Estelle™ - 35ED

Cyproterone acetate 2mg/ Ethinyloestradiol 0.035mg tablets

Polycystic Ovarian Syndrome

A Guide for Women

Introduction

This book has been compiled by Douglas Pharmaceuticals Ltd in the interest of providing you, our reader, with a greater understanding of the condition and treatments for Polycystic Ovarian Syndrome.

We are grateful for the significant contribution made to the book by a variety of specialists at the Oxford Clinic, Christchurch and others. Whilst their perspectives and understandings are not intended to replace the advice of your own doctor, we do hope that the book proves useful in your own insight into the condition.

Oxford Clinic
Women's Health

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Polycystic Ovarian Syndrome

Introduction

Polycystic ovarian syndrome (PCOS) is one of the most common hormone problems for women. The problem was first described in 1935. The "Syndrome" (or collection of symptoms) includes a history of irregular periods, hirsutism (too much hair or hair in the wrong places), obesity (being too heavy) and the presence of polycystic ovaries (ovaries with many cysts or lumps). Over the last 65 to 70 years it has become clear that polycystic ovarian syndrome shows up in many different ways.

How common Is PCOS?

If all fit and healthy women have ultrasound scans of their ovaries around 1 in 5 will have ovaries that look like they have cysts. However, less than half will have any problems related to this. If we look at high risk groups of women, such as those going to hospital clinics for absent or irregular periods, a much higher proportion will have polycystic ovarian syndrome. Around 7 out of 10 of the women with irregular periods will have scans that show polycystic ovaries. More than 6 out of 10 will be hirsute and 9 out of 10 will have high hormone levels.

Does PCOS run in families?

In the last 5 years genes have been found that appear to have an effect on whether PCOS will happen in girls after puberty. The genes seem to be "dominant" which means if you have them there is a 1 in 2 chance of passing them on to your children. Males may also carry the genes and may develop early balding (before the age of 40 years). Males can also pass the genes on.

What causes PCOS?

The actual cause of PCOS remains unclear. It may be a problem of too high a level of male hormones being made in the ovaries (making male hormones is a natural step in the way women make female hormones). There may be a problem in the enzymes involved in the male hormone production. There may also be an important role of insulin in some women. If your body becomes resistant to the effects of its insulin, production of male hormone rises (from the ovaries, the adrenal glands and from the fat tissue) and excess weight gain may occur. As your weight progressively increases, the resistance to insulin worsens.

How would I know if I have PCOS?

There is no one test that allows us to tell you that you have PCOS. You might have an abnormal ultrasound, high male hormone (androgen) levels and symptoms that show such as acne (pimples) or hirsutism (excess hairiness). In addition, periods are often irregular and ovulation

can be very varied. Period problems might date back to puberty. Even in women who have regular periods, ovulation may be a problem. Obesity is common but is not often what women first seek help for.

Your doctor may check if you have acne and hirsutism as well as checking your weight, height (to allow calculation of your body mass index or BMI), waist measurement and blood pressure. Checks for evidence of insulin resistance are often made. This may be seen as changes in skin thickness, pigmentation or as skin tags.

The blood levels of male hormones (androgens) and luteinising hormone (LH) are high in many women with PCOS. Often the level of the binding protein (SHBG), which helps to inactivate the male hormones, is lower than average. This can cause the level of "free" and active male hormone to rise. However there is wide variation from one woman to the next. The blood tests are most useful when checked in the first 2 weeks of the menstrual cycle. Unlike other women with irregular periods, women with PCOS have oestrogen (female hormone) levels within the normal range. However the normal up and down changes in oestrogen levels do not occur. If ovulation is not regular, progesterone (another hormone) may not be produced over the last 2 weeks of the cycle. This means that the lining of the uterus (womb) may suffer from being exposed to too much oestrogen for a long time. This can lead to heavy irregular bleeding and an increased risk of uterine cancer. Insulin (a hormone that regulates blood sugar levels) levels may be increased in some women with PCOS. Insulin levels may be checked, along with a blood sugar level, by an early morning blood test done before you eat.

In PCOS the different symptoms will affect the following numbers of women:

Acne (pimples)	1 in 4
Hirsutism (hairiness)	6 in 10
Obesity (too heavy)	1 in 2
Alopecia (hair loss)	3 in 100
Irregular periods	1 in 2
No periods	between 2 and 5 out of 10

Blood test results:

High free testosterone levels	Most
High total testosterone levels	1 in 2
High DHEAS	1 in 2
High LH/FSH	6 to 8 in 10
Low SHBG	1 in 2
Elevated cholesterol	1 in 2
Impaired glucose tolerance (pre-diabetes)	1 in 3
Diabetes	1 in 13

The typical ultrasound appearance is one of larger ovaries with many (10 or more) cysts arranged around the outside of the ovary. The size of the stroma, or inner core, of the ovary may also be increased. Sometimes these features may not be seen in women with PCOS but this may just mean that the scan wasn't clear enough. Other medical conditions can also show a similar ovarian appearance. For example, in elite athletes the hormones that control ovarian action from the hypothalamus in the brain can be disturbed and have an effect on the ovary.

What effects can I expect from PCOS?

- **Will it affect my looks ?**

Acne (pimples), hirsutism (excess hairiness) and androgenetic alopecia (male pattern hair loss) associated with PCOS are a problem. They can all be managed one way or another with medicines. Hair removal by electrolysis or laser along with bleaching, gentle waxing or cutting of the hairs may be used.

- **Are there any long- term medical problems ?**
  - **Diabetes (too high blood sugar)**
  - **Hypertension (high blood pressure)**
  - **Lipid disorders (high blood fats or cholesterol)**

These problems may occur more commonly in women with PCOS as a result of the insulin resistance, high androgen (male hormone) levels and obesity. Over time, 4 out of 10 women with PCOS may develop a problem with blood sugar levels or diabetes. This risk can be reduced with sensible advice and good medical care for the PCOS.

- **Endometrial cancer (Cancer of the womb lining)**

This form of cancer is more likely to occur when ovulation is erratic and less progesterone than normal is being produced. The uterus (womb) is then exposed to higher levels of oestrogen for a longer time. The risk may be increased further by the presence of obesity, hypertension or diabetes. There is no clear evidence that the risk of endometrial cancer is increased in women with PCOS.

- **Ovarian cancer**

There is no good evidence to support an increased risk of ovarian cancer in women with PCOS.

- **Fertility**

Women with erratic ovulation may find it more difficult to get pregnant. In one study, 4 out of 10 women had problems getting pregnant. There may be a slightly higher risk of miscarriage among women with PCOS. The chapter on Fertility will discuss this in detail.

What help is available?

Weight loss

This is an important part of any treatment programme. Weight loss reduces the amount of androgens (male hormone) being produced in the fat tissue and it helps your insulin to work. Acne, hirsutism and irregular

periods can improve, even with small amounts of weight loss. Ovulation and pregnancy may occur without any further help. Weight loss is achieved with a combination of diet and exercise. The diet is balanced with appropriate carbohydrate, protein and low fat intakes. Exercise is really important for your metabolic rate and to help you continue to lose weight. It helps to lower your blood pressure, cholesterol levels and the risk of diabetes. Medicines to help you lose weight may sometimes be recommended.

Hair removal

Hair, particularly around the face, bikini line and lower abdomen can be successfully removed by electrolysis. This technique uses an electrical current to prevent further hair growth from an individual hair follicle. Because there are many follicles in the skin this can take some time to have a visible effect.

Over the past 5 years there has been interest in using lasers and IPL to permanently remove hair. Studies from Europe suggest they are safe and effective. They may be less painful than electrolysis. 2-5 treatment sessions are required and currently the cost per treatment is high. Some medical insurance companies will rebate the cost of the procedure if you can prove that you have PCOS. A letter from your doctor is usually enough.

Acne treatments

Routine acne treatments such as antibiotics and isotretinoin can be used in combination with the specific treatments for PCOS. If used alone, the acne medications are unlikely to control the problem long-term.

Specific treatments

- **Oral contraceptives (The Pill)**

Contraceptives regulate periods and reduce the amount of androgen being produced by the ovaries. By regulating bleeding, any risk of endometrial and ovarian cancer is reduced. Several contraceptives are available that contain male hormone-blocking ingredients. These may help settle acne and may reduce hair growth. Before an oral contraceptive is prescribed a careful history is taken by the doctor to ensure that it is a safe drug for you. For instance, it is important for your doctor to know about any personal or family history of clotting problems. “The pill” may increase the risk from 1 in 10,000 to over 2 to 3 in 10,000 women. Weight and blood pressure are also checked.

- **Androgen (male hormone) blockers**
  Spironolactone.

This agent blocks the ability of male hormones to attach to their “receptor” on skin or hair cells and reduces the actions of enzymes that help to make androgens work. This slows down the action of androgens on hair growth and acne. This is an effective medicine. Hair growth, in areas it is not supposed to be, almost stops over 12-18 months with an even quicker clearing of acne. Because break-through bleeding

may complicate its use, it is often used in combination with an oral contraceptive (a “Pill” such as Estelle-35ED).

