

ISSN Online: 2160-8806 ISSN Print: 2160-8792

# Psychiatric Disorders of Obstetrical Patients: A Paradigm for Risk Assessment and Collaborative Management

Daniel D. Christensen<sup>1\*</sup>, David V. Sheehan<sup>2</sup>, Martha A. Monson<sup>3,4</sup>, Robert D. Christensen<sup>4,5</sup>

<sup>1</sup>Huntsman Mental Health Institute, University of Utah Health, Salt Lake City, UT, USA

<sup>3</sup>Division of Maternal/Fetal Medicine, Department of Obstetrics and Gynecology, University of Utah Health, Salt Lake City, UT, USA

How to cite this paper: Christensen, D.D., Sheehan, D.V., Monson, M.A. and Christensen, R.D. (2025) Psychiatric Disorders of Obstetrical Patients: A Paradigm for Risk Assessment and Collaborative Management. *Open Journal of Obstetrics and Gynecology*, **15**, 394-407.

https://doi.org/10.4236/ojog.2025.153035

Received: February 19, 2025 Accepted: March 16, 2025 Published: March 19, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

 $\underline{http://creative commons.org/licenses/by/4.0/}$ 





## **Abstract**

Mood and anxiety disorders are relatively common during pregnancy and postpartum. If these go unrecognized and untreated, a host of adverse outcomes can occur. Herein, we propose an approach where obstetricians assess the presence and severity of psychiatric disorders by clinical assessment plus simple patient questionnaires, typically requiring less than two minutes to complete. The process categorizes the condition as either mild, moderate, or severe. We propose guidelines to inform treatment, including when to consider referral to a mental health specialist, and when to involve a neonatologist during the pregnancy, because of the risk that the neonate will require neonatal intensive care unit (NICU) admission. We believe this approach systematizes patient assessment, helps direct decision-making, facilitates appropriate treatment, fosters communication between obstetric, psychiatric, and neonatal clinicians, and could improve maternal and neonatal outcomes.

# **Keywords**

Anxiety, Bipolar, Depression, Diagnosis, Management, Psychosis, Rating Scales

# 1. Introduction

Obstetricians frequently care for women who have mood and anxiety disorders. These conditions include both new-onset disorders and recurrences of pre-preg-

<sup>&</sup>lt;sup>2</sup>Morsani College of Medicine, University of South Florida, Tampa, FL, USA

<sup>&</sup>lt;sup>4</sup>Women and Newborns Research, Intermountain Health, Murray, UT, USA

<sup>&</sup>lt;sup>5</sup>Division of Neonatology, Department of Pediatrics, University of Utah Health, Salt Lake City, UT, USA Email: \*Daniel.Christensen@hsc.utah.edu

nancy psychiatric illnesses [1]-[4]. Psychiatric diagnoses during pregnancy and the postpartum period are particularly common after trauma or undesirable events, such as unwanted pregnancy, miscarriage, traumatic delivery, dystocia, unexpected prenatal diagnosis, or unexpected/undesired caesarean section [5].

The most common psychiatric conditions dealt with by obstetricians are anxiety and mood disorders, either as individual diagnoses or in combination. Anxiety is identified in about 20% of pregnancies and depression in about 14% [5]-[7]. Less common psychiatric conditions—bipolar, obsessive, and psychotic disorders—also occur in women receiving obstetrical care; but are less common and more likely to present post-partum [8].

When psychiatric concerns arise during pregnancy, obstetricians, based on their training and experience, decide whether to diagnose and treat the problem themselves, whether to refer to a psychiatrist for co-management, and when to involve a neonatologist antepartum. Criteria for such referrals are lacking, and the need for such referrals should always be individualized.

The importance of engaging neonatology before birth is illustrated in a recent report from Sweden involving 1,308,487 infants, of whom 2677 (0.2%) were exposed to antipsychotics during pregnancy. Of the exposed infants, 516 (19.3%) were admitted to a neonatal intensive care unit compared with 98,976 (7.8%) of unexposed infants (adjusted risk ratio [ARR]: 1.7; 95% CI: 1.6 to 1.8). The highest risks were seen for withdrawal symptoms (17.7; 95% CI: 9.6 to 32.6), neurological disorders (3.4; 95% CI: 2.4 to 5.7), and pulmonary hypertension (2.1; 95% CI: 1.4 to 3.1) [9].

In this review, we provide a framework that we hope will assist obstetricians in caring for patients who manifest psychiatric illness. It includes assessment and management guidelines, and recommendations regarding when to consider psychiatric referral and when to involve a neonatologist antepartum. Our assessment/management paradigm begins with the obstetrician applying specific but simple criteria to characterize the severity of the psychiatric symptoms as either mild, moderate, or severe [10] [11]. While more diagnostic precision may be necessary for clinical research and psychiatric management, we maintain that beginning with the assessments and standardized rating scales we propose herein is practical and efficient in obstetrical practice.

## 2. Mild, Moderate, and Severe Depression/Anxiety

Mild depression/anxiety is characterized by symptoms that are apparent but manageable and without significant impairment in daily life (**Table 1**, first panel). Individuals with mild illness may report stress, worries, sadness, discouragement, restlessness, and/or irritability. These are more often intermittent than continuous and are commonly linked to life pressures and demands including those associated with the pregnancy. The Diagnostic and Statistical Manual of Mental Disorders, 5th edition and the International Statistical Classification of Diseases and Related Health Problems, 10th edition definitions of mild depression are similar; namely, "Few, if any, symptoms in excess of those required to make the diagnosis are present, the

intensity of the symptoms is distressing but manageable, and the symptoms result in minor impairment in social or occupational functioning" [12] [13]. Obstetricians can proceed most confidently with a mild classification if there is no past or family history of depression, anxiety, bipolar, or a more severe psychiatric illness. However, a mild presentation could be the first phase of a moderate or severe condition.

