Treatment in Psychiatry

Complex Challenges in Treating Depression During Pregnancy

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The treatment of depression during pregnancy can be challenging for patients and providers alike. An increasing attention to perinatal mood disorders has led to an expanding literature that is often difficult for providers to navigate. It can be a challenge for providers to feel comfortable reviewing the broad scope of the risks and benefits of treatments in the context of the limitations of the literature. Women who are depressed during pregnancy have been found to have an elevated risk of poor obstetrical outcomes, although studies of the

relationship between depression and outcomes are limited. Women who are treated with antidepressants during pregnancy are also at risk for a host of poor obstetrical and fetal outcomes. The risks for these outcomes are often confused by confounding factors and study design limitations. Understanding the current data and their limitations will allow providers to guide their patients in choosing treatment options. Consistent and simple strategies should be used when discussing the risk-benefit analysis with the patient.

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t is well known that women are at high risk for depression during their childbearing years (1). In both the scientific and lay press, the postpartum mental health of women has received great attention. In comparison to postpartum depression, depression during pregnancy has received less attention historically. Reasons for the limited knowledge about depression during pregnancy may include a historic and unsubstantiated perspective that pregnancy was "protective" against depression (2), the ethical considerations of treatment studies during pregnancy, and the challenges of studying the fetal environment and its effects on the child after birth. However, with increases in the recognition of depression and its effects, in the use of antidepressants in general (3) as well as among women of childbearing age (4, 5), and in attention to the use and potential impact of antidepressants during pregnancy (6), it is critically important to focus on what is and is not known about depression and its treatment during pregnancy to fully inform women, their partners, and their providers of the risks of the illness and the risks and benefits of the treatment options.

Epidemiology

The rates of mood disorders in women are approximately equivalent in pregnant and nonchildbearing women (7, 8). The prevalence of major depression in pregnant women is in the range of 3.1%–4.9%, and that of major or minor depressive episodes is in the range of 8.5%–11% (8, 9) (minor depression often refers to

subthreshold depression or depressive disorder not otherwise specified) (10). Few studies have explored the incidence of depression during pregnancy, but a systematic review found an incidence of 14.5% during pregnancy for major or minor depression and 7.5% for major depression (8). Among women with bipolar disorder or unipolar depression, major depression was the most prevalent form of morbidity during pregnancy or the postpartum period, which underscores the importance of knowing the evidence for treating depression during pregnancy (11).

Risk Factors

The risk factors for depression during pregnancy are similar to those for postpartum depression. They include having a history of depression, lacking social support, having an unintended pregnancy, being of lower socioeconomic status, being exposed to domestic violence, being single, having anxiety, and having stressful life events (12, 13). In addition, women with depression during pregnancy have an elevated risk of postpartum depression, which can have a significant impact on the health and well-being of both mothers and infants (14).

Etiology and Phenomenology of Symptoms

The study of perinatal depression has often focused on the hypothesized role of changes in hormone concentrations during pregnancy and the postpartum period.

This article is featured in this month's AJP Audio and is the subject of a CME course (p. 129)

A pregnant 28-year-old woman with recurrent major depression that has been kept in remission with antidepressants is uncertain about how to manage her depression during the pregnancy.

"Ms. G," a 28-year-old married woman in her ninth week of a planned pregnancy, has symptoms of general anxiety about her pregnancy, panic attacks, sleep disruption, fatigue, and loss of appetite with nausea and vomiting. She denies feeling sad, as she is excited about her pregnancy. Her interest in her work and hobbies has declined, but she attributes this to the exhaustion of her first trimester. She has been referred for consultation regarding treatment of her depression during her pregnancy, as her obstetrician is concerned about the severity of her current symptoms in light of her history. Her obstetrician had recommended that Ms. G discontinue her medication before she became pregnant, but she chose not to do so out of fear that her symptoms would recur

Ms. G has a history of recurrent major depression. She received intermittent supportive psychotherapy over the years when in crisis but has relied primarily on medication to keep her depression in remission. She was treated by psychiatrists from the age of 16, when she experienced her first severe depression, until age 24, when her illness went into stable remission with a combination of sertraline (150 mg/day) and clonazepam (0.5 mg, twice daily as needed for anxiety). For the past 3 years, she has been treated by her primary care physician, as she has not required any medication changes other than brief increases in her anxiolytic during her wedding planning and times of travel. She cannot recall all of the medications she has taken in the past but does recall poor response to or side effects from

fluoxetine, paroxetine, lithium, lorazepam, bupropion, and venlafaxine. She had two hospitalizations during high school after serious suicide attempts.

