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# Cortisol Replacement Therapy

## What it is and how to give it to your child

### **What is cortisol?**

Cortisol is a hormone that is needed throughout a person's life. The pituitary gland makes adrenocorticotropic hormone, or ACTH. ACTH stimulates the adrenal gland, which produces cortisol. If your child doesn't have enough ACTH to stimulate the adrenal gland to make cortisol, or if the adrenal gland is not able to make cortisol, your child will need to take medicine for the rest of their life. This is called cortisol replacement therapy.

### **What does cortisol do?**

- Maintains energy supply
- Maintains fluid and electrolyte balance
- Maintains normal blood sugar levels
- Controls the body's reaction to changes or to physical stress

### **Are there side effects?**

Your child's prescription of cortisol replaces what their body would make under normal, daily, non-stressful times. There should be no side effects when the medicine is used as directed.

### **What should I do if I forget to give a dose?**

Give the dose as soon as you remember, and then give the rest of the medicine at the usual times. This may mean that you are giving two doses at the same time. Too much cortisol won't hurt, but too little may cause low blood pressure and lead to unconsciousness.

### **What should I do when my child is ill?**

There is a greater need for cortisol when your child is sick or under stress. Therefore, your child will need to have a larger dose of medicine during these times. Increase the medicine if your child has:

- Fever higher than 101 degrees F
- Serious trauma, such as broken bones, head injury or an auto or bike accident that caused injury
- Seizures or other serious medical problems
- Viral illness that would keep them home from school
- Pneumonia
- Severe emotional stress

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- Surgery (if scheduled, notify endocrinologist)
- Tooth removal (increase the day before, day of and day after removal)

During these times of sickness or physical stress, you will need to give the stress doses.

**Usual daily dose:** \_\_\_\_\_

**Stress dose:** \_\_\_\_\_

**Injection shot (dose) if unable to take by mouth:** \_\_\_\_\_

### **How long should I continue to give the stress doses?**

- For 24 hours after the fever goes away
- For 24 hours after a trauma or medical problem has been treated and your child's condition has been stable for 24 hours

### **What should I do if my child has vomited and can't take the medicine by mouth?**

- Wait for 30 minutes and then repeat the dose. Give stress doses if there are signs that your child is low on cortisol. Offer small amounts of clear liquids often.
- If your child vomits again or is unable to take the medicine by mouth for any reason, the medicine will have to be given by a shot into the muscle. Give a shot every 4 to 6 hours. Please call and let the endocrinologist know that you had to give a shot. The doctor will tell you how often to continue giving the shot. Also, let your primary care doctor know that your child is sick.

### **Examples of when to give the shot are:**

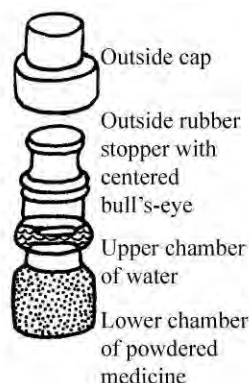
- Vomiting more than once
- Unconsciousness
- When your child is not able to take the medicine by mouth, such as when they cannot eat before and after surgery

### **Signs that your child is low on cortisol:**

- Headache
- Not hungry
- Weak
- Sick to stomach
- Confused
- Peeing less than normal
- Tired
- Vomiting
- Lethargy
- Restless
- Dizzy
- Diarrhea

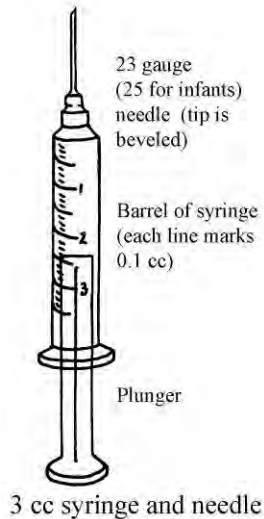
### Preparing injectable hydrocortisone using a Mix-O-Vial

The cortisol replacement called Solu-Cortef comes in a special bottle called a Mix-O-Vial. The sterile water inside the vial sits on top and is separated from the powdered medicine on the bottom by a rubber disc. Once the powder dissolves, the medicine will be safe to use for 72 hours (three days).



