

# Adrenal Insufficiency

## Information for women who have adrenal insufficiency during pregnancy or breastfeeding

The information provided below is for readers based in the United States of America. Readers outside of the United States of America should seek the information from local sources.

### What is adrenal insufficiency?

The adrenal glands are a pair of glands located just above the kidneys, one adrenal atop each kidney. Adrenal insufficiency refers to reduced function, or lack of function, of the outer section of the adrenal gland, called the adrenal cortex. The job of the adrenal cortex is to produce hormones in response to stress and to release those hormones into the bloodstream. There are two types of these hormones. One type, called *glucocorticoids*, increases your blood sugar level to give you energy. The other type, called *mineralocorticoids*, affect the levels of ions in your blood, particularly sodium and potassium, and modify the passage of those ions through the kidneys into the urine. This, in turn, affects the amount of water in your blood, your blood pressure, and the function of cells. People with adrenal insufficiency experience fatigue, low blood pressure, low sodium and high potassium in the blood, and behavioral problems.

Whereas the release of mineralocorticoids from the adrenal cortex depends on factors in the kidney and throughout the body, the release of glucocorticoids, the main one being cortisol, depends on the adrenal cortex being stimulated by a hormone called adrenocorticotropic hormone (ACTH), which comes from the pituitary gland at the base of the brain. Since the release of ACTH is connected with other processes that are affected by the day-night cycle, cortisol levels in the blood normally follow a circadian pattern; they peak in the morning as you are waking up and are lower at night, although the levels also go up in response to stress. The adrenal cortex also produces sex hormones called androgens.

Adrenal insufficiency can be *primary* adrenal insufficiency, meaning that the problem is in the adrenal gland, or it can be *secondary* adrenal insufficiency, meaning that the pituitary gland has a problem that's preventing the release of ACTH. It's extremely rare to have a pituitary problem that interferes only with ACTH rather than causing problems with multiple hormones, so if a person has adrenal insufficiency by

itself, they have primary adrenal insufficiency. This is also called Addison disease, and in developed countries the cause is almost always an autoimmune process, meaning that the immune system has produced antibodies that have damaged the gland so it can't produce adequate amounts of hormones. Other causes include [tuberculosis](#), radiation damage, and problems with the blood supply of the gland.

In the past, Addison disease almost never co-existed with pregnancy, because women with the condition had fertility problems, but since fertility treatments have become more common, pregnancy and adrenal insufficiency now can occur together. Although secondary adrenal insufficiency does not occur without other hormonal problems, it should be noted that it can develop after pregnancy, as part of a condition called Sheehan syndrome in which the pituitary gland becomes damaged as a result of severe hemorrhage during or after delivery.

### **How common is adrenal insufficiency during pregnancy?**

Adrenal insufficiency is relatively rare during pregnancy, but the consequences are significant for the mother and developing baby. These problems can be avoided if the condition is recognized early and treated properly.

### **How is adrenal insufficiency diagnosed?**

Your blood is first tested for levels of cortisol at various points throughout the day, and after that adrenal insufficiency is diagnosed with a corticotropin stimulation test. In this test, you are given a hormone that is similar to ACTH, the hormone that the pituitary normally makes to stimulate the adrenal glands to release glucocorticoids. If your blood cortisol level does not rise substantially in response to the hormone, this suggests adrenal insufficiency and that the problem is in the adrenal gland itself. In such cases, the woman's mineralocorticoid levels are also low throughout the day (these are not expected to rise in the stimulation test). On the other hand, if your cortisol level is normally far too low, your mineralocorticoid levels are normal, and if your cortisol level then rises during the stimulation test, this suggests secondary adrenal insufficiency, meaning that the problem is in the pituitary.

### **Does adrenal insufficiency cause problems during pregnancy?**

Adrenal insufficiency causes problems during pregnancy since pregnancy actually requires an increase in the normal production of cortisol from the adrenal cortex. Having inadequate amounts of cortisol, mineralocorticoids, and androgens circulating in your body causes extreme fatigue, dangerously low blood sugar, muscle and abdominal pain, irritability, [depression](#), loss of hair in the underarm and pubic

areas, weight loss, low blood pressure, darkening of the skin (from the pituitary responding by releasing extra ACTH), nausea, [diarrhea](#), or vomiting, and a craving for salt. This can lead to an emergency, called acute adrenal insufficiency (adrenal crisis, Addisonian crisis), which can lead to coma and death.

### **Does adrenal insufficiency during pregnancy cause problems for the baby?**

Studies on adrenal insufficiency in pregnant women have been very limited, but given the possibility of adrenal crisis shutting down the mother's body, consequences for the developing baby can certainly be fatal, if the condition is not recognized and treated.

