Perimenstrual Symptoms and Syndromes: Guidelines for Symptom Management and Self Care

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Abstract

Purpose: To review evidence-based clinical practice guidelines, which link a cross-disciplinary knowledge base to the screening, assessment, self-care, and medical management of perimenstrual symptoms and discomforts, premenstrual syndrome (PMS), premenstrual dysphoric disorder (PMDD), and premenstrual magnification (PMM).

Epidemiology: Some 4% to 14% of women experience recurring perimenstrual (before and during menstruation) symptoms that are distressing enough to be considered a chronic illness, and up to two thirds of women experience symptoms that are bothersome enough to seek professional advice.

Review Summary: This article reviews the etiology, clinical presentation, assessment methods, and therapeutic strategies for perimenstrual symptoms, PMS, and PMDD. Evidence-based practice guidelines are summarized from 2 professional organizations representing women’s health professionals: the American College of Obstetricians and Gynecologists (ACOG) and the Association of Women’s Health, Obstetric, and Neonatal Nurses (AWHONN). Both organizations recommend careful symptom pattern assessment and initiation of treatment with nonpharmacologic therapies. An evidence-based multimodal strategy—the Premenstrual Symptom Management Program (PMS-SMP)—also is described.

Type of Available Evidence: Randomized controlled trials, national treatment guidelines, unstructured reviews, case control series, prospective cohort studies.

Grade of Available Evidence: Fair to good.

Conclusion: The popular medical term premenstrual syndrome describes the cyclic recurrence of symptoms that impair a woman’s health, relationships, and/or occupational functioning. Recently, an interdisciplinary group proposed a more precise classification—cyclic perimenstrual pain and discomforts (CPPD)—encompassing cyclic pelvic pain and mood and physical discomforts. PMDD, a severe form of PMS, also may be a separate condition and requires the presence of 5 or more symptoms, 1 of which must be irritability, depressed mood, anxiety, or affective lability. These diagnoses should be based on prospective documentation of symptoms over at least 2 menstrual cycles and carefully distinguished from the premenstrual magnification of somatic or mood disorders. (Adv Stud Med. 2005;5(5):228-241)

In 1843, Dr William Dewees of the University of Pennsylvania coined the expression “melancholies of menstruation.” He believed “the uterus exerts a paramount power over every other system, and governs them with a sway no less whimsical than potent”; it “creates, exalts, or modifies diseases, in every portion of the body.” Medical opinions hardly progressed during the next century. In a 1948 review article, Dr Erle Henriksen of Johns Hopkins referred to premenstrual tension as the “Bitch Syndrome,” which was changed by his publisher to the “Witch Syndrome.” After “carefully observing”...
many nurses and other “perfectionistic” women, Henriksen concluded that more severe symptoms occurred in women who were high achievers and “not satisfied” with their work or roles in society.2

Today, the popular and quasi-medical term premenstrual syndrome (PMS) describes the cyclic recurrence of distressing physical, emotional, and behavioral symptoms that affect a woman’s health, relationships, and/or occupational functioning. A PMS symptom pattern can be discerned by either the sudden absence of symptoms after a woman’s period begins or by a low severity of symptoms after onset of menstruation, followed by the escalation of symptom frequency and severity during the premenstrual phase of the cycle. The severity, number, and duration of symptoms affect the intensity of PMS.

**Delineating Premenstrual Symptoms and Syndromes**

Recently, professional and clinical communities have made progress translating research into practice by including both empiric research and women’s experiences in the base of evidence for premenstrual syndromes. An interdisciplinary group of scientists and clinicians, known as the Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN), developed clinical practice guidelines based on a broad range of clinical, empiric, and theoretical evidence that recommend the term cyclic perimenstrual pain and discomfort (CPPD) to differentiate the normal cyclic changes associated with menstruation from the severe, debilitating menstrual and premenstrual symptoms that require professional or pharmacologic intervention.

“Premenstrual” refers to the period of about 7 to 10 days prior to onset of menstrual flow and continuing until the first or second day of menstruation. Although the term CPPD references the negative end of the perimenstrual experience spectrum, the woman’s experience of physical and mood discomforts is the focus, rather than her personal attributes or a medically imposed diagnosis. The term CPPD is based on a range of rigorously reviewed empiric studies using quantitative and qualitative methods. The goal of the AWHONN guidelines is to provide evidence-based clinical practice recommendations that help women’s healthcare professionals accomplish the following objectives:

- Provide screening for cyclic perimenstrual symptoms as part of routine women’s healthcare
- Conduct a targeted assessment to identify perimenstrual symptom patterns
- Implement evidence-based therapeutic strategies applicable to cyclic perimenstrual symptoms, including PMS
- Assist women with self-care activities and references to other providers as necessary.

**Premenstrual Dysphoric Disorder (PMDD)**

Premenstrual dysphoric disorder (PMDD) is a separate diagnostic label referring to severe PMS that affects a much smaller group of menstruating women. Originally, PMDD was known as late luteal phase dysphoric disorder (LLPDD). The American Psychiatric Association (APA) first included this diagnostic term in the 1987 edition of the *Diagnostic and Statistical Manual (DSM-III)*. Although listed in the research appendix—denoting a term “requiring further study”—LLPDD was treated exactly like those diagnostic labels considered to be supported by scientific evidence; it was given a diagnostic code, list of symptoms, and cutoff points. After an extensive literature review, the APA’s subcommittee on LLPDD concluded in 1994 that very little research supported the existence of premenstrual mental illness, in contrast to PMS. Nevertheless, the term LLPDD was revised to PMDD and included in both the *DSM-IV* research appendix and the main text under Depressive Disorders.

