Inhaled & Oral Corticosteroids



Corticosteroids (steroids) are medicines that are used to treat many chronic diseases. Corticosteroids are very good at reducing inflammation (swelling) and mucus production in the airways of the lungs. They also help other quick-relief medicines work better.

The steroids (corticosteroids) used to treat asthma and other chronic lung diseases are not the same as anabolic steroids, used illegally by some athletes for bodybuilding. Corticosteroids do not affect the liver or cause sterility.

Does the Body Make Steroids?

Corticosteroids are similar to cortisol, a hormone produced by the adrenal glands in the body. Cortisol is one of the body's own natural steroids. Cortisol is essential for life and well being. During stress, our bodies produce extra cortisol to keep us from becoming very sick.

Normally the adrenal glands release cortisol into the blood stream every morning. The brain monitors this amount and regulates the adrenal function. It cannot tell the difference between its own natural cortisone and that of steroid medicines. Therefore, when a person takes high doses of steroids over a long time, the brain may decrease or stop cortisol production. This is called adrenal suppression. Health care providers generally decrease a steroid dosage slowly to allow the adrenal gland to recover and produce cortisol at a normal level again. If you have been on steroids long-term do not stop taking them suddenly. Follow your doctor’s prescription.

What are Some Steroid Medicines?

Steroid medicines are available as nasal sprays, metered-dose-inhalers or dry powered

inhalers (inhaled steroids), oral forms (pills or syrups), injections into the muscle (shots) and intravenous (IV) solutions. Steroid shots are rarely used for the treatment of chronic lung disorders. With severe episodes or emergencies, high-dose steroids are often given in an IV. As the symptoms improve, the medicine is changed from IV to oral forms and then slowly decreased.

Inhaled steroids and steroid pills and syrups are often prescribed for people with a chronic lung disease.

Inhaled Steroids

Common inhaled steroids include:

- Aerospan® (flunisolide)
- Alvesco® (ciclesonide)
- Azmanex® (mometasone)
- Flovent® (fluticasone)
- Pulmicort® (budesonide)
- QVAR® (beclomethasone)
- Advair® (fluticasone and salmeterol) Note: Salmeterol is a long acting beta-agonist.
- Dulera® (mometasone and formoterol) Note: Formoterol is a long acting beta-agonist.
- Symbocort (budesonide and formoterol) Note: Formoterol is a long acting beta-agonist.

An inhaled steroid is typically prescribed as a long-term control medicine. This means that it is used every day to maintain control of your lung disease and prevent symptoms. An inhaled steroid prevents and reduces swelling inside the airways, making them less sensitive. It may also decrease mucus production. An inhaled steroid will **not** provide quick relief for asthma symptoms. In addition, inhaled steroids may help reduce symptoms associated with other chronic lung conditions.

Your health care provider may adjust the dosage of your inhaled steroid based on your symptoms, how often you use your quick relief medicine to control symptoms and your peak flow results. You still may need a short burst of oral steroids when you have more severe symptoms.

The most common side effects with inhaled steroids are thrush (a yeast infection of the mouth or throat that causes a white discoloration of the tongue), cough or hoarseness. Rinsing your mouth (and spitting out the water) after inhaling the medicine and using a spacer with an inhaled metered-dose-inhaler reduces the risk of thrush. When a dose is prescribed that is normal or higher than the normal dose in the package insert, some systemic side effects may occur. Keep in mind, however, that an inhaled steroid has

much less potential for side effects than steroid pills or syrups.

Steroid Pills and Syrups

Common steroid pills and syrups include:

- Deltasone® (prednisone)
- Medrol® (methylprednisolone)
- Orapred®, Prelone®, Pediapred® (prednisolone)

Steroid pills and syrups are very good at reducing swelling and mucus production in the airways. They also help other quick-relief medication work better. They are often necessary for treating more severe respiratory symptoms.

Steroid pills and syrups can be used as a short-term burst to treat severe respiratory symptoms. They may also be used as part of the routine treatment for chronic lung disease.

Steroid Burst

Many people with chronic lung disease need a short burst of steroid pills to decrease the severity of symptoms and prevent an emergency room visit or hospital stay. A burst may last two to seven days and not require a decreasing dose. For others, a burst may need to continue for several weeks with a decreasing dose. This is called a steroid taper. Common side effects include increased appetite, fluid retention, moodiness and stomach upset. These side effects are short-term and often disappear after the medicine is stopped.

Routine Steroids

Some people with a chronic lung disease require the use of steroid pills or syrups as part of their routine treatment for weeks, months or longer. In several lung diseases, the main treatment is high-dose steroid pills for several months or longer. If you have asthma, it is important that your treatment include an adequate dosage of an inhaled steroid before beginning routine steroid pills. We recommend that anyone requiring routine steroid pills be under the care of a specialist (pulmonologist or allergist).

