

# Polycystic Ovary Syndrome (PCOS)

Polycystic ovary syndrome (PCOS) is common. It can cause period problems, reduced fertility, hair growth, and acne. Many women with PCOS are also overweight. Treatment includes weight loss (if you are overweight), and lifestyle changes in addition to treating the individual symptoms.

## Understanding ovaries and ovulation

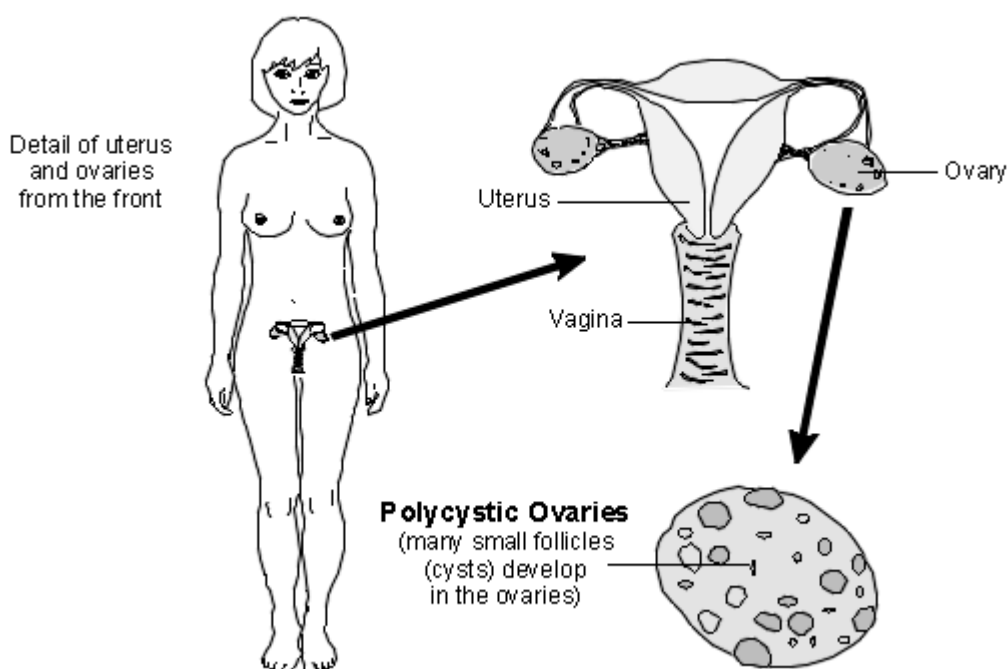
The ovaries are a pair of glands that lie on either side of the uterus (womb). Each ovary is about the size of a large marble. The ovaries make eggs and various hormones. Hormones are chemicals that are made in one part of the body, pass into the bloodstream, and have an effect on other parts of the body.

- Ovulation is when you release an egg (ovum) into the uterus (womb). Ovulation normally occurs once a month. Before an ovum is released at ovulation, it develops in a little swelling of the ovary called a follicle (like a tiny cyst). Each month several follicles start to develop, but normally just one fully develops and goes on to ovulate.
- The main hormones that are made in the ovaries are oestrogen and progesterone - the main 'female' hormones. These hormones help with the development of breasts, and are the main controllers of the menstrual cycle. The ovaries also normally make small amounts of 'male' hormones (androgens) such as testosterone.

## What is PCOS?

PCOS is a syndrome where at least two of the following occur, and often all three:

- At least 12 follicles (tiny cysts) develop in your ovaries. (Polycystic means 'many cysts'.)
- You do not ovulate each month. Some women with PCOS do not ovulate at all. (In PCOS, although the ovaries usually have many follicles, they do not develop fully and so ovulation often does not occur.) If you do not ovulate then you do not have a period.
- The balance of hormones that you make in the ovaries is altered. In particular, your ovaries make more testosterone (male hormone) than normal.



## How common is PCOS ?

PCOS is common. Research studies of women who had an ultrasound scan of their ovaries found that up to 1 in 5 young women have polycystic ovaries (ovaries with many small cysts). However, many of these women were healthy, ovulated normally, and did not have high levels of male hormones. It is thought that up to 1 in 10 women have polycystic ovary *syndrome* (PCOS) - that is, at least two of: polycystic ovaries, a raised level of male hormone, reduced ovulation.

## What causes PCOS?

The exact cause is not totally clear. Several factors probably play a part. These include the following.