Whereas there is no question that some women experience a more severe form of PMS than others, the legitimization of PMDD or severe PMS as a psychiatric disorder troubled many feminists and medical scholars. Research showed that women diagnosed with PMDD...
are significantly more likely than other women to be involved in upsetting life situations (eg, being battered or being mistreated at work, living in poverty or in unsafe neighborhoods). Thus, labeling these women as mentally disordered might send a message that the problem is of an individual psychologic nature and disregards external sources of trouble. In 1999, the US Food and Drug Administration (FDA) approved the antidepressant fluoxetine for treatment of PMDD; however, the European drug regulator, the Committee for Proprietary Medicinal Products, required that the manufacturer remove PMDD from the list of indicated disorders, as they found that “PMDD is not a well-established disease entity across Europe,” it was not listed in the International Classification of Diseases (ICD), and was listed only as a research diagnosis in the DSM-IV.12

PREMENSTRUAL MAGNIFICATION
Defined as the exacerbation of somatic or mood symptoms in the late luteal or menstrual phase of the woman’s cycle, premenstrual magnification is another syndrome distinct from PMS. Conditions subject to premenstrual magnification (PMM) include: depressive disorder; panic disorder; generalized anxiety disorder; migraine; seizure disorder; irritable bowel syndrome; asthma; chronic fatigue syndrome; and allergies. Table 1 summarizes the differences among the various premenstrual symptomatology terms.

EPIDEMIOLOGY
The menstrual cycle is a normative process, not a chronic illness; however, about 10% of women experience severe recurring symptoms associated with their menstrual cycles. In well-designed studies of community-based, nonclinical samples, the prevalence of perimenstrual symptoms was 30% to 50%. Pain, fatigue, mood swings, and physical discomforts were reported most often. Severe perimenstrual symptoms can be considered a syndrome and are classified as PMS in ICD diagnostic codes or as PMDD in DSM diagnostic codes. As the DSM-IV definition of PMDD acknowledges, mild symptoms such as bloating and breast tenderness affect up to 70% of menstruating women, and should not be considered “disordered.” However, between 5% and 14% of women report perimenstrual symptoms so severe they are disabling; up to two thirds of women’s perimenstrual symptoms are bothersome enough to seek professional advice. A review of several recent studies suggests that between 4% and 7% of women qualify for a diagnosis of PMDD. Based on these prevalence studies, an estimated 35 million women will experience mild-to-moderate PMS and another 5 to 7 million will suffer from severe PMS.

CLINICAL PRESENTATION
More than 200 separate symptoms are identified as related to the menstrual cycle. Research has also noted several common patterns of perimenstrual symptoms. In a factor and cluster analysis of data from a cross-sectional population-based sample, Woods et al identified 4 symptom clusters, which accounted for much of the variance in women’s experiences of the premenstrual phase: (1) turmoil; (2) fluid retention; (3) somatic symptoms; and (4) arousal. Table 2 describes these symptom clusters in further detail. When explaining the variance in perimenstrual symptoms, turmoil was the dominant symptom cluster. Fluid retention was the most important cluster for distinguishing women with low symptom severity from those with PMS or premenstrual magnification. The researchers concluded that turmoil and fluid retention were reliable indicators of premenstrual symptoms, which are sensitive to different cycle phases. Somatic symptoms and arousal symptoms were

<table>
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<tr>
<th>Table 2. Premenstrual Symptom Clusters</th>
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<tbody>
<tr>
<td>Symptom Cluster</td>
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</table>
| Turmoil | • Hostility, depression, anger  
                   • Feeling out of control  
                   • Tension  
                   • Guilty feelings  
                   • Tearfulness  
                   • Anxiety, nervousness  
                   • Rapid mood change  
                   • Irritability, impatience  
                   • Desire to be alone, loneliness |
| Fluid retention | • Weight gain, abdominal bloating or swelling  
                   • Painful breasts  
                   • Swelling of hands and feet  
                   • Skin disorders |
| Somatic symptoms | • Nausea  
                   • Lowered desire to move  
                   • Decreased food intake  
                   • Abdominal pain  
                   • Headache  
                   • Decreased sexual desire  
                   • Aches and pains |
| Arousal | • Bursts of energy or activity  
                   • Increased sexual desire  
                   • Impulsiveness  
                   • Increased food intake  
                   • Increased feeling of well-being  
                   • Cravings for certain foods or tastes |

Data from Woods NF, et al.11
highly stable throughout the menstrual cycle and poorly correlated with each other. The researchers speculated that somatic and arousal symptoms might be independent of the menstrual cycle phases.

Using much of the research from Woods et al, the AWHONN guidelines classify CPPD into the following 3 major symptom clusters: (1) cyclic pelvic pain; (2) perimenstrual physical discomforts; and (3) perimenstrual mood discomforts (Table 3).³

**Etiology**

**Biologic**

A strong body of knowledge supports a biologic etiology for cyclic menstrual pain or dysmenorrhea. In a study, Dawood established that an increase or imbalance in the amount of prostaglandins is present in the menstrual fluid of women with dysmenorrhea.²²⁻²⁴ This causes the uterus to contract abnormally and reduces uterine blood flow and oxygenation, giving rise to pain. However, almost any process that affects the pelvic viscera and causes acute or intermittent recurring pain might be a source for cyclic perimenstrual pain. This includes urinary tract infections; endometriosis; pelvic inflammatory diseases; uterine fibroids; interstitial cystitis; hernias; irritable bowel syndrome; or pelvic relaxation.²⁻⁵ Identifying the cause of cyclic perimenstrual pelvic pain can be difficult, since the healthcare provider must distinguish dysmenorrhea from a variety of other causes of pelvic pain occurring in a cyclic manner outside of the menstrual flow.²⁻⁵

