

## PMS Summary Sheet

### Background

- Premenstrual symptoms have been recognized since antiquity. However, it wasn't until 1931 that the term premenstrual syndrome (PMS) first appeared in the medical literature.
- Surveys estimate that 30% to 85% of women report at least one premenstrual symptom during each menstrual cycle. In its milder form, PMS is estimated to affect approximately 40% of women of reproductive age; in its most severe form, it affects roughly 2.5% of women in this age group. In 2% to 10% of cases, symptoms are significant enough to cause disruption in family, personal, or occupational function.
- Between 3% and 8% develop a severe type of PMS termed premenstrual dysphoric disorder (PMDD), primarily characterized by severe irritability, unprovoked anger, anxiety, and/or depression.

### Definition

- PMS is characterized by a wide range of symptoms that recur in the luteal phase of the menstrual cycle and that cease soon after menstruation commences.

### Causes and Contributing Factors

- The precise etiology of PMS remains unknown; however, there are many proposed theories.

- **Hormonal differences:** It appears PMS might not be a hormonal problem directly, but yet another powerful example of psycho-neuro-immuno-endocrinology at play.
- **Neurotransmitter changes:** A recent hypothesis on the physiologic origins of PMS is that symptoms are related to central neurotransmitter changes occurring in response to normal fluctuations in hormone levels. It is hypothesized that women may have a greater susceptibility to changes in central neurotransmitters resulting from normal cyclical changes in sex steroids.
- **Serotonin:** The largest body of evidence suggests that serotonin (5-HT) is the major neurotransmitter involved in PMS and PMDD, and that progesterone may be a key mediator of PMS.
- **HPA axis dysregulation:** Disruption of the hypothalamic-pituitary-adrenal axis has also been recently proposed as a likely cause of PMS and PMDD, and is an interesting and promising theory.
- **Inflammation:** Excessive and incorrect prostaglandin (PG) synthesis has been implicated as a cause of PMS, and a deficiency of prostaglandin E1 (PgE1) at the central nervous system has been proposed to be involved in PMS. There are many nutrients important for the synthesis of PgE1. These include magnesium, linoleic acid, vitamin B6, zinc, vitamin C, and vitamin B3.
- **Diet:** Women who have PMS typically have dietary habits that are worse than the standard American diet, including consumption of more refined carbohydrates, refined sugar, dairy products, coffee, and sodium, and less protein, iron, manganese, and zinc, compared to women who do not have PMS. Research has found an inverse relationship between dietary riboflavin and thiamine and PMS and that women with PMS are more likely to have nutrient deficiencies, especially vitamin B6, vitamin E, vitamin A, calcium, and magnesium.
- **Hypothyroidism:** Low thyroid function (hypothyroidism) has been shown to affect a large proportion of women with PMS.

- **Sedentary lifestyle:** Several studies have shown that women engaged in a regular exercise program do not suffer from PMS nearly as often as sedentary women.
- **Environmental factors**
- **Stress:** Current relationship/marital/sexual difficulties; poor coping skills; workplace stress, etc.
- **Psychosocial factors:** e.g., negative attitudes about menstruation, sense of personal disempowerment or low self-esteem, history of sexual abuse
- **Cultural factors:** negative attitudes about menstruation, cultural expectation that menstruation is accompanied by unpleasant symptoms
- **Natural mood flows and ebbs**
- **Not getting needs met:** need for quiet self-care – incongruent with external social demands and expectations

## Symptoms

- Wide ranging affective and somatic symptoms during the 5 days before menses in each of 3 prior menstrual cycles, and relieved within 4 days of menses onset, including: abdominal bloating and discomfort, breast tenderness, pelvic discomfort, abnormal or increased appetite (including carbohydrate craving), weight gain, fluid retention, anxiety, confusion, headache, mood swings, angry outbursts, depression, irritability, tearfulness, social withdrawal, fatigue, altered libido

## Treatment

### *Conventional medicine approach:*

- The medical treatment of PMS and PMDD includes OCs and other hormonal treatment strategies, NSAIDs, SSRIs, bromocriptine, antidepressants, and diuretics, concentrating on symptom relief with specific symptom-related drug treatments.
- Most of these methods have failed to demonstrate definitive benefits over placebo, with the exception of antidepressants (particularly SSRIs) and GnRH and other ovulation suppressants, which have demonstrable benefit.

### *Functional and integrative medicine approach:*

#### *Diet:*

- Dietary modifications may play a significant role in improving PMS symptoms.
- **Adequate nutrition:** Research has found that women with PMS are more likely to have nutrient deficiencies, especially vitamin B6, vitamin E, vitamin A, calcium, and magnesium. Adequate nutrition can improve stress response. In spite of the lack of literature demonstrating efficacy of many of the dietary changes commonly recommended for PMS, strategies such as improving fiber intake, reducing harmful fats, improving the intake of good-quality fats, proteins, fruits, and vegetables, and ensuring proper nutrient intake are all beneficial health practices and seem wise to recommend.
- **Reducing caffeine intake:** Many practitioners recommend the reduction of caffeinated products in PMS susceptible women. Many women self-report that a reduction in coffee consumption improves their symptoms.
- **Reducing sugar intake:** Heavy sugar consumption may increase sodium and water retention, and increase magnesium excretion. Blood sugar imbalances as

a result of high sugar consumption can also negatively affect mood and lead to further sugar cravings.