Table 1. Treatment guidelines based on severity.

Symptom Severity	Characteristics & Presentation	Rating Scales	Treatment Guidelines
Mild	Feeling stressed, discouraged, upset, blue, worried. Evident symptoms and discomfort but of minor intensity. More intermittent than continuous Little to no functional impairment Often related to life pressures and demands.	PHQ-9 score 5 - 9 GAD-7 score 5 - 9	1) Avoid medication in the 1st trimester if possible 2) Avoid recreational drugs and alcohol 3) Emphasize assurance, support, exercise, sufficient sleep, nutritious diet 4) Counseling, psychotherapy, group therapy 5) Expectant mother classes, online resources 6) Screen for past and family hx of severe psychiatric illness 7) Increased monitoring and vigilant follow-up. Watch for escalation
Moderate	The above symptoms of greater intensity. More prominent anxiety and/or depression and heightened levels of distress causing impairment in work, home, marriage or social functioning. Most continue to function but with decreased satisfaction, increased effort, less efficiency and functional deterioration.  Symptoms more continuous than intermittent.  Absence of suicidal, homicidal or psychotic features.	PHQ-9 score 10 - 14 GAD-7 score 10 - 14 Edinburgh Postnatal Depression score ≥10	1) Outpatient treatment generally appropriate 2) Psychiatric consultation for dx and treatment 3) Classes and online resources 4) More intense psychotherapy 5) Psychiatric medications usually warranted (6) Medication guidelines as outlined in text 7) More frequent visits. Monitor for escalation 8) Depending on medication used (see Table 5) involve neonatology prior to delivery
Severe	Serious, often critical, symptoms of anxiety, depression, psychosis, and/or obsessions. Often debilitating and hazardous to self and others—risk of suicide and/or harm to others.  Possible psychosis, such as delusions, hallucinations, paranoia, grandiosity, disorganized thinking/behavior, extreme withdrawal, diminished emotional expression.  Possible extreme mood alteration, such as mania, guilt, worthlessness, hopelessness or suicidal ideation.  Symptoms intense/distressing to self & others.  Inability to care for self or function in usual roles.	PHQ-9 score 15 - 27 GAD-7 score 15 - 21 Edinburgh Postnatal Depression score ≥13 Rapid Mood Screener score "yes" to 4 or more items	1) Psychiatric referral for dx and management 2) Inpatient treatment is usually necessary to assure safety 3) Rigorous treatment regimens commonly required, such as vigorous medication protocols, ECT and supervised visits 4) Consider prophylactic treatment for high-risk patients who have had previous episodes 5) Involve neonatology prior to delivery

ECT, electroconvulsive treatment; hx, history; dx, diagnosis.

Severity confirmation is available through simple self-administered patient rating scales. While there are numerous well-studied depression and anxiety rating scales, we recommend the Patient Health Questionnaire-9 (for depression) (PHQ-9, <a href="https://www.apa.org/depression-guideline/patient-health-questionnaire.pdf">https://www.apa.org/depression-guideline/patient-health-questionnaire.pdf</a>) and the Generalized Anxiety Disorder-7 (for anxiety) (GAD-7) <a href="https://patient.info/doctor/generalised-anxiety-disorder-assessment-gad-7">https://patient.info/doctor/generalised-anxiety-disorder-assessment-gad-7</a>.

A single page containing both questionnaires is given in **Table 2**. The PHQ-9 is a nine-item questionnaire that commonly takes the patient less than two minutes to complete. It surveys depressive symptoms and is scored 0 to 27. Mild depression is indicated by scores of 5-9 [8] [10]. Generalized anxiety refers to a state of worry about life events and activities. The GAD-7 is a seven-item questionnaire assessing anxiety and is scored 0 to 21. Mild anxiety is indicated by scores of 5-9 [11] [12]. Questions on both the PHQ-9 and GAD-7 are followed by a query into the degree ('not at all" to "extremely difficult") to which symptoms are causing impairment in daily life. Functional impairment is a required criterion for a depression/anxiety diagnosis. Both questionnaires are in the public domain and can be freely reproduced and used.

Table 2. Patient health questionnaire and general anxiety disorder (PHQ-9 and GAD-7).

Date	Patient Name	Date of Birth

Over the last 2 weeks, how often have you been bothered by any of the following problems? Please circle your answers.

PHQ-9	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself or that you are a failure or have let yourself or others down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself in some way	0	1	2	3

## Add the score for each column

Total ec	ore (add s	our column	ecoree).	
I OTAL SC	ore tada v	our column	scores):	

If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people? (Circle one)

1) Not difficult at all; 2) Somewhat difficult; 3) Very difficult; 4) Extremely difficult

Continued

Over the last 2 weeks, how often have you been bothered by any of the following problems? Please circle your answers.