Cyproterone acetate

Cyproterone is a an androgen receptor blocker and is the most commonly used agent in Europe. It is typically used together with “the pill” either in a continuous fashion or for 10-day cycles each month. It sometimes has side effects of fatigue and mood changes. Because it also has an effect like progesterone, periods may become light or even stop. However, you will see that hair growth is visibly reduced within 4 to 6 months with the greatest effect achieved within 12 to 18 months. It must be used with contraception if you are sexually active.

Flutamide

Flutamide is a pure anti-androgen and is used continuously through the menstrual cycle. It has similar effects to cyproterone acetate. It is generally very well tolerated and has been used for more than 20 years in women with PCOS. It does not alter periods.

- **Medicines to make insulin work better**

  Metformin

Metformin has been used for many years to treat type 2 diabetes (insulin dependent). Since the discovery that insulin resistance (your insulin doesn’t work as well as it should) plays a role in PCOS, metformin has become an important part of the treatment programme. It is very useful in reducing acne and may make weight loss slightly easier when combined with exercise and diet. Ovulation may start again by itself and a return of normal menstrual cycles can be seen. It is taken 2 to 3 times each day with meals. The dose is increased very slowly to avoid side effects of nausea (feeling like being sick) and diarrhoea. It can be combined with other PCOS medicines.

Glossary of the terms used

Alopecia

Thinning or loss of scalp hair. This may occur in a “male pattern” where hair is lost from the front of the scalp or “female pattern” when hair thins over the vertex or crown

Androgen

Male hormone

Anti-androgen

A medicine that stops the normal action of male hormones

DHEAS

An androgen produced mainly in the adrenal glands. If the level is too high it can be a useful sign that you have PCOS.

Endometrium

The lining layer of the uterus (womb) that is shed each month as our period

Genes

The characteristics we have inherited from our parents at birth

Hirsutism
Excessive body hair growth, or too much hair in the wrong places
Hypothalamus
The area of brain that controls the activity of the pituitary gland. It makes hormones that control growth as well as ovarian, thyroid and adrenal gland activity.
Luteinising hormone
One of the hormones produced by the pituitary gland that controls ovulation and ovarian activity
Ovary
Two glands adjacent to the uterus in the pelvis that produce eggs and sex hormones
Receptor
An area on a cell that a hormone must connect with before it can change cell activity and have any effect. The hormone and receptor function like a lock and key.
Seborrhoea
Greasy skin or hair that may be seen with excessive male hormone levels.
SHBG
Sex hormone-binding globulin. – A protein produced by the liver to bind to male and female hormones. While bound to SHBG the hormones are less active
Testosterone
The main male hormone produced by men and women
Ultrasound
A painless scan using sound waves to examine the ovaries and pelvis in woman with PCOS.

Anna J Fenton,
ENDOCRINOLOGIST

Fertility and Polycystic Ovarian Syndrome

Who gets PCOS ?

Polycystic Ovarian Syndrome (PCOS) is the most common hormone problem in younger women and those that haven't been through menopause. About 1 in 5 of these women show polycystic ovaries on an ultrasound. The scan usually shows 8 to 10 or more small cysts (or lumps) about 3 to 4mm wide. Only 1 in 10 will show hormone changes that confirm the condition is PCOS.

The hormone tests check the levels of luteinising hormone (LH) and testosterone. Sex hormone binding globulin (SHBG) and free testosterone and dehydroepiandrosterone sulphate (DHEAS) levels are also measured. These have been discussed previously in Dr Fenton's chapter.
About half of the women going to infertility clinics have polycystic looking ovaries. Not all of these women will have the hormone changes that prove they have PCOS.

How would I know if I had PCOS ?

Many women that go to infertility clinics have irregular periods. Their periods may be completely absent or infrequent, occurring every 1-4 months. However, some women have consistent regular 28-day cycles and may have none of the other signs of PCOS.

PCOS usually shows up as absent or irregular periods, excess body weight, excess body hair and greasier skin. Sometimes there is acne (pimples) on the face or other parts of the body. Some women may be of normal build, the skin may be clear, there may be no excess body hair and the periods may be regular, yet she may not ovulate. Anywhere between the two extremes can be seen and variations occur, not just from woman to woman but within the same woman at different times of her life.

Some women may have trouble getting pregnant with their first pregnancy and need medical help and then further pregnancies may occur easily and without help and vice versa. How much you are affected by PCOS also depends on whether you smoke, exercise and how good your diet is. Diet can have a very interesting effect.

During times when there is lots of food women with PCOS will find it harder to conceive whereas during times where food is short it may be that PCOS sufferers may be more fertile than the general population of women as they will have better blood sugar levels and when experiencing weight loss, they could become fertile. This fact is still important in the underdeveloped world.

How can we treat the infertility? General health advice.

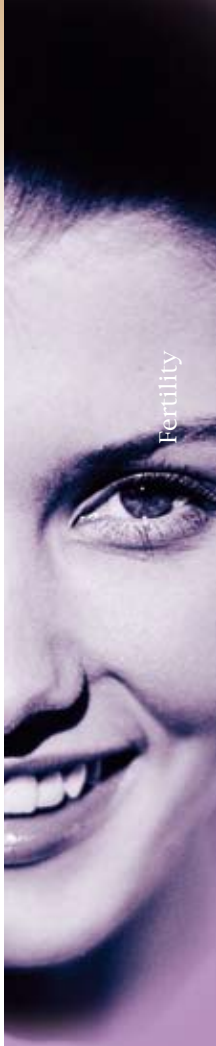
If you are too heavy then entering into a weight loss programme is likely to improve fertility. A weight loss diet should be balanced and contain all the main food types, such as fat, protein and carbohydrate. You need to be careful to limit carbohydrates, especially refined sugars which are very rapidly absorbed. Unfortunately snacks that we tend to have between meals often have a high carbohydrate content, such as a muffin or a chocolate biscuit etc, and therefore "between meal" snacks should consist of either fruit or vegetables. Your diet should go hand in hand with increasing aerobic exercise to increase overall fitness and resistance training to increase muscle bulk which will also increase the metabolic rate and help with weight loss.

What medicines are used ?

The most common medicine used to produce ovulation (egg release) is clomiphene. This medicine is taken early in the menstrual cycle, usually starting on day-1 or 2 with day-1 being defined as the first day of the period. The clomiphene is taken for 5 days only and it causes the body to make more follicle-stimulating hormone (FSH) from the pituitary gland, which travels through the bloodstream to the ovaries and stimulates egg production. This works in 70% of women suffering from PCOS although only 50% will get pregnant.

In those women where clomiphene does not seem to be working, metformin can be added 2-3 times a day after meals. By making the ovaries more sensitive to insulin it can help produce ovulation. It also lowers blood sugar and is used in the treatment of diabetes. If a woman is not having periods regularly when she starts clomiphene, she will be required to take some medication to bring about a period before the clomiphene is commenced. Often the best way to achieve this is by using an oral contraceptive preparation, such as Estelle-35ED, for 21-days, at the end of which a hormone withdrawal bleed tends to occur and then clomiphene can be taken.

If clomiphene, with or without metformin, does not bring about a pregnancy then gonadotrophin injections may be required. These injections pretend to be the FSH normally produced by the pituitary gland and used to start egg development with the ovary. Around mid cycle an injection of another drug that copies the gonadotrophin LH is given to cause the developed egg to release from the ovary. These injections need more supervision by a doctor than simply using clomiphene tablets but can be very effective in getting ovulation started in those people that do not respond to the effects of clomiphene. There is an increased chance with these injections that a multiple pregnancy



consisting of either twins or triplets can occur and also a condition called 'hyperstimulation syndrome' where multiple very large cysts form. This syndrome can be very painful and often needs admission to hospital for a period of observation and pain relief.

Sometimes gonadotrophin injection treatment leads on to the next step of in-vitro fertilisation (IVF). Higher doses of gonadotrophins are used to produce multiple eggs which are then collected by passing a needle through the top of the vagina into the ovaries under ultrasound scan guidance. Once the eggs have been removed from the woman's body they are mixed with sperm to produce embryos that can then be placed into the woman's uterus.

Is surgery ever necessary?

In the early 1900's doctors found that following the taking of a biopsy (small piece) from polycystic ovaries that ovulation may occur and a pregnancy may result. The "wedge resection" was developed to try and treat fertility problems associated with polycystic ovarian syndrome. This required an open operation and taking a wedge-shaped bite out of an ovary. Sometimes this could lead to adhesions which themselves could cause fertility problems. Over the years various operations have been tried that produce the same kind of 'shock' treatment to the ovaries but at the same time lower the risk of adhesions occurring.

At laparoscopy where a telescope is passed through the umbilicus (tummy button) the ovaries can be seen and the little cysts within the ovaries can be opened using an electrical current called 'diathermy.' Even this procedure can be associated with adhesions but techniques such as making sure that there is no bleeding at the end of the surgery from the ovaries and placing fluid into the pelvic cavity at the end of surgery to allow the ovaries to remain mobile will decrease the chance of such adhesions. Such ovarian drilling, as it is known, can result in ovulation occurring in 7 out of 10 women which is about the same as the success achieved by using clomiphene. Clomiphene would be the treatment of choice initially but if laparoscopy is required to look at the fallopian tubes then the opportunity to perform ovarian drilling is often taken. Women suffering from PCOS also have a higher chance of endometriosis being present within the pelvis which can also decrease fertility unless treated. Any woman presenting with PCOS who gets pelvic pain should have a laparoscopy. Information regarding endometriosis can be obtained through the web site of Endometriosis New Zealand (www.nzendo.co.nz and www.endometriosisnz.org.nz) and also the web site of The Oxford Clinic (www.oxfordclinic.co.nz) or from your doctor or specialist.

