

Postpartum Depression: What Pediatricians Need to Know

Linda H. Chaudron, MD,
MS*

Objectives After completing this article, readers should be able to:

1. Describe the range of symptoms and severity of postpartum depression (PPD).
2. Delineate the appropriate, validated screening tools for detecting PPD.
3. List the percentage of women in whom PPD is detected within the current standard of practice.
4. Describe the effects of PPD on maternal–infant interactions and parental attitudes and behaviors.
5. Characterize the method of determining optimal treatment of PPD.

Introduction

Postpartum depression (PPD) is a significant public health problem, each year affecting 10% to 20% of new mothers. Many of these women and their children experience short- and long-term adverse consequences. Despite an increasing awareness of the effects of maternal depression on children's health and welfare, it remains unrecognized and poorly understood by women and clinicians alike. Because pediatricians encounter mothers repeatedly during the postpartum year, it is important that they recognize PPD and appropriately educate and refer mothers for evaluation and treatment.

Definition

PPD describes a heterogeneous group of depressive symptoms and syndromes that occurs during the first year following birth. The American Psychiatric Association *Diagnostic and Statistical Manual of Mental Health Disorders-IV* (DSM IV) uses the term “postpartum” more specifically to describe symptoms of major depressive disorder, bipolar disorder, or brief psychotic disorder beginning within 4 weeks of delivery. The psychiatric postpartum experiences usually are divided into three categories: “maternal blues,” PPD, and postpartum psychosis. The DSM IV does not apply “postpartum” to other psychiatric illnesses. However, anxiety disorders, such as panic, obsessive-compulsive disorder, and phobias, can have an initial onset or exacerbation in the postpartum period.

Epidemiology

Maternal blues or postpartum mood reactivity is considered a “normal” emotional experience for women in the immediate postpartum period. It is estimated that 50% to 80% of new mothers experience transient symptoms of depressed mood, at times alternating with elated moods, irritability, increased crying spells, and a sense of “unreality” during the first 10 days after birth. These symptoms usually resolve without intervention. On the other end of the spectrum is postpartum psychosis, a rare (1/1,000 live births) and serious event that generally occurs within 2 weeks of delivery and is considered a psychiatric emergency that requires immediate psychiatric intervention. PPD falls in the middle, occurring in 10% to 20% of postpartum women and presenting with a range of mild to severe depressive symptoms.

Almost 50% of PPD cases are continuations of depressive episodes that occur during or before pregnancy. The incidence of new-onset cases of depression during the postpartum

*Assistant Professor, Psychiatry, Pediatrics, and Obstetrics and Gynecology; Director, Women's Mental Healthcare, Strong Memorial Hospital, University of Rochester School of Medicine, Rochester, NY.

Dr. Chaudron has received unrestricted grants from Pfizer Pharmaceuticals and Glaxo-SmithKline Pharmaceuticals; provided consultation to Glaxo-SmithKline Pharmaceuticals; and is on the speaker's bureau for Pfizer Pharmaceuticals.

year is estimated to be 15%. However, new-onset cases occur throughout the year; the peak prevalence is at 10 to 14 weeks after delivery.

Little is known or understood about the natural course of PPD. In the general population, the average length of a depressive episode is approximately 5 months. In PPD, the natural course and length of time until remission are unknown. Some studies indicate that postpartum episodes resolve more quickly than episodes in the general population; other studies report episodes of similar duration.

Risk factors for developing PPD continue to be studied. Currently, the following have been found to increase a woman's risk: younger maternal age, lower education, single marital status, lower socioeconomic status, personal or family history of a mood disorder, depression during pregnancy, psychosocial stress, lack of social support, and marital discord. Women who have a history of a mood disorder have twice the risk of women in the general population (10% to 40%) of experiencing PPD. Women who have bipolar disorder have the highest risk of developing a postpartum episode, whether psychosis, mania, or depression.

Pathogenesis

The exact pathogenesis of PPD is unknown. It generally is believed that maternal blues is related to the hormonal and physiologic changes that occur after delivery. The role of the dramatic biologic and hormonal fluctuations in the postpartum period is under investigation, with current theories centering on the rapid decrease in progesterone, estradiol, and estriol. Other researchers are exploring the role of the hypothalamic-pituitary-thyroid axis and thyroid dysfunction in PPD. Another biologic theory, related to cyclical hormonal changes, is the kindling model. Because many women who have PPD also experience other reproductive-related mood disorders (premenstrual dysphoric disorder, perimenopausal mood disorders), the kindling model hypothesizes that each reproductive-related psychiatric episode sensitizes the woman to the development or exacerbation of another episode. Psychosocial factors, including culture, social support networks, and economic pressures, also can affect life and role transitions such as motherhood and, hence, are hypothesized to contribute to the development of PPD in some women.