Etiologic mechanisms for cyclic perimenstrual physical and mood discomforts present in PMS and PMDD are not as clear. Although a number of biologic and neuroendocrine etiologies have been proposed, most have been simple, direct, unsubstantiated pathophysiologic models, such as hormonal imbalances, sodium retention, nutritional deficiencies, or abnormal hypothalamic-pituitary-adrenal axis function.²⁻⁵ Investigators have hypothesized that the neuroregulatory effects of ovarian hormones on the central serotonin systems in humans are causative as inferred mostly from animal studies. The studies demonstrated the impact of sex, the estrus or menstrual cycle, and hormone manipulation on functional behaviors in animals and mood and somatic symptoms in humans.³¹ This menstrual cycle hormone-serotonin hypothesis is unconfirmed and based primarily on indirect tests using selective serotonin reuptake inhibitor (SSRI) antidepressants.²² With this in mind, a European pharmaceutical regulatory agency recently criticized a pharmaceutical company for listing an antidepressant drug as a treatment for PMDD, which is not a well-established disease entity.¹²

**Integration of Biologic, Genetic, and Environmental Factors**

Recent empiric and theory-testing research points to an integrative etiology linking genetics, environmental stressors, and hormonal processes with individual vulnerabilities to PMS.³³⁻⁵⁹ Perimenstrual symptoms and syndromes may act either as modulators or entrainers of other disorders, or may be an abnormal response to normal biologic rhythms (eg, the menstrual cycle, circadian rhythms, adrenocortical pulses).⁴⁰⁻⁴⁷ Most likely, PMS is a psychoneuroendocrine disorder, whereby psychosocial variables become influential in lowering the individual’s threshold to experience perimenstrual symptoms. This happens in response to the normal or abnormal biologic changes of the menstrual cycle in the context of a multifaceted interaction between the central nervous system, hormones, and other modulators.

**Biologic and Psychosocial Studies.** A few well-designed studies have empirically tested the hypothesis that biologic and psychosocial variables interact with each other, resulting in a vulnerability to mood and behavioral changes across the menstrual cycle. By using structural equation modeling techniques, this author and colleagues developed and tested a causal model of premenstrual mood changes. Psychosocial, menstrual cycle, and mood data were collected from a nonclini-

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**Table 3. Cyclic Perimenstrual Pain and Discomfort Symptom Clusters**

<table>
<thead>
<tr>
<th>Symptom Cluster</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Cyclic pelvic pain</td>
<td>Abdominal cramps</td>
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<tr>
<td></td>
<td>Nausea/vomiting</td>
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<td>Backache</td>
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<td>Change in frequency of bowel</td>
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<td></td>
<td>movements</td>
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<td>Perimenstrual physical discomforts</td>
<td>Fatigue</td>
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<td></td>
<td>Headaches</td>
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<td></td>
<td>Fluid retention</td>
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<tr>
<td></td>
<td>Joint aches and pain</td>
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<tr>
<td></td>
<td>Breast tenderness</td>
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<tr>
<td></td>
<td>Leg/thigh discomfort</td>
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<tr>
<td></td>
<td>Change in energy and appetite</td>
</tr>
<tr>
<td>Perimenstrual mood discomforts</td>
<td>Hostility, depression, anger</td>
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<td></td>
<td>Irritability, impatience</td>
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<tr>
<td></td>
<td>Tension</td>
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<td></td>
<td>Anxiety</td>
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<td></td>
<td>Mood swings</td>
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<td></td>
<td>Change in sexual desire</td>
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<tr>
<td></td>
<td>Guilt</td>
</tr>
<tr>
<td></td>
<td>Feeling out of control</td>
</tr>
<tr>
<td></td>
<td>Tearfulness</td>
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</tbody>
</table>

Data from Association of Women’s Health, Obstetric & Neonatal Nurses.¹.
tual, community-based sample of 340 regularly menstruating women.\textsuperscript{39} In this model, women who had the most stressful lives or were generally distressed with high levels of depression and anxiety experienced the most severe premenstrual negative affect symptoms. The effect of stressors and stress responses was not only direct, but operated through generalized distress mediated by poor health behaviors.

Multiple well-crafted laboratory studies from the Behavioral Endocrinology Branch of the National Institutes of Mental Health tested the putative roles of pituitary, ovarian, and adrenal steroids in the etiology of PMS. The results did not support a primary endocrine abnormality in PMS patients; understanding of these disorders appeared to lie in the contextual factors, not the hormonal excesses or deficiencies.\textsuperscript{38,45,47}

Another study focusing on the development of an integrative model of perinatal and postpartum mood changes used clinical, psychosocial, hormone, and mood data collected from 150 women in late pregnancy and at 6 weeks postpartum. Biologic variables were shown to have no direct or indirect effects on a woman’s depressive symptoms during the postpartum period.\textsuperscript{50}

Genealogic Studies. In a study of 1312 menstruating twins, the results suggested no close etiologic relationship between PMS and major depression. Whereas premenstrual symptoms and major depression were found to share genetic and environmental risk factors, 86% of the genetic variance and 88% of the environmental variance for premenstrual symptoms were not shared with major depression.\textsuperscript{60} However, PMDD may have a different pattern of heritability, which was suggested by the recent report about a relationship between a polymorphism in the serotonin transporter gene and the severity of PMDD symptoms.\textsuperscript{59}

