

**Polycystic Ovarian Syndrome:  
A common cause of irregular periods and infertility.**

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*Polycystic Ovarian Syndrome or PCOS is one of the most common causes of chronically irregular periods. While we still do not know what causes PCOS, recent scientific findings in this disorder have led to new treatment options. This article will discuss PCOS: its symptoms, its effects on reproductive and general health, treatment options and strategies for effective management of this lifelong condition.*

## **Introduction**

Polycystic Ovarian Syndrome or PCOS affects 6% of women of reproductive age. Many women with chronically irregular periods may have PCOS without realizing it. It is important to know about PCOS because it can affect not only your ability to conceive but your general health as well. While the cause for PCOS is unknown and there is no "cure" for this condition, you can lower your health risks by knowing about PCOS and taking advantage of the management options available.

Irving Stein and Michael Leventhal first recognized PCOS in the 1920's when they noted an association between no menstrual periods or infrequent periods, bilateral polycystic ovaries, obesity and excessive male pattern hair growth or hirsutism. As a result, PCOS was formerly known as Stein-Leventhal syndrome. However, other names given to this condition include: Hyper-androgenic Chronic Anovulation and PCOD or Polycystic Ovarian Disease. Today PCOS is preferred because researchers do not know the cause of this syndrome and not all women with PCOS have all the symptoms described by Stein and Leventhal.

## **Diagnosis**

How do you know if you have PCOS? Unfortunately, there is no single test that will tell you that you have PCOS. Women with this syndrome usually have irregular menses from the time they start having periods. Therefore, this is the most common and reliable symptom of PCOS. Irregular menses are classified as cycles that are longer than 35 days from the first day of bleeding to the day before the next bleed, or less than 8 cycles per year.

In response to this common symptom, many women with PCOS are given oral contraceptive pills to regulate their menses, but are not formally diagnosed with PCOS. To obtain a diagnosis, the physician must rule out other possible causes for irregular menses. Usually this involves checking a pregnancy test, checking your thyroid function with a TSH (thyroid stimulating hormone) level, and checking a prolactin level as well. These are all simple blood tests. If your physician suspects PCOS, you may be given medroxyprogesterone acetate (brand name Provera) to see if it will induce a period. This can help differentiate PCOS from other causes of no menses such as ovarian failure and hypothalamic amenorrhea. Women with these conditions have low estrogen levels and usually will not bleed in response to Provera. Women with PCOS will have normal to slightly elevated estrogen levels and will usually have a full period after this medication.

Many women with PCOS will have problems with acne and hirsutism - excessive hair growth on the face, chest and abdomen. These are signs of elevated levels of male hormones and androgens and are seen in up to 80% of women with PCOS. If you have these symptoms your doctor may order testosterone, DHEAS and 17 hydroxy progesterone blood levels. If your symptoms are mild, these are not necessary. If they are moderate to severe, these tests will rule out hormone producing tumors and adrenal disorders that can look like PCOS.

Other characteristics of PCOS include excess weight, multiple small follicles on ovarian ultrasound and an elevated LH:FSH ratio in the blood. About 50% of women with PCOS are overweight, making this characteristic consistent with PCOS, but not conclusive from a diagnostic standpoint. About 80% of women with PCOS have polycystic ovaries on ultrasound, but 20% of women with PCOS will have normal appearing ovaries on ultrasound and 20% of normal women will have polycystic ovaries on ultrasound. Therefore, like excess weight, ultrasound can support a diagnosis of PCOS but not make it.

Another supporting test is the LH:FSH ratio. LH is luteinizing hormone and FSH is follicle-stimulating hormone, both of which are made by the brain. Dysfunctional signaling between the ovary and the brain in women with PCOS leads to elevated LH:FSH ratios (greater than 3). These are indicative of PCOS because elevated LH levels cause elevations in male hormones and irregular ovulation, which leads to irregular periods. In ovarian failure, FSH levels are elevated. In hypothalamic amenorrhea, FSH and LH levels are normal or low.

### Impact of PCOS Upon Your Health

Why is it important to know whether you have PCOS? PCOS not only causes irregular menstrual cycles, it puts you at increased risk for other health problems. However, these risks can be decreased or minimized if managed correctly. Irregular menses are a result of chronic anovulation. The ovary produces estrogen, but it does not release eggs and does not produce progesterone. Not only is progesterone necessary for pregnancy, but it also prevents overgrowth of the lining of the uterus. Over-growth of the lining of the uterus can lead to heavy bleeding, and after years of irregular periods, to cancer of the lining of the uterus. Irregular and infrequent ovulation leads to problems conceiving for most women with PCOS.

