# Bipolar disorder in postpartum women: Epidemiology, clinical features, assessment, and diagnosis

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## INTRODUCTION

A nationally representative survey of the United States general population estimated that among postpartum women, the 12 month prevalence of bipolar disorder was 2.9 percent [1]. Many postpartum bipolar patients suffer acute mood episodes [2-4], and the risk of episodes in female bipolar patients may be greater during the puerperium than at other times [2,5,6].

This topic reviews the epidemiology, pathogenesis, clinical features, assessment, and diagnosis of postpartum bipolar mood episodes. Treatment of postpartum bipolar disorder, postpartum psychosis, and postpartum unipolar major depression are discussed separately. (See "Bipolar disorder in postpartum women: Treatment" and "Treatment of postpartum psychosis" and "Postpartum unipolar major depression: Epidemiology, clinical features, assessment, and diagnosis".)

## DEFINITION OF THE POSTPARTUM PERIOD

Onset of postpartum bipolar mood episodes occurs within a limited time period following birth of a live child. However, there is no established cut-off that separates postpartum-onset episodes from subsequent nonpostpartum episodes [7]; definitions of the puerperium include the following:

- The American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5) defines the postpartum period as the first four weeks following childbirth [8]
- For “episodes that are associated with the puerperium,” the World Health Organization's International Classification of Diseases-10$^{th}$ Revision (ICD-10) requires onset of the episode within six weeks of delivery [9]
- Other definitions of the puerperium range from the first 3 to 12 months following a live birth [2,7,10]

Postpartum bipolar mood episodes are often referred to as “postpartum psychosis” or “puerperal psychosis,” although neither term is a formal diagnosis in DSM-5 or ICD-10 [8,9].

## EPIDEMIOLOGY

The risk of acute bipolar mood episodes may be greater in the puerperium than at other times. A retrospective study of 621 bipolar patients found that mood episodes occurred significantly more often in the postpartum period than during pregnancy (52 versus 23 percent of patients) [2]. In a second retrospective study, 20 gravid and 25 nongravid bipolar patients discontinued maintenance treatment and remained stable for 40 weeks; recurrence during weeks 41 to 64 occurred in significantly more postpartum patients than nongravid patients (70 versus 24 percent) [5].

**General population** — A study of nationwide Swedish birth and hospitalization registries found that the incidence of hospitalization for a postpartum bipolar mood episode was 0.03 percent [11]. However, this figure probably overestimates the incidence because it appears that the “bipolar” group included patients with unipolar depression [12].

**Clinical settings** — Based upon a meta-analysis of 25 prospective and retrospective observational studies, which included nearly 3500 women with bipolar disorder and more than 5000 deliveries, postpartum mood episodes occur after approximately 37 percent of deliveries [13].

Factors associated with an increased risk of postpartum bipolar mood episodes include:

- Lack of maintenance pharmacotherapy preceding or following delivery [13]
- Prenatal mood symptoms and episodes [2,11,14,15]
- Younger age at delivery [16,17]
- Unplanned pregnancy [16]
- Primiparity [17,18]

- History of previous postpartum mood episodes [19,20]
- Family history of mood disorder or postpartum psychosis [19-22]

Onset of the first lifetime bipolar mood episode may occur during the puerperium [14].

**Psychotic episodes** — Bipolar patients appear to be at increased risk for postpartum psychosis (eg, delusions and hallucinations) [23-26]. While the estimated rate of puerperal psychosis in the general population is 1 to 2 per 1000 live births [27,28], one study found the rate in bipolar women was 260 per 1000 deliveries [19]. Other studies have found that psychosis occurs in approximately 10 to 50 percent of postpartum bipolar patients [29,30].

In addition, many patients who present with postpartum psychosis are ultimately diagnosed with bipolar disorder [24,26,30-33]. As an example, two retrospective studies of patients admitted for postpartum psychosis (n = 119 and 50) found that the underlying diagnosis was bipolar disorder in 31 and 42 percent [34,35].

Factors associated with an increased risk of postpartum psychosis in bipolar patients include:

- Delivery complications (eg, breech presentation, fetal distress, and cord accidents) [36]
- Prenatal mood episodes [15]
- Prenatal obstetric complications (eg, hyperemesis, preeclampsia, and premature contractions) [15]
- Primiparity [36]
- History of prior puerperal psychosis [23,37]
- Early age of onset of bipolar disorder [15]
- Family history of bipolar disorder or postpartum psychosis [19,37,38]

Additional information about postpartum psychosis is discussed separately. (See "Postpartum psychosis: Epidemiology, clinical features, and diagnosis" and "Treatment of postpartum psychosis".)