### Insulin

A raised level of insulin in the bloodstream is thought to be the main underlying reason why PCOS develops. Insulin is a hormone that you make in your pancreas (a gland behind your stomach). The main role of insulin is to control your blood sugar level. Insulin acts mainly on fat and muscle cells which take in sugar (glucose) when your blood sugar level rises.

Women with PCOS have what is called 'insulin resistance'. This means that cells in the body are resistant to the effect of a normal level of insulin. Therefore, the level of insulin in the blood needs to be higher than normal to control the blood sugar level. So, to keep the level of sugar in the blood normal, you make more insulin. A 'side effect' of a high blood level of insulin is to cause the ovaries to make too much testosterone (male hormone). A high level of insulin and testosterone interfere with the normal development of follicles in the ovaries. As a result, many follicles tend to develop but often do not develop fully.

### Luteinising hormone (LH)

This hormone is also probably involved in causing PCOS. You make this hormone in your pituitary gland. LH stimulates the ovaries to ovulate, and to make certain hormones. A high level of LH may affect the ovaries in some abnormal way. A raised level of LH is found in about 4 in 10 women with PCOS. It may be that a high level of insulin and a high level of LH work together to cause more testosterone than normal to be made in the ovaries.

### Hereditary factors

Your genetic makeup is probably important. One or more genes may make you more prone to develop PCOS. PCOS is not strictly inherited from parents to children, but it may run in some families.

### Weight

Being overweight or obese is not the underlying cause of PCOS. However, if you are overweight or obese it may make things worse. Excess fat can make insulin resistance worse, which may then cause the level of insulin to rise even further.

However, PCOS may also be a contributing cause of overweight and obesity. This is because high levels of insulin can contribute to weight gain.

## What are the symptoms and problems of PCOS?

### Symptoms that occur if you do not ovulate

- **Period problems** occur in about 7 in 10 women with PCOS. You may have irregular or light periods, or no periods at all.
- **Fertility problems** - you need to ovulate to become pregnant. You may not ovulate each month, and some women with PCOS do not ovulate at all. PCOS is one of the commonest causes of infertility.

## Symptoms that can occur if you make too much testosterone (male hormone)

- **Hair growth (hirsutes)** occurs in more than half of women with PCOS. It is mainly on the face, lower abdomen, and chest. This is the only symptom in some cases.
- **Acne** may persist beyond the normal teenage years.
- **Thinning of scalp hair** (similar to 'male pattern baldness') occurs in some cases .

## Other symptoms

- **Weight gain** - about 4 in 10 women with PCOS are overweight or obese.
- **Depression** or poor self esteem may develop as a result of the other symptoms.

Symptoms typically begin in the late teens or early 20s. Not all symptoms occur in all women with PCOS. For example, some women with PCOS have some excess hair growth, but have normal periods and fertility.

Symptoms can vary from mild to severe. For example, mild unwanted hair is normal, and it can be difficult to say when it becomes abnormal in women with mild PCOS. At the other extreme, severe PCOS can cause marked hair growth, infertility, and obesity. Symptoms may also change over the years. For example, acne may become less of a problem in middle age, but hair growth may become more noticeable.

## Possible long-term problems of PCOS

If you have PCOS, over time you have an increased risk of developing diabetes, a high cholesterol level, and possibly high blood pressure. For example, about 1 in 10 women with PCOS develop diabetes at some point. These problems in turn may also increase your risk of having a stroke and heart disease in later life. These increased health risks are due to the long-term insulin resistance (and also being overweight which is common in women with PCOS).

If you have no periods, or very infrequent periods, you *may* have a higher than average risk of developing cancer of the uterus (womb). However, the evidence for this is not conclusive and if there is a risk, it is probably small.

A sleeping problem called sleep apnoea is also more common than average in women with PCOS.

## Are any tests needed?

Tests may be advised to clarify the diagnosis, and to rule out other hormone conditions.

- Blood tests may be taken to measure certain hormones. For example, a test to measure testosterone and LH which tend to be high in women with PCOS.
- An ultrasound scan of the ovaries may be advised. This can detect the typical appearance of PCOS with the many follicles (small cysts) in slightly enlarged ovaries.

Also, you may be advised to have regular checks of blood sugar, blood pressure, and blood cholesterol to detect any abnormality as early as possible. Exactly when the checks are done depends on your age, your weight, and other factors. For example, women with PCOS who are obese may be advised to have a blood sugar check every three years to check for diabetes.