Recently researchers have found that many women with PCOS have elevated insulin levels or hyper- insulinemia and are resistant to insulin action. Insulin resistance can lead to a variety of health problems including obesity. Obesity in turn worsens insulin resistance, but even thin women with PCOS have higher than normal insulin levels. Because of this resistance to insulin, PCOS patients have an increased risk of developing diabetes, high blood pressure, high cholesterol and heart disease. In the past, physicians have considered PCOS to be a gynecologic disorder, but we now know that PCOS can have a negative impact on a woman's overall health.

### Treatment

How is PCOS treated? Because PCOS can affect many different aspects of a woman's health, a multi-pronged treatment plan is often necessary. The treatment for irregular menses depends upon whether or not a woman with PCOS is trying to conceive. For women not trying to conceive, the oral contraceptive pill is a safe and effective treatment for most women. The birth control pill can regulate your period, provide very effective protection against endometrial cancer and can improve symptoms of hyperandrogenism such as hirsutism and acne. An alternative is periodic treatment with progesterone to induce menses.

For women attempting to conceive, the first line of therapy is often clomiphene citrate, a pill that can induce ovulation in 80% of patients with PCOS. For women who do not respond to clomiphene citrate, more advanced treatment with insulin sensitizing agents and/or injectable gonadotropins may be recommended. These more advanced treatments should be monitored by a specialist with experience in using these drugs in women with PCOS. PCOS patients are very sensitive to stimulation with gonadotropins and at high risk for ovarian hyperstimulation syndrome if not properly monitored.

For treatment of hirsutism and acne, a combination of medication to lower androgen levels and local treatment such as electrolysis may be necessary. The oral contraceptive pill is a very effective treatment for lowering androgen levels in the skin. It is even more effective when combined with spironolactone, a mild diuretic that also acts as an antiandrogen in the skin and hair follicle. Spironolactone must be used with an effective contraceptive since it can feminize a male fetus if used in early pregnancy. There also are many other agents that are effective in treating hirsutism and acne in PCOS. These include flutamide, cyproterone acetate (not available in the USA), ketoconazole and finasteride. However, none of these agents has been shown to be more effective than the birth control pill and/or spironolactone. All are more expensive and many have a higher rate of significant side effects. So the oral contraceptive pill and/or spironolactone remain the first choice for treatment of hirsutism and acne.

What about the effects of PCOS on metabolism? Is there a way to lower the risk of diabetes, high blood pressure, high cholesterol and heart disease? The high insulin levels seen in PCOS increase the risks for these serious health problems and make weight loss more difficult for overweight PCOS patients. However, weight control is critical for your health if you have PCOS and as few as 5 to 10 pounds can make measurable improvements in insulin levels, glucose tolerance, blood pressure and cholesterol levels. All patients with PCOS should make a balanced diet and regular exercise a top priority. Although it may be difficult reaching an ideal weight, you should be encouraged knowing that even small improvements can make significant differences in your health.

What about the new drugs for PCOS? Researchers have demonstrated very promising results with insulin-lowering agents that improve hormonal and metabolic parameters in patients with PCOS, induce ovulation and improve pregnancy rates. The most studied of these agents, which can be used alone or in combination with fertility drugs, is metformin (brand name Glucophage). Metformin, used for the last 20 years to treat diabetics, lowers insulin levels without causing hypoglycemia, so non-diabetic women with PCOS can tolerate the drug. This drug may help a patient lower her insulin levels so her body will be more responsive to diet and exercise, and it has been used successfully to induce ovulation in PCOS patients who were very resistant to fertility drugs. However, it remains to be seen whether long-term use will be beneficial and, while the drug is unlikely to cause serious side effects, many people experience nausea and diarrhea. This requires that the drug be started in low doses and gradually increased and that the patient be monitored carefully. Troglitazone (brand name Rezulin), which is more effective than metformin in lower insulin levels, has been used effectively in PCOS. However, the FDA has withdrawn it, due to concern about side effects. Other agents related to troglitazone may be safer and available in the future. Another promising agent that seems to be well tolerated is currently in clinical trials: D-chiro-inositol, which also lowers insulin levels.

### Summary

PCOS, a common cause for irregular menses, can have serious consequences for a woman's reproductive and general health. If you think you may have PCOS it is important to have a thorough evaluation. Weight control through a sensible diet and exercise plan is crucial for women with PCOS and may improve symptoms and response to treatment. While there is no cure for PCOS, there are effective treatments available to manage the symptoms. Speak with your doctor about the options that are best for you.

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