

# Assessment and management of PMS and PMDD in the adolescent

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**Intended audience:** This continuing education (CE) activity has been designed to meet the educational needs of nurse practitioners and other healthcare providers who provide primary care for adolescents.

**CE approval period:** Now through December 31, 2023

**Estimated time to complete this activity:** 1 hour

**CE approval hours:** 1.0 contact hour of CE credit including 0.25 contact hours of pharmacology content

**Goal statement:** Nurse practitioners and other healthcare providers who provide primary care for adolescents will increase their knowledge about diagnosis and both nonpharmacologic and pharmacologic management of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD).

**Needs assessment:** PMS and PMDD commonly occur in the adolescent population, with over 20% of menstruating teenagers being affected. These conditions can affect quality of life but often are unrecognized and undertreated by healthcare providers. Knowledge about signs/symptoms, diagnostic criteria, and appropriate assessment are needed for timely diagnosis. Knowledge about evidence-based nonpharmacologic and pharmacologic management are needed to develop a plan of care that will be individualized, effective, and that will increase adolescents' confidence in managing their menstrual and overall health.

**Educational objectives:** At the conclusion of this educational activity, participants should be able to:

1. Identify diagnostic criteria and appropriate evaluation of the adolescent for PMS/PMDD.

2. Discuss recommended nonpharmacologic therapies for adolescents with PMS/PMDD.
3. Describe indications, mechanism of action, efficacy, adverse effects, and contraindications for pharmacologic options in treating adolescents with PMS/PMDD.

**Accreditation statement:** This activity has been evaluated and approved by the Continuing Education Approval Program of the National Association of Nurse Practitioners in Women's Health (NPWH) and has been approved for 1 contact hour CE credit, including 0.25 hours of pharmacology credit.

**Faculty disclosures:** NPWH policy requires all faculty to disclose any affiliation or relationship with a commercial interest that may cause potential, real, or apparent conflict of interest with the content of a CE program. NPWH does not imply that affiliation or relationship will affect the content of the CE program. Disclosures provide participants with information that may be important to their evaluation of an activity.

**Casey S. Hopkins, PhD, RN, WHNP-BC**, has no actual or potential conflicts of interest in relation to the contents of this article.

**Bianca A. Forte, MSN, WHNP-BC**, has no actual or potential conflicts of interest in relation to the contents of this article.

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To participate in this CE program, click [here](#)<sup>A</sup>.

**Successful completion of the activity:** Successful completion of this activity, J 21-06, requires participants to do the following:

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2. Read the learning objectives, disclosures, and disclaimers on the next page and then click on the "Continue" button.
3. Study the material in the learning activity during the approval period (now through December 31, 2023).

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**P**remenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) commonly occur in the adolescent population, with over 20% of girls being affected. Symptoms of PMS and PMDD may overlap with normal physiologic and emotional development during adolescence as well as with other common gynecologic problems such as dysmenorrhea. Consequently, PMS and PMDD often are underrecognized and undertreated in adolescents. The purpose of this article is to update nurse practitioners who provide care to adolescents on the assessment and timely diagnosis and treatment of PMS and PMDD so that girls may have greater control and confidence in managing their reproductive health and more positive health outcomes overall.

**KEY WORDS:** premenstrual disorders, adolescents, premenstrual dysphoric disorder, premenstrual syndrome, teenagers, reproductive health

It is estimated that more than 20% of adolescent girls experience a moderate-to-severe variant of premenstrual syndrome (PMS). Given the limited research examining premenstrual disorders in the adolescent population, however, these conditions are likely underrecognized and undertreated.<sup>1</sup> PMS is a cluster of physical and mood-related changes that occur each month during the luteal phase of the menstrual cycle, that is, the days leading up to the menstrual period. The symptoms may include but are not limited to headache,

