

## Hormone Imbalance

### The normal menstrual cycle and hormone balance

Estrogen and progesterone are the 2 main hormones that regulate the menstrual cycle. These hormones fluctuate normally to prepare the body for pregnancy each month. **Estrogen** is responsible for growing and maturing the uterine lining (which is shed during menstruation) and also matures the egg prior to ovulation. **Progesterone** is produced after ovulation by the corpus luteum (a physiologic cystic structure where the egg comes from) and dominates the second half of the cycle (luteal phase). Progesterone's main job is to control the build-up of the uterine lining and help mature and maintain the uterine lining if there is a pregnancy. **Testosterone** is another important hormone that is produced by the ovaries and adrenal glands (right on top of the kidneys), and has a surge at time of ovulation and slight rise just before the menses. But what happens to these hormones during times of imbalance?

### Common conditions associated with hormone imbalance

#### Premenstrual Syndrome (PMS)

While some monthly hormonal fluctuations are perfectly normal, others set off PMS symptoms that can range from mild to severe. There is a natural rise and fall of estrogen and progesterone during the average 28-day cycle, which can vary a few days in either direction. But this natural rhythm of hormones is easily disrupted by a number of factors, many of which are controllable. When estrogen and progesterone become imbalanced, a variety of symptoms can arise including irritability, bloating, cramping, cravings, headaches, breast tenderness, fatigue, nausea, sleep issues and acne. The hormone imbalance with PMS is one of **low progesterone** and **excess estrogen**.

#### Polycystic Ovarian Syndrome (PCOS)

PCOS is hallmarked by irregular periods and symptoms of **excess testosterone** such as acne and hirsutism (a male pattern of hair growth such as facial hair). There is a genetic component to PCOS as well as a link to insulin resistance and family history of diabetes. The excess testosterone interferes with ovulation and many women experience difficulties conceiving in their reproductive years and then risk of heart disease and cancer in menopause.

#### Perimenopause

The years that precede menopause, which is our last period, is referred to as peri-menopause. For many women, this can be a roller coaster ride of hormonal fluctuations until their periods stop completely. Although estrogen levels are fluctuating, this tends to be a time of **estrogen dominance** (excess) due to decreasing or **low progesterone** levels.

#### Menopause

Menopause is a normal, natural event. It's defined as the final menstrual period and is confirmed when a woman has not had her period for 12 consecutive months. She no longer needs to use contraception and will not have any more menstrual periods. The average age of menopause is 51, typically between the ages of 45 and 55. Typically, women reach menopause around the same age as their mothers and sisters.

Each woman's experience of menopause is different. Many women report no physical changes during perimenopause except irregular menstrual periods that stop when menopause is reached. Other women experience symptoms of hot flashes, night sweats (heavy sweating from hot flashes at night, often disturbing sleep), and thinning and drying of vaginal tissue that can make sex painful. How severe these body changes are varies from woman to woman, but for the most part these changes are perfectly natural and normal. Menopause is naturally a state of **estrogen deficiency**.

The Hormone Cure. Sara Gottfried, MD

# ESTROGEN DEFICIENCY

Estrogen is a potent steroid hormone (or rather a group of hormones) that is responsible for keeping you joyful, juicy and feeling sexy. Women with low estrogen levels, most commonly during the perimenopausal years, often experience mood swings, low libido, dry vagina, achy joints, less mental focus and enthusiasm.

## Low estrogen (estradiol = E2) has the following effects on our body

**Weight gain.** Low E2 stimulates appetite by triggering a hormone called leptin. The lower your E2 goes, the hungrier you become

**Low libido.** E2 makes the genital skin sensitive, full of innervation and blood supply. When E2 is low the vagina becomes dry and nerves that innervate the clitoris, G-spot, and labia minora start to disappear. The elastic, compliant, blood supplied tissues dry up like the desert! Lubrication is compromised and orgasms may be so subtle they go unnoticed.

