

A Comprehensive Review of Postpartum Depression (PPD) for Healthcare Providers

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Note: This article is best suited for professionals with a background in research and mental health. MOST provides this review for informational purposes and cautions visitors not to use the content below to make treatment decisions without personally consulting a qualified health care provider.

Introduction

Up to 80% of women experience some form of depressive symptoms following childbirth, commonly referred to as “baby blues” (Bennett & Indman, 2003). These mild depressive symptoms are often transitory in nature and resolve without treatment. For 7 to 26% of women, however, these depressive symptoms escalate, present for a longer duration and typically require intervention (Bennett, Einarson, Taddio, et al., 2004; Bowers, 2001; Leonard, 1998; Miller, 2002; O’Hara & Swain, 1996; Troutman & Cutrona, 1990; Robertson, Grace, Wallington & Stewart, 2004). Women presenting with such chronic and elevated levels of depressive symptoms may be experiencing postpartum depression (PPD). Unlike postpartum minor depression (or “baby blues”), postpartum depression typically does not resolve without clinical intervention.

Although the rates of depression vary depending on the population sampled and the type and timing of the assessment measure utilized (Gaynes, Gavin, Meltzer-Brody, et al., 2005), PPD is currently the leading disorder in mothers following childbirth (Gjerdingen & Yawn, 2007). Due to the large number of women afflicted, and the potentially devastating effects of untreated PPD (i.e., infanticide and suicide), it is important for clinical providers to have a comprehensive understanding of postpartum depression. The topics covered in this course will enable healthcare professionals to develop a framework for providing optimal patient care. Specifically, this course will review PPD diagnostic criteria, differential diagnosis, validated screening measures, risk factors, adverse outcomes of untreated PPD, treatment options and future clinical implications.

Diagnostic Criteria

Based on the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV^{TR}, 2000) criteria, postpartum depression (PPD) falls under the diagnostic criteria for Major Depressive Episode with Postpartum Onset. DSM-IV^{TR} (2000) criteria state that symptoms must begin within four weeks of delivery, last a minimum of two weeks and cause clinically significant impairment in daily functioning. Research suggests that women presenting with symptoms of postpartum depression typically remain at increased risk of depression through the postpartum year (Gjerdingen & Yawn, 2007). Table 1 below provides a review of the DSM-IV^{TR} (2000) diagnostic criteria for a Major Depressive Episode with postpartum onset.

Table 1. A Synopsis of DSM-IV-TR Criteria for Major Depressive Episode, with Postpartum Onset¹

1. The patient must present with at least one of the following for at least a two week time period:
 - Depressed mood or
 - Anhedonia
2. At least five of the following symptoms must be present over the two week interval:
 - Feeling depressed most of the time, nearly every day
 - Decrease in pleasure or interest in all, or almost all, daily activities
 - Changes in appetite (with marked weight gain or loss)
 - Sleep disturbance (insomnia, hypersomnia)
 - Psychomotor retardation or agitation nearly every day
 - Lack of energy or fatigue nearly every day
 - Intense feelings of inappropriate or excessive guilt or worthlessness
 - Difficulty concentrating, or making decisions, nearly every day
 - Frequently occurring thoughts of death, suicide or suicidal plan
3. Symptoms endorsed are causing significant impairment or distress in social, vocational, or other important daily living functions.
4. “Postpartum Onset Specifier” if the current onset of symptoms is within four weeks following childbirth.

NOTE: This list of diagnostic criteria is provided to increase practitioner’s awareness of APA guidelines for diagnosing depression during the postpartum period. It should be noted, however, that this list may not be inclusive of all symptoms of PPD and should not be the only tool used to screen for depression. If a patient appears significantly depressed during examination, referral for additional screening and treatment is advised.

In addition, a “postpartum onset specifier” can be added to a Major Depressive, Manic or Mixed Episode in Major Depressive Episode, Bipolar I or II Disorder, or Brief Psychotic Disorder (see DSM-IV-TR, p. 422-423) for additional information.

¹American Psychiatric Association. *Diagnostic and statistical manual of mental disorders. 4th ed, text rev.* Washington, DC: American Psychiatric Association, 2000.

Symptoms of postpartum depression may include depressed mood, anhedonia, psychomotor agitation, or feelings of worthlessness. Several other traditional symptoms of a depressive episode, such as fluctuations in weight, fatigue, and sleep disturbance, routinely occur in women during the postpartum period. It is important for healthcare providers to assess if symptoms present reflect an exacerbation beyond normal postpartum changes. If the difference is not clear to primary care providers, a mental health referral for further assessment is warranted.

Differential Diagnosis

Although postpartum depression is the most common postpartum affective disorder, there are several other postpartum disorders. The most severe disorder that occurs in the postpartum period is known as postpartum psychosis. If present, the mother may experience psychotic thoughts that place her and her child(ren) in imminent danger. A mother diagnosed with postpartum psychosis typically presents with hallucinations (auditory and/or visual), delusional thoughts (false beliefs) and agitation. Postpartum psychosis typically has an early onset and is more common in women with histories of bipolar disorder (Mehta & Sheth, 2006). Although this disorder is rare (1-2%), a patient should immediately be referred for crisis intervention due to the devastating impact and potential for harm to self and others.