bloating, irritability, crying spells, depressive mood, anxiety, social withdrawal, breast tenderness, fatigue, and generalized body aches and pain. A more comprehensive list of PMS symptoms is included in the *Table*. The onset of PMS can occur any time after menarche. The average age of menarche in the United States is 12.8 years, but it can occur between the ages of 9 and 16 years.<sup>2</sup> Although symptoms tend to peak when women are in their late 20s or early 30s, most women report having symptoms for up to 10 years before seeking treatment and recall

symptoms starting during the teen years.<sup>3</sup>

When symptoms of PMS are severe and have a significantly negative impact on relationships or normal activities such as work or school, a diagnosis of premenstrual dysphoric disorder (PMDD) may be considered. PMDD is included in the depressive impairment category of the *Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (DSM-V)* and is characterized by symptoms such as depression, anxiety, marked emotional lability, anger, low self-esteem, and loss of interest in daily activities.<sup>4</sup> Not all adolescent girls with PMS will have PMDD, but girls with PMDD will always experience symptoms associated with PMS.<sup>4</sup> PMS and PMDD are often collectively addressed in the literature as premenstrual disorders (PMDs).

Historically, PMDs have been underdiagnosed in adolescents because many of the symptoms overlap with dysmenorrhea and also because diagnosing mood disorders associated with menses can be complicated when symptoms are reported retrospectively and may overlap with other mental health conditions.<sup>1</sup> It is important to note that an adolescent may experience

**Table.** Common symptoms of PMS<sup>1,9,10,12</sup>

Emotional symptoms	Physical symptoms
Depression	Thirst and appetite changes (food cravings)
Angry outbursts	Breast tenderness
Irritability	Bloating and weight gain
Crying spells	Headache
Anxiety	Swelling of the hands or feet
Confusion	Aches and pains
Social withdrawal	Fatigue
Poor concentration	Skin problems
Insomnia	Gastrointestinal symptoms
Increased nap taking	Abdominal pain
Changes in sexual desire	

dysmenorrhea with or without PMS, but research has shown that girls with dysmenorrhea are at higher risk for anxiety and depression and, as the severity of dysmenorrhea increases, the incidence of PMS/PMDD increases.<sup>5</sup> Another reason for the underdiagnosing of PMS/PMDD in the adolescent may be associated with healthcare providers feeling uncomfortable about treating mood disorders in the adolescent population.<sup>5</sup> Avoidance of health-related issues due to the provider's personal bias or discomfort in treating or managing adolescent patients creates disparities for this age group. Healthcare providers caring for adolescents should guide the visit using an age-appropriate assessment tool such as HEADSSS [Home, Education/Employment, Activities, Drugs, Sexuality, Suicide/depression, Safety], which includes talking about mental and sexual health.<sup>6</sup>

According to the most recent reports from the Centers for Disease Control and Prevention Youth Risk Behaviors Survey, adolescents are more depressed and anxious than they have ever been.<sup>7</sup> In 2009, 26.1% of high school students reported

experiencing persistent sadness and hopelessness. This number has continued on an upward trajectory, with 36.7% reporting those persistent feelings in 2019.<sup>7</sup> Contributing factors to increased depression among adolescents may include socioeconomics, use of social media, political and societal unrest, and the Covid-19 pandemic and its many consequent implications such as social isolation, anxiety about illness, and interrupted connectedness to school.<sup>7,8</sup> In April of 2020, the number of emergency department (ED) visits for mental health-related emergencies increased 31% among adolescents age 12 to 17 years as compared to the ED visits during the previous year, with female adolescents being disproportionately affected.<sup>8</sup> Regardless of the cause, our youth are at risk for mood disorders. As a result, one Healthy People 2030 goal is to increase depression screening among adolescents. This underscores why nurse practitioners responsible for assessing the gynecologic health of adolescent girls should always include a discussion about the presence of mood symptoms associated with menses in the

health history. Discussing menstrual cycle-related mood symptoms provides an opportune time during the visit to complete depression screening. It is also important to consider what the next step will be when a patient explains that she has symptoms of PMS.