GAD-7	Not at all sure	Several days	Over half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it's hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

## Add the score for each column

Total Score (add your column scores): \_

If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people? (Circle one)

1) Not difficult at all; 2) Somewhat difficult; 3) Very difficult; 4) Extremely difficult

Additional assistance can often be found in local resources, such as "Utah's Maternal Mental Health Toolkit" available at <a href="https://mihp.utah.gov/mmhtoolkit">https://mihp.utah.gov/mmhtoolkit</a>. We recommend using rating scales and other assessments for mental health at least once antenatally, more frequently if indicated, and at least once at a post-partum office visit.

Moderate depression/anxiety is a significant escalation in symptom severity causing impairment in work, home, marriage, and/or social functioning (**Table 1**, second panel). Such individuals may be able to function in their daily lives, though their ability to do so is compromised. At this stage, the patient may find it more challenging to control fears, worries, and low moods, leading to sleep disturbance, appetite changes, difficulty concentrating, and social withdrawal. Severity is moderate when the number and intensity of symptoms and functional impairment fall between mild and severe. Such patients should be screened for suicide potential, psychotic symptoms, manic/hypomanic symptoms ("mood swings"), and substance use. If any of these are present the condition should be rated as "Severe".

Rating scale scores in the 10 – 14 range on both the PHQ-9 and GAD-7 are consistent with illness of moderate severity [10] [11]. Question 9 on the PHQ-9 is a single question on suicidal thoughts, but not suicidal behaviors or impulses. Anyone who answers question 9 affirmatively requires further assessment of their suicidality.

Severe psychiatric symptoms in pregnancy and postpartum constitute the most debilitating and hazardous [8] [14] (**Table 1**, third panel). "Severe" is characterized by symptoms that are numerous, intense, cause significant distress, and are debilitating with significant impairment. Severe psychiatric symptoms include suicidal, homicidal, and/or infanticidal thoughts/intent, psychosis, mania, and im-

mobilizing obsessions. Such patients may need hospitalization, rigorous medication regimens, and sometimes electroconvulsive therapy (ECT). Symptoms may include extreme guilt, worthlessness, hopelessness, intense anxiety, manic or hypomanic mood elevation, delusions, hallucinations, and fears of or urges toward harming the newborn or family. Unlike the "post-partum blues", which affect the majority of women and are mild and transient, post-partum depression occurs in 10% - 15% of women following childbirth and up to 40% of those with a past history of major depressive disorder [14]. Risk factors include depression/anxiety during the pregnancy, bipolar disorder, and a history of recurrent major depression, post-partum depression, or post-partum psychosis [14].

If a woman has previously experienced post-partum psychosis, it is likely to recur after subsequent pregnancies [14] [15] and deserves close observation and prophylactic treatment. This is among the most threatening of all post-partum psychiatric conditions [16], occurring in 0.9-2.6 per 1000 deliveries [15] with onset usually within 1-2 weeks of delivery and bearing a high risk of harm to self and others [15]-[17]. One of the authors (DDC) managed a 39-year-old post-partum woman through a six-month psychiatric hospitalization after she poured gasoline on, and set fire to, herself and her sleeping children to "save them from the devil". Even in those with less tragic outcomes, maternal depression and dysfunction has been shown to affect child development negatively [18] [19]. Those with post-partum obsessive states have recurrent fears of harming their newborn, but the risk of actual harm is low [20]-[22].

Rating Scales. PHQ-9 scores 15-27 indicate severe depression, and GAD-7 scores of 15-21 indicate severe anxiety. The Edinburgh Postnatal Depression Scale was developed to screen for post-partum depression

https://med.stanford.edu/content/dam/sm/ppc/docu-

ments/DBP/EDPS text added.pdf. It is a ten-item questionnaire scored from 0 to 30 where scores of 10 or more indicate "at risk" for post-partum depression, and scores of 13 or greater indicate "high risk". An anxiety subscale, composed of items 3, 4, and 5, suggests "further exploration of post-partum anxiety" if the sum of these items is six or greater. The Rapid Mood Screener (RMS)

https://rapidmoodscreener.com is designed to detect bipolar disorder. Roughly 70% of bipolar patients are initially misdiagnosed with major depressive disorder, commonly leading to inappropriate treatment and a mean delay to correct diagnosis of 5 – 10 years [23]. A "positive" screen ("Yes" to 4 or more of 6 items) should be followed by a comprehensive evaluation by one experienced in bipolar disorder [24].

# 3. Treatment Guidelines Based on Illness Severity

We recommend that, whenever possible, a pre-pregnancy counseling session be scheduled for a woman currently taking psychotropic medications and planning to become pregnant. Each medication can be discussed with the obstetrician and/or, psychiatrist, to reevaluate the medications and dosages safest to use during pregnancy and postpartum.

Mild psychiatric conditions can be approached with interventions of lesser intensity and lower risk. Avoidance of psychotropic medication is desirable during the first trimester and advice should be given against the use of recreational drugs and alcohol. Remedies that center on reassurance and support are often helpful and sufficient, such as obtaining help with childcare and home duties, reducing employment hours, regular exercise, sufficient sleep, maintaining a varied and nutritious diet, increased engagement in rewarding activities, and seeking out the positive support of friends and family. Referral for counseling/psychotherapy may contribute to alleviating stress and fostering symptomatic improvement. Numerous online resources are available, such as groups, classes, and individual therapy (https://heidimcbain.com/pregnancy-mental-wellness-course,

https://www.tinyhood.com/category/expecting?, https://www.betterhelp.com).