### **What to consider about taking medications when you are pregnant or breastfeeding:**

- The risks to yourself and your baby if you do not treat the adrenal insufficiency
- The risks and benefits of each medication you use when you are pregnant
- The risks and benefits of each medication you use when you are breastfeeding

### **What should I know about using medication to treat my adrenal insufficiency during pregnancy?**

Primary adrenal insufficiency is treated fairly effectively with hormone replacement. This consists of glucocorticoids ([hydrocortisone](#), prednisolone, or prednisone) and mineralocorticoids (fludrocortisone), and in many cases sex hormones (dehydroepiandrosterone). Prednisone is an oral form of cortisone that is useful for maintaining adequate levels when there is no emergency. The prednisone dosage can be adjusted as needed. For instance, the dosage can be increased to account for an event that stresses the body, such as pregnancy, upcoming labor and delivery, or surgery. If a woman falls into adrenal crisis, however, hydrocortisone is given by injection to raise the glucocorticoid level rapidly.

### **Who should NOT stop taking medication for adrenal insufficiency during pregnancy?**

If you have adrenal insufficiency, you must not stop taking your hormones, and actually your doctor typically needs to increase your dosage. Not only are the hormones considered safe for the baby, but you and the baby are in danger if your dosage is inadequate.

### **What should I know about choosing a medication for my adrenal insufficiency during pregnancy?**

You may find Pregistris expert reports about the individual medications used to treat adrenal insufficiency [here](#). Additional information can also be found in the sources listed at the end of this report.

### **What should I know about taking a medication for my adrenal insufficiency when I am breastfeeding?**

Whether or not you can breastfeed safely depends on your needed dosage of replacement hormones and your dosage regimen. Some women may be able to pump out and discard breastmilk that accumulates in the hours following her dose of hormones and then produce more milk, then wait for new milk to accumulate and nurse the infant from that new milk before the next dose of hormones. Such a schedule can be quite complex, however, and may make it hard to continue breastfeeding.

There are some options for what to do about those missed feedings, including pumping earlier in the day and saving the milk to feed in place of the discarded milk, feeding formula for any meal missed due to medication, or simply using formula for all feedings. A lactation consultant can help you if you would like to keep breastfeeding. It is true that many studies suggest that there are benefits to breastfeeding both to the child and the mother, it's also true that in most such studies it has been difficult to separate the true benefits of breastfeeding from various socioeconomic factors that also relate to whether women chose breastfeeding over formula. The bottom line is that your baby will benefit from having a mother who is as relaxed as possible so just feed your baby in the way that keeps you the sanest!

### **What alternative therapies besides medications can I use to treat my adrenal insufficiency during pregnancy?**

If you suffer from adrenal insufficiency, there is no viable alternative to hormone replacement.

### **What can I do for myself and my baby when I have adrenal insufficiency during pregnancy?**

Cooperate with your physicians and be diligent about taking your replacement hormones on schedule.

### **Resources for adrenal insufficiency in pregnancy:**

For more information about **adrenal insufficiency** during and after pregnancy, contact <http://www.womenshealth.gov/> (800-994-9662 [TDD: 888-220-5446]) or check the following links:

- National Adrenal Diseases Foundation: <http://www.nadf.us/>
- Mayo Clinic: [Adrenal Glands](#)

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## General information

It is very common for women to worry about having a miscarriage or giving birth to a child with a birth defect while they are pregnant. Many decisions that women make about their health during pregnancy are made with these concerns in mind.

For many women these concerns are very real. As many as 1 in 5 pregnancies end in a miscarriage, and 1 in 33 babies are born with a birth defect. These rates are considered the background population risk, which means they do not take into consideration anything about the health of the mom, the medications she is taking, or the family history of the mom or the baby's dad. A number of different things can increase these risks, including taking certain medications during pregnancy.

It is known that most medications, including over-the-counter medications, taken during pregnancy do get passed on to the baby. Fortunately, most medicines are not harmful to the baby and can be safely taken during pregnancy. But there are some that are known to be harmful to a baby's normal development and growth, especially when they are taken during certain times of the pregnancy. Because of this, it is important to talk with your doctor or midwife about any medications you are taking, ideally before you even try to get pregnant.

If a doctor other than the one caring for your pregnancy recommends that you start a new medicine while you are pregnant, it is important that you let them know you are pregnant.

If you do need to take a new medication while pregnant, it is important to discuss the possible risks the medicine may pose on your pregnancy with your doctor or midwife. They can help you understand the benefits and the risks of taking the medicine.

Ultimately, the decision to start, stop, or change medications during pregnancy is up to you to make, along with input from your doctor or midwife. If you do take medications during pregnancy, be sure to keep track of all the medications you are taking.