Just mention those three little letters—PMS—and you’re bound to get a reaction. Women nod in sympathy; men cringe at the thought. Everyone seems to know someone whose moods go through a “Jekyll and Hyde” type of transformation during that time of the month.

But the emphasis on PMS and its effects on a woman’s moods seems blown out of proportion, especially in light of the fact that a woman’s life is a continuum of hormonal upheavals that affect her moods. From puberty through postmenopause, women experience a continuous cycle of hormonal fluctuations that affect brain chemistry and, therefore, their moods.

This physiological fact of life may partially explain why “depression and anxiety disorders are 2–3 times more common in women than in men,” a worldwide, cross-cultural phenomenon, according to Dr. Elizabeth Lee Vliet. This is a serious issue, which demands that we look beyond the all-too-common jokes about PMS to get a better understanding of how hormones affect a woman’s emotional health and well-being, throughout her lifetime.

**Puberty**

Most children exhibit some symptoms of anxiety and moodiness during puberty. As most parents of young teenagers know, adolescents can be irritable or withdrawn, and may have poor concentration and trouble sleeping. However, the changes in behavior are typically more extreme for young girls, especially as they begin to menstruate, when the stress they feel is heightened by the hormonal changes.

Parents should be especially vigilant of their children’s emotional health during puberty. If not dealt with properly, childhood trauma can become encoded into the brain’s biochemistry and reemerge later as a serious depression or an inability to cope with stress.

**PMS / PMDD**

No discussion of moods and hormones would be complete without mentioning premenstrual syndrome (PMS), now sometimes called premenstrual dysphoric disorder (PMDD). This condition is generally described as a noticeable tension just before menstruation, which disappears once menstruation begins. For some, this tension is nearly debilitating, seriously affecting their ability to cope with daily life. In fact, Dr. Katharina Dalton, who pioneered the treatment of PMS over 40 years ago, reports that...
approximately half of all women’s suicide attempts are made during the four days just prior to menstruation, or during the first four days of menstruation.

PMS/PMDD typically involves a combination of intense tiredness, irritability, and depression, which is easily aggravated by any other stress. During this time, many women become weepy, have difficulty making decisions, feel a drop in their physical and mental abilities, and quickly snap at those around them.

In addition, women who already suffer from a mood disorder report that their symptoms worsen just prior to menstruation and, if they are taking any medications for it, the effectiveness of the medications is decreased or diminished.

Although still not yet fully understood, researchers and medical practitioners now agree that PMS/PMDD is a very real phenomenon, and that it is the result of a complex biochemical/hormonal fluctuation that affects women on a physical, behavioral, and emotional level.

**Birth Control Pills**

Even a woman’s choice regarding contraception may affect her moods. Dr. Gabriel Cousens reports that “as many as one in three women on birth control pills suffers from depression.” The hormones in birth control pills affect the brain’s biochemistry in many ways, producing emotional effects as well as the desired physical effects. According to Dr. Cousens, women who take birth control pills also often have nutritional deficiencies that may compound the effects on their moods.

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**Other Common Prescription Medications**

Some commonly prescribed medications are also known to have mood disorder side effects, including blood pressure medications, prednisone, diazepam (Valium®), triazolam (Halcion®), cimetidine (Tagamet®), and even bupropion (Wellbutrin®)—which is actually prescribed for depression!

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**Fertility Medications**

On the flip side of the contraceptive issue, an increasing number of women in the US are experiencing problems conceiving. In response, powerful medications that stimulate the ovaries to produce an overabundance of eggs are now available. But these medications can also affect moods and enhance the anxiety of the situation, because of how they affect the brain’s biochemistry.

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**Pregnancy**

Hormonally speaking, there is no doubt that pregnancy is one of the most volatile times in a woman’s life. The combination of hormonal changes and imminent lifestyle changes wreaks havoc on most women’s moods and emotions.

During the first few weeks of pregnancy, both estrogen and progesterone levels rise rapidly and can affect mood stability. By the sixth week, a woman’s estrogen level is approximately three times that of the highest point in the menstrual cycle, and many women become extremely irritable.

Because the body often successfully accommodates these fluctuations with its own self-regulating mechanisms, most women report feeling much better by the second trimester, and may even feel a sense of euphoria. But not all women adjust so readily.

Approximately 1 in every 10 pregnant women experiences some depression or anxiety during pregnancy, and many of those women will continue to have more serious episodes after delivery. In fact, some women never seem to recover the same emotional stability that they had prior to having a child. If left untreated, mood disorders during pregnancy can lead to serious

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“as many as one in three women on birth control pills suffers from depression”
repercussions for the baby’s health, as well as the important bonding between mother and child after birth.