## PATHOGENESIS

The etiology of postpartum bipolar mood episodes is not known. Possible causes include decreases in estrogen and progesterone, decreased or erratic sleep, increased stress associated with caring for the newborn, and social issues (eg, relationship or financial problems) [29,31,39-41]. In addition, genetic effects may possibly render patients vulnerable to episodes [17,42,43]:

- A family study of bipolar disorder found that postpartum relapse occurred in significantly more patients with a positive family history of postpartum mania or psychosis (n = 27)

compared with patients who had no such history (n = 125) (74 versus 30 percent) [19]

- A family study of bipolar disorder found that postpartum mood symptoms and episodes occurred in significantly more patients with a positive family history of postpartum symptoms (n = 69) compared with patients who had no such history (n = 234; 30 versus 15 percent) [44]

- A genome-wide linkage study found an area on chromosome 16 associated with susceptibility to postpartum bipolar mood episodes [45]

## CLINICAL MANIFESTATION

**Mood episodes** — Bipolar disorder is characterized by episodes of major depression ( table 1), mania ( table 2), and hypomania ( table 3) [8]. The most common psychopathology among postpartum bipolar patients is major depression [14,46-48]. A retrospective study of 1120 pregnancies in bipolar patients found the following rates of postpartum mood episodes [2]:

- Major depression – 25 percent of pregnancies
- Mixed (depression concurrent with mania or hypomania) – 4 percent
- Mania – 3 percent
- Hypomania – 2 percent

These findings are consistent with observations that major depression is the predominant type of bipolar mood episode during pregnancy [49], and in the general population of bipolar patients [50,51]. Comorbid anxiety disorders and substance use disorders are common among patients with postpartum bipolar depression [52,53], which is also seen in the general population of bipolar patients [54,55]. The general clinical features of bipolar disorder are discussed separately. (See "Bipolar disorder in adults: Clinical features".)

Other symptoms commonly observed in postpartum bipolar mood episodes include mood lability and preoccupation with the newborn [56].

Onset of postpartum bipolar mood episodes can occur prior to or during pregnancy and the puerperium. As an example, in a prospective study of women (n = 180) who were recruited from an obstetric population and diagnosed with postnatal bipolar depression, onset was as follows [57]:

- Prepregnancy – 39 percent
- Antepartum – 33 percent

- Postpartum – 28 percent

Among patients with postpartum bipolar mood episodes that begin after delivery, onset appears to be greatest within the first few weeks after delivery, based upon retrospective studies [5,28]:

- A study of 630,373 primiparous pregnant women found that hospitalization for a postpartum bipolar episode was 23 times more likely within the first 30 days of delivery, compared with 11 to 12 months postpartum [10]
- A study of 10,218 primiparous bipolar patients found that recurrent mood episodes occurred 37 times more often 10 to 19 days after delivery, compared with 6 to 11 months postpartum [58]
- One study of primiparous bipolar I mothers (n = 980) found that the median time to a mood episode was one week and for bipolar II mothers (n = 232), two to three weeks [59]

Postpartum bipolar mood episodes often progress rapidly [56], and the mean duration of episodes varies from approximately one to three months [15,60].

**Psychotic features** — Onset of postpartum psychosis in bipolar patients generally occurs within the first two to three weeks of parturition [23,26,56,61]. The clinical features of postpartum bipolar psychosis can include [23,28,39,62]:

- Delusions
- Hallucinations
- Disorganized or bizarre behavior
- Disorganized thinking
- Cognitive impairment or confusion
- Impaired judgement
- Agitation
- Sleep disturbance
- Mood lability
- Impulsivity

Postpartum bipolar patients with psychotic mood episodes may be at increased risk for suicide and infanticide [29].

Additional information about postpartum psychosis and the clinical features of psychosis are discussed separately. (See "Postpartum psychosis: Epidemiology, clinical features, and

diagnosis" and "Psychosis in adults: Epidemiology, clinical manifestations, and diagnostic evaluation", section on 'Clinical manifestations'.)

## COURSE OF ILLNESS

For patients with bipolar disorder, the risk for relapse during the postpartum period may be high, despite pharmacologic treatment. A prospective observational study of women with bipolar disorder (n = 37) found that although 86 percent received pharmacotherapy following childbirth, relapse occurred in 70 percent (n = 26) [63].

