The Shrewsbury and Telford Hospital **NHS**
NHS Trust

The Shropshire and Mid Wales Fertility Centre

Information for Fertility Patients

Polycystic Ovaries & Polycystic Ovarian Syndrome

References

- 2004;81:19–25. The Rotterdam ESHRE/ASRM-sponsored PCOS consensus workshop group. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome (PCOS). Hum Reprod 2004;19;41–7.
- 313. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome. Fertil Steril 2004;81:19–25
- Human Fertilisation and Embryology Authority www.hfea.gov.uk

Who can you ask for information and advice?

You can get further advice and information by:

- Asking the Ward Sister or Clinical Nurse Manager
- Visiting or contacting the **Patient Advice and Liaison Service (PALS).** PALS will act on your behalf when handling patient and family concerns. They can also help you get support from other local or national agencies. PALS, is a confidential service.
  Royal Shrewsbury Hospital Tel: 0800 783 0057 or Tel: 01743 261691
  Princess Royal Hospital Tel: 01952 282888

Other sources of information about health and health care:

- **NHS Direct** is a nurse-led advice service run by the NHS for patients with questions about diagnosis and treatment of common conditions.
  Telephone: 0845 4647
  Website: www.nhsdirect.nhs.uk
- **Equip** is a website established by the NHS in the West Midlands. It signposts patients to quality health information and provides local information about support groups and contacts.
  Website: www.equip.nhs.uk
- **NHS Choices** has been developed to help you make choices about your health, from lifestyle decisions about things like smoking, drinking and exercise, through to the practical aspects of finding and using NHS services when you need them.
  Website: www.nhs.uk

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What are Polycystic Ovaries?

Polycystic ovaries is an inherited variation in the size and appearance of a woman's ovaries.

The "cysts" are due to an increase in the number of fluid filled follicles within the ovaries, each of which contains an egg, from 3-4 follicles in a "normal" ovary to 10 or more follicles in a polycystic ovary.

The exact mode of inheritance is not yet known but it is believed that there are at least 2 separate genes involved.

How frequent are Polycystic Ovaries?

At least 20% (1 in 5) women have polycystic ovaries, of whom half have no symptoms and no medical problems. The other half have symptoms and so they have Polycystic Ovarian Syndrome (PCOS). Thus 1 in 10 women has the symptoms and so has PCOS.

What are the symptoms of PCOS?

1. Infrequent or absent menstrual bleeding, with an interval between periods of at least 5 weeks or more.
2. Irregular menstrual periods.
3. Difficulty in conceiving, due to infrequent, absent or poor quality ovulation, ie sub-fertility.
4. Difficulty in keeping weight in the normal range (body mass index of 19-25).
5. Excessive hair growth or growth in unexpected areas, especially the abdomen and face.
6. Greasy skin and acne
7. Recurrent miscarriages
8. Occasionally patches of thickened, pigmented (brown) skin on the back of the neck, groin and at skin folds.

How do I know if I have PCOS?

If you have any of the above clinical symptoms, you can visit your GP's Surgery for a consultation, which may involve a gynaecological examination. A family history of PCOS is a good indicator. Your GP/Specialist may request:

1. A transvaginal pelvic ultrasound, to look for the size of the ovaries (ovarian volume) and for an increase in the number of follicles, usually to 10 or more in each ovary in PCOS.
2. A blood hormone test during the first 8 days of your cycle (day 1 – first day of period) or on any day if you have very infrequent/absent periods.

1. reversible when the drug has disappeared from the body (after 1 to 3 months for Depot injections).
2. Removal of the ovaries "Bilateral Oophorectomy" is very occasionally used as a permanent treatment for hirsutism, in women who have completed their family. After removal of the ovaries, HRT is required in most women to maintain adequate oestrogen levels in the circulation and tissues.

Long term Consequences of PCOS

The precise long term consequences of PCOS are not yet completely understood, but in over 60% of PCOS women there are high insulin levels, leading to Insulin Resistance. Untreated this can lead to Syndrome X, consisting of the following:

- Insulin resistance
- Hypertension
- Adverse lipid profile
- Risk of diabetes
- Risk of early cardiovascular disease

Treatment consists of:

1. Keeping weight at a normal level (BMI 19-25)
2. Healthy lifestyle including good quality diet, avoiding smoking and excess alcohol intake plus regular strenuous physical exercise
3. Insulin sensitising drugs such as METFORMIN

In summary, Polycystic Ovarian Syndrome (PCOS) is a common but complex inherited condition where weight control is the cornerstone of management, but various additional treatments can effectively treat the symptoms, allowing the woman to lead a healthy normal lifestyle.