There are also a cluster of anxiety disorders, known as postpartum anxiety disorders (such as panic disorder, obsessive-compulsive disorder), in which a mother presents with escalating symptoms of the disorder that are more pronounced following childbirth. Obsessive-compulsive disorder is the most common postpartum anxiety disorder, with mothers typically presenting with significant obsessions regarding the well-being of her child (Mehta & Sheth, 2006). Untreated, many of those suffering with postpartum anxiety disorders ultimately develop postpartum depression (Wittenberg, Family Mental Health Institute, 2006).

Women who present with postpartum depression often have other common comorbid diagnoses. Brockington and colleagues (2006) report that 27% of women with postpartum depression in their study also presented with two or more comorbid diagnoses. In Kelly and colleagues' (2001) sample, over 50% of women presenting with depression during pregnancy also screened positive for psychiatric disorders or substance use. The most common comorbid diagnoses associated with PPD include anxiety disorders, such as obsessive-compulsive disorder and post-traumatic stress disorder, and substance abuse disorders (Battle, Zlotnick, Miller, et al., 2006; Brockington, Macdonald & Wainscott, 2006). A thorough clinical interview should be conducted in order to determine the most appropriate and efficacious treatment available for the complex presentation and history of each patient.

Risk Factors Associated with the Development of Postpartum Depression

Up to one-quarter of all women experience a Major Depressive Episode over their lifetime, with the peak incidence occurring during reproductive years (American Psychiatric Association, DSM-IV-TR, 2000). There has been a substantial body of research examining factors that are associated with the development of PPD. Unfortunately, many of these studies have had methodological limitations (e.g., small, convenience samples) and as such, definitive conclusions about risk factors in the onset of PPD cannot be drawn from these data. In a recent review, Robertson and colleagues (2004) summarized research with strong methodological characteristics and proposed examining risk factors in terms of moderate-to-strong, moderate, and weak predictors of PPD. In their review, they present effect sizes with higher numbers reflecting stronger relationships and negative effect sizes indicating inverse

relationships. In addition, recent research and factors that have not been conclusively linked to PPD are included.

Based on Robertson and colleagues' (2004) analysis of prior studies, one of the strongest predictors of PPD is endorsing symptoms of depression (effect size = 0.75) or anxiety (effect size = 0.68) *during* pregnancy. "Moreover, higher levels of anxiety during pregnancy predicted the level of postpartum depression symptomatology" (Robertson, et al., 2004, p. 291). In another review, Ryan and colleagues (2005) found that having a personal history of depression or any psychiatric disorder predisposes one to greater risk of developing PPD. Bender (2003) found that women were 5 times more likely to present with elevated levels of depression if they had a prior history of major depression. PPD is also more likely if the mother experienced a prior episode of PPD with rates of recurrence varying from as low as 25% (Wisner, Parry & Piontek, 2002), increasing to 30 to 50% (Josefsson, Angelsioo, Berg, et al., 2002), and going as high as 50 to 100% (Gabbe, Niebyl, Landon, et al., 2007).

In addition to a personal history of depression, another moderate-to-strong risk factor for the onset of PPD is having limited social support (effect size = -0.64; Robertson, et al., 2004). Having a large and supportive network may provide immunity against the development of PPD. Specifically, PPD was less likely among women with higher quality support systems (Collins, Dunkel-Schetter, Lobel & Scrimshaw, 1993), including a 10% reduction in risk of PPD with an intact social support system (Howell, et al., 2005). Within the realm of support, having marital tension has been associated with PPD and is a moderate predictor of PPD (effect size = 0.39; Robertson, et al., 2004). In addition, one of the most consistent research findings indicates that one's *perceived* level of social support often mediates the relationship between stress and postpartum development (Logsdon & Usui, 2001).

Another moderate-to-strong risk factor related to PPD is having endured stressful life events (effect size = 0.61; Robertson, et al., 2004) such as divorce, job loss and death of a loved one. Further, Ryan and colleagues (2005) found that the following stressful life events may increase one's risk of developing PPD: childhood abuse, single parenting, marital conflict, domestic violence, unemployment, inadequate social support and smoking (a maladaptive coping response). Consistent with literature linking tobacco use to depression, McCoy and colleagues (2006) reported that cigarette smoking was also linked to an elevated risk of PPD. Having adaptive coping skills to handle such stressful life events may be beneficial in reducing the risk of PPD.

A moderate risk factor for the onset of PPD is maternal personality (effect size = 0.39; Robertson, et al., 2004). Specifically, endorsing neuroticism or negative cognitive attributional styles have been associated with PPD. Low self-esteem has also been implicated in the development of PPD (Logsdon & Usui, 2001).

In Robertson and colleagues' review (2004), family history of any psychiatric disorder was related to PPD, but had a small effect size. In a more recent review, Ryan and colleagues (2005) report that a personal and family history of depression "are substantial biological risk factors" in the development of PPD (p. 1090).

Additional factors that are related to the onset of PPD, but are weak factors, include socioeconomic status (effect size = -0.14) and obstetric factors (effect size = 0.26; Robertson, et al., 2004). Lower socioeconomic status (including such variables as unemployment, mother's occupation, maternal education, income and social status) is weakly related to the onset of PPD. Having complications during the pregnancy (e.g., preeclampsia) or at delivery (e.g., emergency caesarean section, premature labor) have also been weakly associated with PPD.

