**PCOS and fertility explained**

## What PCOS is, and why it matters for fertility

PCOS is a hormonal and metabolic condition characterized by a variable combination of ovulatory dysfunction, clinical or biochemical hyperandrogenism, and polycystic ovarian morphology on ultrasound. Not everyone has all features, and the name can be misleading: ovarian cysts are not required in every diagnostic framework, and the small follicles seen on ultrasound are not the same as dangerous cysts.

The World Health Organization describes PCOS as a common hormonal disorder and a leading cause of infertility, largely because it can cause irregular or absent ovulation. Prevalence estimates vary depending on diagnostic criteria and population, and many people remain undiagnosed for years, especially if their symptoms are dismissed as merely cosmetic or stress-related.

Fertility depends on a coordinated sequence: follicle development, ovulation, egg transport, fertilization, embryo development, and implantation. In PCOS, the most frequent point of disruption is ovulation. If ovulation occurs infrequently, there are fewer opportunities for sperm and egg to meet. If ovulation timing is unpredictable, it becomes harder to time intercourse or insemination effectively.

## The hormonal pattern behind irregular ovulation

In a typical ovulatory cycle, the brain, pituitary gland, ovaries, and uterus communicate through hormones including gonadotropin-releasing hormone, luteinizing hormone, follicle-stimulating hormone, estradiol, progesterone, and androgens. In PCOS, this signaling can become dysregulated.

Many people with PCOS have increased ovarian androgen production. Androgens are often called "male-type" hormones, but all ovaries normally produce them. When androgen levels are elevated, follicle maturation may stall, leading to multiple small follicles that do not consistently progress to a dominant follicle and ovulation. Some people also show altered luteinizing hormone pulsatility, which can further support androgen excess and interfere with predictable follicular development.

The result may be oligovulation, meaning infrequent ovulation, or anovulation, meaning ovulation does not occur. Menstrual cycles may be longer than 35 days, highly variable, or absent for months. Bleeding can still occur without ovulation, so a period-like bleed does not always prove that an egg was released. Conversely, some people with PCOS do ovulate, just less consistently.

## Insulin resistance and metabolic health

PCOS is not only a reproductive condition. Insulin resistance is common, although it can occur in people of any body size. When cells respond less efficiently to insulin, the body may produce more insulin to maintain blood glucose. Higher insulin levels can stimulate ovarian androgen production and reduce sex hormone-binding globulin, increasing the biologically active fraction of androgens.

This metabolic-reproductive loop can worsen irregular cycles for some people. It also matters before pregnancy because PCOS is associated with increased risks such as impaired glucose tolerance, type 2 diabetes, dyslipidemia, and possibly higher risks during pregnancy, including gestational diabetes. These risks are not destiny, but they are a reason to evaluate cardiometabolic health early.

Clinicians may consider blood pressure, body mass index and waist measures when appropriate, fasting glucose or HbA1c, lipid profile, and other individualized testing. The goal is not to blame the patient or reduce fertility to weight alone. Rather, metabolic information helps tailor treatment and reduce risks for both conception and pregnancy.

**Can you get pregnant naturally with PCOS?**

Yes, many people with PCOS conceive without fertility treatment, particularly if they ovulate at least intermittently and there are no additional fertility factors. The challenge is probability and timing. If ovulation happens only a few times per year, there are fewer fertile windows. If cycles vary widely, ovulation predictor kits can be harder to interpret, and calendar-based timing may be unreliable.

Some expert discussions note that people with PCOS may, on average, retain ovarian reserve markers longer than some peers because they often have a higher number of small follicles. However, ovarian reserve is not the same as regular ovulation or egg quality, and age remains highly relevant. Fertility declines with age in all groups, especially through the late 30s and 40s, because egg chromosomal competence decreases over time.

If someone under 35 has been trying to conceive for 12 months without success, professional evaluation is generally recommended. For those 35 or older, evaluation is often recommended after 6 months; earlier assessment may be appropriate with very irregular or absent cycles, known anovulation, prior pelvic disease, recurrent pregnancy loss, or other medical concerns. A clinician can individualize this timeline.

**Evaluation: confirming ovulation and looking beyond PCOS**

A common pitfall is assuming that PCOS explains everything. PCOS may be present and still coexist with other fertility factors. A thorough fertility assessment may include confirmation of ovulation, evaluation of other endocrine conditions, assessment of the uterus and fallopian tubes, and semen analysis for the partner or sperm source.

Ovulation can be assessed in several ways. Menstrual pattern provides clues but

is not definitive. Mid-luteal progesterone testing, timed about 7 days after suspected ovulation rather than on a fixed cycle day for everyone, can help determine whether ovulation occurred. Ultrasound monitoring may be used in fertility clinics, especially when medications are involved.