Emotional Stressors

Studies have suggested that the manifestation of PMS, particularly perimenstrual mood discomforts, may result from a combination of multiple stressors, including a heightened stress response, few support systems, and a vulnerable period of biologic reactivity. Stress perception and stressful experiences appear to influence the reporting of premenstrual symptoms; biopsychosocial factors, such as altered stress hormones, low self-esteem, more negative life changes, and increased stress response, tend to increase the severity of PMS.\textsuperscript{39,52,59} Job-related stress appears to increase a woman’s risk of premenstrual symptoms by as much as 3\textsuperscript{1} according to a study of 6026 active-duty women in all branches of the military.\textsuperscript{19} For example, women with PMS report more stressors and find stress more upsetting than women without PMS.\textsuperscript{85,55} It may be that women with PMS use less effective methods to cope with their stress, such as avoidance or wishful thinking. More effective strategies include problem-solving communication or direct action.\textsuperscript{50,56}

Another common emotional stressor among women seeking treatment for severe PMS is a history of sexual abuse, particularly in childhood. A group of 42 women with severe PMS agreed to be interviewed about their sexual abuse history. Among these women, 95% reported at least 1 attempted or completed sexual abuse event; 81% reported rape with penetration.\textsuperscript{57} This study replicates and extends previous research examining the prevalence of sexual abuse among women with PMS, suggesting that severe PMS appears to be strongly associated with a history of sexual abuse. Furthermore, with nearly two thirds of the women meeting the criteria for posttraumatic stress disorder, the researchers hypothesized that past history of an intensely negative stressor may provide an etiologic mechanism for severe PMS.\textsuperscript{55}

Sociocultural Factors

Sociocultural factors appear to influence which symptoms women notice or consider problematic. Information from 2 of the largest cross-cultural studies on menstruation suggests that the reported incidence of various premenstrual changes is high in many different countries.\textsuperscript{54,59} A large number of women throughout the world report physical discomfort and mood changes associated with menstruation. Perimenstrual symptom experiences also appear to differ by geographic location, marital status, parity, education, and occupation.\textsuperscript{59,60,65} Some analyses of cross-cultural differences suggest that women in Western societies have been socialized to have negative expectations about menstruation. For example, a group of Mexican women viewed a videotape describing the negative consequences of PMS. Later, these women reported more severe premenstrual symptoms as compared to the control group of Mexican women, who watched a neutral video.\textsuperscript{62}

The possibility that any single general theory can fully explain the flare-up of premenstrual symptoms for all women is highly unlikely. Although PMS and PMDD have been predominantly regarded as a biologically based illnesses, strong evidence exists that variables such as life stress, response to stress, history of sexual abuse, and cultural socialization are important determinants of perimenstrual symptoms. The prevailing view is that women with PMS are more sensitive to essentially normal hormonal shifts. As a result, these women develop symptoms that do not affect other menstruating women. The effects of these physiologic changes are different for each woman, creating a variety of distinct PMS experiences.

Translating Research Into Practice: Assessment and Therapeutic Goals

CPPD and PMS represent a family of symptom clusters requiring the clinician to balance several seem-
focus, more or less exact criteria have been defined by is difficult. Although each society has a different in the clinical assessment of perimenstrual symptoms experience, defining precise diagnostic criteria for use in the context of their life transitions, personal characteristics, and environmental stressors. A few assumptions are necessary to provide the proper assessment and therapeutic strategies for women experiencing perimenstrual pain and discomfort, including:

- Health effects from personal and social changes are as important, if not more so, than the biologic changes of the menstrual cycle.
- Focus should be placed on biobehavioral relationships, as well as biologic changes such as hormone levels.
- Multiple factors both promote and prevent women from caring for their own health.

Healthcare providers can significantly impact the care of women with CPPD and PMS by using the evidence-based approach developed by the AWHONN science team and evidence-based clinical guideline group for assessing, diagnosing, and managing CPPD. For those women with severe PMS who do not respond to these evidence-based multidodal therapies, the American College of Obstetricians and Gynecologists (ACOG) Clinical Management Guidelines recommend evidence-based pharmacologic approaches.

**DIAGNOSIS**

The goal for assessment is to understand each individual woman’s perimenstrual experience and then help her define and manage the distressing symptoms and concomitant problems. Most of the assessment process can be assumed by the woman with the help of self-assessment tools and/or professional guidance. Careful symptom assessment through daily monitoring and by keeping a diary of daily experiences can be therapeutic (Figure). Prospective assessment of individual symptoms or symptom clusters is the recommended method for determining the source of symptoms. This can be accomplished by using a calendar or symptom checklist for 2 to 3 consecutive cycles. Table 4 provides a sample symptom severity rating scale.

Since each woman has a different perimenstrual experience, defining precise diagnostic criteria for use in the clinical assessment of perimenstrual symptoms is difficult. Although each society has a different focus, more or less exact criteria have been defined by the AWHONN, ACOG, and the APA.

The AWHONN guidelines emphasize the importance of noting the interaction of medical, psychologic, sociocultural, and lifestyle factors when assessing difficulties related to the menstrual cycle. In addition, distinguishing perimenstrual symptoms and discomfort patterns across at least 3 menstrual cycle phases is optimal. Recommended phases include: premenstrual phase (up to 14 days prior to the onset of menses); menstrual phase (1 to 5 menses days); and postmenstrual phase (after menses and before ovulation).

According to the ACOG guidelines, the key criteria for a diagnosis of PMS are: (1) symptoms consistent with PMS; (2) consistent occurrence of the symptoms only during the luteal phase of the menstrual cycle; (3) negative impact of symptoms on some facet of the woman’s life; and (4) exclusion of other diagnoses that may better explain the symptoms.

