What is the link between prednisone and diabetes?

Taking prednisone can make the liver resistant to insulin, raising blood sugar levels and potentially leading to steroid-induced diabetes. Steroids may also worsen existing diabetes symptoms.

- **Prednisone is a steroid** that works similarly to cortisol, a hormone the adrenal glands usually produce in response to stress.
- Steroids can affect how the body reacts to insulin, another hormone that controls the level of sugar in the blood. As a result, **people living with or at risk of diabetes must be cautious before taking steroids**.

People use steroids to treat a wide range of conditions, including autoimmune disorders and inflammatory conditions, such as arthritis. They work by reducing immune activity and inflammation, so they can help prevent tissue damage.

This article explains the connection between prednisone and diabetes and provides practical steps a person can take to manage the risks.

Steroids and blood sugar levels

Prednisone and other steroids can **cause a spike in blood sugar by making the liver resistant to insulin**. The pancreas produces insulin to control blood sugar levels. Diabetes can result from a fault in how the body reacts to insulin or a problem with insulin production in the pancreas. When blood sugar levels are high, the pancreas secretes insulin, which travels to the liver. The arrival of insulin in the liver triggers a drop in the amount of sugar this organ typically releases to fuel the cells. Instead, sugar enters the cells straight from the bloodstream. This process reduces overall blood sugar concentration.

Steroids can make the liver less sensitive to insulin because they cause it to carry on releasing sugar, even if the pancreas is also releasing insulin. **This continued release of sugar triggers the pancreas to stop producing the hormone.**
If this process continues, it causes insulin resistance. The cells no longer respond to insulin, regardless of whether the body produces it or a person injects it to control diabetes.
Doctors refer to this condition as steroid-induced diabetes.

Steroid-induced diabetes

Steroid-induced diabetes is similar to type 2 diabetes in that the **cells fail to react appropriately to insulin**. Diabetes is a condition that **causes blood sugar levels to be consistently too high**. There are of diabetes:

- type 1 diabetes, in which the pancreas fails to produce any insulin
- type 2 diabetes, in which the pancreas fails to produce enough insulin or the cells do not react to the insulin circulating in the body

Steroid-induced diabetes should resolve soon after the conclusion of steroid treatment.
On the other hand, type 1 and type 2 diabetes are lifelong conditions requiring ongoing management.

Symptoms of steroid-induced diabetes

The symptoms of steroid-induced diabetes are the same as those of type 1 and type 2 diabetes and gestational diabetes, which affects some women during pregnancy. They include:

- dry mouth
- thirst
- feeling tired
- unintentional weight loss
- frequent urination
- blurred vision

- nausea and vomiting
- dry, itchy skin
- tingling or loss of feeling in the hands or feet

Some people can experience high blood sugar levels without showing any symptoms. For this reason, people **should regularly monitor their blood sugar levels after starting a course of steroids**.

Treatment for steroid-induced diabetes

As with other types of diabetes, a person with steroid-induced diabetes should try to make lifestyle adjustments to improve their blood sugar control. These changes might include eating a healthy, balanced diet and partaking in regular exercise.

- When steroids trigger diabetes, blood sugar will usually spike within 1–2 days of starting the course of treatment. If a person takes steroids in the morning, blood sugar will usually rise by the afternoon or evening.
- People taking steroids should regularly monitor their blood sugar levels and may need to take oral medication or insulin if these levels become too high.

Generally, blood sugar levels should **return to their previous levels 1–2 days after finishing steroid treatment**. However, some people may develop type 2 diabetes and need appropriate follow-up treatment with oral medication or insulin therapy.

Risk factors

The risk of developing steroid-induced type 2 diabetes is highest in people who are taking large doses of steroids over extended periods.
Other risk factors for type 2 diabetes include :

- being age 35 years or older
- being overweight
- having a family history of type 2 diabetes
- having a personal history of gestational diabetes
- having impaired glucose tolerance
- Taking steroids with diabetes

Taking prednisone and other steroids will be unavoidable for people with certain conditions. These medications can give a person the best chance of recovery or pain relief, even if they also have diabetes.
People with diabetes will **need to take certain steps before starting a course of prednisone** or a similar medication.

- For example, they should make the doctor aware of their diabetes diagnosis. **In some cases, a doctor may be able to prescribe a different drug that does not interfere with blood sugar levels**.
- If this is not possible, they will often need to **make adjustments to the prescribed dosage to keep blood sugar levels** within the target range.

While taking steroid medications, a person with diabetes should consider the following practices:

- checking blood glucose levels more often than usual — experts recommend doing this four or more times per day
- increasing the dosage of insulin or oral medication, depending on blood sugar levels and whether a doctor advises it
- monitoring urine or blood ketones
- **seeing a doctor immediately if blood sugar levels rise too high** while taking steroids and the insulin or oral medication dose is not high enough to bring the levels down carrying glucose tablets, juice, or candy at all times in case blood sugar levels drop suddenly
- As a person gradually reduces their steroid dosage, they should also reduce the equivalent dosage of insulin or oral medication until it returns to the original dosage. **It is important never to stop taking steroids suddenly, as this may cause severe illness.**

Possible drug interactions

People with diabetes often need to take medications for other conditions. Any medication can increase the risk of the person experiencing harmful drug interactions if they are also taking insulin.

The most common oral drugs people take for diabetes are oral hypoglycemics.
These medications include:

- biguanides such as metformin(Glucophage)
- alpha-glucosidase inhibitors such as acarbose (Glucobay, Precose)
- sulfonylureas such as glyburide (Micronase, DiaBeta)
- meglitinides such as repaglinide (Prandin)
- pioglitazone (Actos)

All of these drugs **have the potential to interact with other medications**. People should take extra caution with sulfonylureas, metformin, and thiazolidinediones, particularly when they are taking them to treat any of the following conditions:

- liver dysfunction
- cardiovascular disease
- kidney disease

Doctors might include insulin therapy in a treatment plan for steroid-induced diabetes if an individual does not respond to lifestyle changes or oral medications.

Many medications interact with insulin, including:

- ACE inhibitors
- aspirin
- beta-blockers
- steroids
- estrogens
- hypothyroid drugs
- monoamine oxidase inhibitors (MAOIs)
- niacin
- oral contraceptives
- sulfa antibiotics

People who have diabetes should always discuss possible drug interactions with their doctor.