

Pcos

A plain-English guide for you and your family

WHAT IS HAPPENING

Normally, the hypothalamus (the brain's master clock) tells the pituitary gland (a pea-sized gland under the brain) to release two hormones—FSH and LH—in a smooth cycle. FSH nudges an egg to ripen in the ovary. LH triggers the egg to pop out (ovulation) halfway through the month. After ovulation, progesterone (a calming hormone) rises and keeps the uterus lining from growing wild. The cycle repeats every 28 days or so, and periods come regular. In PCOS, that cycle breaks. The upstream problem is insulin resistance: her muscle and fat cells ignore insulin's knock on the door, so sugar stays high in the blood and the pancreas pumps out even more insulin to compensate. High insulin tells the ovaries to crank out extra testosterone and other androgens (male-type hormones). At the same time, the pituitary puts out too much LH and not enough FSH, so eggs start to grow but never finish ripening—they stall partway and form tiny fluid-filled sacs (cysts) around the edge of the ovary like a string of pearls on ultrasound. Without ovulation, progesterone never rises, so the uterus lining keeps growing unchecked and periods become irregular—sometimes weeks or months apart, sometimes heavy. The high androgens thicken body hair (especially on the face, chest, and belly), trigger acne, and thin the hair on her head. Insulin resistance also tips fat storage into overdrive, especially around the waist. Dark, velvety skin patches (acanthosis nigricans) appear on the neck, armpits, or groin because too much insulin makes skin cells multiply. Because she is not ovulating, she cannot get pregnant without help. Over years, the insulin resistance can tip into type 2 diabetes, and the hormone imbalance raises her risk of heart disease and uterine cancer if the lining is never shed. Every symptom—irregular periods, extra hair, weight gain, dark skin, infertility—traces back to these two upstream breaks: insulin resistance and too much LH driving androgen overproduction.

What you might feel

- Irregular or missing periods
- Extra hair growth on face, chest, or belly (hirsutism)
- Acne that keeps coming back, especially on the jaw and chin
- Thinning hair on the scalp (like male-pattern baldness)

- Weight gain, especially around the belly, that is hard to lose
- Dark, velvety patches of skin in body folds (neck, armpits, groin)
- Trouble getting pregnant (infertility)
- Many small fluid-filled sacs (follicles) on the ovaries seen on ultrasound

Call the doctor right away if...

- Sudden severe belly pain (may mean an ovarian cyst twisted or burst)
- Very heavy vaginal bleeding that soaks through a pad every hour (may mean abnormal uterine lining growth)
- Signs of diabetes: extreme thirst, peeing all the time, blurry vision, or feeling very tired
- Symptoms that appear very fast in adulthood (may point to a tumor making male hormones instead of PCOS)
- Very deep voice or large muscle growth (signs of much higher androgen levels than PCOS usually causes)

What the care team will do

- Measure height, weight, and waist circumference and calculate BMI (body mass index) at every visit.
- Check fasting glucose (blood sugar after no food for 8 hours) and hemoglobin A1C (average blood sugar over 3 months) yearly.
- Screen for depression and anxiety using a validated tool like PHQ-9 (Patient Health Questionnaire) at every visit.
- Teach the patient to take metformin with food and start at a low dose like 500 mg once daily, slowly increasing to avoid stomach upset.
- Check lipid panel (cholesterol and triglycerides) yearly and teach heart-healthy diet and exercise.
- Educate that oral contraceptive pills regulate periods and lower androgen symptoms but must not be used if planning pregnancy.
- Ask about loud snoring and daytime sleepiness; refer for sleep study if symptoms present.
- Counsel that spironolactone takes 6 months to reduce facial hair and acne, and causes birth defects so requires reliable birth control.

Medicines you may be given — and why

Lifestyle modification (weight loss, exercise)

Losing just 5 to 10 percent of body weight — for example, 10 pounds if you weigh 200 — can restart the whole system. Fat tissue makes extra hormones (like estrogen and androgen) and releases chemicals that make insulin work poorly. When you lose even a small amount of weight through healthy eating and moving your body most days, fat cells shrink, insulin starts working better, and the ovaries often start releasing eggs again (ovulation). Many women see their periods return, blood sugar improve, and testosterone drop naturally. This is the most powerful step and often the only one needed.