Increased frequency of prenatal visits contributes to reassurance and careful monitoring. Vigilant follow-up with recruitment of a spouse or partner to monitor and report is always desirable. Though these supportive interventions are often sufficient to alleviate mild distress and prevent its escalation, conservative psychotropic medication may be considered but is usually not necessary and may not be worth the associated risks in the first trimester.

Psychiatric conditions of moderate severity may also benefit from the above interventions. At this stage of severity, we recommend a referral for psychiatric consultation to establish a precise psychiatric diagnosis and recommend a treatment plan. Many, if not most, at this stage, will remain in the primary care of the obstetrician with any further outpatient psychiatric visits at the discretion of the psychiatrist-obstetrician alliance. Psychiatric medications, more frequent visits, and more intensive psychotherapy are common requirements for managing a moderately severe condition. A checklist such as the one given in (Table 3) is helpful when prescribing a psychotropic medication during pregnancy.

Table 3. Checklist to use when considering psychotropic medications during pregnancy and the postpartum period.

Hold a risk discussion with both patient and partner to secure a collaborative alliance, understand
 risk-benefit issues under consideration, and obtain informed consent for medications and/or procedures where needed.

**√** 

Optimize non-medication options. Even if medication is prescribed, non-medication options can help

minimize the number of medications, facilitate lower drug doses and enhance the overall effectiveness of treatment.

**√** 

The risk of not using psychotropic medications should outweigh the risk of using them. Untreated or undertreated psychiatric conditions pose risks to both mother and child.

 $\checkmark$ 

4 Avoid psychiatric medications in the first trimester and polypharmacy whenever possible.

 $\checkmark$ 

5 Avoid valproic acid, carbamazepine, benzodiazepines, and lithium.

**V** 

**6** Use the lowest effective doses but do not undertreat.

**V** 

7 If medication is required, favor those with long track-records and the most available safety data.

**√** 

8 Once a psychotropic medication plan has been devised, establish clear and ongoing communication between obstetrician, pediatrician/neonatologist, and psychiatrist.

Online education and information sites are beneficial such as the National Alliance on Mental Illness (NAMI) webpage on Mental Health During Pregnancy (<a href="http://www.nami.org">http://www.nami.org</a>), Post-Partum Support International,

https://www.postpartum.net and the MGH Center for Women's Mental Health, http://www.womensmentalhealth.org.

Severe psychiatric symptoms during the pregnancy and postpartum period are perilous and often incapacitating. Close supervision, such as hospitalization, is usually required to ensure safety, well-being, and self-care. Psychiatric referral is warranted, with the psychiatrist assuming responsibility for the psychiatric diagnosis and treatment. Hospital protocols commonly encompass intensive and exacting endeavors such as risk/lethality assessments, suicide precautions, supervision of visits, intensive medication regimens, and possibly ECT. Such severe symptoms may occur pre- or post-partum and frequently center on depression, anxiety, psychosis, and/or mania. The most reliable predictor of a severe pre-or post-partum condition is a past or family history of the disorder. Be alert to ancillary symptoms such as insomnia, anxiety, panic attacks, and impaired functioning progressing to more overt major depression. Post-partum depression is generally defined as beginning within 4 weeks of delivery [15] [18] though initial depressive symptoms may begin in the final weeks of pregnancy. Recognition of a patient at high risk of perinatal psychiatric illness should prompt a discussion of prophylactic medication throughout the pregnancy and post-natal period, preferably beginning after the first trimester. If one has a history of bipolar disorder and their mood stabilizer has been discontinued, there is a particularly high rate of recurrence (71%) in the perinatal period [24].

# 4. Neonatal Complications of Antipsychotic/Antidepressant Use during Pregnancy

Large studies conclude that antipsychotic medications are associated with risk to the fetus and neonate **(Table 4)** [25]-[35]. For instance, a recent 14-year Finnish study of over 36,000 women, concluded that; 1) the use of antipsychotic medications during pregnancy increased from 2002 to 2016, and 2) infants born to these patients were statistically more likely to need NICU admission and a hospital stay over five days (OR 1.54; 95% CI 1.10 - 2.15) [21]. Similarly, a cross-sectional study of delivery records in Los Angeles published in 2020 found that maternal mental illness was independently associated with adverse fetal and neonatal outcomes (OR 1.12; 95% CI 1.09 - 1.14) [22].

**Table 4.** Psychotherapeutics and associations with fetal/neonatal disorders.

Medication	Indication	Associations with Fetal/Neonatal Disorders	Reference
Brexanolone	Post-partum depression	Little data on use in pregnant women to determine drug-induced risks of major birth defects or adverse fetal outcomes. Animal reproductive studies identified serious adverse outcomes.	[26]