Several sociodemographic variables have been examined as predictors of PPD. With regard to ethnicity, a recent study by Howell and colleagues (2005) found that African-American and Hispanic mothers were more likely to endorse symptoms of PPD than Caucasian mothers, even after controlling for other individual, demographic and situational variables. Another study reported that depression was greater in mothers of African-American children, and among those of preterm and lower income families (Logsdon & Usui, 2001). Yet, a review of PPD, Beck and colleagues (2006) found that rates of confirmed PPD were comparable across countries. Additional research is warranted assessing factors related to race and ethnicity as potential risk factors for PPD. With regard to age, one study of adolescent mothers found that over 50% experienced symptoms of a major depressive episode during the first twelve months postpartum (Schmidt, Wiemann, Rickert, et al., 2006). However, aside from an elevated risk among teenage mothers, maternal age has not been associated with the onset of PPD (Robertson, et al., 2004; Smith, Wiemann, Rickert, et al., 2005; Troutman & Cutrona, 1990).

Changes in hormone levels are informally believed to lead to PPD, but, to date, there has not been any conclusive research linking hormonal changes as a causal factor in the onset of PPD. Data does exist implicating changes in progesterone, estradiol and prolactin levels, as well as changes in thyroid functioning and adrenal steroid level, in the development of depression (Bloch, Schmidt, Danaceau, et al., 2000; Halbreich, 2005; Harris, Othman, Davies, et al., 1993). Since hormonal levels immediately change following pregnancy, these changes may account for some of the immediate mood fluctuations. However, the development of significant postpartum symptoms appears to be related to additional necessary factors such as a sensitivity to "mood-destabilizing effects of gonadal steroids" (Bloch, et al., 2000, p. 924) or the interaction of hormonal factors and external stressors (Halbreich, 2005). As noted in a review by Gjerdingen and Yawn (2007), research examining hormonal factors has not been conclusive. Additional systematic research is necessary to assess the etiological, and possible interactive, role of hormonal factors in the development of PPD. Nevertheless, treating PPD with hormonal therapies has had some demonstrated support (as will be discussed in more detail later in the section devoted to treatment).

Studies have also shown a relationship between certain maternal and fetal medical problems and the onset of PPD. Specifically, mothers who endorsed an elevated level of physical symptoms (such as headaches, back pain and vaginal bleeding), had limitations to physical functioning (such as bathing and feeding an infant), and reported having an infant with colic, were more likely to present with PPD (Howell, Mora, Horowitz & Leventhal, 2005). Interestingly, one study revealed that an increased number of sick leave days and a higher

number of clinical antenatal visits were the best predictors of PPD (Josefsson, Angelsioo, Berg, et al., 2002). In addition, infant medical problems, including having an infant with colic and inconsolable, appears to increase a mother's risk of PPD (Howell, et al., 2005).

The number of children delivered in the pregnancy also appears to be associated with the development of PPD. Research has shown a significantly higher rate of depression among mothers of multiples, or even closely spaced siblings (Thorpe, Golding, MacGillivray & Greenwood, 1991). Moreover, these findings are independent of marital status, socioeconomic status, maternal age, number of children in the household or child disability (Thorpe, et al., 1991). Specifically, 34% of twin mothers were clinically depressed up to five years postpartum. The highest rates of depression were among mothers who had lost one of the twins – even at five years postpartum (Thorpe, et al., 1991). In two small-scale studies (sample sizes of 12 & 14), researchers found that 25 to 30% of mothers with triplets reported symptoms of depression at one year, with close to 40% being treated for major depression by 4 years postpartum (Garel & Blondel, 1992; Garel, Salobir, et al., 1997). In an unpublished study through the Mothers of Supertwins (MOST) organization, mothers of triplets or more endorsed twice as many symptoms of PPD than did mothers of twins, as well as significantly more isolation (MOST, 2003). According to one review, factors that may increase a mother of multiples risk of PPD include: sleep deprivation, physical and emotional demands of caring for multiples, higher rate of preterm deliveries, increase in social isolation following births, and possible hormonal changes (LaMonde, 2006).

Lastly, childcare-related issues, such as nursing and confidence in childcare abilities, may be associated with risk for PPD. Specifically, mothers who fed their infants formula instead of breastfeeding displayed higher rates of PPD (McCoy, Beal, Shipman, et al., 2006). McLearn and colleagues (2006) also found that depressed mothers were less likely to continue breastfeeding. Mothers who breastfed at 6 weeks postpartum were less likely to present with symptoms of depression; however, the inverse relationship between nursing and depression was not sustained at 12 weeks postpartum (Hatton, Harrison-Hohner, Coste, et al., 2005). Further examination of the potential protective impact of nursing is warranted. In addition, research has shown that lack of confidence in childcare abilities has been associated with increased risk of PPD (Howell, et al., 2005), and parenting classes may have a beneficial impact on reducing the risk of PPD (Forman, et al., 2000).