### **Lifestyle:**

- **Exercise:** Regular, moderate exercise improves mood and feelings of well-being. Study results are consistent with the belief that women who exercise frequently (but not competitive athletes) are protected from PMS symptoms. In particular, regular exercise protects against the deterioration of mood before and during menstruation. Women with PMS who exercise regularly and frequently have fewer symptoms than women who do not exercise. High exercisers experience fewer behavioral and mood changes, better concentration, and less pain. Aerobic exercise may help the physical symptoms of PMS. Frequency of exercise, rather than intensity, appears more significant in prevention and alleviation of physical and psychoemotional symptoms. Regular exercise also may increase a woman's sense of personal control and self-esteem, also shown to lead to a reduction in symptoms.
- **Quiet self-care:** Giving the permission to be self-compassionate and more introspective and feel how one feels during this time should be considered. Adequate rest can improve stress response.

### **Botanicals:**

- **Vitex (chasteberry):** Chaste tree increases secretion of luteinizing hormone, and increases both progesterone, and mildly, estrogen. Clinical trial evidence suggests efficacy of chaste berry extract for PMS symptoms. Chaste berry is approved by the German Commission E for irregularities of the menstrual cycle, PMS, and mastodynia. Dose: Standardized extract (0.5% agnuside): 175 to 225 mg a day or 20 mg standardized to casticin; Liquid extract: 2-10 mL/day.
- **St. John's wort:** St. John's wort is prescribed for depressive symptoms of PMS or for PMDD. Trials have shown favorable results in depression, and St. John's

wort has been compared favorably with both placebo and other antidepressants. Antidepressant drugs for PMS are increasingly prescribed during the luteal phase of the cycle only; however, St. John's wort seems to be more effective when taken all month. Dose: 300 to 600 mg standardized extract (0.3% hypericin content) TID.

- **Ginkgo:** Some studies show a reduction in some PMS symptoms with ginkgo. Constituents may play a role in anti-inflammatory effects, antioxidant effects, or vascular smooth muscle relaxation. Further evaluation is needed to determine whether there is an important role for ginkgo in the treatment of these PMS symptoms. Dose: 80 to 160 mg standardized extract (24% ginkgoflavonglycosides) twice daily.
- **Curcumin:** In one study, after three consecutive cycles treatment with curcumin (100 mg curcumin in capsules BID for seven days before menstruation and for three days after menstruation), total severity of PMS score had reduced from 102.6 to 42.47 (mean change of 59.59) vs. in the placebo group, total severity of PMS score changed from 106.06 to 91.60 (mean change of 14.45). Mechanisms of curcumin may include HPA axis modulation, reduction in inflammatory prostaglandins, and impact on serotonin and dopamine. Dose undesignated in studies – use doses consistent with depression lesson.
- **Saffron:** Saffron has recently emerged as an effective antidepressant in women with mild to moderate depression mediated by serotonergic effects. In a double-blind placebo-controlled trial on saffron (15 mg twice daily) for alleviating PMS symptoms, 19 of the 25 women in the saffron group responded with at least a 50% reduction in severity of symptoms vs. only 2 of 25 in the placebo group. A statistically significant difference between the saffron and placebo groups occurred between the third and fourth cycles and was statistically significant by the end of the study.
- **Lavender:** Lavender is an excellent herb for the anxiety, irritability, insomnia, and depression that accompany PMS. The essential oil constitutes 1% to 3% of

the active components and has been shown to elicit feelings of happiness. The German Commission E Monograph states the indications for lavender as mood and sleep disturbances, restlessness, and intestinal conditions of nervous origin. It can be taken as a tea or tincture, or the essential oil indirectly inhaled through a diffuser, in a bath, via application to a pillow on which the patient will sleep, or diluted for use in a massage oil.

- **Motherwort:** Motherwort was used by the Eclectics, and continues to be used by herbalists today for the treatment of nervous exhaustion, irritability, hysteria, and nervous excitability. It is used clinically for the treatment of dysmenorrhea, and also has mild cardiotoxic action, effectively reducing palpitations. Motherwort's combined actions make it a useful addition to PMS formulae, particularly when there is emotional lability and irritability, and if there is accompanying pain. It has a good safety profile. Due to its bitter taste, it is typically taken in tincture form. The German Commission E approves motherwort for nervous cardiac disorders. Dose: 1-4 mL up to TID.
- **TCM botanicals:** When it comes to the treatment of PMS in the clinic, many herbalists turn to the use of TCM, which offers a unique perspective on possible etiologies and treatment. Although TCM prescribing is always based on physical examination and determination of the specific imbalances of the individual, several classic formulas may be more generically applied, such as Xiao Yao Wan (Free and Easy Wanderer; containing *Bupleurum falcatum*, *Angelica sinensis*, *Paeonia lactiflora*, *Atractylodes macrocephalae*, *Poria cocos*, *Glycyrrhiza uralensis*, and *Zingiber officinalis*) and Angelica-Peony-Rehmannia Decoction (containing *Angelica sinensis*, *Paeonia lactiflora*, *Rehmannia glutinosa*, *Dioscorea oppositae*, *Fructus Cornii officinalis*, *Alismatic orientalis*, *Moutan radiceis*, *Poria cocos*, *Citrus reticulata*, *Bupleurum falcatum*, and *Albizia julibrissin*). See Safety of Herbal Medicine for precautions with TCM patent medicines.