#### Continued

Zuranolone	Post-partum depression	Advise pregnant women of the potential risk to a fetus.  Available data on use in pregnant women are insufficient to evaluate for a drug-associated risk of major birth defects, miscarriage, or adverse fetal outcomes.	[27]
Benzodiazepines	Anxiety, insomnia, panic disorders	Withdrawal symptoms, hypotonia, seizures. Best to avoid during pregnancy, if possible.	[28]
Lithium	Bipolar and major depressive disorder	Avoid during pregnancy. Risk of spontaneous preterm birth (8.7% vs 3.0%, RR 2.80 (95% CI 2.02, 3.88)) higher incidence of neonates with cardiac malformations (2.1% vs 0.8% RR 3.17 (95% CI 1.64, 6.13) the majority (66.6%) are malformations of the cardiac septa.	[29]
Paroxetine	Major depressive disorder, panic disorder, anxiety with or without depression	Favor other SSRTs when possible. Risk of cardiac malformation. Withdrawal; jitteriness, increased tone, irritability, tremors, trouble eating, trouble breathing.	[30] [31]
Valproate	Bipolar disorder	Avoid during pregnancy. Fetal valproate syndrome caused by exposure during the first trimester. Neural tube defects such as spina bifida, distinctive facial features, congenital heart defects and other musculoskeletal abnormalities.	[32]
Carbamazepine	Mania with bipolar disorder	Avoid during pregnancy. Increased NICU admission (especially for respiratory care). Adverse effects on infant neurodevelopment, poor cognitive and language development and negative behavioral traits.	[33]
Lamotrigine	Bipolar disorder	Appears to be the safest mood stabilizer to use during pregnancy. Not found to be statistically associated with neurodevelopmental disorders as a whole, language disorders or delay, diagnosis or risk of ASD and diagnosis or risk of ADHD.	[34]
SSRIs	Depression	Generally accepted as safe during pregnancy. Withdrawal; jitteriness, increased tone, irritability, tremors, trouble eating, trouble breathing.	[25] [30] [31]
ECT	Severe treatment- resistant depression, severe mania	Uterine contractions are the most common (low-grade) complication, fetal heart rate abnormalities (transient) in a few cases. No proven significant fetal or neonatal effects.	[35]

Antipsychotic use early in pregnancy is associated with a higher risk of adverse outcomes to infants than if used only later in pregnancy. Lin *et al.* [36], in a seven-year study from Taiwan region, found a higher risk of preterm birth (1.29; 95% CI 1.04 – 1.6) and concluded that when women need antipsychotics early in pregnancy, they should be monitored carefully for preterm birth and low infant birth weight. Whether antipsychotic use in pregnancy is a risk factor for gestational diabetes is debated. A 12-year Swedish national registry controlled for maternal factors including body mass index, and concluded that the risk was indeed elevated, with exposed infants at risk for being large for gestational age (1.6; 1.3 - 1.9) [9].

nancy, Kulkarni *et al.* from Australia reported a case-control study focused on women taking clozapine and reported a statistically significant risk of miscarriages, maternal gestational diabetes, and lower birth weight [37].

Antidepressant use during pregnancy is common [25]. Guidelines for using antidepressants in pregnancy have been issued by at least six advocate societies (Table 5). Four of the six specifically advise using pharmacologic treatment for "new onset" depression during pregnancy [38]-[43]. One (German) advises to "continue" antidepressants during pregnancy [44]. The most commonly prescribed antidepressants during pregnancy are selective serotonin reuptake inhibitors (SSRIs) or serotonin-norepinephrine reuptake inhibitors (SNRIs) [25]. Subtle adverse effects were reported in a meta-analysis of 11 studies, by Lattimore et al. [25]. They concluded that neonates exposed to SSRIs in utero are somewhat more likely to have low birth weight and to be admitted to a NICU. In one meta-analysis, paroxetine use during the first trimester was associated with a 1.28-fold increased risk of cardiac malformations (in the cardiac septum, bulbus cordis, and right ventricular outflow tract) [31]. Nevertheless, SSRIs and SNRIs are among the best-studied antidepressants in pregnancy and are considered to be the safest. We suggest involving the neonatology service to evaluate whether delivery should occur in a facility that has a NICU.

**Table 5.** Guidelines for managing depression during pregnancy. (Modified from Eleftheriou *et al.* Int J Environ Res Public Health. 2023 [38]).

Advocate Society	Year	Country	Recommendations	Reference
Dutch Society Ob Gyn	2012	Netherlands	No clear advice to continue antidepressants in pregnancy	[40]
National Institute for Health & Care Excellence	2014	UK	Advise psychotherapy and pharmacologic treatment for new-onset depression	[41]
Royal Australian and New Zealand College of Psychiatrists	2015	Australia & New Zealand	Advise psychotherapy for new-onset depression	[42]
Canadian Network for Mood & Anxiety Treatments	2016	Canada	Advise psychotherapy and pharmacologic treatment for new-onset depression	[43]
German Society for Psychiatry and Psychotherapy, Psychosomatics and Neurology	2017	Germany	Advise to continue antidepressants in pregnancy	[44]
American College Ob-Gyn	2023	USA	Advise pharmacologic treatment for new-onset depression	[39]

## 5. Conclusion

Psychiatric disorders are common during pregnancy and the postpartum period. If unrecognized and untreated, these can lead to symptom escalation, patient and family dysfunction, and in the most severe instances, suicide, homicide, or infan-

ticide. We propose an approach where the obstetrician can assess psychiatric problems based on symptom severity, aided by simple patient self-assessment questionnaires. We propose guidelines to inform the treatment of mild psychiatric conditions by the obstetrician, for more severe psychiatric disorders to trigger a referral to mental health specialists, and to involve a neonatologist as a team member when the maternal condition or therapeutics may increase the risk of NICU admission (Table 6). This approach can simplify patient assessment by the obstetrician, help direct decision-making, and facilitate appropriate treatment.

**Table 6.** Representation of how assigning a symptom severity of "mild, moderate, or severe" might influence the management and therapy of an obstetrical patient who has a psychiatric disorder.