Clinical Aspects

It is important to recognize the range of severity and symptomatology that mothers who have PPD can experience. PPD often is differentiated into major and minor

Table 1. Signs and Symptoms of Postpartum Depression

- Depressed or sad mood
- Anhedonia
- Irritability
- Anxiety
- Insomnia
- Difficulty concentrating
- Complaints of poor memory
- Crying
- Poor appetite
- Feeling overwhelmed
- Feeling hopeless or worthless
- Thoughts of death (own or child's)
- Suicidal ideation

depression. Most women (70%) experience minor depression. Symptoms of PPD may include the full range of emotional, cognitive, and neurovegetative symptoms of depression (Table 1). Women who have PPD often experience a cognitive dissonance between being glad they have new infants and not being able to enjoy their children. They may experience anxiety and obsessional thinking that is focused on the welfare of the child and concerns about their parenting ability. Despite what can be severe symptomatology, many women and clinicians do not identify these symptoms as depression.

Expert opinions differ as to whether PPD symptoms are unique or “atypical” compared with symptoms of depression in the general population. Some studies indicate that women who have PPD report higher levels of somatic complaints and more irritability, anxiety, fatigue, and depression than women who have depression not related to childbearing. Other studies have found no difference in symptomatology between the two groups.

Prognosis

Untreated PPD may result in poor outcomes for the health and welfare of both women and children. There is substantial evidence that maternal depression can have a negative impact on the cognitive, social, and behavioral development of children, including infants and toddlers (Table 2). Although there is no agreed-upon “high-risk age” for exposure to maternal depression, there is evidence that even very young infants exposed to depressed mothers can exhibit withdrawn behavioral styles as early as 3 months of age.

The effects of maternal depression can be severe and long-lasting. Infants of depressed mothers may be at increased risk of child abuse and are more likely to exhibit

Table 2. Possible Effects of Maternal Depression on Children's Behaviors*

Infant Behavioral Problems

- Sleep disruption
- Feeding/eating disruptions
- Temper tantrums
- Fussy/crying
- Withdrawn

Delayed Cognitive Development

- Lag in developing concept of object permanence
- Lower scores on the McCarthy Scale of Children's Abilities

Impaired Social Development

- Less sociable with strangers
- Less engagement in sharing
- No fear of strangers

Insecure Attachment Patterns

- Difficulties with emotion regulation
- Difficulties being comforted
- Unusual behaviors, such as "freezing" after a separation from caregiver
- Lack of interest in age-appropriate objects
- Listlessness
- Apprehension at mother's distance
- Apprehension at mother's closeness
- Overly friendly
- Acting out to obtain a response (more than is expected for the age)
- Cessation of trying to master tasks

*This is not a complete list of behaviors, and these behaviors are not necessarily specific to the effects of postpartum depression; they may represent a host of other concerns or disorders that require further evaluation.

insecure attachment patterns. The behaviors that may be exhibited when attachment is impaired are listed in Table 2. Early attachment patterns are important because they remain stable and influence relationships later in a person's life. School-age children who had postnatally depressed mothers have increased rates of behavioral disturbance. In addition, recent studies have identified that maternal depression may affect the mother's implementation of and follow-through with pediatric preventive practices as well as the use of pediatric health care services. Adult offspring of depressed parents have increased rates of major depression as well as other psychiatric disorders. Finally, it is important to remember that not all children of depressed mothers experience these out-

Table 3. Effects of Maternal Depression on Parental Attitudes and Behaviors

Parenting Attitudes

- Guilt and anxiety about parenting
- Loss of love for the baby
- Negative attributions to the baby
- Thoughts of harming the baby
- Bizarre beliefs about the baby
- Extreme disappointment about the gender*
- Inflated expectations about the infant's developmental abilities*

Mother-Infant Interactions

Mother

- Difficulty enjoying the baby
- Disinterested or negative toward the baby
- Less active interactions
- More negative face-to-face encounters
- Inability or lack of attempt to soothe the baby
- Refusal to look at/hold the baby*
- Hostile expressions toward the baby*

Baby

- Decreased eye gaze toward the mother
- Less reciprocity in interactions
- More drowsy or fussy
- Greater reactivity

*High-risk behaviors for poor infant outcomes.

comes; many children cope effectively and develop normally.