Screening for Postpartum Depression

All mothers, especially those who present with potential risk factors, should be screened during pregnancy and throughout the first postpartum year. Watson and colleagues (1984) found that almost one-quarter of the women suffering with postpartum depression had symptoms of depression that initiated during their pregnancy, highlighting the need for early screening and education. The importance of screening postpartum women is evident in the rise of psychiatric disorders during the postpartum period, including an increased rate of postpartum psychiatric hospitalizations (Kendall, Wainwright, Hailey & Shannon, 1976).

There are several well-validated brief-screening tools for depression as well as several empirically validated measures specifically focusing on depression during the postpartum period. Although these standardized measures are available, screening for postpartum depression is not a routine part of care in the United States (Georgiopoulos, Bryan, Wollan & Yawn, 2001). Interestingly, over the course of their prenatal care women are routinely screened for gestational diabetes even though the rate is only 1 in 20 compared to 1 in 5 women that present with PPD. Studies have demonstrated that over 80% of mothers would be receptive to PPD screening, a figure that is discrepant with the current screening rate of less than 50% (Gjerdingen & Yawn, 2007).

The first cluster of screening tools that have been utilized to screen for PPD are commonly used self-report measures of depression. These include the Beck Depression Inventory (BDI, BDI-II; Beck, Ward, Mendelson, et al., 1961; Beck, Rial, & Rickels, 1974; Beck & Steer, 1984), Hamilton Rating Scale for Depression (Hamilton, 1960), Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) and Zung's Self-Rating Depression Scale (Zung SDS; Zung, 1965). A caveat of utilizing these scales is the tendency of scale items to factor in multiple somatic symptoms of depression, which may artificially mimic normal fluctuations during the postpartum period (e.g., sleep disturbances, weight changes, restlessness, fatigue).

Starting in the late 1980's, more specific screening tools to assess PPD were derived. One of the first measures to specifically assess PPD was the Edinburgh Postnatal Depression Scale (Cox, Holden & Sagovsky, 1987). The EPDS is a short, 10-item self-report measure with four Likert-style response options (See Table 2 below). Scale developers reported test sensitivity of 86% and test specificity of 78% (Cox, et al., 1987). Leverton and Elliott (2004) found that the EPDS produced a sensitivity of 70% and specificity of 93% when a cut-off score of 12/13 was used at a three-month assessment and 90% sensitivity and 84% specificity when a cut-off score of 9/10 was utilized. Boyce and colleagues (1993) found that the EPDS produced a sensitivity of 100% and specificity of 95.7% when using a 12 or 13-point cutoff for depression. Gaynes and colleagues (2005) suggest that evidence supports a cutoff score of 13 or higher. In a recent review of measures (Gjerdingen & Yawn, 2007), the EPDS was the most extensively researched postpartum measure and was found to have "moderate psychometric soundness."

Table 2. Edinburgh Postnatal Depression Scale (EPDS)

Instructions:

1. Please underline the response that comes closest to how you have felt during the past 7 days.
2. Be sure to complete all ten items.
3. While completing this form, please do not discuss your responses with others.
4. If you need help reading or understanding items on this scale, please seek our assistance.
5. This scale is best completed at 6 to 8 weeks postpartum.

Name: _____ Infant Age(s): _____

Address: _____

We would like to know how you are feeling following childbirth. Please UNDERLINE the answer below that comes closest to how you have felt *IN THE PAST SEVEN DAYS*, not just how you feel today.

Edinburgh Postnatal Depression Scale¹

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

Table 3. Scoring the EPDS¹

- Score items # 1, 2 & 4 from “0 to 3”, as follows:

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

- All of the seven other items* are reverse scored from “3 to 0”, as follows:

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

- Be sure to note the response to item 10 on suicidal ideation prior to the patient’s departure and follow-up with the patient if she endorses suicidal ideation.

¹Adapted from: Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry*, 150, 782-786.

In a recent review of measures (Gjerdiengen & Yawn, 2007), the EPDS was the most extensively researched postpartum measure and was found to have “moderate psychometric soundness.” EPDS developers reported test sensitivity of 86% and test specificity of 78% (Cox, et al., 1987). Leverton and Elliott (2004) found that the EPDS produced a sensitivity of 70% and specificity of 93% when a cut-off score of 12/13 was used at a three-month assessment and 90% sensitivity and 84% specificity when a cut-off score of 9/10 was utilized. Boyce and colleagues (1993) found that the EPDS produced a sensitivity of 100% and specificity of 95.7% when using a 12 or 13-point cutoff for depression. Many researchers cite evidence supporting a cutoff score of 12 or above (Cox, et al., 1987; Evans, Heron, Francomb, et al., 2001; Leverton & Elliot, 2000; Murray & Cox, 1990) or 13 and above (Gaynes, Gavin, Meltzer-Brody, et al., 2005). Table 4 below summarizes interpretation recommendations for the EPDS.