Combined oral contraceptive pill (OCP, birth control pill with estrogen and progestin)

The pill delivers steady, low doses of estrogen and progestin (a lab-made form of progesterone) every day. This steady signal tells the brain's control tower — the hypothalamus and pituitary gland — to stop sending the hormones (LH and FSH) that push the ovaries to make testosterone and estrogen in big, uneven bursts. The ovaries quiet down, testosterone drops, and the lining of the uterus sheds on a regular schedule. The pill also raises a liver protein (SHBG, sex hormone binding globulin) that locks up free testosterone in the blood, so less is available to cause acne and hair growth.

Metformin

Metformin makes your body use insulin better. It works mainly in the liver, telling liver cells to stop dumping so much sugar into the blood between meals. It also helps muscle cells grab sugar from the blood more easily. When blood sugar and insulin levels drop, the ovaries get a clearer signal and often start working more normally — some women begin to ovulate and have regular periods. Metformin does not directly lower testosterone, but by lowering insulin it can indirectly reduce androgen levels over time. It is especially helpful if you have prediabetes or type 2 diabetes along with PCOS.

Spironolactone

Spironolactone blocks testosterone from locking onto its receptors in the skin and hair follicles. Think of testosterone as a key and the receptor as a lock — spironolactone jams the lock so the key cannot turn. This means even though testosterone is still in your blood, it cannot send the signal that makes hair follicles grow thick, dark hair (hirsutism) or oil glands pump out excess sebum (which causes acne). Over many months, unwanted hair growth slows and acne often improves. Spironolactone was originally designed to remove extra fluid and lower blood pressure (it blocks aldosterone, a hormone that holds onto salt and water), so it has a mild diuretic (water-pill) effect as well.

Letrozole

Letrozole blocks an enzyme called aromatase, which normally converts androgens (like testosterone) into estrogen. When you take letrozole, estrogen levels drop for a few days. The brain's control center (the hypothalamus and pituitary) senses the low estrogen and responds by releasing more FSH (follicle-stimulating hormone). FSH travels to the ovaries and pushes several follicles (tiny sacs that hold eggs) to grow. Usually one follicle becomes dominant, matures, and releases an egg (ovulation). Letrozole is now the first-choice medication to induce ovulation in women with PCOS who are trying to get pregnant, because studies show it leads to more live births than the older drug clomiphene.

Clomiphene citrate (Clomid)

Clomiphene tricks the brain into thinking estrogen is low. It blocks estrogen receptors in the hypothalamus and pituitary, so even though estrogen is in the blood, the brain cannot sense it. The brain responds by releasing more GnRH (gonadotropin-releasing hormone), which then pushes the pituitary to make more FSH and LH. These hormones travel to the ovaries and stimulate follicles to grow and release an egg. Clomiphene was the first oral ovulation drug and is still used, but letrozole is now preferred in PCOS because it results in higher pregnancy and live birth rates.

Progestin-only therapy (medroxyprogesterone acetate, micronized progesterone)

When you have PCOS and do not ovulate regularly, you do not make progesterone (the hormone that normally protects the uterine lining after ovulation). Without progesterone, estrogen keeps building up the lining month after month without shedding it, which can lead to endometrial hyperplasia (an overgrown lining) and, rarely, cancer. Taking a progestin (synthetic progesterone) or natural progesterone for 10 to 14 days every 1 to 3 months triggers the lining to shed in a controlled bleed, keeping it thin and healthy. This is not a treatment for periods or fertility — it is purely to protect the uterus. If you are on a birth control pill, the progestin in the pill already does this job, so no extra protection is needed.

Eflornithine cream (Vaniqa)

Eflornithine is a prescription cream you apply to unwanted facial hair. It blocks an enzyme (ornithine decarboxylase) that hair follicle cells need to grow. This slows the rate of hair growth, so you do not have to remove hair as often. It does not remove hair that is already there, and it does not kill the follicle — it just slows new growth. You still need to use other hair removal methods (shaving, waxing, laser), but the cream can make those methods more effective and longer-lasting. It only works as long as you use it; hair growth speeds up again if you stop.

Where this information comes from

- International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome 2023
- Endocrine Society Clinical Practice Guideline 2013 (updated)
- American College of Obstetricians and Gynecologists (ACOG)
- Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group

Last reviewed: 2026-07-07