Symptom Severity	Management	Therapeutic Strategy	
Mild	OBSTETRICIAN	Counseling, education, support, monitoring closely, online resources	
Moderate	OBSTETRICIAN with PSYCHIATRIC consultation	All of the above plus: Psychiatric medications, psychotherapy (NEONATOLOGY involvement depending on the psychotropic medications used	
Severe	PSYCHIATRIC inpatient. When no longer severe, outpatient management by OBSTETRICIAN with PSYCHIATRIST co-management	All of the above plus: Assure safety of patient and family. NEONATOLOGY involvement prior to delivery (See <b>Table 1</b> and <b>Table 4</b> )	

## **Conflicts of Interest**

Author DVS previously served on the Scientific Advisory Board of Sage Therapeutics. None of the other authors have conflicts of interest.

# References

- [1] Meltzer-Brody, S., Maegbaek, M.L., Medland, S.E., Miller, W.C., Sullivan, P. and Munk-Olsen, T. (2017) Obstetrical, Pregnancy and Socio-Economic Predictors for New-Onset Severe Postpartum Psychiatric Disorders in Primiparous Women. *Psychological Medicine*, 47, 1427-1441. https://doi.org/10.1017/s0033291716003020
- [2] França, U.L. and McManus, M.L. (2018) Frequency, Trends, and Antecedents of Severe Maternal Depression after Three Million U.S. Births. *PLOS ONE*, 13, e0192854. <a href="https://doi.org/10.1371/journal.pone.0192854">https://doi.org/10.1371/journal.pone.0192854</a>
- [3] Johnson Rolfes, J. and Paulsen, M. (2021) Protecting the Infant-Parent Relationship: Special Emphasis on Perinatal Mood and Anxiety Disorder Screening and Treatment in Neonatal Intensive Care Unit Parents. *Journal of Perinatology*, 42, 815-818. <a href="https://doi.org/10.1038/s41372-021-01256-7">https://doi.org/10.1038/s41372-021-01256-7</a>
- [4] Lewkowitz, A.K., Rosenbloom, J.I., Keller, M., López, J.D., Macones, G.A., Olsen, M.A., et al. (2019) Association between Stillbirth ≥ 23 Weeks Gestation and Acute Psychiatric Illness within 1 Year of Delivery. American Journal of Obstetrics and Gynecology, 221, 491.e1-491.e22. <a href="https://doi.org/10.1016/j.ajog.2019.06.027">https://doi.org/10.1016/j.ajog.2019.06.027</a>
- [5] Cantwell, R. (2021) Mental Disorder in Pregnancy and the Early Postpartum. *Anaesthesia*, **76**, 76-83. <a href="https://doi.org/10.1111/anae.15424">https://doi.org/10.1111/anae.15424</a>
- [6] Wisner, K.L., Sit, D.K.Y., McShea, M.C., Rizzo, D.M., Zoretich, R.A., Hughes, C.L.,

