



# Medicine for Managers

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## Steroids

**Steroid hormones are a class of substances naturally produced in the body within the adrenal glands, which are located on the upper aspect of each kidney. They play crucial roles in the body controlling functions such as fluid and salt balance, as well as metabolism, inflammation and the development of sexual characteristics. They also protect the body by acting as a key component in withstanding injury and illness.**

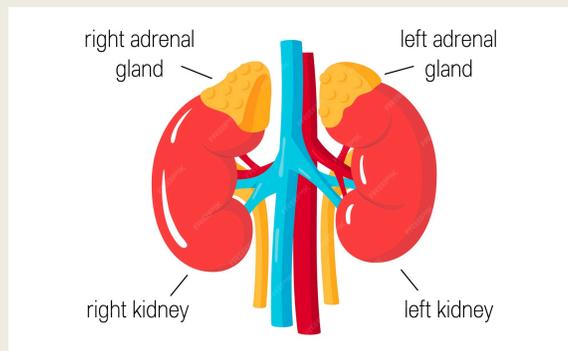
**T**hey are manufactured from *cholesterol* in the adrenal glands and also in the testes and ovaries.

cholesterol was a precursor of what would become known as testosterone and oestrogen.

Steroids have been used medicinally for thousands of years since the ancient civilisations.

Over a hundred years later, in the 1930s two German scientists, Butenandt and Ruzicka isolated the sex hormone testosterone.

In ancient Greece, the herb *Dioscorea*, was used in the treatment of a variety of ailments, including inflammation because it contains chemicals which are



They identified the effect of the hormone in the development of the secondary sex characteristics, including the development of facial hair and a deeper voice, as

precursors of steroids. In Roman times, the gladiators used steroid-like agents to enhance their physical performance and strength.

well as increased muscle mass and strength.

The first science-based studies of the class of drugs was undertaken by the Russian chemist, Alexander Versalius, who identified several steroid chemicals, including cholesterol, in the early nineteenth century. He recognised that

They won the Nobel prize in 1939. The first synthetic formulation of testosterone was developed in the 1940s by the pharmaceutical company, CIBA. It was first used medicinally for men with low testosterone levels but was also adopted by bodybuilders and athletes to enhance their performance.

The use of these steroids, manufactured forms of testosterone and called **anabolic** steroids, in sport flourished and, by the 1980s, had become prevalent in many forms of athletic activity.

They were used for tissue (mainly muscle) building and were banned for use in all Olympic competition by the International Olympic Committee in 1988.

The policy was subsequently adopted by sporting bodies in most countries. In 1990, the Anabolic Steroid Control Act was enacted in the USA, making possession and distribution of steroids illegal. In the UK, the possession of steroids with anabolic (muscle building) properties is not a criminal offence. It is, however, a serious criminal offence to manufacture or supply such drugs without a licence, punishable by unlimited fines or up to 14 years in prison.

The Governing Bodies of UK sport, of course, strictly prohibit their use in sport and, if discovered, offenders are subject to severe sporting sanctions.

### STERIODS IN MEDICINE

Steroid drugs are used throughout medicine in a host of conditions, generally associated with disorders that cause inflammation in the body. Such steroids are called **corticosteroids**.

Although corticosteroids and anabolic steroids are both steroids, they are very different classes of drug. They differ markedly in their structure, actions and effects on the body.

Corticosteroids have the same actions as the body hormone **cortisol**, which is produced by the adrenal glands. It has a host of effects, which can be either beneficial or harmful

depending on the level and duration of exposure. Its functions include the regulation of metabolism, blood pressure and inflammation, as well as managing the stress response.



*Moon face*

If persistently high, corticosteroids can lead to weight gain, including development of '*moon face*' (resulting from facial fat deposition), high blood pressure, high blood sugar (which can lead to diabetes), muscle weakness and a

compromised immune response.

Such steroids therefore, are used as **anti-inflammatory** and **immunosuppressive** agents.

Amongst their many uses in medicine are:

- **Asthma** in inhalers and tablets
- **Rheumatoid Arthritis**
- **Crohn's disease**
- **Eczema** and **nappy rash** in cream or ointment form
- **Allergic reactions** e.g. hay fever
- **Haemorrhoids (piles)** as cream or ointment
- **Cancer treatment**

Steroids are available as tablets, capsules, granules, liquids, inhalers and by injection and commonly encountered types include:

- **Bethamethasone**
- **Budesonide tablets and inhalers**
- **Dexamethasone tablets**
- **Hydrocortisone**
- **Prednisolone**

Steroids cause minimal side effects when used temporarily and in low dosage, although they

may occur depending on dose, duration and the strength of the particular form of steroid. Any side effects are usually reversible when the drug is stopped.

Taking a high dose or for a long time may result in:

- Increased risk of infection
- Raised blood sugar
- Raised blood pressure
- Eye problems
- Osteoporosis (weakened bones)
- Mood changes in about 1 in 20 users
- Skin changes such as bruising, thinning or stretch marks
- Other problems such as headaches, hair changes, dizziness and blood chemistry disturbances

Despite any risks, the use of such drugs is often very important and necessary to manage or eliminate particular diseases or illnesses.

Steroids are now widely used and they are often of crucial importance in the management of specific diseases. Despite any concerns about use, they save lives and maintain health in very large numbers of patients.

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