Many factors contribute to the effects of PPD on infant development. The severity and duration of the condition as well as the stress of life events, maternal age, number of children, economic resources, and emotional support can influence maternal behavior and its subsequent impact on infant development. Furthermore, maternal depression can affect parenting behavior, parenting attitudes, maternal-infant interactions (Table 3), family dynamics, and marital harmony/discord in a variety of ways. An important example of the heterogeneous nature of PPD and its effects are the parenting behaviors exhibited by depressed mothers. Depressed mothers may exhibit normal behavior and affect, be withdrawn and disengaged, be angry and intrusive, or manifest a combination of these behaviors. Infant responses depend on the mother's behavior. Infants of withdrawn mothers are more likely to exhibit fussy and crying behavior; infants of angry mothers avoid looking at or interacting with their mothers. The child's temperament, behavior, and

concomitant medical complications also can affect the severity of maternal depression and the mother's ability to cope and parent effectively. The child's biologic and genetic predisposition as well as the age may influence the child's responses to maternal depression.

Mothers also may suffer negative repercussions from the PPD experience. They are at higher risk of future depression, not just recurrent PPD. Studies of adolescent mothers find that at 4 months postpartum, depressed adolescent mothers are three times more likely to use alcohol or illicit substances than are nondepressed adolescent mothers. Mothers may have difficulty attaining a healthy maternal role and confidence in their parenting skills. Studies have found that women change their reproductive plans and may choose not to become pregnant again to avoid another postpartum episode.

Interpersonal psychotherapy, cognitive behavioral therapy, and antidepressants have been successful in treating PPD. Support groups and psychoeducational material also are essential to decrease the isolation of affected women and to increase their understanding of the disorder and their options for help.

Management

Because women who have PPD often do not recognize their symptoms as depression, most do not seek professional care. Almost 50% of women who have clinically significant symptoms of PPD remain undetected by clinicians. Except for the 1-month obstetric postpartum visit, healthy childbearing women do not see a health care practitioner regularly, except pediatricians, during the postpartum year. Thus, pediatricians have a unique opportunity to assess women and to provide early intervention, education, and appropriate referral.

Although most pediatricians will not treat mothers, screening mothers for psychosocial issues that may affect children and families is within their scope of practice. Some pediatricians informally screen for maternal depression, but a recent study found this method to be inadequate (Heneghan, et al, 2000). Researchers screened mothers of infants and toddlers for depression with a validated screening tool. At the same time, pediatric clinicians completed questionnaires about the mother that included 10 depressive symptom items. A comparison of results showed that pediatric clinicians did not recognize most mothers who had depressive symptoms regardless of symptom severity.

The first step to improving detection is to educate pediatricians about the prevalence, risk factors, and symptoms of PPD. With heightened awareness, pediatricians may be more likely to ask psychosocially oriented

Table 4. Questions to Elicit Information About Postpartum Depression

- How are you feeling about being a new mother?
- How are you coping with the additional stress of a new baby?
- Are you able to sleep when the baby is sleeping?
- How is your appetite?
- Do you have enough energy to do the things you need to do for yourself, your baby, your work?
- Have you been feeling sad or depressed over the past week?
- Have you been feeling anxious, worried, or irritable over the past weeks?
- Have you been having difficulty concentrating or remembering things?
- Do you find yourself crying for no reason?
- Have you been having thoughts of hurting yourself? Anyone else?

questions about the mother and family functioning. Table 4 provides a partial list of questions to help pediatricians begin to talk with mothers about this important, often hidden issue. No studies to date have established an improved rate of PPD detection with the use of these specific questions. Another possibility is to use a validated screening tool. The advantages of a screening tool are that it is quick and easy and has been validated to detect depression at a specific score. Thus, pediatricians may feel more confident talking with mothers about their feelings with this information in hand. Studies in Britain and Sweden indicate that it is feasible for pediatricians to screen mothers for PPD during health supervision visits. Logically, the next questions are: "What screening tool do I use and when?"

Only three depression screening tools are designed and validated specifically to detect PPD effectively: The Edinburgh Postnatal Depression Scale (EPDS) (Cox et al, 1987), Postpartum Checklist (Beck, 1995), and the Postpartum Depression Screening Scale (PDSS) (Beck and Gable, 2000). Scales developed to screen for depression in the general population may not detect PPD as well because of the overlap of somatic symptoms (sleep disturbance, fatigability, loss of appetite, somatic preoccupation, loss of libido, body image) with the physical changes in the postpartum period. The EPDS, Postpartum Checklist, and PDSS were designed to minimize the effects of this overlap in the assessment of depression.

