Introduction

The perinatal period is a profound time of transition for women and their families; a myriad of determinants—including social, psychological, behavioral, environmental, and biological forces—shape pregnancy and the postpartum course (Misra, Guyer, & Allston, 2003). Due to the complexity of this vulnerable time, psychiatric complications such as maternal depression and anxiety are common during the perinatal period (Wisner et al., 2013). The longitudinal course of depressive and anxiety disorders that manifest during pregnancy and the postpartum period and the management of the disorders are active areas of investigation. In particular, the study of whether systematic, population-level screening and case identification of perinatal depression and anxiety are desirable is an important area of controversy.

Although screening for current disorders has been widely promoted based on the serious adverse consequences of untreated maternal depression and anxiety, population-based screening has significant resource implications (Austin, Middleton, Reilly, & Hight, 2013; Henshaw & Elliott, 2005; National Institute for Health and Clinical Excellence [NICE], 2007; Shakespeare, 2005). In many settings, the successful implementation and maintenance of a population-based screening program would require additional provider training, increased provider workloads, and improved patient access to
health services. Barriers to screening for existing disorders and the evidence base are covered in following chapters.

In this chapter, we investigate the case for population-based screening of perinatal depression and anxiety using a public health-care continuum model that takes the reader through the sequential steps from the identification and management of perinatal depression and anxiety to successful health outcomes. The conditions required for successful population-based screening are presented, and the current evidence in Western industrialized countries on each of these conditions is summarized.

Although we discuss both perinatal depression and anxiety, the literature on perinatal depression, and postnatal depression in particular, is more comprehensive and well developed than the literature on perinatal anxiety disorders. As a result, our discussion in this chapter, which primarily addresses perinatal depression but refers to perinatal anxiety where possible, reflects the current state of the literature. Moreover, because anxiety is often a common clinical symptom in women with perinatal mood disorders, it can be difficult to tease apart the difference between perinatal depression with anxious features and a completely separate perinatal anxiety disorder.

The chapter begins with a description of the clinical presentation of perinatal depression and anxiety followed by a description of the care continuum model and current evidence supporting each of the model’s components. We conclude with implications for policy and future research.

**Clinical Presentation of Perinatal Depression and Anxiety**

Perinatal depression and anxiety are clinical syndromes commonly described as the onset of a major depressive episode (MDE) or significant anxiety symptoms occurring during pregnancy and/or in the postpartum period (Gavin et al., 2005; O’Hara & Swain, 1996; Wisner et al., 2013). Symptom onset during pregnancy is often referred to as antenatal or prenatal depression or anxiety. Onset of symptoms in the postpartum period is usually described as postpartum/postnatal depression (PND) or postnatal anxiety.

PND has been the most widely studied perinatal psychiatric illness, although controversy exists regarding how best to define the onset of symptoms in the postpartum period (Elliott, 2000; Wisner, Moses-Kolko, & Sitt, 2010). For example, the DSM-IV postpartum specifier strictly defined an MDE with onset of symptoms within 4 weeks after delivery (DSM-IV, 1994). DSM-5 instead provides a “peripartum” specifier expanded to include onset of symptoms during pregnancy (American Psychiatric Association, 2013). In ICD-10, postpartum onset is considered to be within 6 weeks after childbirth (Cox, 2004). A common broader definition of the term “perinatal depression” includes onset of mood and anxiety symptoms that occur during pregnancy and through one year postpartum (Gavin et al., 2005; Gaynes et al., 2005a). Subthreshold depressive symptoms are often considered important by clinicians and researchers. However, because more information is available on MDEs, our focus in this chapter is on major depression.