## What is the treatment for PCOS?

There is no cure for PCOS. However, symptoms can be treated, and your health risks can be reduced.

### You should aim to lose weight if you are overweight

Losing weight helps to reduce the high insulin level that occurs in PCOS. This has a knock-on

effect of reducing testosterone. This then improves the chance of you ovulating, which improves any period problems, fertility, and may also help to reduce hair growth and acne. The increased risk of long-term problems such as diabetes, high blood pressure, etc, are also reduced.

Losing weight can be difficult. A combination of eating less and exercising more is best. Advice from a dietician, and help and support from a practice nurse, may increase your chance of losing weight. Even a moderate amount of weight loss can help.

### **Treating hair growth**

Hair growth is due to the increased level of testosterone - the 'male' hormone.

- Unwanted hair can be removed by shaving, waxing, hair removing creams, electrolysis, and laser treatments. These need repeating every now and then, although electrolysis and laser treatments may be more long lasting (but are expensive, and are not available on the NHS).
- A cream called eflornithine may be prescribed to rub on affected areas of skin. It works by counteracting an enzyme (chemical) involved in making hair in the skin. Some research trials suggest that it can reduce unwanted hair growth, although this effect quickly wears off after stopping treatment.
- Drugs taken by mouth can also treat hair growth. They work by reducing the amount of testosterone that you make, or by blocking the effect of testosterone. Drugs include:
  - The combined contraceptive pill ('the pill'). There are many pills to choose from, but all have some effect of reducing hair growth.
  - Cyproterone acetate is an 'anti-testosterone' drug. This is commonly combined with oestrogen as a special contraceptive pill called Dianette. Dianette is commonly prescribed to regulate periods, to help reduce hair growth, to reduce acne, and is a good contraceptive.
  - Other anti-testosterone drugs are sometimes advised by a specialist if 'the pill' or Dianette do not help, or are not suitable.

Drugs taken by mouth to treat hair growth take 3-9 months to work fully, and for their effect to be noticed. You need then to carry on taking them otherwise hair growth will recur. Removing hair by the methods above (shaving etc) may be advised whilst waiting for a drug to work.

### **Treating acne**

The treatments used for acne in women with PCOS are no different to the usual treatments for acne. Another leaflet discusses acne and its treatment in more detail. Treatment for acne usually works well.

### **Treating period problems**

Some women who have no periods, or infrequent periods, do not want any treatment for this. However, your risk of developing cancer of the uterus (womb) may be increased if you have no periods for a long time. Regular periods will prevent this possible increased risk to the uterus.

Therefore, some women with PCOS are advised to take the contraceptive pill as it causes regular 'withdrawal bleeds' similar to periods. If this is not suitable, another option is to take progestogen hormone for several days every month which will cause a monthly bleed like a period. If neither of these is suitable, your doctor may advise a regular ultrasound scan of your uterus to detect any problems early.

### **Fertility issues**

Although fertility is often reduced, you still need contraception if you want to be sure of not getting pregnant. The chance of becoming pregnant depends on how often you ovulate. Some women with PCOS ovulate now and then, others not at all.

If you do not ovulate but want to become pregnant, then fertility treatments have a high chance of success. The common treatment is with a drug called clomiphene. This works by causing ovulation. Other fertility treatments may be tried if clomiphene does not work. But remember, you are much less likely to become pregnant if you are obese. If you are obese or overweight then losing weight is advised in addition to other fertility treatments.

**Metformin and other insulin sensitising drugs**

Metformin is a drug that is commonly used to treat people with Type 2 diabetes. It makes the body's cells more sensitive to insulin. This may result in a decrease in the blood level of insulin which may help to counteract the underlying cause of PCOS - see above. Other newer insulin sensitising drugs include rosiglitazone, pioglitazone and D-chiro-Inositol. A specialist may advise that you take metformin or another insulin sensitising drug. However, further research is needed to confirm the role of these drugs in the treatment of PCOS.

**Preventing long term problems**

A healthy lifestyle is important to help prevent the conditions listed above in 'long-term problems'. For example, you should:

- not smoke.
- eat a healthy diet.
- exercise regularly.
- lose weight if you are overweight or obese.

**Further help and advice****Verity**

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Web: [www.verity-pcos.org.uk](http://www.verity-pcos.org.uk)

Verity is a UK charity for women whose lives are affected by polycystic ovary syndrome.

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Comprehensive patient resources are available at [www.patient.co.uk](http://www.patient.co.uk)