Table 4. Interpreting the EPDS Score

The following are recommendations for EPDS scoring. *Regardless of score, clinical judgment should guide diagnosis and treatment recommendations.*

Scale developers proposed a cutoff score of 12+

(sensitivity of 86%, specificity of 78%; Cox, Holden & Sagovsky, 1987)

Empirical Evidence:

- 12+ Suggestive of a depressive disorder (Evans, Heron, Francomb, et al., 2001; Leverton & Elliot, 2000; Murray & Cox, 1990)
- 12 or 13 (sensitivity 100%, specificity 95.7%; Boyce, Stubbs & Todd, 1993)
- 13+ Major Depression (Gaynes, et al., 2005)

The state of New Jersey guidelines require screening before the new mother leaves the hospital and again after several weeks. The state considers scores of 12 or higher as “*at risk.*”

Moran and O’Hara (2006) recently developed the Edinburgh Postnatal Depression Scale – Partner version (EPDS-P). This 10-item measure was adapted from the EPDS and has demonstrated adequate reliability and validity in early studies (Moran & O’Hara, 2006). The EPDS-P highlights the additional benefit derived from assessing partners of women during the postpartum period.

Another postpartum scale that has been reviewed is the Postpartum Depression Screening Scale (PDSS; Beck & Gable, 2000). This self-report measure has 35 items and takes approximately 10 minutes to complete. It has demonstrated higher sensitivity than the BDI and is comparable to the EPDS (Gjerdingen & Yawn, 2007). Gaynes and colleagues (2005) suggest that a cut-off of 81 or higher is indicative of major depression. Additional research has shown that a cutoff score of 80 has a sensitivity of 94% and specificity of 98% (Morris-Rush & Bernstein, 2002).

Several other assessment tools for screening risk factors and antenatal depression are also available (see review by Beck, 2002 and Beck, Records, & Rice, 2006 for additional information). One of these measures includes the Postpartum Depression Predictors Inventory–Revised (PDPI-R; Beck, 2002). Such measures are helpful in identifying women who may be at risk of developing clinically significant levels of depression during the postpartum period. Gjerdingen and Yawn (2007) also reviewed the Patient Health

Questionnaire (PHQ-9) and found that the brief 2-item screening form of the PHQ has a sensitivity of 83% and specificity of 92%.

It is estimated that less than half of all practitioners are currently screening for PPD on a routine basis (Gjerdingen & Yawn, 2007). It is particularly alarming that in a review of screening practices (Gjerdingen & Yawn, 2007), 49% of the pediatricians surveyed (the subset of clinicians who will likely have the most direct and immediate contact with new mothers) did not report feeling knowledgeable about PPD and 93% were unfamiliar with assessment measures (Wiley, Burke, Gill & Law, 2004). Moreover, even when providers were properly informed on the topic, less than half were actively screening patients; identifying inadequate time to screen and, particularly among pediatricians, citing that the adult patient is not the primary focus and as such they may be uncomfortable screening and referring mothers for mental health services (Gjerdingen & Yawn, 2007). The rate of screening is greater during postpartum obstetric visits (70.2%); however, even within this population, only 18% of providers were using a validated assessment tool to screen for PPD (Seehusen, Baldwin, Runkle & Clark, 2005).

There appear to be three primary types, or categories, of barriers to screening and treating depression in primary care (Gjerdingen & Yawn, 2007). The first barrier category is specific to the patient and includes financial aspects (e.g., insurance, costs), limited time, lack of adherence to recommendations, concerns regarding social stigma and lack of access to care. It should be noted that mothers of multiples might present with additional childcare, financial and time constraint barriers. The second category of barriers are specific to the provider and include issues related to insurance (e.g., managed care policies), limited time, lack of training or awareness and concern about legal ramifications. The third set of barriers are called "systems based variables" and include lack of consistent follow-up and limited collaboration between mental and primary health care providers. Miscellaneous additional variables specific to postpartum care include maternal concern regarding treatment options (e.g., time, childcare, medication effects, reporting to child protective services).

It is critical to address these barriers to implement routine screening for women following childbirth. Generally, providers should consider screening for depression during pregnancy, prior to the mother being discharged from the hospital and for up to one year postpartum at routine obstetric follow-up visits, especially for women with a history of depression and limited social support system (Georgiopoulos, et al., 2001; Gjerdingen & Yawn, 2007; Ryan, Millis & Misri, 2005). Further, evidence suggests that screening at the infant's well visits may improve outcomes (Gjerdingen & Yawn, 2007). Pediatric offices should also be aware of the heightened risk of PPD in their mothers, encouraging routine screening and referrals in at-risk populations, such as mothers that have infants with colic or mothers of multiples. It is therefore important for providers to have an accurate list of referral resources to help improve maternal and family outcome. Overall, improving provider education about PPD and instilling assurance that providers will not face legal ramifications as a result of a recommendation and/or referral for screening may positively impact screening and treatment outcomes.

The Detrimental Effects of Untreated Postpartum Depression

There have been multiple adverse effects associated with untreated depression among postpartum women. In particular, research has focused on the detrimental impact of postpartum depression on the mother, father and child(ren). Each of these areas will be briefly reviewed below.

With regard to the mother, research has shown that untreated postpartum depression leaves the mother vulnerable to a poor quality of life (Beck, 1993) and to recurrent depressive episodes in the future (Leonard, 1998). Specifically, mothers who develop PPD are 25 to 100% more likely to experience a recurrent depressive episode in later pregnancies (Gabbe, et al., 2007; Josefsson, et al., 2002; Wisner, et al., 2002), with rates varying depending on assessment factors. There is a higher rate of marital discord when maternal PPD is present (Robertson, et al., 2004) and reportedly twice the risk of divorce within 2 years postpartum (Gjerdingen & Yawn, 2007; Yawn, 2006).

