Polycystic Ovarian Syndrome

Definition
Polycystic ovary syndrome (PCOS) is a common hormonal disorder among women of reproductive age. The name of the condition comes from the appearance of enlarged and containing numerous small cysts located along the outer edge of each ovary. The exact cause of polycystic ovary syndrome is unknown. Early diagnosis and treatment may reduce the risk of long-term complications, such as type 2 diabetes and heart disease.

Symptoms
Signs and symptoms often begin soon after a woman first begins having periods (menarche), and vary from person to person, in both type and severity. For diagnosis of this disorder your doctor looks for at least two of the following:

- **Menstrual abnormality.** This is the most common characteristic. Examples of menstrual abnormality include menstrual intervals longer than 35 days; fewer than eight menstrual cycles a year; failure to menstruate for four months or longer; and prolonged periods that may be scant or heavy.
- **Excess androgen.** Elevated levels of male hormones (androgens) may result in physical signs, such as excess facial and body hair (hirsutism), adult acne or severe adolescent acne, and male-pattern baldness (androgenic alopecia). However, the physical signs of androgen excess vary with ethnicity, so depending on your ethnic background you may or may not show signs of excess androgen.
- **Polycystic ovaries.** Enlarged ovaries containing numerous small cysts can be detected by ultrasound.

When to see a doctor
Talk with your doctor if you have menstrual irregularities — such as infrequent periods, prolonged periods or no menstrual periods — especially if you have excess hair on your face and body or acne. Early diagnosis and treatment of polycystic ovary syndrome may help reduce your risk of long-term complications, such as type 2 diabetes, high blood pressure and heart disease.

Causes of PCOS may include:

- **Excess insulin.** Insulin is the hormone produced in the pancreas that allows cells to use sugar (glucose) — your body's primary energy supply. If you have insulin resistance, your ability to use insulin effectively is impaired, and your pancreas has to secrete more insulin to make glucose available to cells. The excess insulin might boost androgen production by your ovaries.
- **Low-grade inflammation.** Your body's white blood cells produce substances to fight infection in a response called inflammation. Eating certain foods can trigger an inflammatory response in some predisposed people. When this happens, white blood cells produce substances that can lead to insulin resistance and cholesterol accumulation in blood vessels (atherosclerosis). Atherosclerosis causes cardiovascular disease. Research has shown that women with PCOS have low-grade inflammation.
- **Heredity.** If your mother or sister has PCOS, you might have a greater chance of having it, too.
Abnormal fetal development. Some research shows that excessive exposure to male hormones (androgens) in fetal life may permanently prevent normal genes from working the way they're supposed to — a process known as gene expression. This may promote a male pattern of abdominal fat distribution, which increases the risk of insulin resistance and low-grade inflammation. Researchers continue to investigate to what extent these factors might contribute to PCOS.

Complications

- Type 2 diabetes
- High blood pressure
- Cholesterol and lipid abnormalities, such as elevated triglycerides or low high-density lipoprotein (HDL) cholesterol, the "good" cholesterol
- Elevated levels of C-reactive protein, a cardiovascular disease marker
- Metabolic syndrome, a cluster of signs and symptoms that indicate a significantly increased risk of cardiovascular disease
- Nonalcoholic steatohepatitis, a severe liver inflammation caused by fat accumulation in the liver
- Sleep apnea
- Abnormal uterine bleeding
- Cancer of the uterine lining (endometrial cancer), caused by exposure to continuous high levels of estrogen
- Gestational diabetes or pregnancy-induced high blood pressure, if you do become pregnant

What to expect from your doctor

Some potential questions your doctor or other health care provider might ask include:

- What signs and symptoms are you experiencing?
- How often and how long have you experienced these symptoms?
- How severe are your symptoms?
- When did you last have a period?
- Have you gained weight since you first started having periods? How much weight have you gained? When did you gain the weight?
- Does anything improve or worsen your symptoms?
- Are you trying to become pregnant, or do you wish to become pregnant?
- Has your mother or sister ever been diagnosed with PCOS?

