

Pcos

Polycystic ovary syndrome (PCOS): a hormone mix-up where the ovaries overproduce androgens and skip ovulation. Rotterdam criteria say you need two out of three findings (high androgens, no ovulation, or cystic ovaries on ultrasound). Treat the symptoms that bother her most and block the slide into type 2 diabetes and heart disease.

THE ONE-LINE TRUTH

The ovaries make too much male hormone, eggs do not release each month, and many small cysts sit on the ovaries.

The chain — how it unfolds

1. Muscle and fat cells stop responding to insulin (insulin resistance develops). — why: Genetics, weight gain (especially belly fat), low physical activity, and possibly prenatal androgen exposure all make cells ignore insulin's signal; the exact trigger varies, but the result is the same—cells lock their doors and sugar piles up outside.
2. The pancreas floods the blood with extra insulin (hyperinsulinemia) to force sugar into resistant cells. — why: High insulin is the body's short-term fix to keep blood sugar from spiking, but it has two dangerous side effects: it directly tells the ovaries to make more testosterone, and it tells the liver to make less SHBG (the protein that binds and inactivates testosterone), so free active testosterone rises.
3. The hypothalamus speeds up GnRH pulses, skewing the pituitary to release too much LH and not enough FSH. — why: High insulin and high androgens both feed back to the brain and crank up GnRH pulse frequency; the pituitary responds by making more LH than FSH, which is backward from the normal balance needed to ripen and release an egg.
4. Follicles start to grow in the ovary but stall before ovulation (anovulation); many small cysts (two to nine millimeters) line the ovary like a string of pearls on ultrasound. — why: Without enough FSH, follicles cannot finish maturing; high LH directly stimulates the theca cells (the outer shell of each follicle) to pump out extra androgens instead of preparing an egg for release.

5. No corpus luteum forms, so progesterone stays low or absent and the uterus lining grows unchecked (unopposed estrogen). — why: Ovulation is the trigger that turns the empty follicle into the corpus luteum (the temporary gland that makes progesterone); without ovulation, progesterone never rises, and estrogen—still being made by the many small follicles—keeps telling the uterus lining to grow thicker and thicker.
6. Periods become irregular—sometimes weeks to months apart, sometimes very heavy, sometimes absent (oligomenorrhea or absent periods (amenorrhea)). — why: The lining builds up for months because there is no progesterone to stabilize it; eventually it outgrows its blood supply and sheds in an unpredictable, often heavy bleed, or it may not bleed at all if estrogen stays steady.
7. Thick, dark hair grows on the face (upper lip, chin), chest, lower belly, and back (hirsutism); scalp hair thins in a male pattern. — why: High free testosterone converts to DHT (dihydrotestosterone) in hair follicles; DHT makes body hair grow thick and dark and shrinks scalp hair follicles at the temples and crown.
8. Acne flares, especially on the face, chest, and upper back. — why: Androgens enlarge oil glands (sebaceous glands) and make them produce more sebum; the extra oil clogs pores, and bacteria multiply, triggering inflammation and pimples.

Spot it — what you see, and why

- Irregular or missing periods: The ovaries make too much testosterone (a male hormone) and not enough progesterone (the hormone that controls the monthly cycle), so the lining of the uterus does not shed on a regular schedule the way it should.
- Extra hair growth on face, chest, or belly (hirsutism): High testosterone (an androgen, or male hormone) tells hair follicles on the face and body to grow thicker, darker hair in places where only men usually have it.
- Acne that keeps coming back, especially on the jaw and chin: Too much testosterone makes the oil glands in the skin pump out extra oil (sebum), which clogs pores and feeds the bacteria that cause pimples.
- Thinning hair on the scalp (like male-pattern baldness): High androgens (male hormones) shrink the hair follicles on top of the head, so the hair grows back thinner and weaker each time until it stops growing.
- Weight gain, especially around the belly, that is hard to lose: Insulin resistance (the body's cells ignore insulin's signal to take in sugar) makes the pancreas pump out extra insulin, which tells fat cells to store more fat and makes it very hard to burn it off.
- Dark, velvety patches of skin in body folds (neck, armpits, groin): High insulin (from insulin resistance) makes skin cells grow faster and darker in places where skin rubs together, a sign called acanthosis nigricans.

Red flags — act now

- 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)

Treat it — in this order

1. Weight loss of 5-10% through diet and exercise → Losing even a little weight makes her cells listen to insulin again. When insulin drops, the ovaries make less testosterone. Periods come back, acne improves, and fertility goes up. This is the single most powerful fix for the root problem.
2. Combined oral contraceptive pill (estrogen + progestin) → The pill stops the ovaries from making testosterone by shutting down LH. It also delivers a steady dose of hormones so the uterus sheds on schedule every month. Over 3-6 months, acne clears, hair growth slows, and periods become predictable.
3. Metformin 1500-2000 mg daily (start low, go slow) → Metformin makes her cells respond to insulin again. When insulin drops, the ovaries quiet down and make less testosterone. Periods become more regular, and the risk of diabetes goes down. It works best with weight loss.
4. Spironolactone 50-100 mg daily (up to 200 mg) → Spironolactone blocks testosterone receptors in the skin and hair follicles. Acne improves in 3-6 months, and new hair growth slows. Old hairs do not fall out—you have to remove them separately (laser, shaving).
5. Letrozole 2.5-5 mg daily for 5 days (if she wants to get pregnant) → Letrozole blocks estrogen production in the brain for a few days. The pituitary panics and pumps out more FSH and LH to rescue estrogen levels. That surge of FSH forces a follicle to mature and ovulate. She can conceive.

Your top priorities at the bedside

1. Measure height, weight, and waist circumference and calculate BMI (body mass index) at every visit. — why: Even 5-10% weight loss improves insulin sensitivity (how well the body uses sugar), restores ovulation in 55-100% of women, and lowers androgen levels; tracking helps motivate and guide treatment.

2. Check fasting glucose (blood sugar after no food for 8 hours) and hemoglobin A1C (average blood sugar over 3 months) yearly. — why: Up to 40% of women with PCOS develop prediabetes or type 2 diabetes by age 40 because of insulin resistance; early detection prevents kidney damage, blindness, and nerve damage.
3. Screen for depression and anxiety using a validated tool like PHQ-9 (Patient Health Questionnaire) at every visit. — why: Women with PCOS have 3-4 times higher rates of depression and anxiety from hormonal imbalance, body image concerns, and infertility stress; untreated mental illness lowers treatment compliance.