## Diagnosing PMS and PMDD in the adolescent

To make a diagnosis, PMS symptoms must be tracked and recorded prospectively for at least two menstrual cycles. There are no specific findings on the physical exam useful for diagnosing PMS, and generally laboratory and other diagnostic testing is not needed for diagnosis.<sup>1,9,10</sup> However, it is important to consider underlying conditions that may cause PMS-like symptoms and utilize diagnostic tests as necessary to rule out differential diagnoses. For example, if a patient reports having significant thirst, increased appetite, and weight gain with her menstrual cycle it would be prudent to rule out potential endocrine etiologies.<sup>1,9,10</sup> The diagnostic criteria for PMS from the American College of Obstetricians and Gynecologists (ACOG) are provided in *Box 1*.<sup>10</sup> A diagnosis of PMDD can be made using the criteria set by the American Psychiatric Association in the DSM-V (*Box 2*).<sup>11</sup>

When an adolescent complains of PMS-like symptoms, the nurse practitioner should document in the progress note the symptoms reported by the adolescent and should also screen for depression using a simple tool such as the PHQ-2 to ensure patient safety. If the adolescent scores high on the depression screening, she should be further evaluated for depression and suicidal risk and managed or referred as necessary. If there are no concerns for immediate intervention for the adolescent's mental health, it is appropriate to ask

### Box 1. ACOG diagnostic criteria for PMS<sup>10</sup>

#### At least one of the common PMS symptoms must:

- Be present in the 5 days before the period begins for 2 or 3 menstrual cycles in a row;
- End within 4 days after the period begins; and
- Interfere with normal activities to some extent.

the patient to record her symptoms over the next two menstrual cycles and schedule a follow-up visit to discuss her records. Symptoms can be tracked easily by keeping notes on a calendar or journal.

Alternatively, there are online tools and applications that may provide a more robust and precise account of the symptoms. One example of a chart that allows for daily symptom tracking was created by the International Association for Premenstrual Disorders (IAPMD) and may be accessed using this link: [iapmd.org/toolkit](http://iapmd.org/toolkit)<sup>B</sup>. What may be even better than a paper chart for tech-savvy adolescents is a symptom tracking application that can be downloaded to a smartphone. Another resource from the IAPMD is the “Me v PMDD” application, which guides subscribers through daily reporting of PMD symptoms (Figure).

So, when an adolescent patient returns with records meeting the diagnostic criteria for PMS or PMDD, it is time to consider how to begin making a treatment plan.

### Treatment options

Premenstrual disorders can be complex, multifaceted, and chronic in nature. It is essential for nurse practitioners to consider a holistic, multiple strategy approach to aid in symptom management and improvement in overall wellbeing. In an effort to decrease the disease burden of PMDs, patients must be appropriately di-

### Box 2. DSM-V criteria for PMDD<sup>11</sup>

#### To make a diagnosis of PMDD:

At least one of the following core symptoms must be present:

- Emotional lability (ex. mood swings)
- Depressed mood
- Irritability/anger
- Anxiety

One or more of the common PMS symptoms (not including the core symptoms above) must be present to reach a total of at least 5 symptoms.

Symptoms recorded 2 months prospectively and are at a level of severity that causes clinically significant distress or impacts daily activities such as school and work or relationships with others.

agnosed and receive management with both nonpharmacologic and pharmacologic options.

### Nonpharmacologic options

Nonpharmacologic management should begin with a patient-centered approach, including the adolescent, her primary caregivers, and the nurse practitioner. First-line therapy includes education, supportive therapy, and behavior change.<sup>12</sup> Providing education on the menstrual cycle, including physiology, and hormonal changes and associated signs and symptoms can better help teens normalize their menstrual experience.<sup>1</sup> With proper education, adolescents are able to distinguish abnormal symptoms and seek care when they need it.<sup>1,12</sup>

Supportive therapy includes stress management, relaxation techniques, and symptom management. Stress management may include relaxation techniques through yoga, mindfulness, meditation, or aerobic exercise.<sup>1,9</sup> Several helpful smartphone applications are available to assist adolescents with stress management such as Calm, Breathe, and Headspace. These applications offer basic services free of cost and include the option to purchase a more-enhanced subscription.

