



## Polyendocrine Metabolic Ovarian Syndrome (PMOS)

### What is Polyendocrine Metabolic Ovary Syndrome (PMOS)?

Polyendocrine Metabolic Ovarian Syndrome (PMOS), formerly known as Polycystic Ovary Syndrome (PCOS), is a common hormonal and metabolic condition.

The condition was renamed in 2026. The previous name was considered misleading because many people diagnosed with the condition do not have polycystic ovaries, and the condition affects far more than the ovaries alone. PMOS better reflects the complex hormonal (endocrine), metabolic and reproductive features of the condition.

PMOS is a condition that can affect your periods, fertility, skin, hair growth (not only excess hair but also baldness on the head), and increase risk of metabolic and long-term health conditions. Symptoms vary considerably between individuals and support should be personalised to your symptoms, goals and overall health.

You may have been told you have polycystic ovaries on an ultrasound (slightly larger than normal ovaries with multiple follicles, the (fluid-filled spaces within the ovary that release the eggs). Many people have polycystic-appearing ovaries without having PMOS, whilst others with PMOS may have normal-appearing ovaries. Ultrasound findings therefore need to be interpreted alongside symptoms, blood tests, your periods, looking at the entire picture.

Formal diagnosis requires having 2 of the following 3 features:

- Irregular, infrequent or absent periods (ovulatory dysfunction)
- Clinical features (including increased hair and acne, female pattern baldness) and/or blood tests that show higher testosterone levels than normal
- An ultrasound scan that shows polycystic ovaries.

Importantly, polycystic ovaries on ultrasound alone do not mean that you have PMOS.

### Can you diagnose Polycystic Ovaries in any age?

In adolescents, ultrasound is not recommended for diagnosis. During puberty it is normal for the ovaries to contain multiple follicles, making it difficult to distinguish normal ovarian development from PMOS. For this reason, diagnosis in adolescents is based on menstrual irregularity together with evidence of androgen excess rather than ultrasound findings.

### What causes PMOS?

The exact cause of PMOS is not yet fully understood. It is thought to result from a combination of genetic, hormonal, metabolic and environmental factors.

PMOS can run in families, so if your mother, sisters or other close relatives are affected, your risk may be increased.

Insulin resistance plays an important role in many people with PMOS. Insulin is a hormone that helps move sugar from the bloodstream into the body's cells. When cells become less responsive to insulin, the body produces higher levels in the blood to compensate. Increased insulin levels can stimulate the ovaries to produce more androgens (male-type hormones such as testosterone), contributing to many of the symptoms associated with PMOS.

These hormonal and metabolic changes can lead to irregular periods, fertility difficulties, acne, excess hair growth, scalp hair thinning, weight gain and increased long-term health risks.

### Symptoms and signs

Symptoms vary considerably from person to person. Some women experience only mild symptoms, whilst others may be more significantly affected. Symptoms are usually related to the hormonal and metabolic changes associated with PMOS and may fluctuate over time.

Symptoms include irregular or no periods at all; an increase in facial or body hair (hirsutism); loss of hair on your head; being overweight or having difficulty losing weight; skin changes, in particular oily or acne; low libido; bloating; low mood and depression; anxiety; fatigue; sleep disturbance; snoring or symptoms of sleep apnoea; skin tags; darkened areas of skin, particularly around the neck, underarms or groin (acanthosis nigricans), which may be associated with insulin resistance; difficulty getting pregnant.





It is important to remember that PMOS affects everyone differently. Some women have only a few symptoms, whilst others experience a wider range of physical and emotional effects

Having PMOS does not automatically mean you will experience fertility difficulties. Equally, if you do not wish to become pregnant, contraception should still be used as pregnancy can occur even when periods are irregular.

## **What are the long-term consequences**

### **Insulin resistance, diabetes, and heart disease**

Women with PMOS are at increased risk of developing insulin resistance, a condition where the body's cells become less responsive to insulin. Over time, this can lead to higher blood sugar levels and an increased risk of pre-diabetes and type 2 diabetes.

Women with PMOS are also more likely to develop other cardiovascular risk factors, including high blood pressure, abnormal cholesterol levels and weight gain. Collectively, these factors can increase the long-term risk of heart and blood vessel disease.

PMOS is also associated with an increased risk of metabolic dysfunction-associated steatotic liver disease (MASLD), previously known as non-alcoholic fatty liver disease.

Regular health checks and lifestyle measures can help reduce these risks and support long-term health.

### **Endometrial Cancer**

If you are not having regular periods, the lining of the womb (endometrium) may not shed regularly and can gradually become thickened. This is known as endometrial hyperplasia. Having fewer than three periods a year over a prolonged period may increase the risk of endometrial hyperplasia and, in some cases, endometrial cancer.