She and her husband decided to try to conceive, as she was euthymic, was in a stable relationship, had a stable job, and had some family support. She has no significant medical history except exercise-induced asthma. She experienced a first-trimester miscarriage 18 months ago. Her family history is significant for a mother with obsessive-compulsive disorder who experienced severe depression after the birth of her first two children (the patient's older siblings). The patient's mother died at age 55 from breast cancer when the patient was 22 years old. The patient did not know her father. Her two older siblings are healthy except for alcoholism (her brother) and anxiety (her sister).

Ms. G. has multiple questions. She learned of her pregnancy through a home pregnancy test 1 week after she missed her period. She immediately discontinued the clonazepam, which she had not been using often. Although her obstetrician recommended that she discontinue the sertraline, she was not prepared to do so; as a compromise, she decreased her dosage by 25 mg every 4 days to 75 mg. Now, at 9 weeks, she is concerned about having another miscarriage and wants to know what impact the medication will have on the fetus. She is also concerned that her depression will return if she discontinues the medication completely. How do you guide her and her providers?

To date, there is little evidence to support an etiology or symptomatology of depression that differs between pregnancy and other life stages (15), and depressive symptoms and diagnostic criteria for depressive disorders do not differ for pregnant women. Anxiety is common during pregnancy and may be particularly pronounced when comorbid with depression. Additionally, the physical experiences of pregnancy, such as fatigue, sleep disruption, weight change, and concentration difficulties, can overlap with the symptoms of depression and thus confuse the diagnostic picture (16).

In Utero Environment

There is substantial interest in the effects of stress and depression on the fetal environment. It is well established that levels of gonadal hormones, estrogens, and progesterone increase during pregnancy. Placental corticotropin-releasing hormone (CRH), cortisol, human chorionic gonadotropin, prolactin, β -endorphin, and thyroid hormone-binding globulin concentrations also increase during pregnancy. Complex interactions and

feedback systems exist between the hypothalamic-pituitary-ovarian (HPO) axis and the hypothalamic-pituitary-adrenal (HPA) axis (17). The HPA axis is especially important because its functioning and release of hormones such as cortisol, CRH, and adrenocorticotropic hormone are influenced by pregnancy and by stress. Evidence is beginning to support a link between the HPA axis and psychological distress during pregnancy; for example, women's cortisol levels have been found to be higher when they experience negative moods (18). Therefore, it is possible that the changes in the HPA axis and subsequent changes in cortisol levels, resulting from stress and/or depression have an impact on the fetal environment.

Impact of Depression During Pregnancy

While the exact hormonal shifts and interactions of the HPO and HPA axes have not been determined, the impact of depression on the fetal environment, whether through direct or indirect effects, is of great interest and concern.