The course of illness in bipolar patients with a lifetime history of postpartum mood episodes and patients without this history does not appear to differ. A study prospectively followed bipolar patients with a history of postpartum mood episodes (n = 43) and without this history (n = 137) for up to 12 years, and found that the two groups were comparable with regard to age of onset, bipolar subtype (bipolar I and bipolar II), comorbid psychopathology, number of recurrent episodes, occurrence of rapid cycling, number of suicide attempts, educational achievement, occupational functioning, and family psychiatric history [46].

However, the course of bipolar disorder may be more benign if the first lifetime mood episode (onset) occurs with a postpartum mood episode, rather than a nonpostpartum episode. A retrospective study of 123 female patients with bipolar disorder found that there were fewer recurrent mood episodes per year among patients with postpartum onset, compared with nonpostpartum onset (0.5 versus 0.8) [64].

**Subsequent mood episodes** — Postpartum bipolar mood episodes are often followed by additional episodes [34,65].

**Postpartum** — Many bipolar patients suffer multiple postpartum mood episodes [14,23,37]. A retrospective study of 54 bipolar patients with a postpartum episode and one subsequent delivery found that a second postpartum episode occurred in 57 percent [20].

**Nonpostpartum** — Bipolar patients who suffer a postpartum mood episode are at risk for subsequent nonpostpartum mood episodes [34,46,64]. As an example, two retrospective studies of bipolar patients with a postpartum mood episode (n = 103 and 19) found that at least one subsequent nonpuerperal episode occurred in 62 and 90 percent [20,66].

**Suicide** — Bipolar patients with postpartum mood episodes may be at risk for suicide [67]. A study of 1567 women who were admitted to a psychiatric hospital (diagnoses not specified)

within one year of childbirth found that compared with the general population, completed suicide among admitted patients was 17 times higher [68].

## ASSESSMENT

The initial clinical evaluation of postpartum patients with a possible diagnosis of bipolar disorder includes a psychiatric and general medical history, mental status and physical examination, and laboratory tests [69,70]. The psychiatric history and mental status examination should emphasize manic ( table 2), hypomanic ( table 3), depressive ( table 1), and psychotic (eg, delusions and hallucinations) symptoms, especially thoughts of harming oneself or others (including the infant). Laboratory tests should be focused; as an example, obtaining neuronal cell surface antibodies, including anti-N-methyl-D-aspartate receptor antibodies, in patients with symptoms such as slurred speech, disorientation, memory deficits, dyskinesia, and/or seizures [71,72].

Postpartum bipolar patients often present with a depressive syndrome [48], and a prior history of hypomania or hypomanic symptoms is easy to miss [17,73]. As an example, a study evaluated the diagnosis of 56 patients referred by nurses, family physicians, psychiatrists, and obstetricians to a perinatal psychiatric clinic for treatment of postpartum unipolar major depression [52]. The correct diagnosis was unipolar depression in 46 percent, other specified bipolar disorder in 29 percent, bipolar II disorder in 23 percent, and bipolar I disorder in 2 percent.

Postpartum hypomania can be missed due to [74]:

- The patient's lack of awareness of symptoms or poor insight
- Clinicians misconstruing:
    - Excessive mood elevation as the normal elation of childbirth
    - Decreased need for sleep as impaired or disrupted sleep

Additional information about the clinical features of bipolar disorder and psychosis, and assessing patients with a possible diagnosis of bipolar disorder, is discussed separately. (See "Bipolar disorder in adults: Clinical features", section on 'Clinical presentation' and "Psychosis in adults: Epidemiology, clinical manifestations, and diagnostic evaluation", section on 'Clinical manifestations' and "Bipolar disorder in adults: Assessment and diagnosis", section on 'Assessment'.)

**Screening** — Self-report screening instruments can help make the diagnosis of bipolar disorder and save interviewer time, but are more likely to yield false positives than clinician-administered instruments. No screening instruments have been specifically developed for postpartum bipolar disorder [75]. However, self-report instruments that screen for mania, hypomania, and major depression include the:

- Mood Disorder Questionnaire – This 15-item instrument is the most widely used measure that screens for episodes of mania and hypomania ( table 4) [75,76]. A study of postpartum patients (57 with bipolar disorder and 68 with unipolar major depression, established by structured interview) found that the sensitivity was 75 percent and specificity 87 percent [74]. Eliminating the supplementary questions in sections 2 and 3 may improve the utility of the instrument for postpartum patients [74,77]. The Mood Disorder Questionnaire does not generate a diagnosis of mania or hypomania; thus, patients who screen positive require a clinical interview to make the diagnosis. In addition, it is not clear that the Mood Disorder Questionnaire performs well enough to warrant routine use, particularly in psychiatric outpatients. (See "Bipolar disorder in adults: Assessment and diagnosis", section on 'Mania and hypomania'.)