Although recent evidence does not necessarily support the establishment of PMDD as a separate diagnostic classification from severe PMS or CPPD, the APA requirements for a PMDD diagnosis include...
the following:

- 5 or more symptoms, including affective and physical symptoms, present during the week before menses and absent in the follicular phase.
- Irritability, depressed mood, anxiety, or affective lability is present.
- Symptoms markedly interfere with occupational or social functioning.
- Symptoms are not due to an exacerbation of another disorder.
- Prospective daily ratings over at least 2 menstrual cycles confirm the above criteria.

These criteria help primary care physicians (PCPs) distinguish PMS and CPPD from endocrine abnormalities and conditions that are subject to PMM. Furthermore, the transition to menopause can be a vulnerable period and also is distinct from CPPD and PMS. During this transition, women may experience the onset

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<thead>
<tr>
<th>Menstrual Cycle Day</th>
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<th>7</th>
<th>9</th>
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<td>29</td>
<td>10/1</td>
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<td>12</td>
<td>15</td>
<td>17</td>
<td>19</td>
<td>21</td>
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<tr>
<td><strong>Cycle Phase</strong></td>
<td>Menstrual</td>
<td>Post-Menstrual</td>
<td>Early Pre-Menstrual</td>
<td>Late Menstrual</td>
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<td>*<em>Bleeding (H, M, L, S, <em>)</em></em></td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>2. Anxious</td>
<td>4</td>
<td>0</td>
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<td>3. Over-Sensitive</td>
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<td>5. Out of Control</td>
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<td>7. Bloating</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
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</tr>
<tr>
<td>9. Difficulty Falling Asleep</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Confusion</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Well-being (+ / -)</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>/</td>
<td>/</td>
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<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>
| **Stress (+ / -)** | / | - | - | / | - | - | - | - | - | - | - | + | + | / | / | + | / | /
| **Life Events (+ / -)** | / | + | / | + | / | / | / | / | / | / | / | / | / | / | / | / | / | /
| 1. Left Work/Stayed Home | ✓ |
| 2. Took a walk | ✓ |
| 3. Called my friend | ✓ |

**TRACKING INSTRUCTIONS:**

**Menstrual Cycle Day:** Begin with the first day of menstrual flow and end with the last day of your menstrual cycle.

**Month & Date:** Write in the month then the corresponding date in the box under each menstrual cycle day.

**Menstrual Cycle Phase:** At the end of the cycle, divide it into phases by drawing a vertical line down after the day before menstrual bleeding starts; count back 14 days and draw another vertical line—write premenstrual phase in the space; next, draw a vertical line down after the last day of your period and write in menstrual phase; write in postmenstrual phase in the remaining space.

**Bleeding:** Record your menstrual flow or vaginal bleeding as (H) Heavy, (M) Moderate, (L) Light, (S) Spotting, or blank if no bleeding. Note the last day of your menstrual flow with an asterisk (*).

**Weight:** Record your weight (weigh yourself about the same time every day).

**Symptoms:** List your most bothersome or distressing symptoms taken from the Symptom Severity Chart with your worst or most distressing symptom in the #1 space, followed by your second most bothersome symptom, and so on, up to 10 symptoms. Rate these symptoms or behavior changes daily as 0—absent, 1—mild, 2—moderate, 3—severe, or 4—extreme throughout the cycle.

**Well-being:** Rate your feelings of well-being—including increased energy, creativity or generally feeling good—as (+) High, ( / ) Moderate, or ( - ) Low.

**Stress:** Rate your overall stress level as (+) High, ( / ) Moderate, or ( - ) Low.

**Life Events:** Rate any significant events as (+) Positive, ( / ) Neutral, or ( - ) Negative.

**Self-Care:** List anything you did to relieve your symptoms and place a check in the corresponding menstrual day.
or worsening of CPPD or PMS, especially mood disturbance and fatigue.69

In addition to differentiating PMS from premenstrual magnification of an underlying condition, PCPs also must distinguish cyclic menstrual pain from other pelvic pain occurring in a noncyclic or chronic manner outside of the menstrual flow. Clinical management guidelines for the diagnosis of chronic pelvic pain have been published recently by ACOG that differentiate pathophysiology between acute and chronic pelvic pain.20

TREATMENT

PMS treatments have ranged from the dangerous ovarian irradiation to the ridiculous theory of hiding in one’s room.70-71 Until recently, the focus on singular, usually pharmacologic, therapy has dominated the treatment for perimenstrual symptoms and PMS. Clinical research now suggests that combinations of treatments are more beneficial than are single treatments.45,63,76-78 Moreover, outcomes of symptom management programs suggest that when symptoms are comprehensively managed, people are more likely to remain in treatment and show improved outcomes.74,75 New models of symptom management, which combine self-help, social support, medical therapies, and psychosocial strategies applied to specific conditions, have shown promising results.65,76-78

PROFESSIONAL SOCIETY GUIDELINES

Both the AWHONN and ACOG guidelines recommend beginning treatment by working with the patient to set goals. The ACOG guidelines state that according to consensus and expert opinion (level C evidence), the first steps in treating PMS should be the following: (1) supportive therapy, including reassurance and education about physiologic changes; (2) dietary changes—especially carbohydrate-rich foods and beverages to improve mood symptoms and food cravings—and calcium supplements; and (3) aerobic exercise and/or spironolactone to relieve fluid retention.68

A broader range of clinical research is reviewed in the AWHONN guidelines. Using consensus and expert rating standards (level I-II evidence), the guidelines recommend effective multimodal therapies for CPPD and PMS as the first course of treatment. Therapies include cognitive-behavioral symptom management, environmental stress management, nutritional/dietary counseling and supplements, and exercise promotion.3