TABLE 1. Outcomes Related to Antidepressants and to Depression^a

Antidepressants	Depression
Increased risk with use in early pregnancy: 12.4% (exposed) versus 8.7% (unexposed); relative risk=1.45 (within expected range of 15%–20% of pregnancies) (38). Limitations: other contributing factors not consistently controlled for (39)	Inconclusive: limitations of sample sizes and methodologies (31)
Increased risk for slower rates of head growth (25). Limitations of studies: difficulty untangling duration of exposure, timing of exposure, severity of illness, other confounding factors	Increased risk for slower fetal body and head growth (25)
Increased risk with SSRI or TCA use (41); in some studies, accounted for by shorter gestational duration (40)	Inconclusive: increased risk in some (21) but not all (24) studies
Increased risk with SSRI use (small compared with depressed unexposed) (41–43)	Inconclusive: increased risk in some (41) but not all (31) studies
Inconclusive: increased risk in some but not all studies (SSRIs, TCAs, SNRI/NRIs) (43). If increased risk found, modest difference in mean gestational duration of 1 week or less (31). Controlling for confounders had no effect. Dependent on duration of in utero exposure: more exposure, more likely decrease in gestational age (44)	Inconclusive: increased risk in some (21) but not all (31) studies
Studies from linked databases and case cohort studies. No association between SNRI/NRI use and malformations; conflicting associations for TCA use and malformations (41); conflicting associations for SSRI use and malformations (specifically paroxetine) (39, 41–45)	No studies
Conflicting results: No increased rate of major or specific cardiac malformation with SSRI exposure (four studies) (31, 47). First-trimester exposure to paroxetine increased risk of cardiac malformations (three studies); increase not found in other studies (three studies) (31). Combination of SSRI and benzodiazepine may increase congenital heart defects (45)	No studies
Specific defects found; small risks and not replicated (48, 49)	No studies
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Increased risk for irritability, jitteriness, seizures with TCAs (44). Increased risk for irritability, tachypnea, hypoglycemia, temperature instability, weak/absent cry, seizures (15%–30% of women who took SSRIs in late pregnancy); transient symptoms (41, 51)	Increased risk for irritability, decreased activity and attentiveness, fewer facial expressions (23)
Conflicting results; some show increased risk (44, 55, 57) with later gestational exposure to SSRIs and others do not (54, 56). Study of 1.6 million births found an absolute risk increase from 1.2/1000 base rate to 3/1000 in SSRI exposure; only 33 infants exposed to SSRIs in late pregnancy with persistent pulmonary hypertension identified (57).	No studies
Limited information; most studies show no association with use of SSRIs or TCAs. Subtle effects on motor and developmental control (52). Slower in reaching developmental milestones compared with unexposed (but within range of normal development catches up by 19 months) (53). Possible increased risk of autism spectrum disorder (odds ratio=2.2) but very small percentage (2.1%) attributed to SSRI exposure; limitations include inability to control for severity, actually taking medication,	Greater developmental delay in infants exposed to depressive symptoms at 18–32 weeks' gestation compared with nondepressed mothers (odds ratio=1.34) (26). No effect in one study (28). Possible indirect effects (27). Limitations due to bias (31)
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TABLE 1. Outcomes Related to Antidepressants and to Depression^a (continued)

Outcome	Antidepressants	Depression
	language, development, behavioral development (comparison of fluoxetine, TCAs, controls) (59). IQ negatively associated with depression duration; language negatively associated with number of depressive episodes after delivery; comparison of fluoxetine, TCAs, controls (60)	
Maternal outcomes		
Pregnancy-induced hypertension, pre-eclampsia, and eclampsia	Increased risk (50%–53%) (61, 62). Limitations of linked databases, limited control for depression and other confounding risk factors, maternal report of medication use	Conflicting data. In one study, no increased risk (30). In another study, increased risk for pre-eclampsia (odds ratio=52.5) and eclampsia; limitations: did not account for antidepressant use (29)

^a SSRI=selective serotonin reuptake inhibitor; TCA=tricyclic antidepressant; SNRI=serotonin-norepinephrine reuptake inhibitor; NRI=norepinephrine reuptake inhibitor.

The effect of depression on the fetus and pregnancy may be directly mediated by the neurobiological substrates of depression such as glucocorticoids that cross the placenta, or the fetus may be indirectly affected by neuroendocrine mechanisms in which depression modulates physiological maintenance of pregnancy. The indirect effect is hypothesized to be related to hyperactivity of the pituitary-adrenal axis, which induces placental hypersecretion of corticotropin-releasing factor and in turn increases myometrial contractility, leading to preterm delivery or pregnancy loss (19, 20). Depression may also have an indirect impact on the fetus through poor health behaviors, such as poor eating and poor weight gain, and poor sleep and subsequent use of overthe-counter medication, alcohol, tobacco, or caffeine (20).

Despite the multiple ways in which depression might affect the pregnancy, the fetus, and potentially the neonate, few studies have focused specifically on the impact of depression. Studies that have looked at depression during pregnancy have shown associations with poor obstetrical outcomes including preterm delivery (<37 weeks' gestation) (21), postpartum depression (14, 22), and neonatal symptoms (23). The relationship of depression to low birth weight is inconclusive, as some studies showed increased risk while others did not (21, 24). A recent study of pregnant women (25) comparing the effects of untreated depressive symptoms, use of selective serotonin reuptake inhibitors (SSRIs), and no depressive symptoms or use of SSRIs found that untreated depressive symptoms were associated with lower total fetal body growth and head growth during pregnancy. Depression during pregnancy has also been associated with greater developmental delays in infants in more than one study (26, 27), although these studies were based on self-report of depression, and another study that used more objective assessments of depression did not find an association (28).