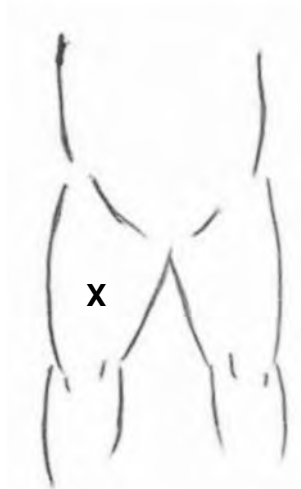
1. Wash your hands.
2. Assemble the equipment:
  - Syringe with attached needle
  - Rubbing Alcohol
  - Cotton ball
  - Medicine
  - Band-Aid
3. Check the expiration date on the bottle. Do not use if outdated.
4. Remove outside cap of vial, and push down firmly on the rubber stopper. Turn the Mix-O-Vial top a quarter-turn before pressing. (This forces the water in the upper chamber to push the middle rubber disc down into the lower chamber with the powder.)
5. Gently rotate the vial so that the water and the powder mix completely and look clear, not cloudy or clumpy.
6. Wash the outside rubber stopper on top of the vial with rubbing alcohol.
7. Put 1 cc of air into the syringe.
8. Holding the syringe like a pencil, insert the needle through the bull's-eye of the rubber stopper. Push the plunger down to force air into the vial.
9. Turn the vial upside down, and pull the plunger back to draw the medicine into the syringe.
10. Keep the needle tip below the surface of the liquid to prevent air from getting into the syringe.
11. Check for air bubbles in the syringe. Tap the syringe to help them surface. Push the plunger up to force air back into the vial. Redraw as needed.
12. Recheck correct dosage. Remove the needle from the vial.
13. Replace the needle cover until your child is ready to receive the injection.

### Preparing injectable hydrocortisone using two bottles



1. Wash your hands.
2. Assemble the equipment:
  - 3 cc disposable syringe with attached needle
  - Medicine vial
  - Sterile water vial
  - Rubbing alcohol
  - Cotton ball
  - Band-Aid
3. Check expiration date on bottle. Do not use if outdated.
4. Remove outside caps of both vials, and wash the tops with rubbing alcohol.
5. Put 1 cc of air into the syringe.
6. Holding the syringe like a pencil, insert needle through the rubber-top bull's-eye of the water vial. Push the plunger down to force air into the vial.
7. Turn the vial upside down, and pull the plunger back to draw water into the syringe. Keep the needle tip below the surface of the liquid to prevent air from reentering the syringe.
8. Check for air bubbles in the syringe. Tap the syringe to help them surface. Push the plunger up to force air back into the vial. Redraw as necessary.
9. Recheck correct volume. Remove the needle from the water vial.
10. Insert the needle through the rubber bull's-eye of the powder medicine vial. Push the plunger down to force water into the vial.
11. Gently rotate the vial so that the water and the powder mix completely and look clear, not cloudy or clumpy.
12. Turn the vial upside down, and pull the plunger back to draw the medicine into the syringe. Keep the needle tip below the surface of the liquid to prevent air from reentering the syringe.
13. Check for air bubbles in the syringe. Tap the syringe to help them surface. Push the plunger up to force air back into the vial.
14. Recheck the correct dosage. Remove the needle from the vial.
15. Replace the needle cover until your child is ready to receive the injection.

### How to give an intramuscular injection



The middle, top portion of your child's leg (anterior thigh)

1. Wash your hands.
2. Get help holding your child, if needed.
3. Have your child lie down or sit and try to relax.
4. Wipe the middle and top part of the leg with rubbing alcohol and let it dry.
5. Hold the syringe like a dart. With your other hand, hold the muscle on top of the leg by opening your hand fully and squeezing the skin.
6. Quickly pierce the skin at a 90-degree angle—straight down, as if you were throwing a dart. A quick poke hurts less than “pushing” the needle slowly.
7. Check to see that the needle is not in a blood vessel by gently lifting the plunger with your thumb or other hand; this is called aspiration.  
**Note:** If blood is inside the syringe, remove the needle without injecting the medicine into the leg, and start over.
8. If no blood appears, push the plunger down to inject the medicine into the leg.
9. Remove the needle from your child's leg quickly and release your hand holding the muscle at the same time.
10. If oozing occurs, place a dry cotton ball over the injection site and use a Band-Aid.

#### To Learn More

- Endocrinology and Diabetes  
206-987-2640
- Your child's healthcare provider
- [www.seattlechildrens.org](http://www.seattlechildrens.org)

#### Free Interpreter Services

- In the hospital, ask your child's nurse.
- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.
- For Deaf and hard of hearing callers  
206-987-2280 (TTY)

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Seattle Children's offers interpreter services for Deaf, hard of hearing or non-English speaking patients, family members and legal representatives free of charge. Seattle Children's will make this information available in alternate formats upon request. Call the Family Resource Center at 206-987-2201.

This handout has been reviewed by clinical staff at Seattle Children's. However, your child's needs are unique. Before you act or rely upon this information, please talk with your child's healthcare provider.

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