What is the risk of miscarriage?

The usual rate of miscarriage in the general population is 1 in 5 of all pregnancies. In sufferers of PCOS some researchers have shown that this

risk is increased up to 1 in 2. It can be very distressing for a couple who have tried for some time to achieve a pregnancy only to find that miscarriage occurs. Two ways to lower the risk of miscarriage are possible. The first is low dose aspirin (75-100mg a day) starting one month prior to trying to get pregnant and continued for the first twelve weeks of pregnancy. The second is providing emotional support aided by blood tests and scans. Blood tests are used to show the normal rise of placental hormones during early pregnancy. A normal rise of the placental hormone beta HCG is a good sign that all is going well. Weekly ultrasound scanning from 6 weeks to 12 weeks of the pregnancy to show normal growth and development of the baby is also reassuring. These two methods of support have been shown to lower the miscarriage rate. Other things such as progesterone suppositories and FSH injections are more controversial and ought to be discussed with your doctor and used on a more individual basis.

Luteinising Hormone – A predictor of failure of fertility treatment and of miscarriage.

A luteinising hormone (LH) level above 10iu (10 international units) is the most significant sign that the medicine treatment may not work. However, if a pregnancy does happen then the high LH level also suggests there will be a higher risk of miscarriage. Unfortunately early treatment with medicines aimed at trying to bring down the LH level has failed to show higher pregnancy rates or lowered miscarriage rates.

Final outcome

On a positive note the majority of women suffering from PCOS who wish to become pregnant usually do and such pregnancies are successful. It is a good idea for women with PCOS to have a specialist involved in their pregnancy care as there is also an increased risk of diabetes and toxaemia developing. If such problems are detected early however, and managed well, a good outcome can still be expected.

Michael East,
OBSTETRICIAN & GYNAECOLOGIST

Polycystic Ovarian Syndrome

How your GP can help

As we are increasingly aware, Polycystic Ovarian Syndrome is very common, therefore it is inevitable that most of the management of this problem will remain in community health centres rather than in hospital clinics. Hospital and specialist clinics have the resources to assist with the more serious complications of PCOS and with infertility problems.

Symptoms and signs

GPs have a long experience of helping women with the traditional range of symptoms of PCOS; hirsutism, acne and irregular periods. But new research informs us that there are many variations on this theme and that we should suspect and test for PCOS far more often, including in women who do not present with the classical features of the syndrome.
For instance, a slim woman with mildly erratic periods may have difficulty conceiving because of PCOS. A woman who gradually develops high blood pressure may have an underlying hormonal problem which is triggering this change. A woman who is struggling to lose weight, in spite of working hard on her diet and exercise regimen, may be fighting an uphill battle against a high testosterone level, and insulin resistance.

What other problems could I have?

The new information emerging on PCOS also shows that there can be serious long term complications from an untreated hormone imbalance. There has been a widespread belief by the public and, to a lesser extent, within the medical community, that the risk of heart disease is relatively low in women and women are less likely to be assessed for cardiovascular risk. Increasingly, however, evidence is emerging that this is incorrect and that women have significant risks of death from heart attacks and strokes that are not being as well addressed as they could be. New knowledge about PCOS is an important factor in the reassessment of women's long term health risks in this area.
GPs and Practice Nurses are an excellent first port of call for any woman concerned about her risk of diabetes or heart disease or who has any of the symptoms of PCOS.

What to expect when you see a GP about PCOS

(Not all doctors approach the same problem in the same way, but this is a general guide to what a consultation about PCOS may involve.)

After hearing you tell them your symptoms or concerns, a doctor may ask you for some further information about
1. Your menstrual history; when you started having periods, what the pattern of bleeding has been over your life and whether the periods have ever been very heavy or painful.
2. Your contraceptive history; if you have ever taken any hormonal contraceptives (combined oral contraceptive, Depo Provera® or minipill) and how they affected your bleeding, weight and skin.
3. Any history of pregnancy, including how long it took without contraception to get pregnant, any history of miscarriages, problems with high blood pressure or high blood sugars during a pregnancy.
4. Any family history you have of heart problems, strokes, diabetes or cancer and whether any of the women in your family had problems getting pregnant or had erratic periods.
5. Any other health problems, current medications, allergies or history of smoking.

The doctor may also examine your skin, abdomen, heart and blood pressure and may also do a pelvic check and urine test. Some blood tests will probably be done. A pelvic ultrasound (scan) is not always needed to confirm a diagnosis of PCOS, but is likely to be requested if your story contains any history of heavy bleeding, very irregular bleeding or pelvic pain.
Obviously this is a complex problem for which the history, examination and discussion of findings and options will take some time. Most doctors will need to take at least two consultations to fully explore the problem, especially if they do blood tests which may take some time to come back.

Treatment

Once a diagnosis has been made, the general practice team can offer support and information on the important lifestyle changes; weight reduction, exercise, smoking cessation and dietary fat and sugar reduction, which can often make a major difference to the syndrome and its associated risks.
Medication useful for PCOS; cyproterone acetate, oral contraceptives, spironolactone and metformin are all widely used in General Practice. (Clomiphene and other fertility medicines are only available through a specialist.) GPs also manage high blood pressure, heart disease and diabetes, but the aim of primary care is to prevent these complications, as far as possible, by detecting and treating the underlying problem, in this case PCOS.
Your GP can give you a green prescription which will give you access to advice and support for an exercise programme.

In summary

Polycystic Ovarian Syndrome is common and variable in the way it affects individual women. It can be treated with lifestyle changes and medication if required. PCOS can have serious long term health consequences if not treated. Women who think they may have any features of the syndrome should seek assistance with diagnosis and treatment from their GP. Referral to other specialist services such as gynaecologists, physicians, dieticians or dermatologists may be needed for those who have more complications of PCOS.

Dr Rose Laing,
GENERAL PRACTITIONER

Polycystic Ovarian Syndrome and its effects on Skin and Hair

Acne vulgaris is one of the most common skin problems. There is no single disease that causes more psychic trauma and more general insecurity and feelings of inferiority than does acne vulgaris.

Acne is not a superficial thing. Mostly it is caused by what is happening in and around the skin pores, particularly those on the face and upper trunk. There are four major factors involved in the cause of acne:

- increased oil (sebum) production
- thickening of the inside lining of the skin pores
- abnormal bacterial function
- production of inflammation

Acne is triggered by over-activity in the sebaceous (oil-producing) glands. The increase in oil production is triggered by androgens, although in most individuals the levels of circulating hormones are normal. For unknown reasons, the skin and oil glands in some individuals seems much more sensitive to normal levels of circulating hormones. The mechanism of the thickening of the inside lining of the skin pore is unclear. There is some suggestion that abnormalities in the make up of the oil secreted by the skin pore leads to increased stickiness of the cells which line the skin pore. At the same time, keratin, which is a protein in the lining of your pores, begins to form little lumps. The build up of keratin, dead skin cells and sebum clogs the skin pores and forms a plug. This plug stops the excess sebum getting out. Bacteria (Propionibacterium acnes) then overgrow in these blocked skin pores and release a number of chemicals that cause inflammation. Some individuals immune systems react with much more inflammation than others; once again, the reasons for this remain unclear.

What are Androgens?

Both men and women have male and female sex hormones circulating in their bodies, the ratios are just different. Androgens are male sex hormones such as testosterone. They influence the growth of hair and both the amount and mix of oil and fatty acids produced by sebaceous glands (oil glands) in the skin. They do this by triggering chemical receptors found in the skin and hair.

Women need to make androgens in order to make female sex hormones such as oestrogens. If the ovaries make too much androgen or, as is probably more often the case, if the skin is too sensitive to normal levels of circulating androgens, the skin can become greasy. This can then lead to acne. Similarly, if the hair is too sensitive to circulating androgens, it can grow excessively, or it may cause hair loss on the scalp. Other hormones can also be involved. Some women are genetically

prone to having more pronounced hormone swings, with higher levels of androgens, and, at certain times of their periods, oil glands that are more sensitive to circulating hormones. This is the cause of pre-period breakouts of acne that so many women complain of. When hormone levels stay stable, it's easier on the skin. When they fluctuate a lot, the skin breaks out.

It is difficult to know the role of stress in acne; many people certainly blame stress for their acne getting worse. It is possibly that stress alters the immune response to inflammation. Acne itself is likely to cause stress, especially when a person tends to pick the lesions, making them appear worse.

Acne myths

The available data shows there is no relationship between eating habits and acne; in particular chocolate, sugar and milk do not cause acne although a very high intake of calories may aggravate acne. Despite what you will read in many magazines diet has never clearly been implicated in acne. There isn't a scientific reason for any particular diet although some women are convinced that a particular food aggravates their acne, and it is reasonable that they avoid the offending food. Avoid greasy foods. Although this can't be proven to cause acne it is advisable to follow a healthy diet.