For patients with severe PMS or those who do not respond to nonpharmacologic symptom management, ACOG recommends SSRIs.68,79,81 Approved by a governmental clearinghouse for clinical practice guidelines,82 an evidence-based clinical practice guideline for depression recommends the use of the 2 FDA-approved SSRIs—fluoxetine and sertraline—for use in the treatment of severe PMS or PMDD. Other SSRIs, such as paroxetine, will have the same effects in the treatment of these disorders.83

Fluoxetine, at a dose of 20 mg or 60 mg per day, is the most studied drug in the SSRI group. In a multicenter trial, significantly more women experienced symptom relief when taking fluoxetine as compared to placebo. There were also fewer reports of side effects at the 20-mg/day dosage.81 Several small, randomized, double-blind placebo-controlled trials also have found SSRIs to be effective when taken intermittently, during the symptomatic phase of the menstrual cycle,80,84,85 however, the evidence suggests daily administration at the lowest dose yields the best results.82 Regardless of the therapeutic regimen, side effects associated with SSRI antidepressants include headaches, nausea, and jitteriness. Insomnia can be avoided by early morning dosing or lowering the dose amount. Decreased libido is problematic for some women taking SSRIs and is independent of dosage.81

Although not FDA-approved for treatment of PMDD, other antidepressants have been used to treat PMDD, including heterocyclic drugs such as clomipramine.89 In addition, herbal antidepressants such as hypericum or St. John’s Wort, while not tested for treatment of PMDD, have been found to be effective in the treatment of mild depression. Alprazolam or another anxiolytic also may be indicated in some patients.68 However, since there is potential for addiction, tolerance, and bothersome sedation, alprazolam is not recommended as a first-line treatment.83,86

Finally, limited and inconsistent evidence supports the treatment of PMS with hormonal ovulation suppression with gonadotropin-releasing hormone agonists or surgical oophorectomy.87-91

While the FDA has not approved progesterone therapy for PMS, micronized progesterone is an FDA-recognized hormone therapy for perimenopausal

Table 4. Perimenstrual Symptom Severity Rating Scale

<table>
<thead>
<tr>
<th>Rating</th>
<th>Descriptor</th>
<th>Typical patient response</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent or none</td>
<td>“I notice the feeling, symptom, or behavior, but it doesn’t interfere with activities or make me feel distressed.”</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>“This symptom affects my work, the way I feel, or my ability to function, but even though I feel somewhat distressed, I’m able to carry on with my usual activities.”</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>“This symptom limits or interferes with my activities; I feel distressed that I can’t do what I want to do.”</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>“I feel very distressed by the feeling, symptom, or behavior: I can’t do anything: I stay in bed or don’t get dressed.”</td>
</tr>
</tbody>
</table>

Adapted with permission from Taylor D. Effectiveness of professional-peer group treatment: symptom management for women with PMS. Res Nurs Health. 1999;22:496-511.63
A MODEL FOR MULTIMODAL TREATMENTS: THE PREMENSTRUAL SYMPTOM MANAGEMENT PROGRAM

An example of a symptom management program highlighted in the AWHONN clinical practice guideline is the Premenstrual Symptom Management Program (PMS-SMP). This is a comprehensive package of nonpharmacologic strategies for the management of PMS symptoms, which was developed and tested by this author in multiple clinical trials. The major components of the PMS-SMP are: (1) self-monitoring; (2) self-modification; (3) self-regulation; and (4) environmental modification. Detailed information on the different components can be found in Table 5.

A study funded by the National Institutes of Health (NIH) assessed the effectiveness of the PMS-SMP for women classified with severe PMS.63 A total of 134 women were randomized to either early treatment with the PMS-SMP or a 6-month waiting list. With professional guidance, women in the intervention group selected at least 3 elements of the PMS-SMP to include in an individualized treatment plan, and then set individual goals for each element. For 3 hours a week over 4 consecutive weeks, women in both the intervention and the control group met with a nurse in small groups for education and peer support.

Women using the PMS-SMP showed reductions in premenstrual mood and physical symptom severity of 75% to 85% within 3 months. Noncyclic depression declined gradually and was down by 32% after 18 months. Marked declines also were found in emotional distress, anxiety, and hostility (40% to 55%), as well as gradual increases in self-esteem and well-being (25% to 33%). The declines in symptom severity, depression, and distress were maintained or enhanced over a long-term follow-up period of 12 to 18 months. Women continued to use a combination of symptom management strategies throughout the follow-up period. In the control group, high depression scores, low well-being scores, and low self-esteem scores remained constant during the 6 months prior to beginning the PMS-SMP intervention.

These findings compare favorably with the results of placebo-controlled studies of SSRIs for PMS treatment,81 in which 40% to 52% of participants reported symptom relief. They also compare well with studies of behavioral therapies, in which there has been 58% to 63% improvement.94,95 A later study showed that self-monitoring alone reduced symptoms in 10% to 20% of women experiencing PMS.64 For some women, keeping track of symptoms may be a trigger to make lifestyle changes that reduce symptom severity.

Primary care physicians can apply these symptom management strategies in a group format or a conventional office visit. The self-monitoring component of the PMS-SMP may help women sort out symptom patterns and determine their severity. Furthermore, symptom management interventions could be complementary to pharmacologic therapy in women with a dual diagnosis, such as PMS and a coexisting psychiatric disorder or those with a depressive disorder that worsens perimenstrually.

CPPD and PMS have been found to be stress-related conditions requiring multiple treatment strategies, which has application to other stress-related women’s health problems (eg, heart disease, arthritis, autoimmune disorders). Although focused on providing perimenstrual symptom relief, the strategies included in the PMS-SMP generally promote overall health. By establishing healthy dietary and exercise habits in conjunction with personal and environmental stress management during early adulthood, women develop lifelong health behaviors that may result in chronic disease prevention in later adult life.