Screening should not be implemented without attention to follow-through. Because PPD remains undetected

ted by many clinicians, all mothers should be screened, not just those whom pediatricians feel may be at high risk. The number of times and the visit at which mothers should be screened during the postpartum year have not yet been established. However, with the current knowledge of peak prevalence occurring around 3 months, the incidence of new cases throughout the postpartum year, and the significant long-term effects of PPD on mothers and children, it is reasonable to screen mothers at least three times during the year. The 2-, 6-, and 12-month health supervision visits (as well as any time the pediatrician is concerned about the mother) are reasonable time points to use a brief screening tool.

Repeated screens may be used to: 1) track changes in symptom severity to determine the need for referral and intervention, 2) identify women at risk as well as affected women, 3) identify women who have suicidal ideation, 4) provide mothers a nonverbal venue to express their emotions, and 5) provide an opening for discussion of other sensitive issues.

The practical implementation of using a screening tool in a busy clinical practice is critical. Clinicians must be careful to use the information rather than simply gather the data. It is essential to score the measure consistently and to pay attention to answers that imply high risk (eg, suicidal ideation). Unless there is imminent danger to the mother or infant, the pediatrician's role is limited to providing information about PPD and referring the mother to her primary care clinician, a psychiatrist, a therapist, self-help groups, or Web sites of organizations that may provide education and networking sources.

Pediatricians also can help the family by monitoring the impact of the depression on the mother-child interaction, the pediatric preventive practices, and the infant's health and development. Pediatricians already routinely assess preventive practices and infant development. The mother-child interaction may be assessed by a combination of asking questions ("How connected do you feel to your baby?" or "Do you enjoy playing with the baby?") and closely observing the interactions (Table 3).

With knowledge of the mother's depression, the pediatrician can provide information and support to the mother as she determines her treatment options. One option is antidepressant treatment. Many mothers who have PPD experience guilt and anxiety when deciding

whether to take medications while breastfeeding. Many know the benefits of human milk and wish to breastfeed, but are concerned about their infants' exposure to medication. The pediatrician, in collaboration with the mothers' psychiatrists, can support women in their choices and assist them in weighing the risks and benefits of using specific medications while breastfeeding. The risk-benefit analysis must be highly individualized, taking into account the severity of the maternal illness, the maternal support system, the age and health of the infant, and the potential effects of either nursing or not on the mother's self-esteem. Furthermore, the role of sleep deprivation and the potential for an exacerbation of symptoms due to insomnia associated with breastfeeding must be considered. Insomnia is an especially important consideration for women who have bipolar disorder because it may precipitate mania, depression, or even psychosis.

Recent articles review the use of psychotropic medications during breastfeeding (Llewellyn and Stowe,

Pediatricians also can help the family by monitoring the impact of the depression on the mother-child interaction, the pediatric preventive practices, and the infant's health and development.

1998; Chaudron and Jefferson, 2000; Ito, 2000; Burt et al, 2001). These articles provide clinicians with comprehensive reviews, including maternal and infant serum levels, human milk levels, and milk-to-plasma ratios of infants exposed to antidepressants and mood stabilizers through human milk. Table 5 summarizes these reports. The review by Ito suggests that tricyclic antidepressants and sertraline are the antidepressants of choice. However, the article does not address the newer antidepressants or other serotonin reuptake inhibitors except fluoxetine. Among the mood stabilizers, carbamazepine and valproate generally are recommended because they are estimated to expose infants to less than 10% of the therapeutic dose standardized by weight. In general, lithium is not recommended during nursing. The American Academy of Pediatrics Committee on Drugs Report (2001) classifies lithium as "associated with significant effects on some nursing infants" and recommends its use with caution in nursing mothers because of the potential