In addition to PND, the development of a new-onset anxiety disorder in the postpartum period or exacerbation of an existing anxiety disorder have been documented in the literature including, but not limited to, generalized anxiety disorder (GAD) (Prenoveau et al., 2013) and postpartum obsessive–compulsive disorder (PP-OCD) (Abramowitz et al., 2010; Fairbrother & Abramowitz, 2007; Prenoveau et al., 2013). GAD is characterized by excessive worry that interferes in multiple domains of the person’s life. Because symptoms must
be present for 6 months before a diagnosis can be made, criteria for new-onset GAD are unlikely to be met during the 9 months of pregnancy or the early postpartum period (Ross & McLean, 2006). In contrast to ruminating symptoms, PP-OCD is characterized by persistent, and unwanted, obsessional thoughts and the implementation of compulsive rituals and behaviors aimed at neutralizing or managing the intrusive thoughts (Abramowitz et al., 2010; DSM-IV, 1994). The literature documents an increased incidence of both obsessive-compulsive symptoms and a clinical diagnosis of OCD in postpartum women, although controversy exists in the field regarding whether PP-OCD is a distinct clinical entity (Abramowitz et al., 2010; Altemus et al., 2012; McGuinness, Blissett, & Jones, 2011; Uguz, Akman, Kaya, & Cilli, 2007). Postpartum posttraumatic stress disorder (PP-PTSD) also occurs (Cohen, Ansara, Schei, Stuckless, & Stewart, 2004; Olde, van der Hart, Kleber, & van Son, 2006; but note that PTSD is no longer listed as an anxiety disorder in DSM-5). The primary trigger for the development of PP-PTSD is the women’s subjective experience of a negative or traumatic birth (Garthus-Niegel, von Soest, Vollrath, & Eberhard-Gran, 2013). A history of sexual trauma and a preexisting anxiety sensitivity have also been associated as risk factors for developing PTSD after childbirth (Verreault et al., 2012).

Depressive symptoms occur on a continuum of severity, and not all women will meet diagnostic categories. The clinical presentation of perinatal depression is often characterized by mood symptoms that cause significant distress to the perinatal woman (Bernstein et al., 2008; Cooper & Murray, 1997). Sadness, weepiness, low mood, irritability, impaired concentration, and feeling overwhelmed are commonly reported symptoms (Hendrick, Altshuler, Strouse, & Grosser, 2000). Moreover, anxiety or agitation is often a distinguishing feature of perinatal depression and can take the form of ruminating and obsessional thoughts, often about the pregnancy or the infant (Abramowitz et al., 2010; Bernstein et al., 2008). In the postpartum period, women with PND can demonstrate severe hypervigilance about the baby and will be unable to sleep at night, even when the baby is sleeping, due to concerns about the infant’s well-being (Leckman et al., 1999; Wisner, Peindl, Gigliotti, & Hanusa, 1999). Alternatively, some women will report feeling detached from the infant and/or will exhibit a lack of interest in holding, interacting, or caring for their baby. Importantly, most women with perinatal mood symptoms report feelings of guilt that they are not able to enjoy the baby (Beck, 1996b; Yonkers, Vigod, & Ross, 2011). Diagnostic criteria for MDEs and other specified depressive disorders are covered in Chapter 7.

**Care Continuum**

Strategies for screening and case identification (including standardized perinatal depression screens) have been promoted but remain controversial (Austin et al., 2013; Henshaw & Elliott, 2005; National Institute for Health and Clinical Excellence [NICE], 2007; Shakespeare, 2005), with arguments against screening including that the potential additional costs of managing women falsely identified as depressed or anxious are not cost-effective (Paulden, Palmer, Hewitt, & Gilbody, 2009).

To determine whether population-based identification of perinatal depression and anxiety is desirable, we consider a model that assesses whether a strategy of screening ultimately leads to improved outcome. In the model, the identification and management of perinatal depression follow along a “treatment cascade” or “care continuum,” which involves multiple sequential steps that can lead to a successful outcome (Figure 1.1) (Gardner, McLees, Steiner, Del Rio, & Burman, 2011; Pence, O’Donnell, & Gaynes, 2012). The model posits that to
achieve successful treatment, both patient and her clinician must be aware of the diagnosis; effective care must be available and accessible; and the patient must be engaged in care, remain in care, and adhere to treatment (Mugavero, Norton, & Saag, 2011). This model requires active participation by both the patient and the provider. Attrition of the population at any of these steps may worsen health outcomes for both the patient and the child.

At any point along the care continuum, strategies can be developed and applied to strengthen the likelihood of remission. For example, clinical recognition can be increased with population-based screening and both clinical and patient education efforts, and the likelihood that providers adhere to treatment guidelines and patients comply with treatment recommendations can be increased through education and various patient support systems.

Within this framework, a number of conditions are necessary to make population-based identification desirable:

1. *The condition must be common.* Enough women must suffer from perinatal depression or anxiety that general screening among a population of pregnant and postpartum women would yield enough cases to make screening worthwhile.

2. *The condition must have bad consequences.* The harmful effects on the woman and her child of unrecognized and untreated perinatal depression and anxiety must be significant enough to outweigh the costs of screening and treatment.