- Patient Health Questionnaire - Nine Item (PHQ-9). This nine-item instrument screens for and diagnoses episodes of major depression, and has good psychometric properties ( table 5) [78]. In addition, the PHQ-9 has been used as a screening tool for postpartum depression [79]. The PHQ-9 is discussed separately. (See "Using scales to monitor symptoms and treat depression (measurement based care)", section on 'Patient Health Questionnaire - Nine Item'.)

Several reasonable alternatives to the Mood Disorder Questionnaire are available [75]. As an example, postpartum patients presenting with major depression can be screened for bipolar I disorder and bipolar II disorder by asking about a family history of bipolar disorder [31,80], or with the Screening Assessment of Depression-Polarity, which is a three item, clinician administered instrument [81]. Patients who screen positive require a follow-up interview to establish the diagnosis of bipolar disorder.

A reasonable alternative to the PHQ-9 is the Edinburgh Postnatal Depression Scale, which is a 10-item, self-report instrument that screens for postnatal depression and is widely used ( figure 1A-B). The original validation study found that the psychometric properties were good: sensitivity was 86 percent, specificity 78 percent, and positive predictive value 73 percent [82]. However, a systematic review of 37 studies found that sensitivity ranged from 34 to 100 percent and specificity from 44 to 100 percent [83].

It is not known whether screening instruments improve outcome for postpartum bipolar patients. However, a randomized trial compared the Edinburgh Postnatal Depression Scale with clinical assessment in screening for postnatal unipolar major depression, and found that maternal mental health outcomes were better among those screened with the Edinburgh Postnatal Depression Scale [84].

Additional information about screening for bipolar disorder is discussed separately. (See "Bipolar disorder in adults: Assessment and diagnosis", section on 'Screening instruments'.)

## DIAGNOSIS

We suggest diagnosing bipolar disorder according to the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [8]. The diagnosis of bipolar disorder is identical for postpartum and nonpostpartum patients. The subtypes of bipolar disorder include:

- Bipolar I disorder – Bipolar I disorder is diagnosed in patients with one or more manic episodes ( table 2). Nearly all patients suffer at least one episode of major depression ( table 1), and hypomania ( table 3) often occurs as well.
- Bipolar II disorder – Bipolar II disorder is diagnosed in patients with a history of at least one hypomanic episode and at least one major depressive episode, and no history of manic episodes.
- Cyclothymic disorder – Cyclothymic disorder is diagnosed in patients with periods of hypomanic symptoms that fall short of meeting criteria for a hypomanic episode and periods of depressive symptoms that fall short of meeting criteria for a major depressive episode. Symptoms recur over a time interval of two or more consecutive years, during which patients are symptomatic at least half the time and are not symptom-free for more than two consecutive months.
- Other specified bipolar disorder – Patients with bipolar symptoms that cause significant distress or impair psychosocial functioning but do not meet the full criteria for a specific bipolar disorder are diagnosed with other specified bipolar disorder.

According to DSM-5, the specifier “with peripartum onset” is used for bipolar mood episodes that occur within four weeks of delivery (as well as episodes that occur during pregnancy) [8]. As an example, patients with a history of mania who suffer an episode of major depression one week after parturition are given the diagnosis “bipolar I disorder, major depression with

peripartum onset." If the depressive episode is accompanied by delusions, the diagnosis is bipolar I disorder, major depression with psychotic features and peripartum onset.

Additional information about diagnosing bipolar disorder is discussed separately. (See "Bipolar disorder in adults: Assessment and diagnosis", section on 'Diagnosis'.)

**Differential diagnosis** — The differential diagnosis of bipolar disorder includes schizophrenia, schizoaffective disorder, unipolar major depression, and substance use disorder, which is discussed separately. (See "Bipolar disorder in adults: Assessment and diagnosis", section on 'Differential diagnosis'.)

In addition, the differential diagnosis of postpartum bipolar disorder includes autoimmune encephalitis, including anti-N-methyl-D-aspartate receptor encephalitis [71,72]. The diagnostic approach to autoimmune encephalitis is discussed separately. (See "Autoimmune (including paraneoplastic) encephalitis: Clinical features and diagnosis".)

## INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5$^{th}$ to 6$^{th}$ grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10$^{th}$ to 12$^{th}$ grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topics (See "Patient education: Bipolar disorder (The Basics)" and "Patient education: Coping with high drug prices (The Basics)".)
- Beyond the Basics topics (See "Patient education: Bipolar disorder (Beyond the Basics)" and "Patient education: Coping with high prescription drug prices in the United States (Beyond the Basics)".)

These educational materials can be used as part of psychoeducational psychotherapy. (See "Bipolar disorder in adults: Psychoeducation and other adjunctive maintenance

psychotherapies", section on 'Group psychoeducation'.)

The National Institute of Mental Health also has educational material explaining the symptoms, course of illness, and treatment of bipolar disorder in a booklet entitled "Bipolar Disorder," which is available online at the website or through a toll-free number, 866-615-6464. The web site also provides references, summaries of study results in language intended for the lay public, and information about clinical trials currently recruiting patients.

More comprehensive information is provided in many books written for patients and family members, including The Bipolar Disorder Survival Guide: What You and Your Family Need to Know, written by David J. Miklowitz, PhD (published by The Guilford Press, 2002); An Unquiet Mind: A Memoir of Moods and Madness, written by Kay Jamison, PhD (published by Random House, 1995); and Treatment of Bipolar Illness: A Casebook for Clinicians and Patients, by RM Post, MD, and GS Leverich, LCSW (published by Norton Press, 2008).

The Depression and Bipolar Support Alliance (available at the website or 800-826-3632) is a national organization that educates members about bipolar disorder and how to cope with it. Other functions include increasing public awareness of the illness and advocating for more research and services. The organization is administered and maintained by patients and family members, and has local chapters.

The National Alliance on Mental Illness (available at the website or 800-950-6264) is a similarly structured organization devoted to education, support, and advocacy for patients with any mental illness. Bipolar disorder is one of their priorities.

## SUMMARY

- Onset of postpartum bipolar mood episodes occurs within a limited time period following birth of a live child; definitions of the puerperium range from the first 1 to 12 months following a live birth. (See 'Definition of the postpartum period' above.)
- The risk of mood episodes in female bipolar patients may be greater during the puerperium than at other times, with episodes occurring after 25 to 50 percent of deliveries. (See 'Epidemiology' above.)
- The etiology of postpartum bipolar mood episodes is not known. Possible causes include decreases in serum estrogen and progesterone concentrations, disrupted sleep, increased stress, social issues, and genetic effects. (See 'Pathogenesis' above.)

- Bipolar disorder is characterized by episodes of major depression ( table 1), mania ( table 2), and hypomania ( table 3). The most common type of postpartum episode is major depression, and psychotic features (eg, delusions and hallucinations) frequently occur during episodes of major depression or mania. Most postpartum episodes occur during the first several (eg, four) weeks after delivery, and the mean duration of episodes varies from approximately one to three months. (See 'Clinical manifestation' above.)

- The course of illness in bipolar patients with a lifetime history of postpartum mood episodes and patients without this history does not appear to differ. Postpartum bipolar mood episodes are often followed by subsequent postpartum and nonpostpartum episodes. However, the course of illness may be more benign if the first lifetime mood episode (onset) occurs with a postpartum mood episode, rather than a nonpostpartum episode. (See 'Course of illness' above.)

- The assessment of postpartum patients with a possible diagnosis of bipolar disorder includes a psychiatric and general medical history, mental status and physical examination, and focused laboratory tests, with emphasis upon mood and psychotic symptoms, including thoughts of suicide and homicide. Postpartum hypomania and a prior history of hypomania are both easy to miss. (See 'Assessment' above.)

- The most widely used self-report instrument that screens for mania and hypomania is the Mood Disorder Questionnaire ( table 4), and for major depression is the Patient Health Questionnaire – Nine Item ( table 5). (See 'Screening' above.)

- The subtypes of bipolar disorder that can be diagnosed in postpartum patients include bipolar I disorder, bipolar II disorder, cyclothymic disorder, and other specified bipolar disorder. (See 'Diagnosis' above and "Bipolar disorder in adults: Assessment and diagnosis", section on 'Diagnosis'.)

- The differential diagnosis of bipolar disorder includes schizophrenia, schizoaffective disorder, unipolar major depression, and substance use disorder. (See "Bipolar disorder in adults: Assessment and diagnosis", section on 'Differential diagnosis'.)



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