Maternal depression is also the strongest predictor of depression among fathers in the postpartum period (Goodman, 2004). Postpartum depression in fathers has also been implicated in an increase in psychiatric issues among their children. Specifically, children (especially sons) of depressed postpartum fathers were twice as likely to present with behavioral problems, such as attention and conduct disorders at age 3 ½, regardless of the mother's affective state (Ramchandani, Stein, Evans, et al., 2005).

With regard to the detrimental impact on children, there have been short-term effects, including impairing the mother-infant attachment (McMahon, Barnett, Kowalenko & Tennant, 2006; Ryan, Milis & Misri, 2005). One study of 4,874 mothers found that depressed mothers were less likely to spend time talking, playing and showing books to their infants (McLearn, Minkovitz, Strobino, et al., 2006). Not surprisingly, infants of mothers with PPD have also been shown to have significant cognitive and emotional delays (Beck, 1998).

PPD may also impact a child's long-term cognitive, emotional and behavioral presentation (Beck, 1998; Georgiopoulos, Bryan, Wollan, & Yawn, 2001; Ryan, Milis & Misri, 2005). For example, the impact of maternal depression on children has been shown to have long-term negative effects on cognitive skills (Cogill, Caplan, Alexandra, et al., 1986; Robertson, et al., 2004), social delays (Cogill, et al., 1986) and intellectual abilities (lower IQ scores at 11-years of age; Hay, Pawlby, Sharp, et al., 2001). Of note, boys tend to experience more significant impairments in IQ scores, reading comprehension abilities and mathematical reasoning skills when the mother has a history of PPD, as many as 11 years prior (Hay, et al., 2001).

An increased risk for the development of childhood psychiatric disorders is associated with a maternal history of PPD (Robertson, et al., 2004). Specifically, at age 11, children of mothers with PPD, displayed higher rates of attention and conduct disorders, with an elevated rate of violent behavior, compared to children of mothers without PPD (Hay, et al., 2001; Hay, Pawlby, Angold, et al., 2003). Weissman and colleagues (2004) found that depressed,

low-income mothers reported a 3-fold increased risk of serious emotional problems in their children, a 10-fold increase in poor maternal-child relations and were 4-times more likely to not seek treatment for their children's problems.

In addition to the aforementioned areas, PPD has also been associated with higher costs to society in terms of an increased number of work absences and a burden on the healthcare system (e.g., increase in sick days and antenatal and postpartum visits with physicians). In particular, Weissman and colleagues (2004) found that depressed mothers had more "functional disability" and increased psychiatric services. Moreover, children may present with long-term behavioral problems related to maternal depression, which involves additional healthcare expenditure.

In extreme cases, the ultimate devastating effect of PPD is the risk of suicide and infanticide/filicide (Yawn, 2006). Up to 20% of maternal deaths in the postpartum period appear to be due to suicide (Lindahl, Pearson & Colpe, 2005). Friedman and colleagues (2005) examined 39 forensic cases involving maternal filicide and found that 50% of the mothers presented with depression at the time of the offense, and 38% occurred during pregnancy or in the postpartum period.

There have been multiple media stories covering maternal suicides and infanticides/filicides during the postpartum period. The most well known case is that of Texas mother, Andrea Yates, who systematically drowned all five of her children seven months after delivering the couple's fifth child. Not as well known, is the case of Suzanne Killinger-Johnson, a 37-year-old medical doctor with a thriving psychotherapy practice, who jumped in front of a subway train with her six-month old son in her arms. Unlike Andrea Yates, Suzanne Killinger-Johnson had no known prior psychiatric history and apparently showed no signs of significant emotional distress prior to the night that the suicide-homicide occurred.

Given the myriad possible negative outcomes, early screening and referral for treatment are essential. Early screening and intervention can result in an improvement in child developmental and behavioral health outcomes, reduction in divorce rates and lower rates of infanticide and suicide (Gjerdingen & Yawn, 2006; Weissman, Pilowsky, Wickramaratne, et al., 2006). Furthermore, Weissman and colleagues (2006) found that treating the mother's depression resulted in a reduction or absence of psychopathology in her child; however, if untreated, a child's level of psychopathology increased. Taken together, findings suggest that it may be important to screen the mother, as well as her children, when considering the detrimental impact of PPD.

Treatment Options for Postpartum Depression

Initially, women presenting with symptoms of depression during the postpartum period should be evaluated for any underlying medical conditions, such as thyroid disorders (which tend to increase during the postpartum period; Mehta & Sheth, 2006). After ruling out other medical conditions that may be exacerbating depression, an assessment of the mother's comfort level with a variety of available treatment is important to improve treatment adherence. There are four evidence-based treatments typically implemented in women presenting with

depression during the postpartum period; psychotherapy, psychotropics, a combination of therapy and medication, and support/educational groups (Family Mental Health Institute, 2006; Gregoire, Kumar, Everitt, et al., 1996; Mehta & Sheth, 2006; Misri, Reebye, Corral & Milis, 2004; O'Hara, Stuart, Gorman & Wenzel, 2000; Ryan, Milis & Misri, 2005). Treatment should be determined based on the patient's history (i.e., was a prior antidepressant effective for this patient), medical conditions (i.e., anti-psychotics passing through breast milk), current symptoms (i.e., if suicidal or homicidal, placing the patient in intensive acute psychiatric services may be necessary) and the patient's treatment preferences (i.e., she may be nursing and reluctant to try an antidepressant, but agrees to a group therapy approach).