In addition to concerns about the impact of depression on the fetus and neonate, there is interest in its impact on the mother's health, beyond the usual concerns related to depression, such as vegetative symptoms, self-harm, suicide, or psychosis in severe cases. Recent exploration of the relationship between depression during pregnancy and hypertension has produced conflicting results (29, 30).

Much less is known about the impact of depression on the pregnancy, the fetus, the neonate, and the mother compared with the impact of antidepressants (31). The lack of knowledge is particularly troubling given that the majority of women with depression do not receive treatment during pregnancy. In a study of 276 women at high risk for depression based on depression screening (32), only 20% were receiving any treatment for depression. Among those with a diagnosis of major depression, 33% were receiving depression treatment. Although women were more likely to receive treatment if they had a history of major depression before pregnancy, a history of psychiatric treatment, or greater depression severity, having a current episode of depression did not predict treatment.

Antidepressant Use

Treatment of depression with antidepressants during pregnancy is complicated by the concern for the safety of the fetus because all psychotropic medications, including antidepressants, pass through the placenta. Antidepressant use has increased in general in recent years, and the increase has been attributed primarily to the newer antidepressants (SSRIs and serotonin-norepinephrine reuptake inhibitors [SNRIs]) (3). The use of antidepressants during pregnancy increased more than twofold in a decade (4, 5). In a study that examined data from seven different health plans (5), antidepressant use increased from 2% in 1996 to 7.6% in 2005. In a study of a population receiving Medicaid, it rose from 5.7% in 1993 to 13.4% in 2003 (4). The increase in antidepressant use in these populations is also attributed to the general increase in SSRI use (5). In pregnant women, similar to the general population, SSRIs are the most frequently prescribed, followed by SNRIs, tricyclic antidepressants, and, rarely, monoamine oxidase inhibitors (33).

Among pregnant women who take antidepressants, the highest prevalence of use is during the first trimester (2%-3.7%) (33, 34). Rates of use during pregnancy are somewhat lower than those of women taking antidepressants before (2.9%-6.6%) and after pregnancy (7%) (34). There appears to be a trend toward decreasing antidepressant use from the first trimester (3.7%) to the second (1.6%) to the third (1.1%.) (33). This trend may reflect provider and patient concern about the relationship between third-trimester exposure and poor neonatal adaptation syndrome. Even when women take antidepressants during pregnancy, treatment is often inadequate, with almost 8% taking antidepressants prescribed at dosages lower than those generally recommended (33). These lower dosages may reflect patient and provider concern—although without supporting evidence—about the possibility of dose-dependent relationships between exposure and obstetrical and neonatal outcomes.

Few epidemiological studies have explored the discontinuation or initiation rates of antidepressants during pregnancy. In a cohort of over 29,000 pregnant women in the Netherlands, approximately 60% of women stopped taking medications after the first trimester (34). In addition, one-third of those who were on medications at some point in the pregnancy initiated them during the pregnancy. Many women stop their antidepressants during pregnancy but are not aware that research indicates that women who discontinue their medication are at much higher risk for recurrence of depression. In one study, women who discontinued their antidepressant were five times as likely to have a relapse compared with women who maintained their antidepressant treatment across the pregnancy (35). These findings are important in understanding the potential needs of women to make informed decisions before and during pregnancy regarding their medications.

Impact of Antidepressant Use During Pregnancy

Antidepressants cross the placenta and enter the fetal circulation. The fetus may also be exposed through amniotic fluid, which means exposure to even greater amounts than usually considered (36). Exploring the impact of antidepressants on the fetus is challenging for many reasons. There are many potentially confounding factors, so it is important to delineate the effects of maternal depression, including severity; variables such as socioeconomic status; substance use; and comorbid medical and mental illnesses. For example, few studies take into account maternal alcohol use. A recent study found that multiple episodes of maternal binge drinking in early pregnancy increases the odds of cardiac defects and is more pronounced when in combination with maternal smoking (37). Accounting for this type of confounding

factor and its impact on interpreting the studies in which antidepressants were associated with an increased risk for cardiac defects is challenging, and it highlights the limitations of our current knowledge. In addition, studies often have little information about the actual adherence to medication during pregnancy, the dosage, and the duration and exact timing of fetal exposure. Most studies are not designed to account for all of the potential confounding factors. Therefore, having an understanding of the limitations when interpreting and applying individual study findings to clinical practice is crucial.