To reduce this risk, treatment may be recommended to ensure the lining of the womb sheds regularly or remains thin. This may include hormonal treatments such as cyclical progesterone, the combined contraceptive pill or a hormonal intrauterine system (coil).

Higher body weight and type 2 diabetes are also independent risk factors for endometrial hyperplasia and endometrial cancer.

PMOS itself does not increase your chance of breast or ovarian cancer but being overweight can increase risk of cancers such as breast cancer.

### **Mental health and emotional wellbeing**

Living with PMOS can affect emotional wellbeing for many reasons. Symptoms such as unwanted hair growth, acne, scalp hair thinning, fertility concerns, weight changes and menstrual irregularities can affect confidence, self-esteem and body image.

Research has shown that women with PMOS have an increased risk of depression and anxiety compared with women without PMOS. Some women may also experience difficulties with body image, self-confidence or their relationship with food.

### **Snoring and daytime drowsiness**

Women with PMOS have an increased risk of obstructive sleep apnoea (a condition where breathing repeatedly stops and starts during sleep). Symptoms may include:

- Loud snoring
- Waking feeling unrefreshed
- Morning headaches
- Daytime sleepiness
- Poor concentration
- Fatigue

Individually or collectively together, these symptoms can have huge negative impact on your quality of life. For some, not being alert at work can be a safety issue, for example if you are a lorry driver.

These symptoms can significantly affect quality of life, work performance and long-term health. If you think you may have sleep apnoea, discuss this with your GP or healthcare professional, as specialist assessment and treatment may be appropriate.

### **Difficulty getting pregnant**

PMOS is a complex condition and can affect ovulation and may make it more difficult for some women to become pregnant. However, many women with PMOS conceive naturally, and a range of effective fertility treatments are available for those who require additional support.

If you are planning a pregnancy or have concerns about fertility, seeking advice early can help you understand your options and optimise your chances of conception.





## Managing PMOS

There is currently no cure for PMOS. Treatment focuses on managing symptoms, improving quality of life, reducing long-term health risks and supporting your individual goals.

Management should be personalised to your symptoms and priorities. Some women are primarily concerned about irregular periods, whilst others may wish to address fertility, skin changes, hair growth, weight management or long-term health risks.

Many women successfully manage symptoms and long-term health risks through lifestyle measures alone. Others may benefit from medications or a combination of approaches. The risks and benefits of any treatment should be discussed with your healthcare professional.

**We know that for many women with PMOS, particularly those with insulin resistance, weight management can be challenging and there is rarely a quick-fix solution. Advice should be personalised, realistic and supportive. You may find the general lifestyle measures below helpful in addition to any specific advice given for your individual circumstances.**

### Regular health monitoring

As PMOS is associated with an increased risk of certain long-term health conditions, regular health checks are important. Women with PMOS are at increased risk of developing features of metabolic syndrome, a group of conditions that increase the risk of type 2 diabetes, cardiovascular disease and stroke.

Depending on your individual risk factors, it may be important to regularly monitor parameters including:

- Blood pressure
- Weight and body mass index (BMI)
- Waist circumference
- Cholesterol levels and other blood fats (lipid profile)
- Diabetes screening (HbA1c and/or blood glucose)

The frequency of monitoring should be individualised based on your age, symptoms, family history and overall health.

### General lifestyle advice

Lifestyle measures are the foundation of PMOS management and can improve symptoms, metabolic health and long-term wellbeing. If you are living with being overweight or obesity, even modest weight loss may help improve menstrual regularity, ovulation, fertility, insulin resistance and overall health.

However, it is important to recognise that weight loss and exercise can be more challenging in women with PMOS due to debilitating symptoms and the hormonal and metabolic changes associated with the condition. Support should be realistic, personalised and non-judgemental.

#### Healthy lifestyle habits may include:

- Following a balanced Mediterranean-style diet
  - Reducing highly processed foods and added sugars
  - Limiting alcohol intake to within recommended guidelines
  - Not smoking
  - Prioritising good quality sleep
  - Managing stress
  - Regular physical activity (which can improve insulin sensitivity, metabolic health, cardiovascular health, mood, sleep quality and overall wellbeing). Current recommendations advise 150–300 minutes of moderate-intensity physical activity per week or 75–150 minutes of vigorous-intensity physical activity per week plus muscle-strengthening activities on at least two days per week.
- In addition to supporting metabolic health and weight management, exercise is important for maintaining muscle strength, physical function and long-term bone health. Weight-bearing activities (such as walking, jogging, dancing and stair climbing) and muscle-





strengthening exercises (such as resistance training, Pilates, yoga or weight training) help maintain healthy bones and muscles throughout life.

