# CORTICOSTEROIDS

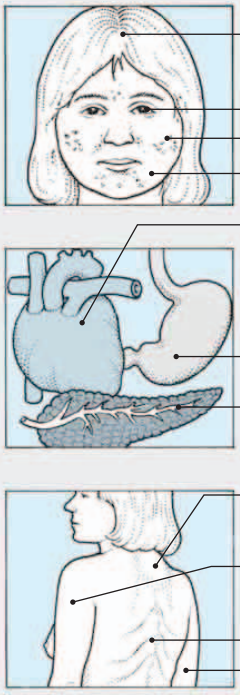
Corticosteroid drugs – often referred to simply as steroids – are derived from, or are synthetic variants of, the natural corticosteroid hormones formed in the outer part (cortex) of the adrenal glands, situated on top of each kidney. Release of these hormones is governed by the pituitary gland (see p.103).

Corticosteroids may have either mainly glucocorticoid or mainly mineralocorticoid effects. Glucocorticoid effects include the maintenance of normal levels of sugar in the blood and the promotion of recovery from injury and stress. The main mineralocorticoid effects are the regulation of the balance of mineral salts and the water content of the body. When present in large amounts, corticosteroids act to reduce inflammation and suppress allergic reactions and immune system activity. They are distinct from another group of steroid hormones, the anabolic steroids (see p.104).

Although corticosteroids have broadly similar actions to each other, they vary in their relative strength and duration of action. The mineralocorticoid effects of these drugs also vary in strength.

## ADVERSE EFFECTS OF CORTICOSTEROIDS

Corticosteroids are effective and useful drugs that often provide benefit in cases where other drugs are ineffective. However, long-term use of high doses can lead to a variety of unwanted effects on the body, as shown below.




## Why they are used

Corticosteroid drugs are used primarily for their effect in controlling inflammation, whatever its cause. Topical preparations containing corticosteroids are often used for the treatment of many inflammatory skin disorders (see p.134). These drugs may also be injected directly into a joint or around a tendon to relieve inflammation caused by injury or disease (see p.76). However, when local administration of the drug is either not possible or not effective, corticosteroids may be given systemically, either by mouth or by intravenous injection.

Corticosteroids are commonly part of the treatment of many disorders in which inflammation is thought to be caused by excessive or inappropriate activity of the immune system. These disorders include inflammatory bowel disease (p.70), rheumatoid arthritis (p.75), glomerulonephritis (a kidney disease), and some rare connective tissue disorders, such as systemic lupus erythematosus. In these conditions corticosteroids relieve symptoms and may also temporarily halt the disease.

Corticosteroids may be given regularly by mouth or inhaler to treat asthma, although their effect on relieving acute asthma attacks is delayed by a few hours (see Bronchodilators, p.48 and Drugs for asthma, p.49).

An important use of oral corticosteroids is to replace the natural hormones that are deficient when adrenal gland function is reduced, as in Addison's disease. In these cases, the drugs most closely resembling the actions of the natural hormones are selected and a combination of these may be used.

Some cancers of the lymphatic system (lymphomas) and the blood (leukaemias) may also respond to corticosteroid treatment. These drugs are also widely used to prevent or treat rejection of organ transplants, usually in conjunction with other drugs, such azathioprine (see Immunosuppressants, p.115).

## How they work

Given in high doses, corticosteroid drugs reduce inflammation by blocking the action of chemicals such as prostaglandins that are responsible for triggering the inflammatory response. These drugs also temporarily depress the immune system by reducing the activity of certain types of white blood cell.

## How they affect you

Corticosteroid drugs often produce a dramatic improvement in symptoms. Given systemically, corticosteroids may also act on the brain to produce a heightened sense of well-being and, in some people, a sense of euphoria. Troublesome day-to-day side effects are rare. Long-term corticosteroid treatment, however, carries a number of serious risks for the patient.

## Risks and special precautions

In the treatment of Addison's disease, corticosteroids can be considered as "hormone replacement therapy", with drugs replacing the natural hormone hydrocortisone. Because replacement doses are given, the adverse effects of high-dose corticosteroids do not occur.

Drugs with strong mineralocorticoid effects, such as fludrocortisone, may cause water retention, swelling (especially of the ankles), and an increase in blood pressure. Because corticosteroids reduce the effect of insulin, they may create problems in people with diabetes and may even give rise to diabetes in susceptible people. They can also cause peptic ulcers.

Because corticosteroids suppress the immune system, they increase susceptibility to infection. They also suppress symptoms of infectious disease. People taking corticosteroids should avoid exposure to chickenpox or shingles; if they catch either disease, drugs such as aciclovir tablets may be prescribed. With long-term use, corticosteroids may cause a variety of adverse effects (see left). Doctors try to avoid long-term use of corticosteroids drugs to children because prolonged use may retard growth.

Long-term use of corticosteroids suppresses the production of the body's own corticosteroid hormones. For this reason, treatment that lasts for more than a few weeks should be withdrawn gradually to give the body time to adjust. If the drug is stopped abruptly, the lack of corticosteroid hormones may lead to sudden collapse.

People taking corticosteroids by mouth for longer than one month are advised to carry a warning card. If someone who is taking steroids long-term has an accident or serious illness, his or her defences against shock may need to be quickly strengthened with extra hydrocortisone, administered intravenously.

## COMMON DRUGS

Alclometastone
Beclometasone ✻
Betamethasone ✻
Budesonide ✻
Clobetasol ✻
Clobetasone
Deflazacort
Dexamethasone ✻
Diflucortolone
Fludrocortisone
Fludroxycortide
Flumetasone
Flunisolide
Fluocinolone
Fluocinonide
Fluocortolone
Fluticasone ✻
Hydrocortisone ✻
Methylprednisolone
Mometasone ✻
Prednisolone ✻
Triamcinolone

✻ See Part 3