Blackheads are not skin pores filled with dirt nor are they oxidised keratin. The black colour is due to the pigment, melanin. Acne is not an infection; although the bacteria P. acnes are important in the cause of acne, it is an overgrowth rather than an infection. The pussy spots of acne are due to inflammation – not bacterial infection.

Treatment

Treatment of most acne is usually straightforward. Most patients respond well to conventional treatment although most treatments do not cure acne. Conventional treatment is defined as topical therapy or topical therapy combined with antibiotics taken by mouth and/or hormonal therapy. Nine out of ten patients should achieve an 80% improvement of their acne within 8 months of therapy. It is important to stress that improvement is sometimes slow, perhaps improving by only 10% per month.

Some cosmetic products, particularly if they are oil based, promote the formation of comedos (blocked skin pores). Some cosmetics may also cause a chemical irritation that can lead to inflamed papules and pustules. Washing the face twice a day with a low residue soap, e.g. QV, is of benefit. Too frequent washing of the face may make things worse. Over scrubbing of the face should also be avoided as it can damage the lining of the skin pore and worsen acne. Whilst it is better to avoid cosmetics completely, the psychological impact of acne is such that, judicious use

of non-comedogenic cosmetics is sound advice. Use water based skin products and avoid oil-based make-ups containing ingredients such as lanolin or petrolatum which can block your pores. Moisturisers, including some sunscreens, need to be used with caution.

Don't wear tight clothing on affected areas or rough textured clothing such as wool. Don't cover acne on your forehead by wearing a hat or headband. These can irritate the skin and spread the inflammation. Smoking may reduce the benefits of some treatments, so it is always best not to smoke.

Physical treatments

Unblocking blocked skin pores by applying light pressure (ie. squeezing or better still using a comedo extractor) can sometimes be of benefit. It is very important to do so carefully to minimise inflammation and scarring. However, do not pick at spots and blemishes. Abrasive creams and exfoliating pads can also be of help although they need to be used with care as too much abrasion may cause the acne to get worse.

Acne frequently improves over the summer months. Both visible and ultraviolet light has been shown to improve acne, although the effect is usually only temporary. Unfortunately, in a small number of individuals, acne can be made worse by the sun. This may be due to sunscreens or increased sweating causing the skin pores to become blocked. Sunbeds and acne lamps are of limited help. A number of new light and laser sources are being investigated for the treatment of acne; these include blue, red, green and yellow light sources as well as Intense Pulsed Light (IPL). To date they show a 50-75% reduction in acne over a number of treatments. It is however not yet clear how long these benefits last.

Topical treatments

There is no topical treatment that effectively controls oily skin (seborrhoea). However, a number of topical treatments can unblock skin pores. These include products containing benzoyl peroxide, salicylic acid, resorcinol or retinoids.

Benzoyl peroxide has both antibiotic and skin peeling activity.
It should be applied once daily to begin with preferably to dry, clean skin. Start with the lower concentrations. A small amount should be used, perhaps a pea-sized quantity, for the whole of the face. Over a number of weeks the applications can be increased to twice daily. The time frame of improvement is 6 to 8 weeks. Benzoyl peroxide needs to be continued long term as it only controls the acne process. Side effects of benzoyl peroxide include irritation, erythema and peeling, allergic contact dermatitis, and bleaching of clothing.

The topical retinoids are effective in treating both inflamed and non-inflammatory acne lesions. Skin irritation is common although the newer retinoids are better tolerated. They are best applied at night to dry skin

(increased irritation if applied when the skin is wet). Retinoids can make you more sensitive to sunlight so care must be taken during the summer months. They should not be used if pregnancy is a possibility.
Frequent mistakes made when using topical agents include overuse (causing irritation), application to moist skin (absorbed more quickly causing irritation), used for too short a period of time (failure to respond) and too high an expectation of result.

Oral treatment

Oral treatment is indicated in women with moderate to severe acne. It is also indicated in milder acne if it has not responded to topical agents, if there is any scarring or the patient is very upset by their acne. Treatment should be continued for at least 6-9 months.

Antibiotics are generally moderately effective treatment for acne vulgaris. They work more by reducing inflammation than by killing off bacteria.

The most common reasons for apparent treatment failure by antibiotics are: too short a length of treatment (should be for at least 6 months), poor compliance (missing even 1 dose a week reduces efficacy), and too high an expectation of result.

Too oily a skin is another cause for antibiotic failure. The mechanism is thought to be excessive dilution of the antibiotic in the skin pore. If this occurs, options include doubling the antibiotic dose, using anti-androgens in female patients to reduce oiliness, or a course of isotretinoin.

Hormonal therapy is indicated in those females who are not responding to, or who are intolerant of, topical agents and/or systemic antibiotics. There are three major hormonal therapies: oestrogen with cyproterone acetate, spironolactone or prednisone.

The main hormonal treatment used is Estelle-35ED (0.035 mg ethinyloestradiol, 2 mg cyproterone acetate). Treatment should generally be continued for 1-2 years, with little expected response in the first two months. It can be used as a single treatment or in combination with other medications.

The third generation oral contraceptives (ethinyloestradiol with desogestrel or gestodene) are regarded as less likely to worsen acne than second generation pills. Estelle-35ED moreover, also contains the anti-androgen, cyproterone acetate.

Spironolactone (50-200 mg/day), a diuretic, can sometimes be helpful in some female patients. It is particularly helpful in older women with known risk factors for the oral contraceptive in whom hormonal treatment is indicated. The mechanism of action is not clear. Spironolactone and Estelle-35ED both reduce circulating levels of testosterone and dehydroepiandrosterone. However, spironolactone has no contraceptive effects and can cause menstrual irregularities and increased facial

pigmentation (melasma). There is some concern that spironolactone could promote tumours in animals.

The steroid prednisone (5 mg at night for 5-7 days/month) can suppress adrenal androgens. This treatment was commonly used before isotretinoin and Estelle-35ED were developed, but has fallen from favour.

Oral retinoids

Retinoids (isotretinoin, Oratane) have revolutionised the treatment of acne vulgaris. Isotretinoin is the first drug that actually modifies the disease process. Isotretinoin is indicated for severe nodulo-cystic acne only. However, as it is such an effective treatment it is sometimes difficult to avoid, even when not specifically indicated.

Isotretinoin dramatically suppresses oil (sebum) excretion, which is often maintained for many months after stopping the drug. Isotretinoin also suppresses comedogenesis, decreases cell-to-cell stickiness (which is why it makes the skin more fragile), indirectly reduces P. acnes bacterial levels, and reduces inflammation.

The biggest concern with isotretinoin is the risk of pregnancy. There is a very high risk of a major birth abnormality if a women takes isotretinoin during pregnancy, the main effects are on the babies heart, brain and ear.

Isotretinoin is contra-indicated in pregnancy and effective methods of contraception must be used in any woman of child-bearing age who is prescribed isotretinoin.

Side effects include: dryness of the lips, skin, nasal mucosa and eyes, muscle and joint pain, nausea, headache, visual disturbances including sensitivity to light, itch, hair changes and depression.

Most of these side effects can be managed by appropriate counselling, dose adjustment or use of moisturisers, topical steroids or antibiotics. It is uncommon to have to discontinue isotretinoin completely.

Hirsutism

Hirsutism in women is the excessive growth of hair in a male pattern, ie. in the moustache and beard areas, or occurring more thickly than usual on the limbs. There may be hairs on the chest or an extension of pubic hair on to the abdomen and thighs. What is considered normal for a woman, and what is considered hirsute, depends on cultural factors and race. Hirsutism is very common.

Hirsutism is nearly always genetic in origin. Female and male relatives may also have more hair than the average so hirsutism is normal in that family. Unfortunately, in our society, to be hirsute is thought unattractive. The only reason that fashion models appear to have little hair is that they spend a lot of time and energy removing it.

Androgen effects on hair

Although some women with hirsutism have increased amounts of male hormone (eg. testosterone with low sex hormone binding globulin), most have normal levels. The problem in these women is that the hairs are more sensitive than normal to small amounts of hormone. The hairs grow more quickly and thicker in response to it. The increased hair growth is usually first noted in late teenage years and tends to gradually get more severe as you get older.

Blood tests may be arranged to make sure that the hirsutism is not due to excessive male hormone levels, which could be due to a tumour on the pituitary gland or adrenal gland. Other blood tests should include prolactin levels and cortisol. An ultrasound examination of the ovaries may be necessary as one common cause of hirsutism is polycystic ovaries.

Physical methods of hair removal

There are a number of physical treatments available to help with hirsutes. Bleaching, although it does not get rid of any hair, can make excessive hair much less obvious. Bleaching is often useful in combination with one of the other treatments.

Depilatory creams are generally based on thioglycolate (a chemical more commonly used in perming solutions). A thick layer is applied for 15-30 minutes to the hairy area, then wiped off and the hair comes off with the cream. The chemical slowly dissolves the hair. Depilatory creams can irritate and cause dermatitis.

Shaving is a very quick and inexpensive way of removing hair. Women are generally comfortable to shave leg hairs but for some reason there is a great reluctance to shaving facial hair. This is illogical but a fact of life. Shaving does not make the hair grow more quickly or more thickly. It does, however, leave a sharp edge to the end of the hair, which is more easily felt than the naturally weathered end of a non-shaved hair.