- et al. (2013) Onset Timing, Thoughts of Self-Harm, and Diagnoses in Postpartum Women with Screen-Positive Depression Findings. *JAMA Psychiatry*, **70**, 490-498. <a href="https://doi.org/10.1001/jamapsychiatry.2013.87">https://doi.org/10.1001/jamapsychiatry.2013.87</a>
- [7] Penny, K.A., Friedman, S.H. and Halstead, G.M. (2014) Psychiatric Support for Mothers in the Neonatal Intensive Care Unit. *Journal of Perinatology*, 35, 451-457. <a href="https://doi.org/10.1038/jp.2014.221">https://doi.org/10.1038/jp.2014.221</a>
- [8] Zimmerman, M., Morgan, T.A. and Stanton, K. (2018) The Severity of Psychiatric Disorders. *World Psychiatry*, **17**, 258-275. https://doi.org/10.1002/wps.20569
- [9] Heinonen, E., Forsberg, L., Nörby, U., Wide, K. and Källén, K. (2022) Antipsychotic Use during Pregnancy and Risk for Gestational Diabetes: A National Register-Based Cohort Study in Sweden. CNS Drugs, 36, 529-539. <a href="https://doi.org/10.1007/s40263-022-00908-2">https://doi.org/10.1007/s40263-022-00908-2</a>
- [10] Kroenke, K., Spitzer, R.L. and Williams, J.B.W. (2001) The PHQ-9: Validity of a Brief Depression Severity Measure. *Journal of General Internal Medicine*, 16, 606-613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x
- [11] Spitzer, R.L., Kroenke, K., Williams, J.B.W. and Löwe, B. (2006) A Brief Measure for Assessing Generalized Anxiety Disorder. *Archives of Internal Medicine*, **166**, 1092-1097. <a href="https://doi.org/10.1001/archinte.166.10.1092">https://doi.org/10.1001/archinte.166.10.1092</a>
- [12] American Psychiatric Association (2013) Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.
- [13] World Health Organization (2016) International Classification of Diseases and Related Health Problems, 10th Revision.
- [14] Furtado, M., Chow, C.H.T., Owais, S., Frey, B.N. and Van Lieshout, R.J. (2018) Risk Factors of New Onset Anxiety and Anxiety Exacerbation in the Perinatal Period: A Systematic Review and Meta-Analysis. *Journal of Affective Disorders*, 238, 626-635. <a href="https://doi.org/10.1016/j.jad.2018.05.073">https://doi.org/10.1016/j.jad.2018.05.073</a>
- [15] Agrawal, I., Mehendale, A.M. and Malhotra, R. (2022) Risk Factors of Postpartum Depression. *Cureus*, **14**, e30898. <a href="https://doi.org/10.7759/cureus.30898">https://doi.org/10.7759/cureus.30898</a>
- [16] VanderKruik, R., Barreix, M., Chou, D., Allen, T., Say, L. and Cohen, L.S. (2017) The Global Prevalence of Postpartum Psychosis: A Systematic Review. *BMC Psychiatry*, **17**, Article No. 272. <a href="https://doi.org/10.1186/s12888-017-1427-7">https://doi.org/10.1186/s12888-017-1427-7</a>
- [17] Jones, I., Chandra, P.S., Dazzan, P. and Howard, L.M. (2014) Bipolar Disorder, Affective Psychosis, and Schizophrenia in Pregnancy and the Post-Partum Period. *The Lancet*, **384**, 1789-1799. <a href="https://doi.org/10.1016/s0140-6736(14)61278-2">https://doi.org/10.1016/s0140-6736(14)61278-2</a>
- [18] Slomian, J., Honvo, G., Emonts, P., Reginster, J. and Bruyère, O. (2019) Consequences of Maternal Postpartum Depression: A Systematic Review of Maternal and Infant Outcomes. *Women's Health*, 15. <a href="https://doi.org/10.1177/1745506519844044">https://doi.org/10.1177/1745506519844044</a>
- [19] Resnick, P.J. (1970) Murder of the Newborn: A Psychiatric Review of Neonaticide. American Journal of Psychiatry, 126, 1414-1420. <a href="https://doi.org/10.1176/ajp.126.10.1414">https://doi.org/10.1176/ajp.126.10.1414</a>
- [20] Fairbrother, N. and Woody, S.R. (2008) New Mothers' Thoughts of Harm Related to the Newborn. Archives of Women's Mental Health, 11, 221-229. <a href="https://doi.org/10.1007/s00737-008-0016-7">https://doi.org/10.1007/s00737-008-0016-7</a>
- [21] Heinonen, E., Forsberg, L., Nörby, U., Wide, K. and Källén, K. (2022) Neonatal Morbidity after Fetal Exposure to Antipsychotics: A National Register-Based Study. *BMJ Open*, **12**, e061328. <a href="https://doi.org/10.1136/bmjopen-2022-061328">https://doi.org/10.1136/bmjopen-2022-061328</a>
- [22] Gentile, S. and Fusco, M.L. (2019) Schizophrenia and Motherhood. *Psychiatry and*

- Clinical Neurosciences, 73, 376-385. https://doi.org/10.1111/pcn.12856
- [23] Hirschfeld, R.M.A., Lewis, L. and Vornik, L.A. (2003) Perceptions and Impact of Bipolar Disorder: How Far Have We Really Come? Results of the National Depressive and Manic-Depressive Association 2000 Survey of Individuals with Bipolar Disorder. The Journal of Clinical Psychiatry, 64, 161-174. https://doi.org/10.4088/jcp.v64n0209
- [24] Viguera, A.C., Whitfield, T., Baldessarini, R.J., Newport, D.J., Stowe, Z., Reminick, A., et al. (2007) Risk of Recurrence in Women with Bipolar Disorder during Pregnancy: Prospective Study of Mood Stabilizer Discontinuation. American Journal of Psychiatry, 164, 1817-1824. https://doi.org/10.1176/appi.ajp.2007.06101639
- [25] Lattimore, K.A., Donn, S.M., Kaciroti, N., Kemper, A.R., Neal, C.R. and Vazquez, D.M. (2005) Selective Serotonin Reuptake Inhibitor (SSRI) Use during Pregnancy and Effects on the Fetus and Newborn: A Meta-analysis. *Journal of Perinatology*, 25, 595-604. https://doi.org/10.1038/sj.jp.7211352
- [26] Reddy, D.S., Mbilinyi, R.H. and Estes, E. (2023) Preclinical and Clinical Pharmacology of Brexanolone (Allopregnanolone) for Postpartum Depression: A Landmark Journey from Concept to Clinic in Neurosteroid Replacement Therapy. *Psychopharmacology*, 240, 1841-1863. <a href="https://doi.org/10.1007/s00213-023-06427-2">https://doi.org/10.1007/s00213-023-06427-2</a>
- [27] ACOG Clinical Practice Advisory (2024) Zuranolone for the Treatment of Postpartum Depression.
  <a href="https://www.acog.org/clinical/clinical-guidance/practice-advisory/arti-cles/2023/08/zuranolone-for-the-treatment-of-postpartum-depression">https://www.acog.org/clinical/clinical-guidance/practice-advisory/arti-cles/2023/08/zuranolone-for-the-treatment-of-postpartum-depression</a>
- [28] Wu, H., Liang, Y., Li, L., Jiang, H. and Xu, L. (2024) The Safety of Benzodiazepines and Related Drugs during Pregnancy: An Updated Meta-Analysis of Cohort Studies. *Archives of Gynecology and Obstetrics*, 310, 45-54. https://doi.org/10.1007/s00404-024-07557-4
- [29] Hastie, R., Tong, S., Hiscock, R., Lindquist, A., Lindström, L., Wikström, A., et al. (2021) Maternal Lithium Use and the Risk of Adverse Pregnancy and Neonatal Outcomes: A Swedish Population-Based Cohort Study. BMC Medicine, 19, Article No. 291. https://doi.org/10.1186/s12916-021-02170-7
- [30] Bérard, A., Ramos, É., Rey, É., Blais, L., St.-André, M. and Oraichi, D. (2006) First Trimester Exposure to Paroxetine and Risk of Cardiac Malformations in Infants: The Importance of Dosage. Birth Defects Research Part B: Developmental and Reproductive Toxicology, 80, 18-27. https://doi.org/10.1002/bdrb.20099
- [31] Painuly, N., Painuly, R., Heun, R. and Sharan, P. (2013) Risk of Cardiovascular Malformations after Exposure to Paroxetine in Pregnancy: Meta-analysis. *The Psychiatrist*, **37**, 198-203. <a href="https://doi.org/10.1192/pb.bp.111.035915">https://doi.org/10.1192/pb.bp.111.035915</a>
- [32] NORD (National Organization for Rare Disorders) (2020) Fetal Valproate Syndrome.
- [33] Matalon, S., Schechtman, S., Goldzweig, G. and Ornoy, A. (2002) The Teratogenic Effect of Carbamazepine: A Meta-Analysis of 1255 Exposures. *Reproductive Toxicology*, **16**, 9-17. <a href="https://doi.org/10.1016/s0890-6238(01)00199-x">https://doi.org/10.1016/s0890-6238(01)00199-x</a>
- [34] Peron, A., Picot, C., Jurek, L., Nourredine, M., Ripoche, E., Ajiji, P., *et al.* (2024) Neurodevelopmental Outcomes after Prenatal Exposure to Lamotrigine Monotherapy in Women with Epilepsy: A Systematic Review and Meta-analysis. *BMC Pregnancy and Childbirth*, **24**, Article No. 103. <a href="https://doi.org/10.1186/s12884-023-06242-9">https://doi.org/10.1186/s12884-023-06242-9</a>
- [35] Cipolla, S., Catapano, P., Messina, M., Pezzella, P. and Giordano, G.M. (2023) Safety of Electroconvulsive Therapy (ECT) in Pregnancy: A Systematic Review of Case Reports and Case Series. *Archives of Women's Mental Health*, 27, 157-178. <a href="https://doi.org/10.1007/s00737-023-01394-1">https://doi.org/10.1007/s00737-023-01394-1</a>
- [36] Lin, H., Lin, F., Katz, A.J., Wang, I. and Wu, C. (2022) Antipsychotic Use in Early