DIETARY AND NUTRITIONAL CHANGES

Fair to good evidence supports the combined use of dietary modification and nutritional supplements to reduce pain and perimenstrual symptoms. Barnard

| Table 5. Major Components of the Premenstrual Symptom Management Program (PMS-SMP) |
|---------------------------------|---------------------------------|
| Component                      | Description                     |
| Self-modification              | • Increased consumption of complex carbohydrates, fruits, and vegetables |
|                                | • Decreased use of salt, sugar, caffeine, and alcohol |
|                                | • Increased water; small, frequent meals |
|                                | • Multivitamin/mineral supplements |
|                                | • Increased aerobic exercise (20 minutes 3 to 5 times/week) |
|                                | • Stretching and yoga           |
| Self-regulation                | • Behavioral therapy such as progressive muscle relaxation, imagery, and breathing exercises |
|                                | • Cognitive strategies such as changing negative thought patterns, visualization, and self-esteem enhancement exercises |
| Environmental modification     | • Training in time management, role redefinition, communication, and problem solving |

Data from Taylor D.63
et al reported that a low-fat, vegetarian diet decreased menstrual pain, body weight, and water retention symptoms. In a double-blind, crossover study of 24 women with confirmed PMS, increasing complex carbohydrates was found to significantly reduce self-reported premenstrual depression, anger, confusion, and food cravings. Severity of PMS, especially irritability and insomnia, has been associated with caffeine consumption. A 30% increased severity has been reported with 1 cup of a caffeinated beverage per day; women can experience up to a 7-fold increase with 8 to 10 cups per day. Although not confirmed by research, decreasing salt intake premenstrually is often recommended as a way to minimize bloating and physical symptoms.

A growing body of evidence supports the use of specific vitamins, minerals, fatty acids, and other dietary supplements for CPPD management. These supplements may be prescribed at levels well above the recommended dietary allowances. In a recent systematic review, supplements such as magnesium, vitamin B6, and calcium were found to have beneficial effects on PMS symptoms. Based on fair to good evidence (level I-III), the AWHONN guidelines recommend the following nutritional supplements as having shown adequate evidence for reducing premenstrual pain and discomforts: calcium; magnesium; vitamin E; omega-3 fatty acids; and vitamin B (in complex and B6).3,102-107

In the PMS-SMP study, approximately 90% of the women changed their diets (i.e., decreased caffeine and processed foods or increased water, complex carbohydrates, and meal frequency). These women also included daily regular multivitamin-mineral supplements, as well as a PMS-formula vitamin with added B6 and B-complex vitamins and mineral supplements containing extra magnesium and calcium. Symptoms helped the most by these changes were irritability, fatigue, anxiety, bloating, and food cravings. Finally, a recent review stratified studies by the level of evidence and concluded that calcium carbonate supplementation is a well-supported first-line therapy for mild-to-moderate PMS.

**Exercise**

Most studies examining the effects of exercise on perimenstrual symptoms have investigated aerobic exercise as a potential treatment for PMS. While the evidence is inconclusive, the overall health benefits of aerobic exercise make this a reasonable recommendation. In a specific study, previously sedentary women embarked on a 6-month running program; by the end of the training program, the women experienced significantly fewer premenstrual symptoms including decreased fluid retention, breast discomfort, and premenstrual depression and anxiety.

Stretching exercises or yoga also may be beneficial for motivated patients. A 10-month study of 40 women with “menstrual distress” found that yoga-trained subjects scored significantly better than control subjects on the subscales of a menstrual distress questionnaire—both premenstrually and after onset of menses.

For women suffering from PMS, participating in physical activity throughout the month and then modifying the regimen 1 to 2 weeks before the arrival of their periods may work best to alleviate symptoms. Combining regular aerobic exercise with relaxation or meditative strategies, especially during the premenstrual phase, may actually multiply the effects on mood and well-being. Many women substituted yoga or stretching for more vigorous activities during the premenstrual or menstrual weeks. Essentially, continuing to move, even when their PMS flared up, was beneficial for their physical and emotional well-being.

**Cognitive and Behavioral Therapies**

Women with moderate to severe perimenstrual symptoms report more stressors and fewer healthy stress-coping skills. Stress research results indicate that women can change their coping methods both physiologically and psychologically. In a clinical trial testing the use of relaxation for treatment of PMS, investigators found a 58% reduction in premenstrual negative affect symptoms after 3 months of daily relaxation compared with 17% to 27% improvement in 2 control groups. Kirkby compared the effects of an experimental cognitive-behavioral coping skills training program with a nonspecific treatment (reading) or a waiting-list group in women experiencing severe PMS. The training program reduced the negative effects of premenstrual symptoms by 60%; these effects were maintained over time. In 2 studies, Van Zak demonstrated the effectiveness of biofeedback, cognitive control, and relaxation for PMS symptom relief.

In another study, learning proper breathing also reduced symptoms of anxiety. In the PMS-SMP study, this author tested a combination of behavioral and cognitive relaxation strategies and demonstrated that all women found these strategies to be somewhat to very helpful in managing their perimenstrual symptoms, as well as in managing their general stress response. Combining body relaxation strategies with cognitive stress reduction was critical for half of the women, especially during their premenstrual days. At this point in their cycle, the women felt unable to practice relaxation strategies due to uncontrollable worries, self-doubts, and critical self-talk.