Nonpharmacologic options for symptom management may include

thermotherapy with heating pads, patches, or hot baths/showers, and the use of mineral and vitamin supplements.<sup>1,9,13</sup> Supplementing with 1,200 mg of calcium carbonate daily in a divided dose has been widely studied and is recommended to decrease mood and somatic symptoms associated with PMDs.<sup>1,9,13,14</sup> Other studies have evaluated the efficacy of vitamins D, B6, E, and magnesium in reducing symptoms, but more data are needed to recommend treatment with these supplements in adolescents.<sup>9,13</sup> Similarly, the use of alternative and complementary

**Figure.** Me v PMDD symptom tracker app by International Association for Premenstrual Disorders available for IOS and Android



treatments such as active bright light therapy, transcutaneous electrical nerve stimulation (TENS), acupuncture, and other herbal therapies have been explored in small studies, but more data are required to create generalizable recommendations for PMS/PMDD symptoms management with these therapies.<sup>9,12,13,15-17</sup>

Finally, the use of behavior change practices such as cognitive behavior therapy can assist in management, helping to identify and correct negative thoughts or ideas associated with menstrual-related symptoms. This method can aid adolescents in learning how to better adapt and respond to physiologic changes associated with PMDs.<sup>1,9,14,16</sup>

### Pharmacologic options

Used in conjunction with nonpharmacologic therapy, pharmacologic management including nonsteroidal anti-inflammatory drugs, combined oral contraceptives (COCs), selective serotonin reuptake inhibitors (SSRIs), and/or gonadotropin-releasing hormone (GnRH) agonists has proved effective for the treatment of PMS and PMDD.<sup>1,9,13,14</sup> Some PMS/PMDD symptoms may be managed with the preemptive use of nonsteroidal anti-inflammatory drugs such as ibuprofen and naproxen sodium, other over-the-counter pain med-

ications like acetaminophen and various combination drugs such as acetaminophen/pamabrom/pyrilamine.<sup>12</sup> Given that PMS/PMDD symptoms occur during the luteal phase of the menstrual cycle in response to the luteinizing hormone (LH) surge and hormonal response, COCs are highly effective at treating symptoms due to their ability to suppress ovulation. Additionally, COCs can improve menstrual flow and regularity, dysmenorrhea, and acne breakouts, which are often bothersome to the adolescent. COCs may be prescribed in a cyclic extended dose or continuous regimen, but longer active pill administration has proved most effective in PMDD symptom control.<sup>2,16,18</sup> A COC with 0.02 mg of ethinyl estradiol and 3 mg of the progestin drospirenone was approved by the US Food and Drug Administration for the treatment of PMDD in 2006.<sup>1</sup> This regimen provides the user with three additional active pills and four placebo or nonhormonal pills, further inhibiting follicular development.<sup>1</sup> Drospirenone is indicated due to its antiandrogenic and antiminer- alocorticoid features, although FDA cautions users of an increased venous thromboembolism (VTE) risk.<sup>2</sup> Compared to nondrospirenone COC use, users are at a 1.5-fold increased

risk of VTE development, with the greatest risk in the first 3 months of use. To understand this more clearly, the risk of VTE when using other COCs is 6 in 10,000 women, and when using drospirenone containing COCs, the risk is 10 in 10,000 women.<sup>1</sup> As with all COC initiation, a focused history should be obtained to screen for increased VTE risk and education should be provided on VTE warning signs and symptoms. Although this adverse effect is a serious concern, the benefits of the drospirenone COC outweigh the risk in otherwise healthy adolescents suffering with PMDs.