- Pregnancy and the Risk of Maternal and Neonatal Complications. *Mayo Clinic Proceedings*, **97**, 2086-2096. https://doi.org/10.1016/j.mayocp.2022.04.006
- [37] Kulkarni, J., De Chellis, A., Gilbert, H., Gavrilidis, E., Mu, E., Karimi, L., *et al.* (2024) Clozapine Safety in Pregnancy: A Clinical Study. *Schizophrenia Bulletin*. <a href="https://doi.org/10.1093/schbul/sbae132">https://doi.org/10.1093/schbul/sbae132</a>
- [38] Eleftheriou, G., Zandonella Callegher, R., Butera, R., De Santis, M., Cavaliere, A.F., Vecchio, S., et al. (2023) Consensus Panel Recommendations for the Pharmacological Management of Pregnant Women with Depressive Disorders. *International Journal* of Environmental Research and Public Health, 20, Article 6565. <a href="https://doi.org/10.3390/ijerph20166565">https://doi.org/10.3390/ijerph20166565</a>
- [39] ACOG Committee on Practice Guidelines—Obstetrics (2023) Treatment and Management of Mental Health Conditions during Pregnancy and Postpartum. *Obstetrics & Gynecology*, **141**, 1262-1288.
- [40] Bijl, R.V. and Ravelli, A. (2000) Psychiatric Morbidity, Service Use, and Need for Care in the General Population: Results of the Netherlands. Mental Health Survey and Incidence Study. *American Journal of Public Health*, 90, 602-607.
- [41] National Institute for Health and Care Excellence (NICE) (2018) Surveillance of Pregnancy and Complex Social Factors: A Model for Service Provision for Pregnant Women with Complex Social Factors (NICE Guideline CG110). National Institute for Health and Care Excellence (NICE).
- [42] Malhi, G.S., Bassett, D., Boyce, P., Bryant, R., Fitzgerald, P.B., Fritz, K., et al. (2015) Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines for Mood Disorders. Australian & New Zealand Journal of Psychiatry, 49, 1087-1206. https://doi.org/10.1177/0004867415617657
- [43] MacQueen, G.M., Frey, B.N., Ismail, Z., Jaworska, N., Steiner, M., Lieshout, R.J.V., et al. (2016) Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the Management of Adults with Major Depressive Disorder: Section 6. Special Populations—Youth, Women, and the Elderly. The Canadian Journal of Psychiatry, 61, 588-603. https://doi.org/10.1177/0706743716659276
- [44] German Society for Psychiatry and Psychotherapy (2015) Psychosomatics and Neurology-DGPPN, BÄK, KBV, AWMF (Hrsg.) für die Leitliniengruppe Unipolare Depression. S3-Leitlinie/Nationale Versorgungs Leitlinie Unipolare Depression-Langfassung. 2nd Edition, German Society for Psychiatry and Psychotherapy.