Similar to the effects of depression on the fetal environment, antidepressants have the potential to affect the fetus in many ways, including pregnancy loss (38, 39), growth reduction (reduced head growth, low birth weight, small for gestational age) (25, 40-43), preterm birth (43, 44), and malformations (43, 45-50). In addition, antidepressants may have an impact on neonates, as suggested by recent studies of neonatal adaption (41, 51), neonatal and infant motor development (52, 53), persistent pulmonary hypertension (45, 54-57), and infant and child behavioral effects (58-60). Finally, antidepressants may also affect the mother's health (61, 62). While some of these studies have shown associations between antidepressant use and outcomes, often others have not. It is difficult to determine cause and effect, as well as the increased likelihood and absolute risk, on the basis of these studies. Therefore, it is important for patients to understand that these positive and negative findings exist, as well as where studies show a predominance of associations and where there is significant controversy.

Impact of Nonpharmacologic Treatments on Pregnancy

In addition to antidepressants, many patients can be treated with psychotherapy, either alone, in the case of mild-to-moderate depression, or in combination with antidepressants in more severe illness. Individual and group therapies have been evaluated in studies and found to be effective in pregnant women (63). In addition to psychotherapy, bright light therapy may be a promising treatment (64–66) with less potential risk than antidepressants during pregnancy. ECT, a well-established, safe, and effective treatment, is reserved for severe mood disorders, including depression during pregnancy (67). While studies indicate that psychotherapy, bright light therapy, and ECT are potentially effective treatments for depression during pregnancy, there are no reports of their direct impact on fetal, neonatal, or birth outcomes.

Clinical Approach to Treating Women During Pregnancy

The clinical approach to treating depressed pregnant women can be extremely challenging because there is no

one "correct" or absolutely safe answer. However, if the clinician takes a rigorous and consistent approach to collecting the information needed to allow the woman to make an informed decision, it simplifies the picture. Pregnancy is often viewed as one event that spans 9-10 months. In reality, for many women, the discussions and decision making related to pregnancy can begin months or years in advance and may continue throughout early infant development. Others do not know that they are pregnant until many weeks into their pregnancy, leaving a shorter time for intervention and planning. In any case, pregnancy is not one consistent event. Hormonal fluctuations, fetal development, and maternal health change across time. In counseling patients with depressive illness, it is important to break down the risks and benefits of treatment options into each phase—preconceptional, first trimester, second trimester, third trimester, and neonatal. Each phase has its own risks and benefits of treatment types for individual women, and the choices and decisions may change depending on the stage of pregnancy and the woman's symptoms and circumstances. Another important factor in counseling women is to discuss the risks both of the treatments and of untreated depression, including the data on the impact of depression on pregnancy outcomes (31).

Table 1 provides a comparison of the known and unknown data to assist with this discussion. In general, our understanding of the effects of depression on fetal development is in its early stages. Our knowledge of antidepressant effects on the fetus and the newborn, as well as long-term effects, is evolving rapidly. For an individual woman, it is important to assess her own history of depression—the duration, recurrence, and severity of her symptoms and episodes; her history of self-harm tendencies as well as use of alcohol, drugs, and tobacco when not receiving treatment; her access to different types of treatment; her social supports; the opinions about treatment of those who support her during the pregnancy (partner, mother, sister, friend, spiritual leader, obstetrician, pediatrician); her history of response to specific treatment types (therapy versus medications, length of time to respond, specific medications); her family history; her family situation, especially any evidence of abuse or violence; her responsibility for other children; her need for stability of mood to be able to work and perform other tasks; her medical history; and her reproductive history. All of these aspects must be taken into account in individual circumstances.