- **Herbs for HPA axis support:** Treatment for women who develop PMS might include adaptogens, nervine tonics, and anxiolytic herbs to counteract the adverse effects of stress on the nervous system.
- **Other botanicals for sleep, anxiety, and depression**

### **Supplements:**

- **Vitamin B6 (pyridoxine):** Most studies have shown a significant and wide range of effect of vitamin B6 in improving PMS symptoms. In Europe, vitamin B6 supplementation is an accepted treatment. Vitamin B6 is prescribed for PMS symptoms based on the rationale that it demonstrates positive effects on the neurotransmitters serotonin, epinephrine, histamine, dopamine, and taurine. Vitamin B6 is thought to be unique in its ability to increase the synthesis of several neurotransmitters in the brain including serotonin and dopamine. Positive effects have been observed in most trials for PMS with vitamin B6 doses ranging from 50 to 600 mg daily or when vitamin B6 (300 mg) is given in conjunction with other nutrients and a healthy diet. Sensory neuropathy is possible with prolonged high dosing; practitioners should be aware of this possibility and inform their patients of toxicity symptoms.
- **Magnesium:** Magnesium supplementation may improve PMS symptoms such as PMS-related pain. Magnesium is known to also promote muscle relaxation. Dose: 300 to 900 mg/day.
- **Calcium:** Calcium carbonate, 1,200 mg per day in divided doses, has been found in two controlled studies to reduce PMS symptoms.
- **Tryptophan:** There are some indications that premenstrual food cravings might be an attempt to increase the plasma ratio of tryptophan to other amino acids in order to improve symptoms via an increased central serotonergic activity. There is also limited support (one placebo-controlled trial) for L-tryptophan, 6 g/day, from ovulation until day 3 of menses for the treatment of PMDD. In addition, researchers have observed a reduction in premenstrual symptoms

when women are given a dietary supplement that selectively increases tryptophan levels. Dietary changes that can be reasonably expected to achieve a similar result include increased frequency of smaller volumes of food; no sugar or refined carbohydrates; regular complex carbohydrate and protein intake at each meal with increased consumption of fish, legumes, eggs, lean meat, and/or low-fat yogurt.

- **EFA:** Many practitioners use evening primrose oil (EPO) for PMS believing that its effects on reduction in inflammatory prostaglandins (PGE1) may improve PMS symptoms. High quality clinical trial evidence of efficacy is lacking. It is typically recommended at a dose of 2 to 3 g/d. Dietary or supplemental omega-3 essential fatty acids, generally in the form of fish oils, are beneficial in depression and doses of up to 4,000 mg daily are advisable.

#### ***Mind-body and manual therapies:***

- **Yoga:** Research evaluating the effectiveness of specific yoga postures in relieving PMS symptoms found improvement in self-reported menstrual distress.
- **Massage:** Research evaluating the effects of massage therapy for PMS found some improvement in symptoms. Massage therapy has been demonstrated to reduce stress, so for women with a high stress component to their PMS symptoms or musculoskeletal discomforts, regular massage may be beneficial.
- **Cognitive therapy:** Research on cognitive therapy suggest that it is superior to a wait list (control) for improving premenstrual psychological and physical symptoms and functioning. Cognitive therapy was also found to be superior to group awareness and information-focused therapy.
- **Relaxation:** Eliciting the relaxation response is a safe, and nonpharmacologic intervention in the treatment of PMS. Women with PMS improved with progressive muscle relaxation in conjunction with guided imagery.

- **Reflexology:** An interesting study of the use of foot, ear, and hand reflexology showed that those women who received pressure to actual reflex points responded significantly better than the women who were given treatment of incorrect reflex points.
- **Acupuncture:** Acupuncture may be helpful to relieve the severity of PMS.

#### **Additional Information/Clinical Pearls**

- The defining factor in making a PMS (or PMDD) diagnosis is the appearance of symptoms in the luteal phase and their resolution with the onset of the menses.
- It is essential to rule out other mental and physical conditions.
- It should be remembered that whether a woman meets the criteria for a PMS or PMDD diagnosis is somewhat arbitrary. Lack of a diagnosable case should not be reason to invalidate a woman's experience of premenstrual symptoms and difficulties, nor should it be justification for withholding beneficial therapies.
- Women presenting with symptoms who do not meet diagnostic criteria should be offered follow up care, particularly in the case of possible PMDD.