Short term treatments include bleaching or shaving hairs. Others include tweezing, waxing and depilatory creams. Electrolysis and laser therapy can produce a permanent reduction in hair growth.

Long term drug treatments aim to reduce the levels of biologically active male hormones, especially testosterone.

What treatments are available for Hirsutism?

3. Combined oral contraceptive: most brands will suppress male hormone levels. Indeed for best effect, the packs may be taken "back to back" without a break (periods will be absent or very scanty) or tri-cycled – 4 packs back to back and then a week's break.
   Dianette is a combined pill with an "anti-androgen" which lowers male hormones even further and so can be very effective in hirsutism. Yasmin is a combined pill, which is useful in women who experience side effects with other brands. In particular, there is no fluid retention with this brand.
4. Progestogen only pill: this has limited effect on hirsutism due to the low dose used.
5. High dose progestogen, either orally, eg Duphaston 10-20mg, 12-hourly, Provera 100mg daily or DepoProvera 150mg injections every 3 months. These preparations are effective but some women experience side effects.
6. Cyproterone acetate 25 to 100mg daily: This is a progestogen and anti-androgen. It is highly effective in hirsutism but some women experience fluid retention and other side effects, limiting its use.
7. Flutamide 250mg, 12-hourly: This is a non-hormonal anti-androgen and is useful in women in whom previous treatments have been unsuccessful. Liver function needs to be monitored during use.
8. Spironolactone is an anti-androgen and a diuretic. The dose used is 75 to 200mg daily and is particularly suited to some women.
9. Metformin is a drug that lowers insulin levels and helps to correct some of the hormone imbalance in PCOS. It has recently been used to treat hirsutism, in doses from 500mg, 3 times per day, to 1g twice a day.
10. Finasteride has been recently used successfully at a dose of 5mg daily in hirsutism. It prevents the circulating androgens (male hormones) having their effects in the skin by blocking their conversion to biologically active hormones (principally Dihydrotestosterone)

GNRH Analogues such as Buserelin or Nafarelin nasal sprays, or more usually as Depot injections (Zoladex or Prostap) switch off the pituitary gland's production of hormones, which in turn switches off hormone production from the ovaries. The woman then enters a temporary menopausal state, unless she also takes a small dose of HRT. The effects of GnRH Analogues are completely

Typical findings are:

a) Normal or low follicle stimulating hormone (FSH)
b) Raised luteinising hormone (LH)
c) Borderline/raised testosterone (male hormone)
d) Low SHBG – a protein that binds with testosterone, reducing its effects
e) Normal or slightly raised prolactin hormone
f) Normal thyroid function (TSH)

What are the underlying problems in PCOS?

1. The raised luteinising hormone levels stimulate the ovaries to produce more testosterone than usual.
2. The liver produces less SHBG to bind testosterone and so the high blood testosterone levels cause greasy skin/acne and increased hair growth.
3. Some of the testosterone and other male hormones are converted in the body fat to weak oestrogens, which suppress ovulation via the pituitary gland, causing irregular/infrequent/absent periods and subfertility.
4. High levels of circulating insulin-like proteins promote an increase in body fat and worsen the hormone imbalance.

Management of PCOS

If a woman has PCOS but has no specific problems, she may accept infrequent or absent periods, but it is important for her to keep her weight within the normal range for her height, to avoid developing some of the previously mentioned symptoms.

Management of Specific Problems

Menstrual Problems

Heavy, painful, irregular menstrual bleeding or infrequent/absent bleeding will usually respond to one of the following:

1. A combined oral contraceptive ("The Pill") – most brands are satisfactory but you may need to try a few different ones until you find one that suits you.
2. A progesterone-only pill ("Mini-Pill").
3. One of the above plus either Tranexamic acid for heavy bleeding or Mefenamic acid for pain.
4. The Mirena Intrauterine System will usually reduce heavy/painful periods, though there may continue to be irregular bleeding initially. Please ask for the Mirena leaflet.

