depression and psychosis: a cost-effectiveness analysis. *Matern Child Health J*. 2017;21:903–914.
128. Dennis CL, Chung-Lee L. Postpartum depression help-seeking barriers and maternal treatment preferences: a qualitative systematic review. *Birth*. 2006;33:323–331.
129. Loudon H, Nentin F, Silverman ME. Using clinical decision support as a means of implementing a universal postpartum depression screening program. *Arch Womens Ment Health*. 2016;19:501–505.
130. Austin M, Highet N. *Clinical Practice Guidelines for Depression and Related Disorders, Anxiety, Bipolar Disorder and Puerperal Psychosis in the Perinatal Period*. 1st ed. Melbourne, Australia: Beyond the Blue – The National Depression Initiative; 2011.
131. Buist A, Condon J, Brooks J, et al. Acceptability of routine screening for perinatal depression. *J Affect Disord*. 2006;93:233–237.
132. Gemmill AW, Leigh B, Ericksen J, et al. A survey of the clinical acceptability of screening for postnatal depression in depressed and non-depressed women. *BMC Public Health*. 2006;6:211.
133. Teng L, Robertson Blackmore E, Stewart D. Healthcare worker's perceptions of barriers to care by immigrant women with postpartum depression: an exploratory qualitative study. *Arch Womens Ment Health*. 2007;10:93–101.
134. O'Mahen HA, Flynn HA. Preferences and perceived barriers to treatment for depression during the perinatal period. *J Womens Health (Larchmt)*. 2008;17:1301–1309.
135. Abrams LS, Dornig K, Curran L. Barriers to service use for postpartum depression symptoms among low-income ethnic minority mothers in the United States. *Qual Health Res*. 2009;19:535–551.
136. Campos B, Schetter C, Walsh J, et al. Sharpening the focus on acculturative change. *Hispanic J Behav Sci*. 2007;29:209–224.
137. Scrimshaw S, Zambrana R, Dunkel Schetter C. Issues in Latino women's health: myths and challenges. In: Ruzek S, Oleson V, Clarke A, eds. *Women's Health: Complexities and Differences*. 1st ed. Columbus, OH: Ohio State University Press; 1997:329–347.
138. Bhat A, Reed SD, Unützer J. The obstetrician-gynecologist's role in detecting, preventing, and treating depression. *Obstet Gynecol*. 2017;129:157–163.
139. Battle C, Howard M. A mother-baby psychiatric day hospital: history, rationale, and why perinatal mental health is important for obstetric medicine. *Obstet Med*. 2014;7:66–70.
140. Stowe Z, Calhoun K, Ramsey C, et al. Mood disorders during pregnancy and lactation: defining issues of exposure and treatment. *CNS Spectr*. 2001;6:150–166.
141. NICE. *Antenatal and Postnatal Mental Health: The NICE Guideline on Clinical Management and Service Guidance*. Leicester: NICE; 2007.
142. Bonari L, Pinto N, Ahn E, et al. Perinatal risks of untreated depression during pregnancy. *Can J Psychiatry*. 2004;49:726–735.
143. Dosset E. The role of reproductive psychiatry in women's mental health. In: Barnes D, ed. *Women's Reproductive Mental Health Across the Lifespan*. 1st ed. Cham, Switzerland: Springer International Publishing; 2014.
144. Einarson T, Einarson A. Newer antidepressants in pregnancy and rates of major malformations: a meta-analysis of prospective comparative studies. *Pharmacoepidemiol Drug Saf*. 2005;14:823–827.
145. De las Cuevas C, Sanz EJ. Safety of selective serotonin reuptake inhibitors in pregnancy. *Curr Drug Saf*. 2006;1:17–24.
146. Rahimi R, Nikfar S, Abdollahi M. Pregnancy outcomes following exposure to serotonin reuptake inhibitors: a meta-analysis of clinical trials. *Reprod Toxicol*. 2006;22:571–575.
147. Bellantuono C, Migliarese G, Gentile S. Serotonin reuptake inhibitors in pregnancy and the risk of major malformations: a systematic review. *Hum Psychopharmacol*. 2007;22:121–128.
148. Reefhuis J, Devine O, Friedman JM, et al. Specific SSRIs and birth defects: Bayesian analysis to interpret new data in the context of previous reports. *BMJ*. 2015;351:h3190.
149. Huybrechts KF, Palmsten K, Avorn J, et al. Antidepressant use in pregnancy and the risk of cardiac defects. *N Engl J Med*. 2014;370:2397–2407.
150. Cohen LS, Altshuler LL, Harlow BL, et al. Relapse of major depression during pregnancy in women who maintain or discontinue antidepressant treatment. *JAMA*. 2006;295:499–507.
151. Malm H, Sourander A, Gissler M, et al. Pregnancy complications following prenatal exposure to SSRIs or maternal psychiatric disorders: results from population-based national register data. *Am J Psychiatry*. 2015;172:1224–1232.
152. Ross LE, Grigoriadis S, Mamisashvili L, et al. Selected pregnancy and delivery outcomes after exposure to antidepressant medication: a systematic review and meta-analysis. *JAMA Psychiatry*. 2013;70:436–443.