Table 5. Antidepressants and Mood Stabilizers in Human Milk*

	Cases (n)	Present in Infant Serum	Adverse Effects Reported
Tricyclics			
Amitriptyline	4	Undetectable	None
Nortriptyline	11	Undetectable	None
Clomipramine	4	Undetectable	None
Doxepin	2	1 case–Undetectable 1 case–Equal to maternal levels	None Respiratory depression
Desipramine	5	Undetectable	None
Serotonin Reuptake Inhibitors			
Fluoxetine	19	Yes (most, 0.01 to 0.02 mg/kg per day) 1 case with therapeutic plasma concentrations	1 case with colic 1 case with seizurelike episodes ^a Fluoxetine–exposed breastfed infants gained less weight than breastfed infants not exposed to fluoxetine
Sertraline	36	Yes (most undetectable)	None
Paroxetine	48	Undetectable	None
Fluvoxamine	2	Undetectable	None
Citalopram	2	Yes	1 case of infant having uneasy sleep
Others			
Bupropion	1	Undetectable	None (High milk:plasma ratio of 2.51 to 8.58)
Trazodone	1	No infant serum levels reported	None
Nefazodone	2	No infant serum levels reported	1 case of drowsiness, lethargy, poor feeding, inability to maintain body temperature
Venlafaxine	3	Yes	None
Mood Stabilizers			
Lithium ^b	10	Yes	1 case of lithium toxicity 1 case of cyanosis, lethargy, T-wave inversion
Valproate	35	Yes	1 case of thrombocytopenia and anemia
Carbamazepine	50	Yes	1 case of cholestatic hepatitis 1 case of direct hyperbilirubinemia 1 case of seizurelike episodes ^a 6 cases of drowsiness, irritability, or poor feeding

*This is not intended to be a complete list.
^aSame case: infant exposed to fluoxetine and carbamazepine.
^bAmerican Academy of Pediatrics Committee on Drugs considers lithium to be contraindicated during lactation.

for toxicity. However, if a mother requires lithium and chooses to nurse, lithium levels should be monitored closely in the mother’s plasma and milk and the infant’s plasma. The infant also should be monitored for any signs of lithium toxicity.

Summary

PPD is a treatable and underrecognized illness that affects 10% to 20% of new mothers and may have significant repercussions for the health and well-being of women and their children. Pediatricians may help mothers to identify, cope with, and seek treatment for PPD by routinely screening new mothers for depression, identifying high-risk maternal attitudes and behaviors, providing referrals to mental health specialists, and assisting with the risk-benefit analysis of medication treatment

during breastfeeding. By becoming actively involved, pediatricians can help their pediatric patients.

Resources

Postpartum Support International
 927 North Kellogg Avenue
 Santa Barbara, CA 93111
 805–967-7636
 www.postpartum.net

Depression After Delivery, Inc.
 91 Somerset Street
 Rariton, NJ 08869
 1–800-944-4773 (4PPD)
 www.depressionafterdelivery.com

Suggested Reading

- Beck C. Screening methods for postpartum depression. *J Obstet Gynecol Neonatal Nurs.* 1995;24:308–312
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PIR Quiz

Quiz also available online at www.pedsinreview.org.

5. A *true* statement about "maternal blues" is that it:
 - A. Can be associated with a sense of unreality immediately following the birth of a child.
 - B. Is another term for postpartum depression.
 - C. Is associated with persistent symptoms of depression, irritability, and crying spells.
 - D. Is considered a pathologic phenomenon and requires psychiatric intervention.
 - E. Occurs in approximately 20% to 25% of new mothers.

6. Postpartum depression falls in the middle of the spectrum of postpartum disorders. Of the following, the statement that *best* characterizes postpartum depression is that:
 - A. Fewer than 20% of cases are continuations of depressive episodes that occur before the pregnancy.
 - B. Most women who have postpartum depression experience symptoms of major depression that are recognized readily by family members and professionals.
 - C. Postpartum depression is related primarily to hormonal and physiologic changes related to childbirth.
 - D. The depressive episodes usually occur immediately following birth and last for approximately 1 year.
 - E. Women who have a prior history of mood disorder, especially bipolar disorder, have a higher risk of developing postpartum depression.

7. Postpartum depression can affect infants as well as mothers. All of the following effects can be seen in infants of mothers suffering from postpartum depression *except*:
 - A. Eating and sleep disruptions.
 - B. Gaze aversion and withdrawal behavior styles.
 - C. Increased risk of child abuse.
 - D. Insecure attachment patterns.
 - E. Universal inability to cope and develop normally.

8. The *most* important aspect of the pediatrician's role in the management of mothers who have postpartum depression is:
 - A. Admission to a hospital for inpatient psychiatric care.
 - B. Assessment for sleep deprivation and, if present, the prescribing of medical treatment.
 - C. Early detection of symptoms by use of a standardized screening tool.
 - D. Initiation of personal counseling.
 - E. Initiation of treatment with an appropriate antidepressant medication.

9. Of the following medication options for the treatment of postpartum mood disorders, which one has been associated with significant adverse effects and should be used with caution in a mother who is nursing?
 - A. Carbamazepine.
 - B. Lithium.
 - C. Sertraline.
 - D. Tricyclic antidepressants.
 - E. Valproate.