Summary and Recommendations

Treatment guidelines have been detailed elsewhere by experts in psychiatry and obstetrics and gynecology (31). Some simple strategies should be followed (Figure 1). As noted above, a thorough history must be obtained. For women with mild to moderate depression without a

FIGURE 1. Strategies and Considerations in Treating Depression During Pregnancy

General Strategies

- · Take a thorough history to guide risk-benefit analysis.
- · Offer psychotherapy and other supports.
- Meet with patient and social supports (partner, mother, aunt, etc.) to review risks and benefits if patient approves.
- Keep a close collaboration with obstetrician and pediatrician.
- Identify triggers for the decision to initiate or change the antidepressant dosage in advance (sleep disruption, suicidal ideation) and have a plan in place.
- Encourage a healthy lifestyle (exercise, sleep, reduce stress, increase supports).
- Discuss risks and benefits of different treatments at different time points throughout the pregnancy.
- Review the known and the unknown, including the limitations of published studies.
- Provide a "big-picture perspective" to the patient.

General Strategies for Antidepressant Use During Pregnancy

- Monotherapy is best if possible.
- When possible, avoid first-trimester exposure to antidepressants.
- When possible, avoid first-trimester antidepressant and standing benzodiazepine combinations; benzodiazepines in low doses may be considered on an as-needed basis in making the transition to effective treatment with an antidepressant for anxiety.
- If the depression is severe, continue antidepressants if the patient is willing
- Do not stop antidepressants abruptly; if an antidepressant must be discontinued, taper the dosage.
- · Treat to remission.
- · Use the lowest effective dosage.
- It is unlikely that the patient will benefit from tapering and discontinuing before delivery because of the risk of recurrence of postpartum depression.

Considerations for Risk-Benefit Discussion

Before Conception

- Discuss plans for stopping and restarting medication.
- Complete the risk-benefit discussion of medication before pregnancy, when the patient is not in crisis.
- Minimize the length of time the patient is without medication before pregnancy if possible.
- Review the maternal risks of antidepressants, including side effects, gestational hypertension.

Throughout the Entire Pregnancy

- Review the known and unknown risks for potential motor, cognitive, and behavioral issues.
- Review the maternal side effects and symptoms.

Specific Topics to be Discussed Related to Each Trimester First-trimester exposure:

The known and unknown risks for:

- Specific malformations
- · Pregnancy loss or miscarriage

Second-trimester exposure:

The effects on:

- · Fetal growth
- Birth weight
- Size for gestational age

Third-trimester exposure:

The effects on:

- Birth weight
- · Size for gestational age

The risks for:

- · Persistent pulmonary hypertension
- · Neonatal adaptation syndrome

history of recurrent or severe depression or women with depression related to specific adjustments or stressors, psychotherapy with a trained provider may be sufficient. However, if the woman's history indicates a need for an antidepressant—because of symptom severity, illness recurrences, or lack of access to psychotherapy—then a thorough risk-benefit discussion of antidepressants in general and the specific medication in particular is warranted. Collaboration with the patient's obstetrician, and even her pediatrician, may be especially helpful in supporting the mother—and the psychiatrist—in making an informed decision and following through on it. Keep in mind that mothers may be anxious about initiating and continuing medications during pregnancy, but they may be just as anxious about discontinuing them or not starting them if they have experienced depression in the past and know that their symptoms interfere with their lives. Working with the pregnant woman and her supports (including family and providers) to understand what is known, what is unknown, the risks, and the benefits of the whole picture will lead to a truly informed decision that will allow the mother to feel that she has made the best choice for her individual situation.

The patient in the vignette, Ms. G, has many risk factors for prenatal and postnatal depression: she has a history of recurrent depression; a history of serious suicide attempts and psychiatric hospitalizations; a family history of postpartum depression, anxiety disorders, and alcohol abuse; a recent miscarriage; and a lack of extended family support. She also has multiple protective factors—she is in a supportive, stable relationship; the pregnancy was planned; she has effective treatment for her depression; and she has been euthymic for several years. Ms. G's presenting symptoms may be the beginning of an exacerbation of her depression and anxiety, but they are not severe enough to warrant immediate changes to her medication. She has appropriately discontinued her clonazepam but may wish to reinstate it on an as-needed basis for her anxiety. Her sertraline was tapered appropriately, but her dosage may be inadequate for her to remain in remission. After a discussion of her personal risks, benefits, and options, Ms. G chose to initiate psychotherapy with the understanding that if her symptoms worsened or if she was unable to control her panic and anxiety with cognitivebehavioral approaches, she would consider an increase in her sertraline dosage. She agreed to have frequent visits with her obstetrician and coordinated care with the therapist and the psychiatrist.

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