3. *Screening must identify a significant number of otherwise unrecognized cases.* The screening instrument and procedures must be sensitive enough to correctly identify most of the women suffering from perinatal depression or anxiety and specific enough to identify only a few false positives.

4. *An effective treatment must exist.* Management, whether pharmacologic or psychotherapeutic, has to be able to reduce or eliminate the poor outcomes of the depressive or anxious episode and minimize adverse effects of treatment in a cost-effective manner.

5. *Effective treatment must be available to the affected population.* The population targeted for screening must have access to the treatment.

6. *Effective treatment must be followed.* Treatment guidelines must be easily followed by most providers, and women must seek and follow up recommended treatment.

Evidence on whether each of these conditions is met for perinatal depression and anxiety in Western industrialized countries is summarized in what follows.

### Prevalence and Incidence

Depression is a common complication of pregnancy and the postpartum period. As many as 20% of women in industrialized countries meet the criteria for a diagnosis of major or minor depression sometime during pregnancy, with a similar or higher percentage meeting these criteria sometime during the first year postpartum (Gavin et al., 2005). Major
depression accounts for 20–50% of diagnosed depression during the perinatal period (Dietz et al., 2007; Reck et al., 2008). Furthermore, one-third or more of perinatal women with depression have been found to have a concurrent diagnosis of anxiety (Austin et al., 2010; Miller, Pallant, & Negri, 2006; Reck et al., 2008; Wisner et al., 2013), and another 9–10% of postpartum women have been found to have anxiety alone (Miller et al., 2006; Reck et al., 2008). Estimates vary depending on the definition of anxiety used, the population studied, and the time period at which the diagnosis is assessed.

Most definitions of anxiety in the research literature include some combination of GAD, panic disorder, social phobia, specific phobias, and generalized panic disorder. Studies in Western industrialized countries have found 8.5% of pregnant women in their third trimester (Sutter-Dallay, Giaconne-Marcesche, Glatigny-Dallay, & Verdoux, 2004) and 4.4–8.2% of postpartum women (Wenzel, Haugen, Jackson, & Brendle, 2005; Wenzel, Haugen, Jackson, & Robinson, 2003) to have GAD, 1.3–5.6% of postpartum women to have PTSD (Olde et al., 2006; Soderquist, Wijma, Thorbert, & Wijma, 2009; Verreault et al., 2012), and 1.2–1.6% of pregnant women (Andersson et al., 2003; Borri et al., 2008; Grigoriadis et al., 2011; Sutter-Dallay et al., 2004) and 2.7–3.9% of postpartum women (Grigoriadis et al., 2011; Wenzel, Gorman, O’Hara, & Stuart, 2001; Wenzel et al., 2005) to have OCD.

Although recent studies have discredited the notion that depression is more prevalent among women of childbearing age during pregnancy compared to other times (Dietz et al., 2007; Ko, Farr, Dietz, & Robbins, 2012; Loxton & Luecke, 2009; Najman, Andersen, Bor, O’Callaghan, & Williams, 2000; Schmied et al., 2013), the prevalence of depression, GAD, and OCD during the postpartum period is consistently estimated to be higher than at other times of a woman’s life (Dave, Petersen, Sherr, & Nazareth, 2010; Gavin et al., 2005; Ross & McLean, 2006; Vesga-Lopez et al., 2008; Wisner et al., 2013).

Certain subgroups of women are at higher risk of perinatal depression and anxiety. A prior episode of depression is consistently the strongest predictor of depression during pregnancy and the postpartum period (Dennis, Heaman, & Vigod, 2012; Flynn, Davis, Marcus, Cunningham, & Blow, 2004; Leigh & Milgrom, 2008; Meltzer-Brody et al., 2013; Milgrom et al., 2008; Rich-Edwards et al., 2006; Schmied et al., 2013). Recent research by Di Florio et al. reported that more than 70% of parous women with a history of a mood disorder will experience at least one perinatal mood episode in relation to pregnancy and childbirth (Di Florio et al., 2013). Other significant risk factors for perinatal depression include antenatal anxiety (Leigh & Milgrom, 2008), poor partner relationship (Milgrom et al., 2008; Schmied et al., 2013), low social support (Dennis et al., 2012; Leigh & Milgrom, 2008; Schmied et al., 2013), stressful life events (Dennis et al., 2012; Schmied et al., 2013), low socioeconomic status (Dennis et al., 2012; Rich-Edwards et al., 2006; Schmied et al., 2013), and unwanted pregnancy (Rich-Edwards et al., 2006; Schmied et al., 2013). Studies have found similar risk factors for anxiety disorders. In addition, complications in pregnancy and delivery were found to increase the incidence of both PP-PTSD and PP-OCD (Verreault et al., 2012; Zambaldi et al., 2009).