Plucking hair is painful and time consuming. This is suitable for small areas of hirsutes. Note however, plucking and waxing does make the hair follicle grow back more quickly.

Waxing requires the application of an adhesive wax to the skin. This binds onto the hair and, when the wax is removed, it takes the hairs with it from the roots. Ouch! Waxing needs to be repeated every six weeks. Unfortunately, waxing can damage the hair follicles causing a folliculitis (inflammation of the hair follicle). This can last for months.

Electrolysis or thermolysis may result in permanent hair loss but it takes time. A small probe is inserted along each hair, and a small electrical or heat discharge destroys the hair. A small area is treated every few weeks. It can be expensive if the area affected is extensive. Unskilled treatment may cause scarring.

Laser therapy, new long wavelength lasers and Intense Pulsed Light (IPL) are under investigation for the removal of body hair. Time will tell how effective these will be.

Medical treatment of Hirsutism

Hormonal treatment using anti-androgen medicines (which counteract the male hormone) may be used for women with moderate or severe hirsutism. In many cases the hair growth slows down and the hairs become thinner and less noticeable. It takes between six and twelve months to notice much difference.

Although several low dose combined pills may be helpful, Estelle-35ED (0.035 mg ethinyloestradiol, 2 mg cyproterone acetate) has been specifically formulated to have anti-androgenic activity (ie. anti-male hormone action). Estelle-35ED contains oestrogen and cyproterone. Side effects include spotting (bleeding between periods), tender breasts, nausea and headaches, especially in the first few months. The oral contraceptive pill is not suitable for everyone.

Sometimes larger doses of cyproterone are required. This is given as cyproterone tablets, 50 to 200mg, for 10 days each cycle and combined with the oral contraceptive pill (Estelle 35ED). This is often very effective for women with hirsutism. Side effects include weight gain, depression, and loss of libido.

Spironolactone 50–200 mg daily can slowly reduce excessive hair growth. It is sometimes combined with the oral contraceptive pill. The mechanism of action is not clear. Spironolactone and Estelle-35ED both reduce circulating levels of testosterone and dehydroepiandrosterone. However, spironolactone has no contraceptive effects and can cause menstrual irregularities and increased facial pigmentation (melasma). There is some concern that spironolactone could promote tumours in animals. Side effects include tender breasts and irregular menstrual bleeding.

Dr Marius Rademaker,
DERMATOLOGIST

Diet and lifestyle for Polycystic Ovarian Syndrome

Introduction

Many women with Polycystic Ovarian Syndrome (PCOS) have raised insulin levels in their blood (hyperinsulinaemia). This can lead to abnormally high production of male hormones from the adrenal glands and ovaries causing many of the symptoms including erratic menstrual periods, infertility, acne, hirsutism and alopecia.
Hyperinsulinaemia can also raise low density lipoprotein (LDL) cholesterol and triglycerides (TG) as well as decrease high density lipoprotein (HDL) cholesterol and abnormal clotting factors. This increases risk of heart disease, high blood pressure and Type 2 Diabetes Mellitus.
Hyperinsulinaemia promotes fat storage and is a major reason why many women with PCOS find it so difficult to lose weight. For all these reasons treatment of hyperinsulinaemia is pivotal for those with PCOS.

If someone is overweight their main goal should be to lose weight.
The good news is that even a loss of 3-5kg can have an effect on reducing hyperinsulinaemia.

Insulin and insulin resistance

To help normalise insulin levels it is useful to first briefly explain the main role of insulin.

Many foods we eat are rich in carbohydrate, in particular foods made with grains and flour (breakfast cereals, bread, crackers, pasta, rice muffins, cakes, biscuits, pastry) and certain vegetables (potatoes, kumara, sweetcorn), fruits and foods or drinks made with sugar.

Following a meal or drink containing carbohydrate the process of digestion will break down the carbohydrate into glucose. As glucose travels from the digestive tract into the bloodstream blood glucose levels then begin to rise. This stimulates the pancreas to produce and release insulin directly into the bloodstream. Insulin acts like the ‘key in the lock’ opening the door to allow glucose to leave the blood and enter cells all around the body. Once in the cells the glucose can be used as an important source of energy.

In PCOS, for reasons not yet clear, the insulin fails to work as effectively as it should. This is known as 'insulin resistance'. After eating carbohydrate, blood glucose levels rise higher than usual and remain high for longer whilst passage of glucose into many cells is slowed. The pancreas responds to the rising blood glucose by producing more insulin resulting in hyperinsulinaemia. Because the glucose cannot easily enter the muscle cells much is diverted into storage as fat. This is one reason why gaining fat is easier with insulin resistance.

Changes in diet and lifestyle to reduce insulin resistance

Lifestyle changes can go a long way to reducing both hyperinsulinaemia and insulin resistance. Currently in most bookshops you will find a number of diets for treating insulin resistance with the main goal to lower or avoid all carbohydrates. Of these 'low' or 'no' carbohydrate diets which do result in weight loss and improved insulin resistance, the success is largely due to the reduced calories rather than the low percentage of carbohydrates.

The 'very low' carbohydrate diets (less than 30% carbohydrate) are unhealthy long term because for most people they are deficient in fibre, vitamins and minerals and too high in protein and animal fats.'Low' carbohydrate diets (40% carbohydrate: 30% fat: 30% protein) are less unbalanced and do recommend more sensible fat content and fibre-rich vegetables. However, these diets are also low calorie diets where much of the weight loss and reduced insulin resistance is due to the calorie deficit and not actually to the low percentage of carbohydrate. Other published 'low' carbohydrate dietary approaches for treating insulin resistance work because of a combination of diet, exercise, motivation therapy and stress release to achieve the weight loss and reduced insulin resistance.

People generally find the 'very low' and 'low' carbohydrate diets hard to maintain for long because the complex calculations and food restriction make it difficult both when eating at home with the family and when eating out. All too soon many return to previous eating habits and regain the weight plus more.

As far as carbohydrates are concerned much of the problem is that people tend to overeat **refined** and **processed** carbohydrates which are usually high in refined flour, sugar and/or fat. Think of what foods are available at the dairy, café, work cafeteria, fast food outlets, petrol stations and snack bars; chips, chocolate, muffins, cookies, pies, pastries, slices, cakes, white bread sandwiches, white rolls, burgers with high fat fillings, and deep fried foods. All of these foods are high in refined flour, fat and/or sugar and low in fibre, fruit and vegetables. When people rely on these

foods for many of their meals it is all too easy to overeat carbohydrate, fat and calories and to not eat enough fibre, fruit and vegetables.

In summary, yes, many people are eating too much carbohydrate and need to cut back on quantity and portion size but equally most people need help to change the **type** and **quality** of carbohydrate rich foods in their diet.

Our approach to managing insulin resistance is an eating pattern based on the following percentages:
Moderate carbohydrate (45 to 50%), Moderate protein (20 to 25%) and Low fat (30%). This type of eating pattern is easier to maintain long term and that means lasting changes to weight and insulin resistance.
Here are some ways to achieve these percentages and reduce insulin resistance:

- Enjoy regular frequent meals always starting with breakfast. Have 3 small meals and 2 or 3 healthy snacks to help avoid dips in your energy levels which means eating about every 3 hours whilst you are active. This helps reduce sudden cravings for sugary foods and overeating.

- Learn about the 'Glycaemic Index' (GI) of foods. This term refers to the speed at which the carbohydrate in food and drink is digested causing the blood glucose levels to rise. Remember the problem with rapid digestion and a fast rise in blood glucose is that more insulin is then released into the blood stream.
  Foods with a high GI are rapidly digested and cause a rapid surge in blood glucose levels. Foods highly processed and rich in refined grains, white flour and sugar are foods with a higher GI and include white bread, Corn Flakes, Ricebubbles, foods made with white flour such as scones or bagels.
  Replace these high GI foods with low GI choices which are slowly digested and release their glucose into the bloodstream more slowly. Low GI foods tend to be the less processed and contain unrefined wholegrains such as untoasted mueslis, grainy breads, basmati or brown rice, fibrous vegetables, unpeeled fruits, legumes (dried beans, lentils and split peas), nuts and seeds. These foods also provide vitamins and minerals, water and fibre.
  Low GI foods tend to remain in your stomach for longer so an added bonus is you feel less hungry between meals and have more sustained energy between meals. Have a look at the table for a brief guide on low versus high GI foods.
  For more information on the Glycaemic Index of foods you can ask your dietitian or read 'The GI factor' by Jennie Brand Miller.

- Choose small portions of carbohydrate rich foods (including breakfast cereals, breads, crackers, rice, pasta and potatoes). Only 1/4 of your meal (about the size of your palm) should be bread, pasta, rice or potatoes. Opt for the low GI types that are less processed eg untoasted unsweetened muesli or porridge, grainy breads, wholewheat crackers, brown or basmati rice, wholemeal pasta and boiled or steamed potatoes with their skins on.

- Choose some low fat protein with every main meal, again about 1/4 of your meal (about the size of your palm or a deck of cards). Protein slows the digestion of carbohydrates which helps lower the GI of the meal. Breakfast could include trim milk, low fat unsweetened yoghurt, cottage cheese or an egg. At lunch and dinner you can include a serving of fish, lean meat, chicken without the skin, cottage cheese or other low fat cheese, hummus, tofu, pulses or legumes (cooked without added fat or oil).