Blood tests may be used to evaluate androgens, thyroid-stimulating hormone, prolactin, glucose metabolism, and other markers depending on symptoms and history. Conditions such as thyroid dysfunction, hyperprolactinemia, hypothalamic amenorrhea, congenital adrenal hyperplasia, and androgen-secreting tumors may need to be considered in selected cases. This is why self-diagnosis based only on irregular periods or acne can be misleading.

Partner evaluation is also essential. Sperm concentration, motility, morphology, and total motile count can affect the chance of conception, even when ovulation is irregular. Tubal patency testing or uterine cavity evaluation may be considered based on clinical context, especially before more advanced treatment.

**Lifestyle support: helpful, but not a moral test**

Lifestyle interventions are often discussed in PCOS care because nutrition, physical activity, sleep, and stress physiology can influence insulin sensitivity and cardiometabolic risk. For some people, improving insulin resistance may help cycles become more regular. Even modest changes in weight, when medically appropriate and personally desired, may improve ovulatory function in some individuals.

However, lifestyle advice must be handled carefully. PCOS is not caused by a lack of willpower, and fertility care should not be withheld solely because someone does not fit a narrow body-size expectation. People with PCOS deserve respectful, evidence-based care at every weight. For individuals with eating disorder history, weight-focused advice can be harmful and should be replaced by weight-neutral metabolic support.

Useful strategies may include regular physical activity, resistance training, adequate protein and fiber intake, attention to sleep, and screening for obstructive sleep apnea when symptoms suggest it. A registered dietitian familiar with PCOS can help translate general principles into a sustainable

plan. Medication for metabolic indications may be appropriate for some people, but decisions should be made with a qualified clinician.

**Medical fertility treatment options**

When irregular ovulation is the main barrier, treatment often focuses on ovulation induction. This means using medication to encourage the ovary to develop and release an egg. The choice of medication, dose, monitoring, and safety plan should be individualized by a healthcare professional. People should not start or combine fertility medications without medical supervision because of risks such as ovarian over-response, multiple pregnancy, and cyst formation.

Letrozole, an aromatase inhibitor, is commonly used as first-line ovulation induction for many people with PCOS in contemporary fertility practice. Clomiphene citrate has also been used for decades. Gonadotropin injections may be considered in selected cases but require careful ultrasound and hormone monitoring because PCOS ovaries can be very sensitive to stimulation.

Metformin may be used when insulin resistance, impaired glucose tolerance, or certain metabolic features are present, and in some cases it may be combined with ovulation induction. Its role varies by patient and guideline context. The decision should consider metabolic status, side effects, fertility plan, and pregnancy considerations.

If ovulation induction with timed intercourse is unsuccessful, intrauterine insemination may be considered in certain situations, especially if there are mild sperm factors or timing challenges. In vitro fertilization may be recommended when there are additional factors such as tubal blockage, significant sperm abnormalities, advanced reproductive age, prolonged infertility, or unsuccessful lower-intensity treatments. IVF can be highly effective, but PCOS requires careful stimulation protocols because of increased risk of ovarian hyperstimulation syndrome.

**Pregnancy considerations with PCOS**

Once pregnancy occurs, many people with PCOS have healthy pregnancies and healthy babies. Still, preconception and early pregnancy planning are important

because PCOS is associated with higher rates of some complications, including gestational diabetes and hypertensive disorders in some studies. The exact risk varies according to age, body size, metabolic health, treatment history, and other factors.

Preconception care may include optimizing glucose control, reviewing medications and supplements, ensuring folic acid intake, updating immunizations, managing blood pressure, and discussing mental health. If cycles are irregular, dating a pregnancy by last menstrual period may be inaccurate, so early ultrasound may be used to estimate gestational age.

PCOS can also carry emotional weight. Years of irregular cycles, acne, hair growth changes, weight stigma, or previous dismissive medical encounters can make fertility care feel vulnerable. It is reasonable to ask for explanations, shared decision-making, and referrals to reproductive endocrinology, endocrinology, nutrition, or mental health support when needed.

**Endometrial health and why absent periods should be discussed**

Long gaps without ovulation can mean long periods of estrogen exposure without the balancing effect of progesterone after ovulation. Over time, this may increase the risk of endometrial hyperplasia, a thickening of the uterine lining, and in some cases endometrial cancer. The WHO notes endometrial hyperplasia and cancer among health risks associated with PCOS.

This does not mean that every missed period is dangerous, but prolonged amenorrhea should be discussed with a healthcare professional. Management depends on pregnancy goals, bleeding pattern, ultrasound findings, risk factors, and individual medical history. If someone is trying to conceive, clinicians can help balance endometrial protection with fertility planning.