Adverse Health Effects

Untreated perinatal depression and anxiety are associated with serious short- and long-term, adverse consequences for the mother, her baby and the family (Flynn et al., 2004; Marcus et al., 2011; O’Hara & Swain, 1996; Stowe, Hostetter, & Newport, 2005; Wisner, Parry, & Piontek, 2002).
During pregnancy, women with antenatal depression and anxiety have an amplification of reported physical symptoms including complaints of gastrointestinal distress, headaches, dizziness, shortness of breath, and cardiac symptoms (Kelly, Russo, & Katon, 2001). More importantly, antenatal depression increases the risk of poor obstetrical outcomes, such as preterm birth and low birth weight (Diego et al., 2004, 2009; Fransson, Ortenstrand, & Hjelmstedt, 2011; Grote et al., 2010; Halbreich, 2005; Ibanez et al., 2012). Evidence has shown that this is partly due to decreased prenatal care, decreased practice of recommended health behaviors during pregnancy, and increased risk of smoking and substance use in the perinatal period (Flynn et al., 2004). Antenatal anxiety symptoms (with or without mood symptoms) have also been associated with increased risk of preterm birth and low birth weight (Halbreich, 2005; Martini, Knappe, Beesdo-Baum, Lieb, & Wittchen, 2010).

During the perinatal period, women with depression are at increased risk of maternal suicide. In the postnatal period, there is increased risk of infanticide, and decreased maternal sensitivity and attachment with the infant (Campbell et al., 2004; Lindahl, Pearson, & Colpe, 2005; McLern, Minkovitz, Strobino, Marks, & Hou, 2006; Paulson, Dauber, & Leifermer, 2006). Maternal depression has also been associated with the decreased practice of recommended parenting behaviors such as engaging in enriching interactions with the child (e.g., reading or singing) (Network NECCR, 1999). In addition, postpartum anxiety has been associated with increased maternal health-care utilization and reduced duration of breastfeeding (Paul, Downs, Schaefer, Beiler, & Weisman, 2013; Stuebe, Grewen, & Meltzer-Brody, 2013).

The mechanisms through which maternal depression and anxiety affect the fetus are likely to be biological in pregnancy, whereas postnatally, the mechanisms are more likely psychological. Considerable evidence shows that if the mother is anxious, depressed, or stressed during pregnancy, her child is more likely to experience neurodevelopmental and other problems (Talge et al., 2007). Fetal exposure to suicide attempts during pregnancy has been associated with mental retardation and congenital abnormalities (Gentile, 2011; Gidai, Acs, Banhidy, & Czeizel, 2010; Petik, Czeizel, Banhidy, & Czeizel, 2011).

Infants and toddlers born to anxious/depressed mothers have more difficult temperament and sleep problems. Older children have more emotional difficulties, symptoms of ADHD, and conduct disorder, as well as lower cognitive function. Debate continues as to the extent that this association is causal. However, studies that have taken into account a wide range of potential confounders, including paternal mood and maternal postnatal mood and parenting, still find a substantial prenatal component. Children of mothers in the top 15% for anxiety or depression in a general population in the United Kingdom had double the risk of a probable mental disorder at age 13 (O'Donnell, Glover, Barker, & O'Connor, in press). Prenatal depression and anxiety may contribute 10–15% of the attributable load to behavioral outcome (Talge et al., 2007). The literature provides little consistency as to the most sensitive time in gestation for these altered outcomes. However, several studies have found effects in later gestation (Glover, 2014), so interventions at any stage of pregnancy are likely to be beneficial.

Considerable evidence also shows that PND is associated with different types of difficulty in parenting, particularly the early mother–infant interaction that are, in turn, associated with different problems among children (Milgrom, Westley, & Gemmill, 2004). These overlapping difficulties can be characterized in three groups (Murray et al., 2010): withdrawn interactions, hostile and intrusive interactions, and general sadness and insensitivity. These in turn are associated with an increased risk of worse child emotional, behavioral, and cognitive outcomes. For example, where a depressed mother's vocal interactions signal
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sadness and she appears insensitive to the baby's attachment needs, there is a more than fourfold increase in the risk of the child developing emotional problems in adolescence (Murray et al., 2011).

