

## **Disclaimer**

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## **Polycystic Ovary Syndrome (PCOS)**

Polycystic ovarian syndrome (PCOS) was first described in 1935 by Stein and Leventhal. They described a number of women who had obesity, infertility, hirsutism (hairiness) and frequent periods which was endometrial hyperplasia (see below).

For many years these women were treated with wedge resection (see separate handout on Ovarian Drilling). In the 1980's it was found that a certain appearance on ultrasound of the ovaries was found in women with PCOS. Approximately 25% of women in the community have ultrasound evidence of polycystic ovaries but do not have the full syndrome.

PCOS is best described as a condition in which women have two out of the following three features (1) infrequent ovulation, (2) high levels of male hormones, (3) ultrasound evidence of polycystic ovaries.

### [Making the diagnosis](#)

Making the diagnosis of PCOS requires confirmation of high levels of male hormone, anovulation (not ovulating). An ultrasound may also be required.

Other causes of not ovulating need to be excluded and these include high levels of prolactin, Cushing's Syndrome, a rare condition of congenital adrenal hyperplasia (present mainly in women of Jewish descent). Sometimes, low body weight and excessive exercise can cause a woman to stop ovulating and this can be very difficult to distinguish from lean PCOS.

### [What are the consequences of PCOS?](#)

#### 1. Anovulation and the risk of endometrial hyperplasia.

Anovulation may cause difficulty getting pregnant but also carries with it the risk of endometrial hyperplasia (thickening of the lining of the womb). A hormone called progesterone is released by the ovaries after ovulation and the effect of the progesterone is to thin the endometrium (lining of the womb). When a woman does not ovulate, medium amounts of oestrogen and insignificant amounts of progesterone are produced.

The effect of oestrogen is to thicken the lining of the womb. In the absence of ovulation and progesterone the lining of the womb can become progressively thicker and thicker. During this time the woman does not menstruate but eventually the lining becomes so thick that it breaks down and sheds often as a heavy and long menstrual period. Sometimes, the bleeding can be so heavy that it can cause iron deficiency or anaemia.

There is a risk of cancer of the endometrium in women with endometrial hyperplasia. This is very rare but catastrophic for a young woman who has not yet had her children.

## 2. Diabetes mellitus

Women with PCOS have an associated finding of insulin resistance. Insulin resistance means that the insulin (a hormone which lowers sugar levels in the blood) does not work as well. This causes high levels of insulin. Insulin resistance, if anything, protects against weight gain and is not the cause of obesity. The consequence of insulin resistance is that the pancreas (gland at the back of the upper abdomen), which produces the insulin may not produce enough insulin and diabetes mellitus (high blood sugar levels) occurs. Diabetes mellitus has serious consequences for long term health and is associated, if not well controlled, with shortening of life expectancy. It also has consequences in pregnancy for the baby and the mother.

The ways to reduce insulin resistance are weight loss, exercise (which reduces insulin resistance even when no weight is lost), a tablet called metformin and a new family of drugs called the "glitazones", previously troglitazone (now withdrawn from the market) and rosiglitazone which have not been researched fully in young women and their use should therefore be cautious. They are associated with weight gain and should not be taken in pregnancy because of the risk of abnormality in the baby.

## 3. Hirsutism

High levels of male hormone, particularly when women have a genetic predisposition to respond to male hormone, can result in excess body and facial hair. This can be very distressing. There are no means of removing this predisposition once it occurs. Treatments can be taken which reduce the hairiness (the thickness of the hair, growth rate of the hair and the number of new hairs being recruited to follow a male pattern of growth) but the effect of these is present only whilst the drug is being taken. Generally, because the hair cycle is very slow it takes six months for a drug to take effect. Response of acne (skin pimples) has much the same time frame, perhaps a little shorter than the hirsutism.

Generally it is advisable to use local treatments such as waxing, bleaching, shaving as none of these have side-effects on the rest of the body. There is no evidence that these measures increase the growth rate of the hair follicles, rather it is the ongoing high male hormone levels which continue to recruit more hair follicles. It is therefore worth considering suppressing the male hormones and the best way that this is done is suppression of the ovaries with the combined oral contraceptive pill ("the pill").

As the combined oral contraceptive pill should not be used in women over 35 years who have smoked for a significant proportion of their life, it is advisable that women with PCOS do not smoke cigarettes. Some women with severe migraine or predisposition to clotting cannot take "the pill" and options for controlling hairiness is very restricted.

It is not possible to control hairiness and conceive a pregnancy at the same time.

## 4. Increased risk of heart disease and ovarian cancer

These are uncertain at this time.

### [What is the place of Metformin?](#)

1. Sometimes, a person who is at high risk of diabetes mellitus develops an intermediate state called "impaired glucose tolerance" and this is determined by measuring the blood sugar levels for one and two hours after a sweet glucose drink. If impaired glucose tolerance is present, the progression to diabetes mellitus over the next few years is very high. Lifestyle change is therefore very important and has been proven to be better than metformin. However, if lifestyle change cannot be achieved, metformin in the dose of 850mg twice daily reduces the number of cases that progress to diabetes mellitus.

2. Metformin is shown to help induce ovulation if the woman wishes to conceive a pregnancy. It can be added to clomiphene (see separate sheet). Metformin has side effects of nausea, vomiting, diarrhoea, not absorbing vitamin B12 and rarely a life threatening condition called lactic acidosis. Lactic acidosis is rare in healthy young women however if kidney, liver or heart problems are present or develop metformin should be avoided.