- At both lunch and dinner at least 1/2 your meal should be vegetables.
  Enjoy vegetable soup, salad or salad vegetables at each meal and remember in a sandwich vegetables should be double the thickness of your bread. Vegetables provide essential vitamins, minerals and fibre and help lower the GI of the meal.

- Your first choice of snack should be fruit. Remember for health you should eat 2 servings of fruit each day. Wash it well and for fruits with edible peel, keep the peel on.

- To help keep overall fat content under 30% of daily calorie intake use little fat, oil, margarine or butter. This is easily achieved by choosing trim milk and low fat cheese, lean meat and skinless chicken.
  Use very little or no fat spread, butter or margarine on your breads or toast.
  Avoid fried foods, most takeaways, pastries and pies.
  Use cooking methods which do not rely on adding oil e.g. steaming, boiling, dry roasting, grilling or baking in paper or foil. When stir frying try using stock to reduce the need for oil.
  To help identify low fat foods, read food labels and choose foods with less than 5-10 g of fat per 100g of product.
  Try going without butter, margarine or fat spreads altogether.
  For essential fats and nutrients enjoy a tablespoon of nuts and/or seeds each day as one of your snacks. Cashew nuts, almonds, brazils, walnuts, hazelnuts as well as pumpkin, sunflower and sesame seeds are all interesting alternatives.

Try toasting sunflower and pumpkin seeds lightly in the oven with a splash of soy sauce and have as one of your snacks or sprinkle them in your sandwich, over a salad, in your vegetables or on a stir fry.

- Drink enough fluid. Aim for 6 to 8 cups of fluid consisting mainly of water, herbal teas or fruit teas without added sugars. For good health keep coffee, tea and caffeine rich drinks to 2 cups or less each day.

- Aim to keep your waist size and weight within your healthy range. For women waist size should be less than 82cm.
  This is particularly important because it is excess body fat inside your abdomen that increases insulin resistance.
  If you are overweight your main goal should be to lose weight because losing even 5% of your weight improves insulin resistance. For someone weighing 100kg this means even losing 5kg is beneficial.

- Exercise is just as important as eating the right foods and more about this is in the next chapter. Seek an individualised plan for nutrition and exercise which should meet your own calorie needs for both losing weight and then maintaining your improved weight and fitness levels.

A brief guide to the Glycaemic Index (GI) of foods
When eating carbohydrates make them low GI choices

High GI High GI foods give a relatively quick rise in blood glucose levels	Medium GI Medium GI foods give a medium rise in blood glucose levels	Low GI Low GI foods give a slow rise in Blood glucose levels
BREADS: Bagels Baguette White Bread Wholemeal smooth textured bread Water crackers	BREADS: Light multi grain bread Pita bread	BREADS: Fruit bread Heavy mixed grain bread Oat bran bread
BREAKFAST CEREALS Bran and sultana cereals Cornflakes Puffed wheat Ricebubbles	BREAKFAST CEREALS 'Lite' Muesli	BREAKFAST CEREALS Porridge Natural Muesli Bran only cereals
RICE and PASTA Calrose white rice Jasmine white rice	RICE and PASTA Basmati rice Brown rice	RICE and PASTA Wheat Pasta Long grain white rice
VEGETABLES White flesh potato	VEGETABLES Beetroot Kumara Sweetcorn	VEGETABLES Most vegetables including Carrots, Peas, Yams DRIED BEANS AND PEAS All types including Baked beans, Chickpeas Kidney beans, Lentils, Soya beans
	FRUIT Banana, Cherries, Grapes, Kiwifruit, Melon, Orange, Pineapple Raisins and Sultanas	FRUIT Most fruits including Apples, Grapefruit, Pears
OTHERS Glucose, Honey Jellybeans & similar lollies Sports drinks	OTHER Muesli bars	OTHER Milk Yoghurt

Healthy eating for PCOS and insulin resistance – some ideas to get you started

- **Breakfast** — Untoasted unsweetened muesli – served with trim milk and chopped or grated apple, a sprinkle of ground almonds or a few mixed nuts and a large dollop of 'bio' yoghurt.
  Or wholegrain toast with a poached egg or cottage cheese.
- **Morning tea** — Fresh fruit e.g apple or pear.
- **Lunch** — Fat free vegetable soup containing beans, pulses or 'soup mix'.
  Wholegrain bread filled with tuna, sardines or salmon (tinned in brine or water) enough salad vegetables to equal double the thickness of the bread.
  Fruit and low fat low sugar yoghurt.
- **Afternoon tea** — A tablespoon of mixed nuts and 3 dried apricots.
- **Dinner** — Skinless chicken, lean beef or tofu and vegetable stir fry on basmati rice with a sprinkle of toasted pumpkin and sunflower seeds. Remember your meal is 1/2 vegetables, 1/4 rice and 1/4 meat.
- **Supper** — Fresh fruit or Yoghurt or crispbreads with tomato or salsa.
- **Drinks** — Drink at least 1-2 litres of water each day. Take a pump bottle with you in the car or on your bike and at work. Limit your intake of caffeine to no more than 2 cups of tea, coffee or diet cola. Avoid all fruit juice, fruit concentrates or drinks sweetened with sugar such as milkshakes or 'energy' drinks.

Clarice Hebblethwaite,
DIETITIAN

I have PCOS, how can exercise help me?

Exercise can be beneficial when coping with the effects of Polycystic Ovary Syndrome (PCOS). The obvious benefits include increased fitness, helping to achieve weight loss, stress relief and an overall sense of wellbeing. Other health benefits include lowering blood pressure and cholesterol, and helping to keep blood glucose levels more balanced when combined with regular exercise and a healthy diet.

Regular exercise can also help counter the effect of having an increased level of Testosterone in the body. Mood swings and increased aggression can be associated with this. Use some form of exercise to help relieve these symptoms. The release of endorphins during exercise gives a feeling of wellbeing.

The key to incorporating exercise into your life and making it a regular part of you lifestyle, is to make it something you enjoy, not something that becomes a chore. It doesn't have to cost alot of money and it could be anything that you do continuously for 30-45 minutes, 4 days a week, making sure to increase your heartrate enough to be increasing your cardiovascular fitness.

Before undertaking any exercise program it is important to have the all clear from your doctor first. Resistance training (weight bearing/ weight training) is an important part of an exercise program, especially for women. Working with weights or your own body weight, works the muscles of the body and can help strengthen the bones against osteoporosis. Weight training also burns more calories than aerobic exercise alone, and the metabolism will be burning calories for hours after a workout. To combine with some form of aerobic exercise, (walking, swimming, cycling, running, rowing, etc) is the best way to achieve overall fitness, weight loss, strength and toning.

Walking is the easiest exercise to start with – make sure you have good shoes to avoid injury. You can do it when and where you like, alone or with a friend. If you are lacking motivation, you may prefer to join a gym. Gym memberships can be expensive and the gym environment can be intimidating to someone who may not feel very comfortable working out with others. Some Personal Trainers will come and work with you in the comfort of your home or in a local park, but make sure any Fitness Trainers have the relevant qualifications to understand and help you deal with PCOS.

Having personally dealt with PCOS, I have found that keeping fit and regularly exercising (and making the time to exercise!), as well as eating a healthy diet, has definitely decreased my symptoms and pain level. Even losing a little weight may be enough to improve your health, therefore causing overall better health outcomes. This can also be a huge motivation if you start feeling stronger and fitter. Make small changes to your everyday lifestyle – take the stairs, park the car further away from work, or take a 20-minute walk at lunchtime with a friend. These can all have a positive effect on your health.

The following is a 6-week walking program for someone who has not previously been exercising, and has the permission of his or her doctor.

Week One: 10-15 minutes walking, 3-4 times this week.

Week Two: Increase your times this week – 15-20 minutes, 3-4 times this week.

Week Three : 4 walks this week – 2x30-minute walks/2x20-minute walks

Week Four : 4 walks this week – 3x30-minute walks/1x20-minute walk

Week Five: Increase intensity this week – 4 walks – 2x30-minute hill walks/2x30-minute walks.

Week Six: Your final week – keep up the good work! 4 walks this week 2x30-minute hill walks/2x1-hour walks.

Once you are into a good routine, don't stop! Set yourself some goals and challenge yourself. But most of all, don't stop enjoying it!

Happy Exercising!

Vanessa Warren,
MOBILE PERSONAL TRAINER

Consumer Medicine Information

ESTELLE-35ED

Cyproterone acetate 2 mg and ethinyloestradiol 35 µg

What is in this leaflet

This leaflet answers some common questions about Estelle-35 ED. It does not contain all the available information. It does not take the place of talking to your doctor or pharmacist.

All medicines have risks and benefits. Your doctor has weighed the risks of you taking Estelle-35 ED against the benefits this medicine is expected to have for you. If you have any concerns about taking this medicine, ask your doctor or pharmacist.

Keep this leaflet with the medicine; you may need to read it again.

What Estelle-35 ED is used for

Estelle-35 ED is used to treat women who suffer from conditions arising from increased secretion of or increased response to androgen (male) hormones. Such conditions include acne, or moderately increased growth of facial and body hair (hirsutism).