The relation between maternal depression and paternal mood symptoms is also important and has critical implications for family health and functioning (Goodman, 2004; Paulson & Bazemore, 2010; Paulson et al., 2006). Maternal perinatal depression has been identified as one of the strongest predictors of paternal depression with estimates that 24–50% of men whose partners are depressed also meet the criteria for minor or major depression (Areias, Kumar, Barros, & Figueiredo, 1996; Goodman, 2004). Perinatal depression in either the mother or father can negatively impact the couple's relationship, leading to increased marital discord and a decrease in marital satisfaction (Beck, 1996a).

Clinical Recognition

Clinical recognition of perinatal depression and anxiety can occur in family practice or general medical settings (Buist et al., 2005; Hickie et al., 2001), obstetrical settings (Austin et al., 2013; Miller et al., 2012), pediatric settings (Earls & Committee on Psychosocial Aspects of Child and Family Health American Academy of Pediatrics, 2010) and at contacts with maternal and child health nurses. Recognition of perinatal depression and anxiety is often poor. Although clinicians are generally supportive of screening for perinatal depression (Dietrich et al., 2003; LaRocco-Cockburn, Melville, Bell, & Katon, 2003), these attitudes do not consistently translate into practice. In the United States, less than half of women are formally screened for perinatal depression (Seehusen, Baldwin, Runkle, & Clark, 2005), even in settings with active perinatal depression screening programs (Kim et al., 2009). Consistent with such efforts, less than 50% of PND cases are detected in routine clinical practice, with prenatal recognition rates reported at 41% (Goodman & Tyer-Viola, 2010) and postnatal rates ranging from 29% (Fairbrother & Abramowitz, 2007) to 43% (Hearn et al., 1998). Chapter 12 describes the variation in screening policies and practices internationally.

A number of effective, easy-to-administer screening tools, including the Edinburgh Postnatal Depression Scale (EPDS: Cox, Holden, & Sagovsky, 1987) and more generic tools such as the Beck Depression Inventory, are available to screen for perinatal depression (Austin et al., 2013; Gaynes et al., 2005a; Paulden et al., 2009). Chapters 5 and 6 describe depression screening tools and anxiety identification, respectively. Population-based perinatal depression screening with such tools can improve health outcomes when the infrastructure to monitor and respond to at-risk patients is available (Gordon, Cardone, Kim, Gordon, & Silver, 2006). A recent systematic evidence review found that across a variety of low-intensity interventions, screening was associated with modest improvements in depression (Myers et al., 2013). These tools can identify perinatal depression, most accurately major depression; their accuracy appears similar to what is found with depression screeners in primary care settings (Gaynes et al., 2005b). These tools can reduce the number of cases of missed perinatal depression (Paulden et al., 2009).

Commonly used and validated screening instruments for anxiety have also been used in the perinatal period. The Generalized Anxiety Disorder Scale (GAD-7) is a brief, seven-item screening tool to assess the presence of GAD validated in primary care populations (Spitzer, Kroenke, Williams, & Lowe, 2006; Swinson, 2006). The Spielberger State-Trait
Anxiety Inventory has been validated for use in perinatal populations (Meades & Ayers, 2011). The trait inventory provides a stable measure of anxiety, whereas the state inventory captures perceived stress “right now” (Spielberger, 1983). In addition, the new Tilburg Pregnancy Distress Scale was developed to assess pregnancy distress and also includes an important subscale measuring perceived partner involvement (Pop et al., 2011). Furthermore, the anxiety subscale of the EPDS has emerging evidence showing its reliability and validity as an anxiety screen (Swalm, Brooks, Doherty, Nathan, & Jacques, 2010). Further details on screening tools are found in Chapters 5 and 6.