**Mood.** E2 maintains levels of serotonin, the feel-good neurotransmitter. When E2 decreases, serotonin levels drop and may lead to depression

**Bone health.** E2 helps facilitate the movement of calcium into the bones. When E2 goes down, bone loss ensues.

**Hot flashes, night sweats, insomnia.** Although the exact mechanism is unknown, the thermoregulatory control of the body is affected by estrogen levels. As E2 levels fluctuate and eventually decline, the regulation becomes unpredictable.

## Targeted lifestyle changes

**Avoid caffeine.** Coffee and other caffeinated beverages decrease E2 levels. Herbal teas containing rhubarb or valerian (as a tea or supplement) may help reduce hot flashes and improve sleep.

**Cut out gluten grains.** Glutens can lead to insulin resistance, which leads to hormonal imbalance.

**Add flaxseeds to your meals.** Flaxseeds contain lignans, a phytoestrogen or estrogen-like chemical that also acts as an antioxidant. Eating 2 tbs of flaxseeds twice per day over 6 weeks reduced hot flashes by half. Plus it offers a good dose of fiber.

**Orgasm...more.** Female orgasm and sexual stimulation raises E2 in premenopausal women. Orgasm also releases oxytocin, which works with estrogen to buffer stress and lower cortisol.

**Exercise...but not too much.** Exercise helps reduce low-estrogen symptoms in lean women. Those who are overweight may worsen their vasomotor symptoms with more intense exercise and should exercise with moderation.

**Acupuncture.** Getting needled has been shown to raise E2 levels sufficiently to reduce hot flashes but probably not enough to help with vaginal dryness or recurrent urinary infections.

**Eat pomegranate.** Many women report relief of hot flashes. Pomegranate seed oil at a dose of 30 mg twice per day for 12 weeks has been shown to reduce hot flashes.

## Nutraceuticals

❑ **Fish oil** (omega 3) 3,000 mg/day

Studies have shown that omega 3 decreases the frequency and intensity of hot flashes. It is also known to elevate mood. Plus fish oil is one of the only supplements proven to extend life. It lowers heart disease, heart attack and subsequent death.

❑ **Vitamin E** 400 IU/day

Vitamin E has been a long-standing remedy for improving symptoms of low estrogen, including hot flashes, vaginal dryness, and mood swings. Vitamin E has been shown to increase blood supply to the vaginal wall. It may take 4 weeks of supplementation to note these effects.

❑ **Magnesium** 400 mg/day

Among breast cancer patients, magnesium was shown to reduce hot flashes, fatigue and distress, all common symptoms of low estrogen. These women took 400 mg daily for 4 weeks increasing to 800 mg daily if symptoms persisted. Please note magnesium may cause diarrhea particularly at higher doses.

# ESTROGEN EXCESS

Estrogen is a potent steroid hormone (specifically a group of hormones) that is responsible for keeping you joyful, juicy, and feeling sexy. However, high estrogen levels can result in stubborn weight gain, particularly in the hips and buttocks, mood swings, PMS, depression or irritability, weepiness, sometime over the most ridiculous things and mini breakdowns or anxiety. Women with estrogen dominance can develop fibroids and endometriosis. Elevated estrogen levels have also been connected to be the leading cause of breast cancer in women.

Yes, you can be estrogen dominant (high estrogen, or specifically estradiol) and also have low estrogen. This can happen when you have too little protective forms of estrogens (especially the estriol) as opposed to estradiol and/or when your progesterone levels are too low to oppose estradiol.

## Causes of estrogen excess

**Perimenopause.** Due to the fluctuation of estrogen levels, overall the estrogen levels are higher relative to progesterone levels. Finally, estrogen levels will fall with menopause

**Xenoestrogens.** These are synthetic chemicals that mimic estrogen and are referred to as “endocrine disrupters”. They come from artificial chemicals you are exposed to in your daily life such as plastics. Examples are BPA (bisphenol A) and phthalates.

**Obesity and weight gain.** In addition to the ovaries, fat cells also produce estrogens, specifically estrone. Women with excess fat cells have increased risk of not only diabetes, heart disease and sleep apnea but also breast, uterine and colon cancers!