Estelle-35 ED should be withdrawn 3 to 4 cycles after the treated condition has been completely resolved.

Estelle-35 ED provides effective oral contraception in women being treated for androgen-dependent diseases.

Before you take Estelle-35 ED

When you must not take it

Do not take Estelle-35 ED if:

- You are pregnant or breast-feeding.
- You have had severe disturbances of liver function, jaundice (yellowing of the skin) or other problems associated with the liver.
- You have or have had blood clots in your legs.
- You have or have had any pro-coagulant disorder such as Protein C deficiency, Protein S deficiency, Leiden Factor V mutation, Antithrombin III deficiency or other familial disorders.
- You have or have had the first signs of a heart attack or stroke.
- You presently have, or have a history of: breast cancer, cancer of the genital organs or suspected oestrogen related cancer.
- You are a diabetic and have damaged blood vessels.
- You have an allergy to one or more of the ingredients in Estelle-35 ED tablets.
- You have sickle-cell anaemia.
- You have had undiagnosed vaginal bleeding or migraines.
- The package shows signs of damage or tampering or if the tablets do not look quite right.

If you are not sure whether you should start taking Estelle-35 ED, talk to your doctor.

Before you start to take it

Tell your doctor if:

- You have a history of migraine or epilepsy.
- You are a diabetic.
- You have a disorder of the blood called sickle-cell anaemia.
- Your blood pressure is high.
- You are suffering from disorders of the bowel such as Crohn's disease or ulcerative colitis.
- You have problems with your veins.
- You have a family history of breast cancer.
- You have a history of or currently have yellowish-brown pigmentation patches on the skin, particularly on the face (called chloasma). If so, you must avoid being exposed for any great length of time to the sun or other sources of ultraviolet radiation such as sun beds.
- You are a smoker.
- You have kidney failure as a result of a blood coagulation problem called haemolytic uraemic syndrome.
- You experience irregular heart rhythms or a heart valve does not work properly.
- You are suffering from disease of the gall bladder or liver.
- You have a family history of high cholesterol or fats (triglycerides) in the blood.
- You have a weight problem
- You have ever had any blood clots
- You have any allergies to any other medicines or any other substances, such as foods, preservatives or dyes.

If you have either recently developed hirsutism or you have had a considerable increase in symptoms, tell your doctor, as the cause of the changes must be determined.

If you have not told your doctor about any of the above, tell them before you take Estelle-35 ED.

Taking other medicines

Tell your doctor if you are taking any other medicines, including medicines that you buy without a prescription from your pharmacy, supermarket or health food shop.Some medicines may affect the way other medicines work.

Estelle-35 ED does not interfere with the effects of any topical acne treatment. Medicines that can interfere with Estelle-35 ED include those taken for epilepsy such as primidone, phenytoin, carbamazepine and barbiturates; those taken for tuberculosis such as rifampicin; and various types of antibacterials and antifungals such as ampicillin, tetracyclines and griseofulvin.

Always tell your doctor or pharmacist if you are taking other medicines, including non prescription medicines, when prescribed Estelle-35 ED. Your doctor or pharmacist will give you advice on additional contraception that may be required.

What else you should know

Estelle-35 ED cannot protect you against infection with HIV or development of AIDS. Neither can it protect you against any other form of sexually transmitted disease (STD).

Men must not take Estelle-35 ED.

Estelle-35 ED should not be stopped in certain situations or its reliability may be reduced as described in this leaflet. If such situations develop you should either stop having sex or use a condom or other barrier method for extra precaution. Since Estelle-35 ED alters body temperature and causes changes in cervical secretion during the menstrual cycle, rhythm or temperature contraceptive methods should not be used.

Estelle-35 ED and Blood Clots

The formation of a clot in the blood is called a thrombosis. The clot may sometimes block a blood vessel. Deep vein thrombosis (DVT) occurs when the clot forms in the deep veins of one or both legs. A blood clot may cause pulmonary embolism, heart attack or stroke if it falls off the vein wall where it formed, and travels through the circulation to block the arteries feeding either the lungs, heart or brain. DVT is very uncommon but may develop either naturally or while you are taking Estelle-35 ED. Pregnancy can also cause DVT. The rate of development of thrombosis is higher in pregnant women than in non-pregnant women with the rate being in between for Estelle-35 ED users. Blood clots may occur in other parts of the body as well but this is extremely rare. Examples include the gut, liver, kidney and eye. Symptoms of thrombosis can include: unilateral leg pain and/or swelling, sudden severe chest pain, sudden breathlessness, sudden onset of coughing, unusual or severe prolonged headache, sudden partial or complete loss of vision, slurred speech, giddiness and weakness or numbness of one part or side of the body. The risk of thrombosis increases with age, smoking (especially in women over 35), family history, obesity, high blood pressure, heart disease and in surgery. You may need to stop taking Estelle-35 ED well before surgery and not start again until your doctor tells you to.

Can Estelle-35 ED cause cancer?

There appears to be a slightly increased risk of breast cancer in women using the 'pill' compared to women not using the pill who are the same age. On stopping the pill, the excess risk disappears over the next 10 years. Breast cancer is rare in women under 40 years of age. This means that the increase in number of breast cancers diagnosed in current and recent pill users is much less than the overall risk of breast cancer. The apparent increase in risk may be due to either earlier diagnosis, or the biological effects of the pill or a combination of both. Breast cancers found in pill users tend to be less advanced then breast cancers found in non-pill users.

Occasionally benign or very rarely malignant tumours of the liver have been reported in pill users. In isolated cases these have caused bleeding into the abdomen. If you develop severe abdominal pain, contact your doctor immediately.

Taking Estelle-35 ED while breast-feeding

It is recommended that you do not take Estelle-35 ED if you are breast-feeding.

Use of Estelle-35 ED in pregnancy

Do not take Estelle-35 ED if you are pregnant or if you think you may be pregnant.

Estelle-35 ED and driving

Estelle-35 ED is not likely to impair your ability to drive or use machinery.

How to take Estelle-35 ED

How much to take

Take Estelle-35 ED only when prescribed by your doctor. To achieve effective clinical efficacy or contraception, Estelle-35 ED is to be taken every day. The same rules apply to taking Estelle-35 ED as with any other contraceptive pill. Bleeding between one period and the next, and/or reduced therapeutic or contraceptive effectiveness can be caused by not taking Estelle-35 ED regularly. Continuous protection against pregnancy is provided by Estelle-35 ED when it is taken regularly. Extra precautions are, however, required when either starting your first pack or when other circumstances such as forgetting to take a tablet occur. This is because the effectiveness of Estelle-35 ED can be reduced by circumstances preventing regular intake. Carefully follow all directions given to you by your doctor.

They may differ from the information contained in this leaflet.

If you do not understand the instructions in this leaflet, ask your doctor or pharmacist for help.

When to take it

Take your Estelle-35 ED tablets every day. Take your Estelle-35 ED tablet at about the same time each day. This will help you remember when to take the tablets.

How long to take it

Take Estelle-35 ED until your doctor tells you to stop taking it.

Starting your first pack of Estelle-35 ED

When hormonal contraception has not been taken in the past month

Starting on the first day of your period, take the tablet for the corresponding day of the week in the red area on the calendar pack (eg if your period starts on a Monday take your first tablet from the spot marked Monday in the red section). Continue taking one tablet daily until all tablets in the calendar pack have been taken. This includes all of the small yellow active tablets and the white non-active tablets. Start taking the next tablet from the next calendar pack on the day after the last tablet on the first calendar pack. Follow the arrows on the pack for the corresponding day of the week.

You must use an additional barrier contraceptive method such as condoms or a diaphragm for the first 14 days after starting your first pack of Estelle-35 ED. Do not use rhythm, temperature or cervical mucous methods. Additional contraceptive methods are not required when starting your second or subsequent packs after completing your first pack provided you have taken Estelle-35 ED on a regular daily basis i.e. no tablets have been missed.

When changing from a combined oral contraceptive

Start Estelle-35 ED the day after you take the last active tablet from your present pill pack (this means no tablet free break). If you are not sure which tablets are active and non-active, ask your doctor or pharmacist. Use a barrier contraceptive method for the first 14 days of taking Estelle-35 ED if having intercourse.

How to change from a pill containing only progestogen (minipill)

Stop taking the minipill. Start Estelle-35 ED on the next day taking the tablet at the same time of day that you were taking the minipill. Use an additional barrier contraceptive method such as condoms or a diaphragm (but not rhythm, temperature or cervical mucous methods) for the first 14 days of Estelle-35 ED if having intercourse.

How to change from a contraceptive injection or implant

Start Estelle-35 ED on either the day your injection is due or your implant is removed. Use an additional barrier contraceptive method such as condoms or a diaphragm (but not rhythm, temperature or cervical mucous methods) for the first 14 days of Estelle-35 ED if having intercourse.

What to do after giving birth

If you have just given birth, it is recommended that you do not start Estelle-35 ED until you have had your first normal period. It is, however, possible to start sooner if advised to do so by your doctor. It is recommended that you do not take Estelle-35 ED while breast-feeding without first seeking your doctor's advice.

What to do after an abortion or miscarriage

Talk to your doctor.