In addition to hormonal support, antidepressants (specifically SSRIs) have proven efficacy and are considered a treatment of choice in adolescents with severe PMDs.<sup>1,9,16</sup> These agents increase the availability of serotonin, the neurotransmitter responsible for mood modulation. Sertraline, fluoxetine, and paroxetine are the only FDA-approved agents for PMDD, although citalopram and escitalopram are also effective in PMDD management.<sup>2,19,20</sup> Of these medications, fluoxetine and escitalopram are the only SSRIs approved by FDA for depression in the adolescent (fluoxetine for children age 8 years and older and escitalopram for children age 12 years and older).<sup>20</sup> Dosing either should be intermittent (during the luteal phase only) or continuous, and the choice depends on effectiveness and ability to adhere to the regimen.<sup>1</sup> Intermittent dosing includes administration at mid cycle or suspected ovulation until 1 to 2 days after the start of menses. If symptoms persist beyond the luteal phase or if the SSRI intermittent regimen presents adherence challenges, continuous dosing may be more favorable. Adolescents should begin treatment with fluoxetine at 10 to 20 mg daily.<sup>1</sup> If this agent is not effective as an intermittent regimen after a 2-month trial, continuous



administration should be pursued. If fluoxetine is deemed ineffective or if poorly tolerated, another SSRI (eg, escitalopram, sertraline, paroxetine, citalopram) can be tried. Caution should be taken when alternate agents are utilized in the adolescent population. Teens should be monitored closely throughout the first 3 months of use for increased suicidal thoughts or ideas.<sup>2,20</sup>

Finally, the use of GnRH agonists has been studied in various trials for PMS/PMDD treatment in adults, but studies are lacking in the adolescent population.<sup>9,16</sup> GnRH agonists suppress the release of luteinizing and follicle-stimulating hormone, inhibiting the release of estrogen and progesterone.<sup>2</sup> Therefore, use of this agent produces a menopausal-like state and is reserved for those who have failed therapy with SSRIs and COCs. Use in adolescents is limited due to the agent's permanent effects on bone mineral density, cardiovascular function, and vaginal health.<sup>21</sup> Using GnRH agonists can be unfavorable in adolescents who have not yet reached peak bone mineral density. In studies on the use of GnRH agonists in adolescents with dysmenorrhea, endometriosis, and pelvic pain, recommendations have been to delay treatment until age 16 or 18 years to ensure the majority of bone development has occurred.<sup>21,22</sup> When other viable treatment options fail, GnRH agonists such as leuprolide or goserelin may be considered for use in the adolescent over the course of 1 year when given along with estrogen or progestin add-back therapy.<sup>1,21,22</sup>

## Implications for practice

PMS and PMDD are common disorders among adolescents that can significantly impact quality of life and in the case of PMDD can be very debilitating. Given the stressors already associated with adolescence

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(such as concern for body image and peer relationships) and the ever-increasing risk of depression among this age group, screening for PMS and PMDD among menstruating adolescent patients is an important part of providing comprehensive, holistic care for this population.<sup>7</sup>

What is most important is a willingness to ask questions. Ask adolescent patients if they have symptoms of PMS and PMDD. Offer a method for symptom tracking to them, encourage prospective recording of symptoms for 2 months, and plan to follow up. In the case of severe symptoms, it is acceptable to make an initial diagnosis based on the patient's (and/or her primary caregiver's) retrospective report and implement treatment if it is in the patient's best interest to begin treatment immediately. Consider the first-line treatments: nonpharmacologic methods such as healthy lifestyle changes and cognitive behavioral therapy, oral contraceptive pills in a cyclic or continuous regimen, or low-dose SSRIs continuously or during the luteal phase of the menstrual cycle. Regardless of which treatment options are implemented, providing education on PMS and PMDD symptoms and the nature of the menstrual cycle is imperative in supporting the adolescent. When adolescents know what is normal and expected with their changing bodies, they are empowered to be an active participant in their healthcare

and feel more confident communicating with their parents, caregivers, or healthcare providers when they have a health-related concern. ■

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- A. [npwh.org/courses/home/details/1636](http://npwh.org/courses/home/details/1636)
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