Although each of these treatments has shown a good degree of efficacy in treating depression, there have been limited systematic studies examining the effectiveness of these treatments in the PPD context. Treatment of PPD, and thereby its empirical examination, is complicated by multiple barriers that postpartum women present with such as time constraints while caring for a newborn, financial demands associated with a new child (e.g., nursery costs, loss of income due to maternity leave and/or limited work hours, childcare costs incurred if the mother seeks treatment), and reluctance among those nursing their newborn to consider psychotropic medications. However, a few clinical efficacy studies have focused on this population.

Traditional psychotherapy has been found to be effective in treating PPD. In particular, cognitive-behavioral therapy (CBT) has been efficacious as a monotherapy and in tandem with antidepressants; resulting in the same reduction in depressive and anxious symptoms whether alone or together (Misri, Reebye, Corral & Milis, 2004). O'Hara and colleagues (2000) found that mothers who received 12 individual sessions of interpersonal psychotherapy (IPT) over 12 weeks had lower scores on measures of depression and better postpartum adjustment at 4, 8 and 12-week follow-ups compared to mothers placed on a waiting list. Another preliminary study with a small sample and no control group reported that postpartum depressive symptoms improved in 87% of women receiving a group IPT format (Klier, Muzik, Rosenblum & Lenz, 2001).

There have been limited randomized, controlled studies examining psychotropic medications in the antenatal and postnatal period. Selective serotonin reuptake inhibitors (SSRIs), such as sertraline, have been utilized and found to be beneficial. Specifically, two-thirds of women prescribed sertraline endorsed no significant symptoms of depression at an 8-week follow-up (Mehta & Sheth, 2006). In this review paper by Mehta and Sheth (2006), venlafaxine demonstrated improvement in 80% of PPD patients. The Family Mental Health Institute (2006) reported that approximately 67% of mothers improve with a standard dose of antidepressants or psychotherapy, and 90% improve with a combination of treatments.

Although further research is required, many medications have not been associated with increased teratogenicity or long-term effects on mothers or children (Ryan, Milis & Misri, 2005). In a review by Ryan and colleagues (2005), however, fluoxetine was found to be associated with premature delivery, perinatal complications during the third trimester, and higher dosages were

associated with lower infant birth weights and transient withdrawal symptoms in infants, such as jaundice, jitteriness, and increased distress. Additional research is warranted since most studies suggest that antidepressants are safe during the postpartum period. Following the birth of a child, it is important for practitioners to consider a nursing mother's concern regarding the potential for psychotropic medication to pass to her infant.

A combination of psychotherapy and medication may also be beneficial. Ryan and colleagues (2005) found that nonpharmacologic treatment, including psychotherapy, is beneficial for mild-to-moderate depression. The addition of pharmacologic treatments, such as antidepressants, however, was beneficial for severe depression. The Family Mental Health Institute (2006) reported that approximately 90% of mothers improve with a combination of treatments.

Additional research has shown the benefit of using transdermal oestrogen in the treatment of severe PPD (Gregoire, Kumar, Everitt, et al., 1996). Specifically, 61 severely depressed women were randomly assigned to a placebo or transdermal oestrogen group. Women in the transdermal oestrogen group had significantly greater improvement on PPD measures when compared to the women in the control group. Case studies have also been presented which demonstrated the success of transdermal oestrogen, however, further study assessing the benefits and risks is warranted.

Support groups have also been effective in ameliorating symptoms of PPD. Groups involving parenting support and educational groups during the antenatal period (Ryan, Milis & Misri, 2005), new mother support groups, and "pram walking" groups (stroller companions) have all been shown to improve mood through enhancing levels of social support. Specifically, Nielsen and colleagues (2000) reviewed the literature and found support that PPD risk is reduced when women attended parenting classes. In addition, the Family Mental Health Institute (2006) reported that PPD peer support groups, which include volunteer mothers whose depression had resolved, were also therapeutic.

The prognosis of women presenting with severe PPD and postpartum psychosis is unknown. Psychiatric hospitalization should be considered in high-risk cases where harm to self, others or psychotic behavior is evident. Clinicians need to ascertain the severity of the depression in order to develop the most optimal treatment plan. Overall, it is important to consider treatment options on an individual basis to determine the best treatment for each patient, based on their history and current presentation.

Future Clinical Considerations

Currently, PPD is the most common postnatal complication and has demonstrated detrimental, and even fatal, effects on families. In spite of the large number of women receptive to screening, it is still not a standard of care in the United States. Within the United Kingdom, mothers are routinely screened for depression (at birth and at two follow-up assessments). At present, New Jersey is the only state that requires provision of PPD education and postpartum screening (using the EPDS at birth and a follow-up several weeks later). Texas, New York and Virginia do not currently require screening, but do mandate that literature on PPD be provided. In the states of New York,

Minnesota and California, lawmakers are currently considering legislation comparable to New Jersey's current requirements. In the near future, it is likely that other states will require PPD screening and we can begin providing optimal care that has already been established in other countries.