Postnatal Depression

For many years, people felt that postnatal depression or the “baby blues” primarily affected those women who were weak or lacking in self-control. The common advice was to “pull yourself together.” But with the passage of time, that attitude slowly faded and postnatal depression gained credence as a medical phenomenon.

Symptoms of postnatal depression differ significantly from those of “clinical” or “normal” depression, according to Dr. Dalton. For example, women with depression typically have difficulty sleeping, while women with postnatal depression usually have a yearning for sleep and can’t seem to get enough of it. (Obviously, some of that yearning may result from the sleep deprivation that often accompanies a newborn baby, but not to the extent that it occurs.) Other differences with postnatal depression typically include weight gain (instead of weight loss) and generally feeling best in the morning (while morning is usually when women with depression feel their worst).

Despite the differences associated with postnatal depression, it shares many similarities with PMS. Dr. Dalton believes that, in many cases, postnatal depression can be blamed for the onset of PMS. She states that over 80 percent of the women who have once suffered from postnatal depression subsequently develop PMS. Both postnatal depression and PMS occur during a hormonal upheaval, specifically when there is a significant drop in progesterone. Both conditions include symptoms of exhaustion, irritability, depression, and mood changes—sometimes with violent outbursts and/or suicidal tendencies. And, according to Dr. Dalton, both can be successfully treated with progesterone.

Perimenopause / Menopause

Dr. Phyllis Bronson, a clinician and biochemist, has conducted studies of mood disorders in women at mid-life. During a personal interview, Dr. Bronson concurred that what most women fear most as they approach menopause is not hot flashes or night sweats, not breast cancer or heart disease, but losing their mind!

Most women report feeling mentally foggy or dull before they sense any of the physical symptoms of menopause. As they begin to experience irregular hormonal fluctuations, they find that they are tense and moody, have poor concentration and memory, feel an overall loss of well-being, and experience difficulty sleeping. Notice that many of these symptoms overlap with those of clinical depression.

During perimenopause, some women struggle with depression-like symptoms for the first time; others who have had previous episodes of depression may find that their symptoms reemerge. Moreover, as with PMS/PMDD, women with a mood disorder may find that previously successful treatments may seem to stop working with the onset of menopause. Mood-related symptoms may reemerge and mood swings may become more pronounced.

Notably, few people (healthcare practitioners included) discriminate between symptoms that arise from the loss of hormones versus those attributable to other factors. Especially during this stage of life, women should investigate hormone therapy as a key element in the treatment of their depression or mood-related symptoms.

Hormones Linked to Moods

Hormones are very powerful substances in our bodies, as indicated by the fact that such minute quantities produce such profound effects. Hormones are also very selective, generally having very specific and limited functions. These two characteristics help explain why we get so “out of whack” when hormonal conditions are not quite right.

Some people may argue that our moods are affected by many factors, including our social and physical environment, diet, exercise, and daily sleep patterns, just to name a few. But the reality is that those same factors also significantly affect our hormones, which regulate our brain’s response system, and thereby determine our moods. Our emotional health is inextricably linked to our hormones.

Research at Rockefeller University reported on by Dr. Vliet indicates that the steroid hormones (especially estrogens, testosterone, and progesterone) are the most potent chemical
Dr. Bronson states that “high levels of estrogen produce an imbalance in the system that aggravates or causes symptoms of tension and anxiety.” In fact, she says that some women with high estrogen levels may be predisposed to high levels of anxiety, and even panic attacks. On the other hand, low levels of estrogen can lead to episodes of depression.

It is interesting to note that a woman typically tends toward either an estrogen dominance or an estrogen deficiency; yet she still experiences both high and low levels due to normal fluctuations (as in PMS) or irregular fluctuations (as in perimenopause) relative to her “normal” level. During the fluctuation, she may experience mixed symptoms as the balance shifts. Mood changes associated with a woman’s declining estrogen levels tend to respond very well to estrogen therapy, with most women reporting feeling more alert and having more energy upon receiving treatment.

Progesterone

Dr. Bronson notes that the estrogen/progesterone ratio is really the key to proper treatment of mood disorders. A study by Dr. Bronson found that “a deficiency of progesterone is clearly implicated as a primary factor in mid-life anxiety patterns.” She observed that when estrogen levels were high and progesterone levels low, patients “would exhibit extreme rage, followed by [a] conciliatory, self-defeating demeanor.”

This is not surprising because the largest concentration of progesterone receptors is in the limbic area of the brain, which is the center of emotion and also called the “area of rage and violence” by animal physiologists. Progesterone has a calming effect on the brain, which suggests that a deficiency leads to varying levels of anxiety, depending on the level of the imbalance.