Women learned muscle relaxation and meditation strategies using audiotapes—breathing, progressive muscle relaxation, and/or autogenic training (AT, or self-hypnosis). Additional relaxation and meditation strategies included guided imagery; women developed personalized, audiotaped meditations that focused on revitalization, relaxation, and self-esteem. Women identified
stressors in their relationships with family, friends, and coworkers or the time demands of home and work. They also learned strategies for managing time across the menstrual cycle and how to redefine their roles of spouse/partner, mother, friend, or coworker that ultimately reduced stress. Making these structural changes involved improved problem-solving strategies and effective communication strategies. Women with severe PMS reported “saying things that I don’t mean,” “not being able to talk because I’m crying,” or “isolating myself and not talking to anyone,” resulting in relationship conflicts and difficulties. The majority of women with severe perimenstrual symptoms practiced breathing and mind-body relaxation strategies daily for 5 to 20 minutes a day. During the premenstrual weeks, these women increased the time spent breathing or added cognitive strategies and imagery.

Through improved communication women reported feeling better about themselves and noted general improvement in their relationships. For some women, effective communication and role redefinition led to major life changes such as divorce or job change.

Another study of PMDD patients compared the effectiveness of 10 sessions of cognitive-behavioral therapy (CBT), fluoxetine dosage (20 mg/day), and combined therapy (CBT plus fluoxetine). All 3 groups showed significant improvement at 6 months, as assessed on the Calendar of Premenstrual Experiences. The investigators concluded that CBT and fluoxetine are equally effective in treating PMDD and that there appears to be no benefit to combining the treatments.

Focusing only on the woman may emphasize her role as the “victim” or as “sick.” A combination of personal and environmental change usually is necessary to reduce the effects of stress. While most stress reduction strategies have focused on managing “inner” or body stress, a number of investigators have found that environmental stressors—“outside” stress, such as interpersonal relationship stress and time pressures—were associated with increased perimenstrual symptom severity.

Social support similarly can impact perimenstrual symptoms. Women who used social support as a coping strategy experienced less severe premenstrual symptoms. While support groups have been described as helpful in relieving PMS severity, most women find peer support works best after the initiation of treatment. At the same time, Alonso and Coe reported that a loss of social support was related to an increase in menstrual symptoms.

In the clinical trial of the PMS-SMP, a combination of personal and environmental modification was found to be the most effective. Women identified stressors in their relationships with family, friends, and coworkers or the time demands of home and work. They learned strategies for managing their time across the menstrual cycle and how to redefine their roles of spouse/partner, mother, friend, or coworker in ways that ultimately reduced stress. By the end of the study, 70% of the women found these strategies helpful, and 27% found these strategies very helpful; only 6% of the women had not used role redefinition or time management strategies. This clinical trial demonstrated that environmental stress management was as important as personal stress management strategies for coping with PMS. The advantage of such a symptom management package is that the woman’s perimenstrual experiences are taken seriously within a nonpathologizing framework. This allows for the development of effective self-care strategies and preventive interventions that empower women.

**Emerging Therapies**

**Light Therapy.** A randomized, double-blind, crossover study compared the effects of dim light therapy vs bright light therapy in 14 women with PMDD during the late luteal phase over 6 menstrual cycles. Results showed that the bright white light condition significantly reduced depression and premenstrual tension scores during the symptomatic phase of the menstrual cycle, as compared with baseline ($P < .05$). On the other hand, the dim red light condition did not affect the women’s scores.

**Chasteberry (Vitex agnus-castus).** In 2 studies, the efficacy of treatment of PMS and PMDD with a proprietary chasteberry extract found positive response rates of around 90%. The incidence of adverse effects was 2% and primarily included malaise, gastrointestinal complaints, and nausea. Other studies of chasteberry capsules, tablets, or extract have found less dramatic, but statistically significant, reductions in premenstrual symptoms. Due to potential hormonal effects, chasteberry should not be used during pregnancy or breastfeeding. Also, in theory, chasteberry could potentially interfere with the action of dopamine antagonists.

**Conclusion**

Although PMS has become a popularized entity as well as a recognized ICD classification, CPPD more completely describes the actual experiences of women and encompasses the medical diagnoses of dysmenorrhea and PMS. Biomedically, PMS is defined as an illness, experience, or syndrome characterized by the repeated occurrence of behavioral, somatic, and mood symptoms. These symptoms are severe enough to impair a woman’s social and work-related functioning during the premenstrual phase of her menstrual cycle. PMDD, a severe form of PMS and controversial label, is defined as a psychiatric diagnosis, while PMM refers to the premenstrual magnification of an underlying medical or psychiatric condition.

CPPD encompasses 3 diagnoses; each diagnosis represents a cluster of symptoms supported by empiric research. Identifying the severity and patterns of these symptom clusters provides a guide for determining...
whether a woman has cyclic or chronic perimenstrual pain, mild or severe perimenstrual physical or mood discomforts, PMM, severe PMS, or a dual diagnosis. Prospective symptom self-monitoring using tracking charts or calendars, combined with menstrual and health history data, will provide additional diagnostic clues.

According to the evidence-based clinical guidelines from ACOG and AWHONN, good quality evidence recommends multimodal symptom management as the first-line treatment for cyclic perimenstrual physical and mood discomforts or mild to moderately severe PMS. This includes symptom monitoring, dietary counseling, nutritional supplements, personal and environmental stress management, and exercise promotion. For patients with severe PMS, fair to good evidence supports the use of selective pharmacologic therapy, such as SSRIs, antiestrogens, or selective serotonin reuptake inhibitors (SSRIs). Inconsistent evidence also exists for other pharmacologic therapies such as hormonal or singular therapies.

Multimodal symptom management has been shown to be as effective as medical therapy for PMS, without the side effects. Establishing healthy dietary and exercise habits, along with personal and environmental stress management for perimenstrual symptom management, may lead to lifelong improvements in health behaviors that result in chronic disease prevention as well as minimize perimenstrual symptoms.

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