Tests and diagnosis

There's no specific test to definitively diagnose polycystic ovary syndrome. The diagnosis is one of exclusion, which means your doctor considers all of your signs and symptoms and then rules out other possible disorders. During this process, your doctor takes many factors into account:

- **Medical history.** Your doctor may ask questions about your menstrual periods, weight changes and other symptoms.
- **Physical examination.** During your physical exam, your doctor will note several key pieces of information, including your height, weight and blood pressure.
- **Pelvic examination.** During a pelvic exam, your doctor visually and manually inspects your reproductive organs for signs of masses, growths or other abnormalities.
- **Blood tests.** Your blood may be drawn to measure the levels of several hormones to exclude possible causes of menstrual abnormalities or androgen excess that mimic PCOS. Additional blood testing may include fasting cholesterol and triglyceride levels and a glucose tolerance test, in which glucose levels are measured while fasting and after drinking a glucose-containing beverage.
- **Pelvic ultrasound.** A pelvic ultrasound can show the appearance of your ovaries and the thickness of the lining of your uterus. During the test, you lie on a bed or examining table while a
A wand-like device (transducer) is placed in your vagina (transvaginal ultrasound). The transducer emits inaudible sound waves that are translated into images on a computer screen.

**Treatments and drugs**

Polycystic ovary syndrome treatment generally focuses on management of your individual main concerns, such as infertility, hirsutism, acne or obesity.

**Medications**

Your doctor may prescribe a medication to:

- **Regulate your menstrual cycle.** If you're not trying to become pregnant, your doctor may recommend low-dose birth control pills that contain a combination of synthetic estrogen and progesterone. They decrease androgen production and give your body a break from the effects of continuous estrogen. This decreases your risk of endometrial cancer and corrects abnormal bleeding.
  
  An alternative approach is taking progesterone for 10 to 14 days each month. This regulates your periods and offers protection against endometrial cancer, but it doesn't improve androgen levels.
  
  Your doctor also may prescribe metformin (Glucophage, Glucophage XR), an oral medication for type 2 diabetes that lowers insulin levels. This drug improves ovulation and leads to regular menstrual cycles. Metformin also slows the progression to type 2 diabetes if you already have prediabetes and aids in weight loss if you also follow a diet and an exercise program.

- **Help you ovulate.** If you're trying to become pregnant, you may need a medication to help you ovulate. Clomiphene citrate (Clomid, Serophene) is an oral anti-estrogen medication that you take in the first part of your menstrual cycle. If clomiphene citrate alone isn't effective, your doctor may add metformin to help induce ovulation.
  
  If you don't become pregnant using clomiphene and metformin, your doctor may recommend using gonadotropins — follicle-stimulating hormone (FSH) and luteinizing hormone (LH) medications that are administered by injection.

- **Reduce excessive hair growth.** Your doctor may recommend birth control pills to decrease androgen production, or another medication called spironolactone (Aldactone) that blocks the effects of androgens on the skin. Because spironolactone can cause birth defects, effective contraception is required when using the drug and it's not recommended if you're pregnant or planning to become pregnant. Eflornithine (Vaniqa) is another medication possibility; the cream slows facial hair growth in women.

- **Surgery**
  
  If medications don't help you become pregnant, an outpatient surgery called laparoscopic ovarian drilling is an option for some women with PCOS. Your doctor can help you determine if you're a candidate for this type of surgery.
  
  In this procedure, a surgeon makes a small incision in your abdomen and inserts a tube attached to a tiny camera (laparoscope). The camera provides the surgeon with detailed images of your ovaries and neighboring pelvic organs. The surgeon then inserts surgical instruments through other small incisions and uses electrical or laser energy to burn holes in follicles on the surface of the ovaries. The goal is to induce ovulation.

**Lifestyle and home remedies**

Paying attention to the foods you eat and your activity levels may help you offset the effects of PCOS:

- **Keep your weight in check.** Obesity makes insulin resistance worse. Weight loss can reduce both insulin and androgen levels, and may restore ovulation. No single specific dietary approach is best, but losing weight by reducing total calorie intake can benefit the overall health of women with polycystic ovary syndrome. Ask your doctor to recommend a weight-control program, and meet regularly with a dietitian for help in reaching weight-loss goals.

- **Consider dietary changes.** Low-fat, high-carbohydrate diets may increase insulin levels, so you may want to consider a low-carbohydrate diet if you have PCOS — and if your doctor recommends it. Don't severely restrict carbohydrates; instead, choose complex carbohydrates, which are high in fiber. The more fiber in a food, the more slowly it's digested and the more slowly your blood sugar levels rise. High-fiber carbohydrates include whole-grain breads and cereals,
whole-wheat pasta, bulgur, barley, brown rice, and beans. Limit less healthy, simple carbohydrates such as soda, excess fruit juice, cake, candy, ice cream, pies, cookies and doughnuts.

- **Be active.** Exercise helps lower blood sugar levels. If you have PCOS, increasing your daily activity and participating in a regular exercise program may treat or even prevent insulin resistance and help you keep your weight under control.

Reference:
Mayo Clinic 2012

MFHS 2013