Weight Gain

1. Careful calorie controlled diet
2. Programmed regular strenuous exercise – enough to raise a sweat – for 30 to 60 minutes, 3-5 times per week.
3. Weight watching clubs/organisations.
4. Drug therapy can work, in well-motivated women, when the body mass index (BMI) is 30 or more. Examples are Xenical and Reductil.
5. Counselling, to explore and alter the thought processes leading to excessive or "snack" eating, for example substituting exercise for food at times of stress.

Subfertility

1. Women who are not ovulating regularly, or have poor quality ovulation due to PCOS, are often overweight. Losing 6Kg from any abnormally heavy weight results in ovulation in 50% of women.
2. Clomiphene tablets are most effective in women with PCOS whose BMI is less than 30. The usual starting dose of 100mg daily, from day-2 to day-6 of the cycle, for 6 to 12 months. The first cycle is usually monitored with ultrasound scans to ensure ovulation is occurring and to avoid too many eggs being released.
3. Tamoxifen tablets are used for women who are sensitive to Clomiphene, or in whom Clomiphene doesn't work. The usual starting dose is 40mg daily from day-2 to day-6 for 6 to 12 months, with ultrasound scanning in the first cycle.
4. Metformin is a drug that reduces the abnormally high level of the insulin like proteins and is used with or without Clomiphene, to improve the chance of ovulation. The usual starting dose is 500mg at night, increasing gradually to 850mg –1g, 8-12-hourly, maintenance dose for as long as pregnancy is desired. There is also some evidence that Metformin reduces the miscarriage rate in women with PCOS.
5. Gonadotrophins such as Menopur and Gonal-F are used when the oral treatments are unsuccessful. These are given by daily injection with frequent ultrasound scans to try to avoid overstimulation and high multiple pregnancies.
6. Ovarian drilling is a technique performed under General Anaesthetic. A telescope is inserted into the abdomen and through a separate "keyhole" incision a needle is used to apply an electric current to the centre of each ovary 4 to 8 times, causing temporary damage to the centre of the ovaries. As a result testosterone and other male hormone production is reduced and ovulation/pregnancy occurs in 30-50% of women treated. The effect usually wears off 6 months after ovarian drilling
7. Gonadotrophin injections plus Intrauterine Insemination (IUI) is used where previous treatments have failed.
8. In-Vitro Fertilisation (IVF) is used as a last resort where other treatments have failed. Currently strict acceptance criteria apply for NHS cycles. Pregnancy rates are 20-30% per cycle.

Seborrhoea (oily skin/acne)

The increased male hormones in PCOS stimulate the oil secreting "sebaceous" glands in the skin, causing increased greasiness. Glands become blocked and bacteria living in the glands can overgrow, leading to acne.

What treatments are available for oily skin/acne?

Skin care products such as cleaners and cosmetic procedures such as microdermabrasion may help. Some specific topical acne treatments such as Benzoyl Peroxide can be purchased over the counter from the pharmacy. Other topical treatments and antibiotic tablets need to be prescribed by a doctor. In severe cases the drug Isotretinoin (Roaccutane) can be prescribed by a Consultant Dermatologist. Whatever treatment is used, it must be continued for at least a couple of months before assessing its benefit.

Why do I have excessive hair growth (hirsutism)?

Circulating male hormones (androgens such as testosterone) stimulate the hairs on most of the body, except the scalp. In women with PCOS, the higher levels of androgens cause increased numbers of skin hairs to enter their "growth phase".

However, once a hair has entered its growth phase it is no longer sensitive to androgen and will continue to grow until it completes its life cycle. The life cycle of most body hair lasts 6 to 9 months. The life cycle of facial hair lasts 3 years.

How can I reduce body hair growth?

Mechanical of physical hair removal can be effective in removing hairs in their "growth phase" and are detailed below.

Drug treatments reduce androgen levels and so reduce the number of hairs entering their growth phase. Thus drug treatment begins to have a noticeable effect 6 to 9 months after starting treatment, except for facial hair, when effects can be noticed after 3 years.

The most effective long-term strategy for reducing hirsutism is weight control, maintaining a BMI between 19 and 25.