**Diet.** Diets high in grain-fed meat and dairy as well as refined carbohydrates will likely cause estrogen overload. Consumption of alcohol also raises estrogen levels and slows down fat burning.

**Nutritional deficiencies.** Low levels of magnesium have been associated with higher estrogen levels in both perimenopausal and menopausal women as well as low levels of vitamin B12, folate and zinc.

**Mercury.** Acts like a Xenoestrogen by binding to estrogen receptors. Mercury can be found in certain fish which should be avoided (particularly shark, swordfish, king mackerel and tile fish) as well high-fructose corn syrup, fungicides and herbicides, dental fillings, thermometers.

## Targeted lifestyle changes

**Avoid caffeine.** Coffee and other caffeinated beverages decrease E2 levels. Herbal teas containing rhubarb or valerian (as a tea or supplement) may help reduce hot flashes and improve sleep.

**Avoid xenoestrogens.** Minimize exposure to environmental toxins. Avoid canned food, plastic food containers and fish high in mercury. Take your shoes off when you are inside your house. Buy organic when you can. Check ewg.org for the “Clean 15” and “Dirty Dozen”.

**Eat grass-fed meat and dairy.** Although more expensive, when animals are treated humanely, eat the foods they were intended to, and are allowed to graze in a pasture, they are healthier and then their products are healthier for us to eat!

**Eat more fiber.** Increased intake of fiber will lower your estrogen levels. Women need at least 25 grams of fiber a day and may benefit from 35 to 45 grams per day.

**Exercise.** Exercise decreases estrogen levels and helps you make more of the good estrogens. And as you know exercise will help lower your stress.

**Sleep.** Going to sleep by 10pm provides optimal production of melatonin, which lowers estradiol. Try to turn off all screens at least 30 minutes before bedtime otherwise the blue light will interfere with melatonin.

## LOW PROGESTERONE

Progesterone is another steroid hormone that works hand in hand with estrogen as its counterbalance partner. It's important to balance out your progesterone levels. Progesterone's role is to regulate the uterine lining, (keep it from getting too thick), mood and sleep.

Low progesterone levels often cause infertility, miscarriages, night sweats, sleeplessness, PMS, and irregular menstrual cycles. It is also common for women to experience painful and/or swollen breast, heavy or painful periods, bloating or easily disrupted sleep, or itchy, restless legs. Healthy progesterone levels are needed to conceive and maintain a healthy pregnancy.

### May be caused by

- Aging
- Stress
- Irregular ovulation
- Low thyroid

### May cause

- Endometriosis
- Endometrial cancer or precancer
- Anxiety
- Disordered sleep

### Targeted lifestyle changes

- Wean from caffeine
- Limit alcohol
- Decrease refined sugars
- Acupuncture
- Moderate exercise
- Guided visualization
- Light therapy

### Nutraceuticals

#### **Vitamin C** (750 mg/day)

Vitamin C is an antioxidant, which is vital to the body. Antioxidants protect the body from oxidative stress. Vitamin C can also minimize PMS symptoms like bloating, fatigue, breast swelling and heavy menstrual bleeding. Vitamin C can also get rid of cravings during your period.

#### **Magnesium** (200 mg/day)

Magnesium is a good muscle relaxant which can help relieve menstrual cramps. Menstrual fatigue is another common complaint of women that magnesium can help relieve. Magnesium is 'nature's tranquillizer' and can easily treat symptoms related to anxiety, tension, irritability, depression, confusion, etc. Magnesium also reduces constipation, water retention and bloating, breast tenderness. Cravings for sweets are also reduced or eliminated when magnesium intake is increased.