**Effective Treatment**

For pregnant and postpartum women with mild to moderate depressive illness or anxiety, psychological or behavioral treatments without medication therapy are recommended as a first-line treatment option (Yonkers et al., 2009, 2011). Solid evidence exists on the efficacy of a wide range of psychological interventions including, but not limited to, interpersonal psychotherapy (Brandon et al., 2012; Grote et al., 2009; Stuart & O’Hara, 1995; Zlotnick, Miller, Pearlstein, Howard, & Sweeney, 2006), cognitive behavioral therapy (Chabrol et al., 2002; Cooper, Murray, Wilson, & Romaniuk, 2003), and group psychoeducation (Honey, Bennett, & Morgan, 2002; Morgan, Matthey, Barnett, & Richardson, 1997). Importantly, the type of therapeutic modality must be tailored to the primary presenting symptoms of the patient and is the reason why a broad psychosocial assessment is recommended (as detailed later in the book). For example, women who report a negative or traumatic birth experience as a trigger for onset of symptoms may be best served by participating in psychotherapy that integrates trauma recovery work.

For more severe depressive and anxiety symptoms, pharmacotherapy is considered an appropriate and efficacious treatment option (Einarson, 2010; Yonkers et al., 2009). A recent large systematic review and meta-analysis found the absolute risks associated with antidepressant exposure during pregnancy to be small (Einarson, Choi, Einarson, & Koren, 2009; Ross et al., 2013). Evidence also exists for the efficacy of both newer antidepressants (selective serotonin reuptake inhibitors—SSRIs) and older tricyclic antidepressants in the treatment of perinatal depression and anxiety (Newport, Hostetter, Arnold, & Stowe, 2002; Wisner et al., 2006). The benzodiazepines may also used for treatment of anxiety during pregnancy and lactation and are generally considered safe in the perinatal period after careful weighing of the potential risks and benefits (Buist, Norman, & Dennerstein, 1990; Burt et al., 2001; Kelly, Poon, Madadi, & Koren, 2012; see Chapter 11 for a fuller discussion).

Other evidence-based treatment modalities for perinatal depression and anxiety (though the evidence for some is limited) include hormonal therapy (Moses-Kolko, Berga, Kalro, Sit, & Wisner, 2009), such as the use of the estrogen patch in the prevention and treatment of PND and bright light therapy in antenatal depression (Epperson et al., 2004; Oren et al., 2002; Wirz-Justice et al., 2011) and the administration of repetitive transcranial magnetic stimulation (rTMS) during pregnancy (Kim et al., 2011; Zhang, Liu, Sun, & Zheng, 2010) and the postpartum period (Garcia, Flynn, Pierce, & Caudle, 2010; Myczkowski et al., 2012).

Overall, treatment for perinatal depression and anxiety is associated with some improvement in maternal functioning and improved maternal interaction with her baby, partner, and overall family health (Miller, Shade, & Vasireddy, 2009; Yonkers et al., 2011).
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Availability of and Barriers to Access of Treatment

Despite the existence of sensitive screening instruments, effective treatment, and frequent interactions with the health-care system during pregnancy and the first year postpartum, many pregnant women and new mothers with depression or anxiety remain undiagnosed and untreated (Vesga-Lopez et al., 2008). Women's help-seeking behaviors, their lack of financial resources, and the lack of available services all contribute to this treatment gap.

At 9 months postpartum, one-third of the 1385 Australian women participating in the Maternal Health Study who were experiencing depressive symptoms and more than one-half of those who were experiencing anxiety had not spoken to a health professional about their symptoms (Woolhouse, Brown, Krastev, Perlen, & Gunn, 2009). Reasons included a belief that they could handle their condition on their own, that their feelings were normal or not a medical issue, or that health professionals could not help them. The women also noted that they were too busy or too embarrassed to seek care (e.g., social stigma). Women experiencing anxiety symptoms, either with or without depression, were more likely to say that they felt too embarrassed to seek help (Woolhouse et al., 2009).

Other studies have found that even when health-care professionals detect perinatal anxiety or depression, many women do not receive treatment (typically less than 50%: Dennis & Chung-Lee, 2006; Farr, Dietz, Williams, Gibbs, & Tregear, 2011; Patel & Wisner, 2011). Treatment rates for clinics serving less well-resourced populations are likely lower than in well-educated, high socioeconomic status settings (Goodman & Tyer-Viola, 2010; Kohn, Saxena, Levav, & Saraceno, 2004; Pence et al., 2012; Saxena, Thornicroft, Knapp, & Whiteford, 2007).