#### **Cosmetic laser and creams**

These treatments can be used to help manage excess hair growth (hirsutism). Even when using medical treatments, direct hair removal methods may still be required to manage existing terminal hairs.

Options may include shaving, waxing, threading, depilatory creams, electrolysis and laser hair reduction.

Laser treatment is generally most effective on dark hairs and usually requires multiple sessions. It is important to seek treatment from a suitably qualified and experienced practitioner.

#### **Combined oral contraceptive pill (COCP)**

This is often considered one of the first-line treatment for PMOS in women who do not wish to become pregnant. It can help regulate menstrual cycles; reduce the risk of womb lining thickening and cancer; improve acne; reduce excess hair growth over time

There are several different types of combined pill, and some may be more suitable than others depending on your symptoms and medical history. As with all medications, there are potential risks and benefits, including a small increased risk of blood clots, which should be discussed with your healthcare professional.

#### **Progestogen only preparations**

Progestogen-containing treatments may be used to protect the lining of the womb in women who are not having regular periods. These help reduce thickening of the womb lining by ensuring the lining of the womb sheds regularly or remains thin. They can also help regulate bleeding and, in some cases, provide contraception. Options include progestogen-only pills; the hormonal intrauterine system (coil), such as Mirena®; the contraceptive implant; intermittent courses of oral progesterone or synthetic progestogens.

Not all progestogens are the same. Some synthetic progestogens have additional anti-androgenic properties, meaning they can help counteract some of the effects of male-type hormones and may therefore improve symptoms such as acne, oily skin and excess hair growth. Some may also help reduce fluid retention and bloating.

Some progestogen-containing treatments also provide effective contraception, which may be particularly important as pregnancy can still occur even when periods are irregular.

The most appropriate option will depend on your symptoms, need for contraception, medical history and personal preferences.

#### **Anti-androgens**

Examples including spironolactone and finasteride are medications that help reduce the effects of androgens (male-type hormones) and may be used to treat symptoms such as excess hair growth, acne and scalp hair thinning. They are not usually used as first-line treatment but may be considered if symptoms have not improved sufficiently with other treatments or if the combined pill is unsuitable.

As anti-androgens can affect the development of a baby, effective contraception is required whilst taking these medications if pregnancy is possible.

#### **Metformin**

This is a medication commonly used to treat type 2 diabetes. It works by improving insulin sensitivity, helping the body respond more effectively to insulin, reducing the amount of sugar released by the liver, and improved blood sugar control. As insulin resistance is common in women with PMOS, metformin may be beneficial for some women, particularly those with insulin resistance, pre-diabetes, type 2 diabetes or an increased risk of developing diabetes. Importantly, it has a supportive role for long term metabolic health and diabetes prevention in addition to improving menstrual cycle regularity and fertility.

Some women may also notice modest weight loss whilst taking metformin, although it is not primarily a weight-loss medication and should not be viewed as a substitute for lifestyle measures.

Metformin can be used on its own or alongside other treatments, depending on your symptoms, goals and medical history. It is not suitable for everyone, and the potential risks and benefits should be discussed with your healthcare professional.

The most common side effects include nausea, diarrhoea, abdominal discomfort and loss of appetite. These symptoms are often temporary and can usually be minimised by gradually increasing the dose and taking the medication with food.

Long-term use of metformin may reduce vitamin B12 levels. In some women, periodic monitoring of vitamin B12 may therefore be recommended, particularly if there are additional risk factors for vitamin B12 deficiency.

#### **Inositol**

This is a naturally occurring substance that has gained increasing interest in the management of PMOS. It is available as a dietary supplement and may be found in a variety of formulations.





Some studies suggest that inositol may help improve insulin sensitivity, ovulation and certain metabolic markers in some women with PMOS. However, the evidence remains limited and inconsistent, and more research is needed to fully understand its role.

Some women prefer to try inositol before considering prescription medication, whilst others may choose to use it alongside lifestyle measures or medical treatments. Whilst some women report symptom improvement when taking inositol, current evidence is not as strong as for established treatments such as lifestyle measures and metformin.

If you choose to use inositol, it is advisable to purchase products from a reputable manufacturer. There is currently insufficient evidence to recommend one particular type, formulation or dose over another.

As with any supplement, it is important to discuss its use with your healthcare professional, particularly if you are taking other medications or trying to conceive.

### **Weight loss medications**

These may be considered for some women living with being overweight or obesity, particularly where lifestyle measures alone have not achieved the desired results.