Special circumstances

Situations may occur which require you to alter the way you take Estelle-35 ED. Additional barrier contraceptive methods are required in circumstances where protection cannot be relied upon. Such circumstances include missed tablets, or you are taking other medicines including non prescription medicines that may interact with Estelle-35 ED or you have vomited shortly after taking Estelle-35 ED.

If you forget to take it

Forgetting to take your tablets means that there is a risk you may become pregnant. That risk increases as the number of tablets missed increases. Risk of pregnancy is particularly high if active tablets at the beginning or end of the pack are missed. If you have forgotten to take a tablet or tablets, the following instructions (also known as the "7 day rule") apply.

- If the forgotten tablet or tablets are the white, non-active tablets, do not worry. Take the next tablet on the indicated day as usual.
- If you have missed taking a yellow active tablet but remember within 12 hours, you will still be protected against pregnancy. Take the missed tablet and then take your next tablet at the usual time even if this means taking two tablets in one day.
- If you have missed taking a yellow active tablet and it is more than 12 hours later when you remember, then protection against pregnancy is lost. You need to take the missed tablet immediately and then take the next tablet at your usual time even if this means you take two tablets on the same day. Extra barrier contraceptive methods will be required according to the 7-day rule. Information about this is given below.
- If the forgotten tablet or tablets occurred in the first week of yellow active tablets from your pack, and you had intercourse in any of the seven days preceding that week, you need to seek advice from your doctor to exclude the possibility of pregnancy.
- Where you may have forgotten to take the yellow active tablets for a few days, see your doctor to exclude the possibility of pregnancy. Follow the 7-day rule after disposing of the missed tablets in your pack.

What to do if extra contraceptive precautions are required

If extra contraceptive precautions are required, you need to either:

- Refrain from having intercourse; or
- Use a barrier contraceptive method such as a cap with spermicide or condom.

Rhythm, temperature or cervical mucous methods must not be used since oral contraceptives alter normal menstrual cycle changes.

The 7-day rule

- Do not stop taking your tablets.
- You need to take your yellow active tablets for seven consecutive days before you will be protected from pregnancy.
- Refrain from intercourse or use barrier contraceptive methods while taking the seven yellow active tablets referred to in the above bullet point.
- If less than seven yellow active tablets remain in your current blister strip, finish these and go straight onto the yellow active tablets of the next blister strip missing out the white non-active tablets. It is possible you may not have a period until you reach the end of the next blister strip, however, you will not be harmed by this.

What to do if you vomit soon after taking Estelle-35 ED

Vomiting within 3 to 4 hours of taking the Estelle-35 ED tablet is similar to missing a tablet as it may mean that the amount of active ingredients absorbed into your bloodstream is reduced. You need to follow the same advice that is given for missed tablets.

Taking other medicines with Estelle-35 ED

Some medicines can interfere with the beneficial clinical effect of Estelle-35 ED. These medicines are: phenytoin, barbiturates such as primidone and phenobarbitone, antiepileptics such as carbamazepine, oxcarbamazepine and antibiotics/antifungals such as rifampicin, ampicillin, tetracyclines and griseofulvin. While taking these medicines and for the next 7 days, follow the advice given for missed tablets. Ask your doctor for advice about the length of time you need to use extra contraceptive precautions if you are on continuous medication or taking rifampicin.

How to delay a period

By missing out the white non active tablets of one blister strip and going straight onto the yellow active tablets of the next, you can delay the start of your period until you begin taking the white non active tablets of the second blister strip. Some breakthrough bleeding or spotting may occur, however, while you are taking the yellow active tablets from the second blister strip.

How to change the day your period starts
By taking the tablets as directed, your period will start on about the same day every four weeks. To change this, shorten (you must never lengthen) the number of days in which you take the white non-active tablets. If you shorten the number of days to 3 or less, this may stop you from bleeding during the break but you may have breakthrough bleeding or spotting while taking the yellow active tablets from the second blister strip.

What to do if unexpected bleeding occurs
During the first few months of taking Estelle-35 ED you may have spotting or breakthrough bleeding from your vagina in between your periods. Continue to take your tablets as directed. Such spotting or breakthrough bleeding usually stops after about 3 cycles of tablet taking. However, tell your doctor if it continues, changes to heavy bleeding or starts again.

If you take too much (overdose)
Serious harmful effects resulting from taking too many Estelle- 35 ED tablets have not been reported. Effects expected from taking a number of tablets at the same time are: nausea, vomiting or bleeding from the vagina. Seek medical advice if a child has taken any Estelle-35 ED tablets. Immediately telephone your doctor or National Poisons Information Centre (New Zealand: telephone 0800 POISON or 0800 764 766; Australia: 13 11 26) for advice or go to your nearest Casualty Department (Accident and Emergency Centre) if you think that you or anyone else may have taken too much Estelle-35 ED. Do this even if there are no signs of discomfort or poisoning.

While you are using Estelle-35 ED

Things you must do
Stop taking Estelle-35 ED and immediately see your doctor if you get a blood clot. Possible symptoms of a blood clot are:
- Any abnormal cough.
- Severe chest pain that may also include the left arm.
- Difficulty in breathing or coughing for no apparent reason.
- An abnormal, relentless or long lasting headache or migraine.
- Changes in your vision including loss of or double vision.
- Changes in your speech, slurring of words.
- Changes in your senses of hearing, smell or taste.
- Changes in your balance such as dizziness or fainting.
- Total or partial body weakness.
- Severe abdominal pain.
- Relentless leg pain or serious swelling of one or both legs. If you notice any enlarged veins in your legs or have sharp pains in your legs or chest contact your doctor immediately.

You must contact your doctor as soon as you can if:
- You experience changes in your personal health.
- A lump appears in your breasts.
- You start using other medicines including non prescription medicines.
- You need surgery or are going to be kept immobile. Talk to your doctor at least four weeks before the surgery or immobilisation is planned.
- Abnormal, heavy bleeding occurs from your vagina.
- You missed taking active yellow tablets in the first week of any pack and had intercourse during the preceding 7 days.
- Your period doesn't occur twice in a row or you think you may be pregnant. Talk to your doctor before continuing with your next pack of Estelle-35 ED.

Regular medical follow up
While taking Estelle-35 ED you need to have regular medical check ups. It is recommended that such check ups should be at least once a year.

Things you must not do
Do not give Estelle-35 ED to anyone else, even if they have the same condition as you.

How long should Estelle-35 ED be taken?
The severity of your acne or hirsutism will determine how long you should remain on treatment. Several months are generally required with continuation for another 3 to 4 months after the acne or hirsutism is controlled. Further treatment with Estelle- 35 ED can be initiated if the conditions recur. It is likely that longer treatment will be required for treating the symptoms of polycystic ovary syndrome.

Side Effects

Tell your doctor or pharmacist as soon as possible if you do not feel well while you are taking Estelle-35 ED.

All medicines can have side effects. Sometimes they are serious, most of the time they are not. You may need medical treatment if you get some of the side effects.

Ask your doctor or pharmacist to answer any questions you may have.

Rarely, serious side effects may occur. If any of the symptoms listed in the section "While you are using Estelle-35 ED' develop, stop taking Estelle-35 ED and tell your doctor immediately or go to the Casualty Department at your nearest hospital.

Also, tell your doctor if you notice any skin rash or itchiness.

Other side effects listed below may also occur in some patients. Tell your pharmacist or doctor if you notice any of these effects.

- Tender and/or painful breasts with or without secretion
- Gastric upsets
- Headache
- Feeling depressed
- Libido changes
- Reduced tolerance to contact lenses
- Feeling or being sick
- Any change in normal secretion from the vagina including change in menstrual flow
- Rash, allergy, sensitivity to sunlight, itchiness
- Appetite and/or body weight changes including fluid retention

Do not be alarmed by this list of possible side effects. They do not occur often and you are unlikely to experience any of them.

After using Estelle-35 ED
- Store below 30°C. Protect from light and moisture.
- Keep the pack away from sources of heat
- Keep this medicine out of the reach and sight of children.
- This medicine must not be taken after the expiry date printed on the pack, or if the tablets show any signs of deterioration.
- If the pharmacist has repacked the medicine for you, there may not be an expiry date on the pack.
- Return any left over medicine to your pharmacist. Only keep it if your doctor tells you to.
- REMEMBER this medicine is for you. Only a doctor can prescribe it for you. Never give it to others. It may harm them even if their symptoms are the same as yours.

Further Information

You can get more information on Estelle-35 ED from your doctor or pharmacist.

Product Description

What Estelle-35 ED looks like
Estelle-35 ED is a calendar pack containing 21 small yellow active tablets and 7 larger white non- active tablets per blister strip. Available as packs of 28 tablets and 84 tablets.

Ingredients
The ingredients in Estelle-35 ED small yellow active tablets are cyproterone acetate, ethinyloestradiol, lactose, microcrystalline cellulose, povidone, croscarmellose sodium, magnesium stearate, Opadry white, Opadry buff, Opaglos white, Quinoline yellow, and sucrose.

The ingredients in Estelle-35 ED white non- active tablets are lactose, microcrystalline cellulose, and magnesium stearate.

Marketed by

New Zealand
Douglas Pharmaceuticals Ltd
Central Park Drive, Lincoln, Auckland 0610

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www.estelle35.com.au

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