



## **Polycystic Ovary Syndrome**

Polycystic ovary syndrome (PCOS) is a disorder that affects as many as 5–10% of women. PCOS has three key features:

- 1) High levels of hormones called androgens;
- 2) Irregular menstrual periods or lack of periods; and
- 3) The presence of many fluid-filled sacs (small cysts) in the ovaries.

Many women with PCOS have other signs and symptoms as well.

The cause of PCOS is not known, but it may be at least partly genetic (passed down through a person's genes). With proper diagnosis, the symptoms of PCOS can be treated successfully. Long-term treatment may be needed to prevent the health risks associated with the disease.

### **Signs and Symptoms**

PCOS has many different signs and symptoms. Some women may not be aware that seemingly unrelated symptoms are actually those of PCOS. Common PCOS signs and symptoms include the following:

- Irregular menstrual periods—Menstrual disorders can include absent periods, periods that occur infrequently or too frequently, heavy periods, or unpredictable periods.
- Infertility—PCOS is one of the most common causes of female infertility.
- Obesity—Up to 80% of women with PCOS are obese.
- Excess hair growth on the face, chest, abdomen, or upper thighs—This condition, called hirsutism, affects more than 70% of women with PCOS.
- Severe acne or acne that occurs after adolescence and does not respond to usual treatments
- Oily skin
- Patches of thickened, velvety, darkened skin called acanthosis nigricans
- Multiple fluid-filled sacs (small cysts) in the ovaries

Not all women with PCOS have all of these symptoms.

### **What Causes PCOS?**

Although the cause of PCOS is not known, it appears that PCOS may be related to many different factors working together. These factors include insulin resistance, increased androgen levels, and an irregular menstrual cycle.

**Insulin Resistance:** Insulin resistance plays a key role in PCOS. Insulin is a hormone that helps move glucose from the bloodstream into the body's cells for the energy the body needs. If the body's cells do not respond to the effects of insulin, the level of glucose in the blood increases. Higher than normal blood glucose levels may eventually lead to diabetes mellitus, a health condition that can cause serious complications if it is not managed. Insulin resistance also may cause more insulin to be produced as the body tries to move glucose into cells. High insulin levels may cause the appetite to increase and lead to imbalances in other hormones. Insulin resistance also is associated with acanthosis nigricans.

**High Androgen Levels:** High levels of androgens are a hallmark of PCOS. Androgens are hormones made by the ovaries and adrenal glands (small glands that rest on top of the kidneys). All women produce a certain amount of these hormones. When higher than normal levels of androgens are produced, it can prevent the ovaries from releasing an egg each month (a process called ovulation). High androgen levels also cause the unwanted hair growth and acne seen in many women with PCOS.

**Irregular Menstrual Periods:** Women with PCOS often have irregular menstrual periods. Some have infertility. These problems are caused by lack of regular ovulation. Women with PCOS may have more follicles in their ovaries than women without PCOS. Follicles are the fluid-filled sacs that enclose the eggs. These follicles give the appearance of multiple cysts in the ovaries, which may be how PCOS got its name.

**Other Health Risks:** PCOS affects all areas of the body, not just the reproductive system. It increases a woman's risk of serious conditions that may have lifelong consequences. Insulin resistance increases the risk of type 2 diabetes mellitus and cardiovascular disease. Obesity, which often occurs with insulin resistance, also is associated with type 2 diabetes and heart disease. Another condition that is associated with PCOS is metabolic syndrome. Metabolic syndrome is a combination of factors that increases a person's risk of diabetes and cardiovascular disease. About 30% of women with PCOS also have metabolic syndrome. Metabolic syndrome is diagnosed when a person has at least three of the following signs: Elevated blood pressure; Waist measurement of 35 inches or more; Higher than normal blood glucose level; Lower than normal levels of good cholesterol; High levels blood triglycerides.

Women with PCOS tend to have a condition called endometrial hyperplasia, in which the lining of the uterus (the endometrium) becomes too thick. This condition increases the risk of endometrial cancer.

## **Diagnosing PCOS**

PCOS can be diagnosed when a woman has two of the three key features of PCOS:

1. Increased levels of androgens, either by measuring the levels of androgens in the blood or by noting the presence of unwanted hair growth
2. Lack of menstrual periods or irregular menstruation
3. Ovaries with many fluid-filled sacs

The diagnosis is based on your medical history, a physical exam, and results of lab tests.

## **Treatment**

Several treatments are available to address the problems of PCOS. Treatment is tailored to each woman according to symptoms, other health problems, and whether there are plans for fertility.

**Treating Menstrual Problems:** Combined hormonal birth control pills can be used for long-term treatment in women with PCOS who do not wish to become pregnant. Combined hormonal pills contain both estrogen and progestin. Birth control pills may help relieve several PCOS symptoms. They regulate the menstrual cycle and reduce hirsutism and acne by decreasing androgen levels.

For overweight women, weight loss alone often regulates the menstrual cycle. Even a loss of 10 to 15 pounds can be helpful in making menstrual periods more regular. Weight loss also has been found to improve cholesterol and insulin levels and relieve symptoms such as excess hair growth and acne.

Insulin-sensitizing drugs used to treat diabetes frequently are used in the treatment of PCOS. These drugs help the body respond to insulin. In women with PCOS, they are associated with a decrease in androgen levels and improved ovulation. Restoring ovulation helps make menstrual periods regular and more predictable.

**Getting Pregnant:** Successful ovulation is the first step toward pregnancy. For overweight women, weight loss often accomplishes this goal. Medications also may be used to cause ovulation. Clomiphene citrate or Letrozole are the most common drugs used for this purpose. Adding a drug called metformin, an insulin-sensitizing drug, may increase the likelihood of pregnancy, especially in women who are obese. When treatment with medication does not work referral to Fertility center may be needed.

Surgery on the ovaries has been used when other treatments do not work. However, the long-term effects of these procedures are not clear.

**Prevention of Diabetes and Cardiovascular Disease:** Losing weight through a reduced-calorie diet combined with regular exercise is the best way to reduce the risk of diabetes in women with PCOS. Regular exercise and maintaining a healthy weight can help prevent heart disease as well. Statins are drugs that lower cholesterol. An increasing amount of research shows that statins have good effects on cardiovascular health in women with PCOS. Metformin may be used in addition to lifestyle changes to improve the body's response to insulin and stabilize glucose levels.

**Treating Hirsutism and Skin Problems:** For many women, hirsutism is one of the most disturbing symptoms of PCOS. There are many ways to manage this condition. A combination of treatments often works best. Birth control pills may prevent growth of excess hair. If they do not, antiandrogen drugs may be added. These drugs prevent the body from making androgens or limit the effects of androgens. Women who may become pregnant should not take antiandrogens because they can cause birth defects. A drawback of these medications is that they may take several months to work. While waiting for these drugs to take effect, many women with PCOS use shaving, plucking, waxing, and depilatory creams for hair removal. Laser treatment and electrolysis are noninvasive surgical methods for removing hair that can be effective. Repeat treatment might be necessary. Retinoids (drugs that are related to vitamin A), antibacterial medications, and antibiotics are used to treat acne. Women who may become pregnant should not use retinoids because they can cause birth defects.

## **Finally...**

With proper treatment, PCOS can be managed, and you can expect relief from symptoms. Long-term preventive health care is important for a healthy future. A healthy diet and regular physical activity are lifestyle choices you can make for yourself that can play a large role in reducing the symptoms of PCOS.