153. Beddoe AE, Lee KA. Mind-body interventions during pregnancy. *J Obstet Gynecol Neonatal Nurs*. 2008;37:165–175.
154. Butler A, Chapman J, Forman E, et al. The empirical status of cognitive-behavioral therapy: a review of meta-analyses. *Clin Psychol Rev*. 2006;26:17–31.
155. Burns A, O'Mahen H, Baxter H, et al. A pilot randomised controlled trial of cognitive behavioural therapy for antenatal depression. *BMC Psychiatry*. 2013;13:33.
156. O'Mahen H, Himle J, Fedock G, et al. A pilot randomized controlled trial of cognitive behavioral therapy for perinatal depression adapted for women with low incomes. *Depress Anxiety*. 2013;30:679–687.
157. Sockol L, Epperson C, Barber J. A meta-analysis of treatments for perinatal depression. *Clin Psychol Rev*. 2011;31:839–849.
158. Dennis CL, Ravitz P, Grigoriadis S, et al. The effect of telephone-based interpersonal psychotherapy for the treatment of postpartum depression: study protocol for a randomized controlled trial. *Trials*. 2012;13:38.
159. Reay R, Mulcahy R, Wilkinson R, et al. The development and content of an interpersonal psychotherapy group for postnatal depression. *Int J Group Psychother*. 2012;62:221–251.
160. Stuart S. Interpersonal psychotherapy for postpartum depression. *Clin Psychol Psychother*. 2012;19:134–140.
161. Bhat A, Grote NK, Russo J, et al. Collaborative care for perinatal depression among socioeconomically disadvantaged women:

adverse neonatal birth events and treatment response. *Psychiatr Serv*. 2017;68:17–24.
162. Brandon A, Ceccotti N, Hynan L, et al. Proof of concept: partner-assisted interpersonal psychotherapy for perinatal depression. *Arch Womens Ment Health*. 2012;15:469–480.
163. Lu Q, Lu M, Schetter C. Learning from success and failure in psychosocial intervention: an evaluation of low birth weight prevention trials. *J Health Psychol*. 2005;10:185–195.
164. Norbeck JS, DeJoseph JF, Smith RT. A randomized trial of an empirically-derived social support intervention to prevent low birthweight among African American women. *Soc Sci Med*. 1996;43:947–954.
165. Ickovics JR, Kershaw TS, Westdahl C, et al. Group prenatal care and perinatal outcomes: a randomized controlled trial. *Obstet Gynecol*. 2007;110(2, part 1):330–339.
166. Brown K, Ryan R, Creswell J. Mindfulness: theoretical foundations and evidence for its salutary effects. *Psychol Inq*. 2007;18: 211–237.
167. Beddoe AE, Paul Yang CP, Kennedy HP, et al. The effects of mindfulness-based yoga during pregnancy on maternal psychological and physical distress. *J Obstet Gynecol Neonatal Nurs*. 2009;38:310–319.
168. Duncan LG, Bardacke N. Mindfulness-based childbirth and parenting education: promoting family mindfulness during the perinatal period. *J Child Fam Stud*. 2010;19:190–202.
169. Dunn C, Hanieh E, Roberts R, et al. Mindful pregnancy and childbirth: effects of a mindfulness-based intervention on women's psychological distress and well-being in the perinatal period. *Arch Womens Ment Health*. 2012;15:139–143.
170. Muzik M, Hamilton S, Lisa Rosenblum K, et al. Mindfulness yoga during pregnancy for psychiatrically at-risk women: preliminary results from a pilot feasibility study. *Complement Ther Clin Pract*. 2012;18:235–240.
171. Lever Taylor B, Cavanagh K, Strauss C. The effectiveness of mindfulness-based interventions in the perinatal period: a systematic review and meta-analysis. *PLoS One*. 2016;11: e0155720.
172. Manber R, Schnyer RN, Lyell D, et al. Acupuncture for depression during pregnancy: a randomized controlled trial. *Obstet Gynecol*. 2010;115:511–520.
173. Deligiannidis KM, Freeman MP. Complementary and alternative medicine for the treatment of depressive disorders in women. *Psychiatr Clin North Am*. 2010;33:441–463.
174. IsHak W, Lopez E, Steiner A, et al. Evaluating the impact of depression screening in general hospitals: a pilot study of patient reported outcomes of quality of life, functioning, and psychiatric symptom severity. *Int J Med*. 2016;4:32–38.
175. Rice S. *Screen for depression on admission*. 2016. Available at: http://www.modernhealthcare.com/article/20160130/MAGAZINE/301309996. Accessed May 19, 2017.
176. Sidebottom A, Harrison P, Godecker A, et al. Validation of the Patient Health Questionnaire (PHQ)-9 for prenatal depression screening. *Arch Womens Ment Health*. 2012;15:367–374.
177. Yawn BP, Pace W, Wollan PC, et al. Concordance of Edinburgh Postnatal Depression Scale (EPDS) and Patient Health Questionnaire (PHQ-9) to assess increased risk of depression among postpartum women. *J Am Board Fam Med*. 2009;22: 483–491.