Barriers to care described in the literature include both maternal and professional and health system factors and are explored in detail in Chapter 3. Maternal factors include structural barriers, such as an inability to pay and lack of transportation or child care, lack of motivation and social stigma, and fear of adverse reproductive outcomes or of losing custody of their child or children (Bonari et al., 2005; Dennis & Chung-Lee, 2006; Goodman, 2009). At the same time, many health-care providers, including obstetricians and pediatricians, do not see the diagnosis and treatment of maternal depression or anxiety as their responsibility and frequently lack the training and time required (Olson, Dietrich, Prazar, & Hurley, 2006; National Institute for Health Care Management [NIHCM], 2010).

Moreover, mental health resources are often scarce and/or inequitably distributed between communities, countries, and regions. Populations with high rates of socioeconomic deprivation may have the highest need for mental health care but the lowest access to it (Saxena et al., 2007). Depressed women continuously enrolled in a large health plan in the United States had high rates of treatment (93.4%), suggesting a willingness of perinatal women to accept treatment when it is available (Dietz et al., 2007).

Adherence to Best Practices

Once treatment is sought, providers must adhere to treatment guidelines and best practices when prescribing care, and patients must comply with treatment recommended by their providers. For example, abrupt discontinuation of medication treatment during pregnancy has been associated with both a significant risk of relapse of major depression and significant economic costs (Cohen et al., 2006; O’Brien, Laporte, & Koren, 2009).
Compliance among pregnant and postpartum women is often complicated by women’s preferences and by social stigma. Pregnant and postpartum women suffering from depression or anxiety may experience significant stigma associated with having a mental illness during what is commonly viewed as a “happy time of life.” The stigma of mental illness causes unique difficulties for women with depression who must weigh the pros and cons of treatment options during pregnancy and/or lactation. However, because effective and safe treatments for both mother and baby are available, overcoming stigma is critically important and should always include a careful discussion of risks and benefits of treatment options with the patient, family, and health-care providers.

Little is known about the proportion of perinatally depressed or anxious patients who receive adequate treatment. For perinatal depression, adequate treatment is defined as “receiving at least eight psychotherapy visits or at least four medication monitoring visits in the prior year” (Kessler et al., 2003) and consists of moderately dosed treatment for at least 6–8 weeks (Gaynes et al., 2009). This regimen allows for many breakdowns in compliance. For depression care in nonspecialty mental health settings, the likelihood of adequate treatment is approximately 40% for the general population (Pence et al., 2012).

Finally, even when receiving adequate treatment, rates of remission (i.e., full recovery from the depression, which is the goal of depression treatment) remain low. In real-world primary care settings, the likelihood of remission following aggressive treatment is approximately 30% (Trivedi et al., 2006), and, for example, only about two-thirds of individuals in trials of cognitive behavioral therapy are no longer diagnosed with depressive disorders at follow-up (Gloaguen, Cottraux, Cucherat, & Blackburn, 1998).

**Discussion**

In most areas, conditions necessary for successful adoption of population-based screening for perinatal depression and anxiety are met in Western industrialized countries. Perinatal depression and anxiety are common and have serious adverse consequences for the patient and her child and family. Clinical recognition is poor, and accurate screening tools are available that can assist in identification of unrecognized cases. Effective treatments, both pharmacologic and psychotherapeutic, exist and can be followed and, for the most part, are accessible by the affected population.

Summary estimates of the evidence on each major step in the perinatal depression and anxiety care continuum can be graphed to help clarify where gaps exist and to underscore the role of screening (see Figure 1.2). Based on the literature review provided previously and assuming a best-case scenario among prevalent perinatal depression cases, approximately 40% are recognized clinically, and of those recognized, approximately 60% receive treatment (or 24% of the overall cases). Of those treated, 40% will be adequately treated, and of those adequately treated, 30–66% may sufficiently recover to have measurable impact on health outcomes. Accordingly, approximately 3–6% of prevalent perinatal depression cases will be treated and achieve remission. (How many cases would achieve remission without treatment is unknown; however, the clinical trial literature cited previously suggests that lack of treatment would likely lead to longer and more severe episodes.) The largest drop-off in the perinatal depression care continuum is between prevalent cases and clinical recognition, a step that population-based screening can address.