#### **Vitamin B6** (50-100 mg/day)

Vitamin B6 is involved in the syntheses of some of the neurotransmitters that affect mood. Vitamin B6 acts as a cofactor in the production of dopamine and serotonin. These are also the most important "feel good" neurotransmitters. Low serotonin level is a common observation during the luteal phase of women with PMS. Because serotonin is involved in mood, memory, and sleep, vitamin B6 deficiency can cause symptoms such as irritability, forgetfulness, insomnia, anxiety, and moodiness. These are also the PMS symptoms that studies showed vitamin B6 reduced.

#### **Calcium** (1,200 mg/day) ideally from milk or non-dairy milks, yogurt, dark leafy greens, and almonds

It is known that ovarian hormones influence the metabolism of calcium (as well as vitamin D and magnesium, both of which are also important to PMS). Estrogen, the chief female sex hormone, can lower the absorption of calcium from the intestines by inhibiting the activities of the parathyroid hormone. Because ovarian hormones can affect calcium levels, PMS is sometimes described as a state of hypocalcemia. However, it is more accurately a state of calcium dysregulation that can be worsened by vitamin D deficiency. Some experts believe that women with PMS lose more calcium that they can obtain from their diet.

# EXCESS ANDROGENS

Androgens are sex hormones that include DHEAS and testosterone. Excess androgens result in unwanted facial hair growth, ovarian cysts, hyperglycemia, hypoglycemia, or unstable blood sugar levels, irritability, aggression or episodes of depression and anxiety.

Excess androgens may lead to **insulin resistance** and **polycystic ovarian syndrome**. If you already have obtained a diagnosis of high androgens or PCOS, it's important to also test your blood sugar levels. The good news is that if you are overweight, just a 5% reduction in weight may normalize your blood sugar levels and reverse androgen dominance.

## Causes of excess androgens

- Genetics
- Chronic stress
- Excess body fat
- Congenital adrenal hyperplasia
- Polycystic ovarian syndrome
- Androgen-secreting tumor (rare)

## Symptoms of PCOS

- Difficulty losing weight
- Rogue hairs
- Inflammation

## Dangers of PCOS beyond infertility

- Heart disease
- Cancer
- Mood disorders
- Abnormal liver enzymes

## Targeted lifestyle changes

- **Exercise**
- **Eat for lower androgens/weight loss.** Eat foods with low-glycemic index
- **Eat fiber.** Fiber increases the excretion of testosterone
- **Eat foods containing zinc** such as green beans and sesame and pumpkin seeds
- **Eat more protein.** Organic chicken and turkey, low-mercury fish and grass-fed meat
- **Avoid dairy.** Milk, cheese, and eggs increase inflammation, which leads to higher androgens and acne
- **Omit sugar.** Significant levels of sugar increase insulin levels which also raise androgens
- **Eat healthy fats.** Eat foods rich in omega-3 fatty acids such as oily fish and yolks from pasture-raised eggs. Minimize oils high in omega-6 such as corn and safflower oil as well as many processed foods
- **Take up yoga.** Yoga has been shown to be more effective than other exercises for improving insulin resistance

## Nutraceuticals

### **Fish oil** omega 3 (3,000 mg/day)

Studies show fish oil can reduce cholesterol, triglycerides and blood pressure, lowering your chance for heart attack, and stroke. There is an increased risk for heart disease in women with PCOS. Also, fish oil can ease period pain, aid in weight loss, reduce insulin resistance and improve moods, and may even help to prevent miscarriage in certain women.

### **Magnesium** (400 mg/day)

Individuals with insulin resistance tend to be lacking magnesium. Magnesium is important to help glucose enter cells where it is used for energy. Without enough magnesium, glucose doesn't enter the cells in sufficient amounts. This can cause fatigue and difficulties regulating blood sugar. Sufficient levels of magnesium can therefore improve insulin resistance and reduce your risk for developing type 2 diabetes.

### **Vitamin D** (2,000 IU/day)

Women with PCOS are 3 times more likely to be severely deficient in vitamin D. Vitamin D deficiency is also associated with insulin resistance, obesity, inflammation, low levels of good cholesterol, and high levels of testosterone. D deficiency is associated with cysts on the ovaries, poor metabolic health, and inflammation.