Recall the previous discussion regarding PMS and postnatal depression, both of which can occur with a sudden drop in progesterone and can include considerable anxiety. Dr. Dalton found that both conditions can be effectively treated with progesterone, especially if administered before symptoms develop. For PMS, she suggests supplementing with...
progesterone from ovulation until menstruation; for preventing postnatal depression, she recommends that progesterone therapy begin immediately after delivery, tapering off until menstruation returns.

Dr. Bronson agrees that progesterone can be an effective treatment for anxiety in perimenopausal women. However, she finds the treatment to be most effective at higher doses, specifically 400–600 mg/day, administered on the skin. Most of the women treated reported significant improvements in emotional health.

When progesterone therapy is in order, both Dr. Bronson and Dr. Dalton emphasize the importance of using bioidentical progesterone instead of progestin (see box on page 5) to achieve the best results.

**Thyroid**

The thyroid gland produces several different hormones that have a profound effect on the body and affect every cell in one way or another. And, their effects on mood are far-reaching.

The primary thyroid hormones are thyroxine (T4) and triiodothyronine (T3), which respond to pituitary thyroid stimulating hormone (TSH), as part of the body’s complex feedback system that keeps endocrine gland secretions in sync. Thyroid hormones also affect blood glucose levels and the release of stress hormones, which obviously also affects moods. A thyroid hormone deficiency inhibits the brain’s neurotransmitters, possibly leading to depression. Thyroid hormone levels may be deficient during and after pregnancy.

**Insulin and Glucose**

Dr. Dalton noticed a correlation between aggressive, emotional outbursts during PMS and patients’ blood sugar levels. When asked about the time of day or circumstances immediately preceding such outbursts, her patients frequently reported that they occurred late morning after missing breakfast or while preparing for the evening meal, especially if that was occurring later than usual. Incidentally, many of her patients also reported confusion or forgetfulness during the time surrounding these outbursts.

Dr. Cousens believes that paying careful attention to what and when you eat is important to your emotional health. In Depression-Free for Life, he identifies foods according to a glycemic index, which compares their impact on blood sugar. He states that eating foods that are “super high” on the glycemic index (such as white flour products, refined and sweetened cereals, and candy bars) cause “wild swings in blood sugar, a high followed by a low,” and should be avoided for that reason.

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**Bioidenitical Progesterone versus Progestin: What’s the Difference?**

Many medical researchers and healthcare practitioners debate the merits of bioidentical hormones (i.e., those that are chemically identical to the hormones produced naturally in the body) versus non-bioidentical ones. The primary concern with non-bioidentical treatments is that because they are not quite identical to the substances produced in the body, the body typically responds slightly differently, with a greater possibility of undesirable side effects.

Dr. Bronson reports that the primary biochemical difference between bioidentical progesterone and non-bioidentical progestins is their relationship with water. Bioidentical progesterone is hydrophobic, meaning that it repels water or acts as a diuretic. In contrast, non-bioidentical progestin molecules are hydrophilic, meaning that they bond easily with water. So, if you take a non-bioidentical progestin such as Depo Provera®, your body (including your brain) can retain water, which may have additional side effects on your brain chemistry.

A study by Dr. Lorraine Fitzpatrick of the Mayo Clinic supports the finding that perimenopausal women reported better relief of anxiety and depressive symptoms with bioidentical progesterone than they did with a non-bioidentical progestin.
Other Substances Affecting Mood

Many other hormones, amino acids, and nutrients also affect our moods, which makes it difficult to try to diagnose your own personal biochemistry. For example, either too little or too much of the hormone melatonin can lead to depression, and people with depression also often have elevated cortisol levels. We know that amino acids (such as glutamine) can affect the neurotransmitters, and that nutrients (such as vitamin B6 and other trace minerals) also play an important role in regulating our moods. But, we are still learning about how these substances work together to influence our moods.

Conclusion

Moods and mood disorders are quite complex and can vary significantly from one person to the next, and from one day to the next.

Mood disorders and milder mood-related symptoms are a significant source of stress for many women throughout their lifetime. If and when they seek treatment, Dr. Vliet observes that “these patients often ‘fall through the cracks’ in the fragmented healthcare system.” She suggests that additional research that integrates the disciplines of gynecology, psychiatry/psychology, and endocrinology is needed to develop a better understanding of how to treat mood disorders in women.

Clearly, the popular approach of prescribing mind-altering medications may not be the best answer for every woman, and may not solve the problem if the hormonal issues are not addressed.

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Connections is a publication of Women’s International Pharmacy, which is dedicated to the education and management of PMS, menopause, infertility, postpartum depression, and other hormone-related conditions and therapies.

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