Routine Steroid Use and Side Effects

The use of routine steroid pills or frequent steroid bursts can cause a number of side effects. Steroid side effects usually occur after long-term use with high doses of steroid pills. Side effects, which may occur in some people taking high-dose steroid pills, include:

SIDE EFFECTS	PREVENTION OF SIDE EFFECTS
Endocrine (hormones): • Suppression of the adrenal glands • Delayed sexual development • Changes in menstrual cycle • Increase and change in fat placement causing fullness in the face and weight gain • Increased blood sugar (diabetes) • Emotional changes such as moodiness, depression, euphoria or hallucinations	**Endocrine (hormones):** • Your health care provider may prescribe your steroid pills at specific times. Make sure you take your steroid pills as prescribed and do not stop them suddenly. • If you have taken oral steroids, talk with your health care provider about obtaining a medical alert bracelet. • Talk with your health care provider if you are having moodiness or depression that doesn't seem to get better.
Fluid and Electrolytes • Salt and water retention • High blood pressure (hypertension) • Loss of potassium	**Fluid and Electrolytes** • Limit the amount of salt and foods that are high in sodium to prevent fluid retention and swelling. Condiments and processed foods tend to be high in sodium. • Add foods that are high in potassium to your diet.
Eyes • Increased pressure in the eye (glaucoma) • Clouding of vision in one or both eyes (cataracts)	**Eyes** • Visit the eye doctor (Ophthalmologist) at least yearly. Inform him or her that you take steroid pills routinely.

Skin • Increase in body hair and acne • A tendency to bruise easily • Thinning of the skin and poor wound healing	**Skin** • Ask your health care provider about how acne can be treated. • Keep the skin well moisturized.
Nutrition • Increase in appetite • Irritation of stomach and esophagus with possible ulcer symptoms and, rarely, bleeding	**Nutrition** • If you are eating more food, be sure you choose low-fat, low-sugar items to control calories. Ask your health care provider or dietitian to help you with a specific diet plan. • Eat a well balanced diet that meets the Food Pyramid Guidelines. • Take your steroid dose with food to decrease stomach irritation.
Muscles • Muscle weakness or cramps	**Muscles** • Routine exercise may be recommended to prevent or decrease muscle weakness.
Bones • Joint pain (especially as steroids are decreased) • Thinning of bones (osteoporosis) may lead to fractures or compressions, especially of the backbone and the hip • Loss of blood supply to bones	**Bones** • To prevent osteoporosis (loss of calcium in the bones), it is important to eat foods high in calcium, such as dairy products. If you need to control calories, low fat dairy products may be used. • Your health care provider or dietician may recommend certain supplements,

(aseptic necrosis) may cause severe bone pain and may require surgical correction	such as calcium, vitamin D and a multi -vitamin. • Weight bearing exercise may also be recommended by your health care provider. • Medication may be prescribed to improve osteoporosis.
Immune System • General suppression of the immune system causes an increased risk to a variety of infections, for example chickenpox	**Immune System** • Good handwashing • Avoid exposure to any infectious disease. • If you or your child is exposed to chicken pox or measles while receiving oral steroids or high dose inhaled steroids, **notify your health care provider immediately** to determine if any special treatment is needed.

Recommendations to Decrease or Prevent Steroid Side Effects

- Take your long-term control medicines as prescribed to keep your chronic lung disease under good control. This will help decrease the steroid pills to the lowest possible dose.
- Monitor your lung disease. If you notice your peak flow numbers are decreasing, or you are having increased symptoms, call your health care provider. A short burst of steroid pills given early may prevent the need for a longer burst if treated later.

Important Considerations When Your Dosage Changes

As the control of your disease improves, or if serious side effects develop, your health care provider may decrease your steroid dose by tapering the dose to prevent "breakthrough" symptoms and to allow the adrenal glands time to function again. **If you have been taking steroids long-term do not stop your steroids abruptly.** Follow your health care provider's recommendations.

As your body adjusts to a lower steroid dose, you may notice some withdrawal side effects. These may include an increase in breathing difficulty due to worsening of your disease, fatigue, weakness, depression and muscle and joint pain. If breathing difficulty occurs, or if any of the above symptoms are severe, notify your health care provider. The non-respiratory side effects usually disappear within a few weeks or months.

If your steroid dose has recently been decreased or stopped and you have a serious illness, surgery or injury, you may require a short steroid burst. During this time, your adrenal glands may not be functioning at full capacity and cannot handle stress to the body. This is important if you have taken routine steroid pills within the last year or completed a burst within the past two weeks. Inform all of your health care providers that you have been on steroid treatment.

Some people do not react normally to steroid medicine. Special testing may be required and the medicine dose may need to be adjusted.

Frequently people have concerns about taking corticosteroid ("steroid") medicine. Please discuss concerns that you have about steroid use with your health care provider. Discuss all medicines and herbal supplements with your health care provider to make sure they don't interact with the steroids you take. It is important to follow your health care provider's directions when taking steroids.

Visit our website for more information about support groups, clinical trials and lifestyle information.

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