At minimum, clinicians working with this population (including pediatric offices since they often have most routine contact with families postpartum) should be trained to recognize symptoms and have a list of resources and referrals available. Seehusen and colleagues (2005) recommended that physicians completing a residency in family practice be required to complete curriculum addressing PPD. Primary care providers will provide a critical point of care in the early diagnosis and treatment of postpartum disorders (Georgiopoulos, et al., 2001). As more women screen for PPD, there will likely be an increase in need for treatment services. Clinical outcomes are likely to improve when providers have established referral sources and patients are adherent to treatment.

It is also imperative to provide new mothers with education on PPD, with specific information on symptoms, rates of depression and the importance of treatment. Reinforcing mothers for seeking treatment, assuaging any possible guilt over their current emotions and assessing for potential barriers to treatment, may be critical in ensuring that they adhere to treatment recommendations.

Early intervention, screening and education may be beneficial in reducing the detrimental effects of PPD. Research has shown that as many as 20% of women develop depression *during* pregnancy (Gotlib, Whiffen, Mount, Milne & Cordy, 1989). Early diagnosis, with screening during pregnancy, may help minimize the devastating effects of untreated depression (Ryan, Millis, & Misri, 2005).

Preventive measures to reduce or eliminate the risk of PPD should also be implemented. For example, developing support groups during the antenatal period, when the mother may not have as many time constraints as she does with a newborn, may be beneficial. Prior to childbirth, improving a mother's level of support, enhancing her self-esteem and focusing on improving partner relationships (Logsdon & Usui, 2001) may be critical factors in minimizing symptoms of depression during the postpartum period.

In summary, clinical health providers have an opportunity to help improve the outcome of families suffering with PPD by engaging in routine screening, providing education and offering referral sources to patients. We can provide optimal patient care by continually improving our understanding of postpartum depression. Table 5 below provides a sample of a brief handout that can be distributed to patients to assist in PPD education and to serve as a catalyst for discussion.

Table 5. Sample Handout for Patients on Postpartum Depression

What You Should Know About Postpartum Depression (PPD)

❖ **How often does PPD occur?**

Postpartum depression occurs in 7 to 26% of new mothers and, unlike “baby blues” (which occurs in up to 80% of new mothers), PPD does not typically resolve without treatment.

❖ **Do I have PPD?**

A clinical health practitioner can screen for PPD with a short interview or brief screening measure. Some symptoms of PPD include depressed mood, loss of interest in activities, withdrawal from others, feelings of worthlessness and thoughts of death.

❖ **Why should I seek treatment?**

Left untreated, research has shown that PPD can have a devastating impact on mothers, children and families. Studies have shown that mothers suffering with PPD are less likely to develop a secure bond with their infant, and interact less with their child on a daily basis. The devastating impact of PPD on a child can be long-lasting, as shown by studies that have found that children of mothers who suffered with PPD are more likely to have intellectual, social and psychiatric problems (even up to age 11). In addition, there is a higher rate of marital problems when PPD is untreated. In the most severe cases, untreated PPD can result in the mother fatally injuring herself and/or her child(ren).

❖ **What treatments are available?**

Psychotropic medications, individual and group therapy, peer support groups and combinations of treatment options are available. Check with your provider and insurance carrier for treatment options and remember to select the one that best suits you.

If you are having thoughts of harming yourself or your child, seek immediate assistance. Any local urgent care center or any of your clinical providers can assist you in establishing services.

Web-based Resources

American Psychological Association (APA):

<http://www.apa.org/pi/wpo/postpartum.html>

Center for Disease Control (CDC):

<http://www.cdc.gov/PRAMS/PPD.htm>

National Institute of Health (NIH):

http://newsinhealth.nih.gov/2005/December2005/docs/01features_02.htm

National Mental Health Association (NMHA):

<http://www1.nmha.org/children/ppd.pdf>

National Women's Health Information Center (NWHIC):

<http://www.4women.gov/>

1.800.994.9662

Postpartum Support International (PSI):

<http://www.postpartum.net/>

PSI Postpartum Depression Helpline: 1.800.944.4PPD

U.S. Department of Health & Human Services:

<http://www.womenshealth.gov/faq/postpartum.htm>

WebMD:

<http://www.webmd.com/depression/tc/Postpartum-Depression-Topic-Overview>

Recommended Reading

Brooke Shields, *Down Came The Rain: My Journey Through Postpartum Depression*. Hyperion Books, 2005.

Marie Osmond, Marcia, Wilkie & Judith Moore, *Behind the Smile: My Journey Out of Postpartum Depression*. Warner Books, 2001.

Shaila Misri, M.D., *Shouldn't I Be Happy? Emotional Problems of Pregnant and Postpartum Women*. The Free Press; Simon and Schuster, Inc., New York, 1995.

Shoshana S. Bennett, Ph.D. & Pec Indman, Ed.D., MFT, *Beyond the Blues: A Guide to Understanding and Treating Prenatal and Postpartum Depression*. Moodswings Press, 2006.

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