A newer group of medications known as GLP-1 receptor agonists are increasingly being used to support weight management. These medications work by helping you feel fuller for longer, reducing appetite and improving the way the body handles blood sugar. Whilst early research in PMOS is encouraging, these medications are currently used primarily for weight management and metabolic health rather than as a specific treatment for PMOS itself. For women with PMOS, losing weight may help improve menstrual cycle regularity and ovulation, as well as improvements in bloating, energy levels and quality of life.

It is important to understand that these medications are not a quick-fix solution. Long-term success depends on sustainable lifestyle changes, and some weight regain can occur after treatment is stopped.

Like all medications, GLP-1 receptor agonists can cause side effects. The risks, benefits and suitability of weight-loss medications should be discussed with your healthcare professional as part of an individualised treatment plan.

The most common include nausea, vomiting, diarrhoea, constipation and abdominal discomfort. These symptoms are often temporary and improve as your body adjusts to treatment.

Significant weight loss can be associated with loss of muscle mass, and potentially bone density over time. For this reason, maintaining adequate protein intake and undertaking regular resistance and weight-bearing exercise is particularly important when using weight-loss medications.

As the safety of these medications during pregnancy has not been established, effective contraception is recommended whilst taking them. If you are planning a pregnancy, discuss this with your healthcare professional, as treatment will usually need to be stopped before conception.

**Orlistat** is another weight loss medication that has been used in the UK

### **Vitamins and supplements.**

Most nutrients required for good health can be obtained through a balanced and varied diet.

Some women choose to use vitamins or supplements alongside lifestyle measures and medical treatments. Whilst some supplements have shown potential benefits in small studies, the evidence for most supplements in PMOS remains limited and further research is needed.

Vitamin D is important for bone, muscle and immune health. Many adults in the UK are advised to consider vitamin D supplementation, particularly during the autumn and winter months. If you have a diagnosed deficiency, or are at increased risk of deficiency, your healthcare professional may recommend additional supplementation.

Women taking metformin long-term may be at increased risk of vitamin B12 deficiency and, in some circumstances, monitoring or supplementation may be recommended.

Some women also choose to use supplements such as inositol, magnesium or omega-3 fatty acids. Whilst some women report symptom improvement, the evidence varies between products and supplements should not replace a balanced diet, healthy lifestyle measures or evidence-based medical treatments.

As with any supplement, it is important to choose reputable products and discuss their use with your healthcare professional, particularly if you are taking other medications, trying to conceive or are pregnant. You may also find our leaflet "How to Safely Choose Supplements" helpful.

### **Support for Mood**

Many women find that PMOS symptoms can affect their emotional wellbeing and quality of life. Support is available, and you do not need to manage these challenges alone. Lifestyle measures such as regular exercise, good nutrition, prioritising sleep and managing stress can all have a positive impact on mood and overall wellbeing.





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Some women find relaxation techniques such as mindfulness, yoga, meditation and breathing exercises helpful for managing stress and anxiety.

Psychological therapies may also be beneficial. Cognitive Behavioural Therapy (CBT) is an evidence-based therapy that can help develop practical strategies for managing difficult thoughts, emotions and behaviours. CBT may help improve coping strategies, reduce stress and improve overall wellbeing. Some women may benefit from medication to help manage depression or anxiety. If you feel your mood is significantly affecting your daily life, relationships or ability to function, please speak to your GP or healthcare professional.

The following resources may be helpful:

British Psychological Society – Find a Chartered Psychologist:

<https://portal.bps.org.uk/Psychologist-Search/Directory-of-Chartered-Psychologists>

Counselling Directory:

<https://www.counselling-directory.org.uk/>

### **Trying to get pregnant**

Although PMOS can affect ovulation and make it more difficult for some women to conceive, most women with PMOS will become pregnant naturally. If you are trying to conceive, maintaining a healthy lifestyle, achieving a weight that is right for you, prioritising sleep and managing stress may all help improve fertility and pregnancy outcomes. If you are living with being overweight or obesity, even modest weight loss may help improve ovulation and fertility in some women.

It is recommended to take folic acid before conception and throughout early pregnancy. You should also avoid smoking, limit alcohol intake and ensure any medical conditions are well controlled.

If your periods are irregular, ovulation can be more difficult to predict. Having regular intercourse every 2–3 days throughout the menstrual cycle can help maximise the chance of conception.

A range of effective fertility treatments are available if required. Depending on your individual circumstances, these may include medications to help stimulate ovulation, metformin, assisted conception treatments or referral to a fertility specialist.

If you are concerned about your fertility, planning a pregnancy, or have been trying to conceive without success, please speak to your healthcare professional for individualised advice and support.

### **Useful resources**

For further information and support, you may find the following resources helpful:

**Verity – The UK PMOS/PCOS Charity**

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