The evidence base for the effectiveness of population-based screening to improve identification of depressive or anxiety disorders and to subsequently improve health outcomes is
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Growing (Myers et al., 2013). However, the cost of such a strategy remains a concern. Little work has been done in this area. One study found the costs of universal screening with the EPDS at cut points of 12–16 to be £40,000 and £60,000 per quality-adjusted life year (QALY), which does not meet the NICE threshold of £20,000–30,000 per QALY (Paulden et al., 2009). Most of the excess cost was driven by the costs of treating false-positive patients. The authors had assumed that these women would receive supportive care of four 45 minute visits from a health visitor and one 1 hour home visit from a community psychiatric nurse. In sensitivity analyses, they found that if these costs were replaced by the cost of a single visit with a general practitioner, who would then immediately make the correct diagnosis, that universal screening with an EPDS cut point of 10 was borderline cost-effective, with an incremental cost-effectiveness ratio of £29,186 per QALY. They also considered the scenario of the home visitor taking 30 minutes to administer a structured clinical interview for DSM-IV axis I disorders (SCID) to confirm the diagnosis among women with a positive screen and found an incremental cost-effectiveness ratio of £33,776 per QALY compared with routine care at an EPDS cut point of 13. However, the authors did not consider the possibility of medication treatment in place of psychological therapy nor did they consider costs beyond the first year postpartum or the potentially very important impact that successful identification and subsequent management might have had on the infant or other family members. Further, the authors did not consider that false positives might instead indicate women who had anxiety disorders (Austin, 2004) or low-intensity, low-cost treatment options such as group treatment or Internet treatment with telephone support.

Figure 1.2 Perinatal depression care continuum. Recognized clinically: prenatal, 41% (Goodman & Tyer-Viola, 2010); postpartum, 29% (Heneghan, Silver, Bauman, & Stein, 2000) to 43% (Hearn et al., 1998). Best-case scenario, 40%. Any treatment: prenatal, 58% of those identified received treatment in clinic or accepted referral to mental health in well-educated, high SES setting (27/46); postpartum, 82% (9/11) in well-educated, high SES setting. In general, in primary care nonpsychiatric settings (high and low SES), 50% (Pence et al., 2012). Average, 60%. Adequate treatment, 40% (likely best-case scenario) for depression care in a nonspecialty mental health setting (Pence et al., 2012). Achieved remission, 30% (in real-world primary care setting following aggressive treatment) (Trivedi et al., 2006) to 66% (in clinical trials) (Gloaguen et al., 1998).
which could change the cost-effectiveness ratios. Consideration of how best to weigh the potential costs and benefits of screening paradigms remains a critical consideration in decisions to adopt population-based perinatal depression and anxiety screening.

Further, the case for population-based screening must be assessed at a country, region, or community level. Important factors to consider include whether adequate resources are available for diagnosis and treatment and whether women have the means to access care and are willing to accept care. Medical institutions and governments may need to first engage in mental health-care capacity building and public awareness campaigns aimed at reducing the stigma of depression and anxiety during pregnancy and early motherhood.

Additional research is needed to confirm the link between screening for perinatal depression and anxiety and improved health outcomes. As a field, perinatal psychiatry is attempting to disentangle the biological, genetic, and psychological contributions that determine prognosis and long-term outcomes, including (i) identification of women at risk, (ii) how best to screen, (iii) symptom severity threshold that leads to intervention (i.e., DSM-based diagnoses vs. subsyndromal disorders), (iv) longitudinal course of illness, (v) risk of recurrence in subsequent pregnancies, (vi) differentiation of subtype of perinatal psychiatric illness, (vii) the interrelationship between anxiety and depressive disorders, (viii) the effects on the fetus and the child, and (ix) partner support. As our understanding of the pathophysiology of perinatal mood and anxiety disorders grows, our ability to provide evidence-based diagnostic and treatment recommendations will also improve. Improved knowledge on these dimensions will help weigh the case for population-based screening.

In sum, the evidence (though much is limited to high-income countries) suggests that population-based screening can be an important first step toward identifying those women suffering from perinatal mood and anxiety disorders who would otherwise remain undiagnosed and untreated. The care continuum model presented in this chapter discusses the conditions that are needed to make population-based screening programs successful. Examples of successful programs exist that can serve as models for widespread dissemination and will help address the vital mental health needs of mothers and their children (Buist et al., 2007; Earls & Committee on Psychosocial Aspects of Child and Family Health American Academy of Pediatrics, 2010; Leung et al., 2011; Segre, O’Hara, Brock, & Taylor, 2012; Yawn et al., 2012). Of note is a clinical trial of health visitor training in psychologically informed approaches for depression identification, prevention, and management of postnatal women that was found to be both effective and cost-effective among patients of general practices in Trent, England (Morrell et al., 2009). The remainder of the book addresses key issues that will aid in the decision-making process.

References


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