

How to Prepare & Inject Glucagon For Treatment of Severe Hypoglycemia in Persons with Diabetes



Islets of Hope Publication TRE-1-2006

Become familiar with the information in this publication **BEFORE** an emergency!

If a person with diabetes loses consciousness from hypoglycemia (low blood sugar) do the following:

1. Prepare glucagon
2. Roll person onto their side
3. Inject glucagon
4. Feed the person as soon as they can take food by mouth
5. Call 911 as necessary

School officials or caregivers (without someone else around to help them) should inject glucagon and call 911 even before contacting a child's parent. Valuable time can be lost trying to track a parent down. If a child is unconscious, save their life first, call 911, then call the parent!

Important Medical Disclaimer

All material found in this publication is intended to provide you with general information and should in no way be used as a substitute for professional medical care or advice.

How to Prepare & Inject Glucagon For Treatment of Severe Hypoglycemia In Persons with Diabetes

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Be Prepared for an Emergency

Make sure that your relatives or close friends know that if you become unconscious, fast medical assistance must always be sought. You should always carry glucagon so that (trained) others can give you an injection if you are ever unable to take sugar by mouth. If you are unconscious, glucagon can be safely given while awaiting medical assistance. Glucagon should awaken the person enough so that fast sugars can then be taken by mouth.

Show your family members and others where you keep this kit and how to use it. They need to know how to use it before you need it. They can practice giving a shot by giving you your normal insulin shots. It is important that they practice. A person who has never given a shot probably will not be able to do it in an emergency.

Save expired glucagon kits to practice on fruit or a potato and to train family, friends, caregivers.

IF YOU HAVE QUESTIONS CONCERNING THE USE OF GLUCAGON CONSULT A DOCTOR, NURSE, OR PHARMACIST BEFORE AN EMERGENCY.

Your emergency kit

You should always carry with you, and keep a spare on hand to leave at school, the office, or any place that you normally spend time:

- emergency medical information
- testing supplies (meter, strips, lancing supplies)
- plenty of fast-acting sugars (at least 100 grams of carbohydrate)
- insulin & syringes (or other injecting device like a pen) (pumpers too)
- insulin pumpers need extra batteries & compete site change set
- glucagon

Storing glucagon

Store the kit at controlled room temperature between 20° to 25°C (68° to 77°F). Do not store in trunk of car, direct sunlight, or places where glucagon will be exposed to heat or cold.

After dissolving glucagon with diluting solution it must be used immediately. Discard any unused portion. Solutions should be clear and of a water-like consistency at time of use.

What to do When a Diabetic Person is Unconscious

- **Remain calm.** You can do this!
- **Act quickly.** Prolonged unconsciousness may be harmful and blood glucose can continue to drop quickly even over a matter of minutes.
- **Yell** specifically for someone by name (or point and say "you") to call 911, don't just randomly say "someone" call 911.

When to give glucagon

DO NOT USE glucagon kits after the expiration date stamped on the container. Call 911 if glucagon is expired or cannot be given for any reason whatsoever.

Milder cases of hypoglycemia should be treated quickly by giving fast sugars by mouth -- don't wait -- because blood glucose can drop rapidly and sharply and a person can lose consciousness in only a matter of minutes. They will then need to be injected with glucagon.

Give glucagon if:

- the person is unconscious
- the person is unable to eat sugar or a sugar-sweetened product
- the person is having a seizure or convulsions, or
- repeated administration of sugar or a sugar-sweetened product such as a regular soft drink or fruit juice does not improve the patient's condition.

Glucagon will only work when injected under the skin into muscle or into fatty tissue.

Information about Hypoglycemia (LOW Blood Glucose)

Onset: Rapid; sudden, may not be preventable.

Causes Related to Diabetes: Missing snacks or meals, eating too little food, taking too much insulin, too much activity, side effects of medications taken, or a combination of these things.

ALERT: All lows are potentially dangerous and can lead to seizure, convulsion, unconsciousness, and death if not treated. If you are unable to test someone's blood glucose, always assume the person is low and treat for low blood glucose. Call 911 and test blood glucose as soon as possible.

If the patient does not improve or if they cannot eat fast sugars, glucagon should be given or the person should be treated with intravenous glucose at a hospital.

How glucagon helps raise blood glucose during hypoglycemia

Glucagon is a naturally occurring hormone produced by the pancreas. When the body releases glucagon, the hormone triggers the release of stored energy in the liver and muscles (glycogen). This released energy puts sugar into the blood stream and can raise the level of blood sugars.

Injecting glucagon is helpful because it enables the person with diabetes to produce his/her own blood glucose to correct the hypoglycemia.

Patients should always call their physician when hypoglycemic reactions occur so that the treatment regimen may be adjusted if necessary.

WARNING THE PATIENT MAY BE IN A COMA FROM SEVERE HYPERGLYCEMIA (HIGH BLOOD GLUCOSE) RATHER THAN HYPOGLYCEMIA. IN SUCH A CASE, THE PATIENT WILL NOT RESPOND TO GLUCAGON AND REQUIRES IMMEDIATE MEDICAL ATTENTION.

Symptoms of Hypoglycemia (Low Blood Glucose)

It is important to remember that people can react differently to low blood glucose levels. Generally, symptoms of hypoglycemia include:

Mild Hypoglycemia

- Increased or sudden hunger
- Feeling shaky, dizzy or nervous
- Pounding heartbeat
- Drowsiness, feeling tired
- Sweating (cold and clammy)
- Numbness or tingling around the mouth
- Headache or stomach ache

Moderate Hypoglycemia

(may require glucagon shot if the person cannot swallow)

Any of the above mild symptoms, plus:

- Personality change
- Irritability
- Confusion and/or difficulty concentrating
- Slurred or slow speech
- Poor coordination

Severe Hypoglycemia **Give glucagon & CALL 911 ASAP!**

Any of the above mild or moderate symptoms, plus:

- Loss of consciousness
- Seizures and/or convulsions
- Death

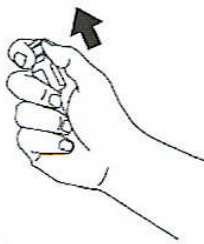
Hypoglycemia can also happen while you are sleeping. You might:

- Cry out or have nightmares
- Find that your pajamas or sheets are damp from perspiration
- Feel tired, irritable, or confused when you wake up
- Wake up with high blood glucose or a headache.

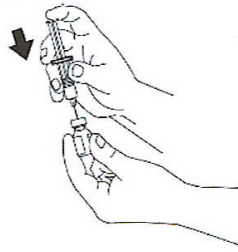
How to Prepare Glucagon for Injection

The contents of the syringe are inactive. You must mix the contents of the syringe with the glucagon in the accompanying bottle before giving injection. Do not prepare Glucagon for Injection until you are ready to use it.

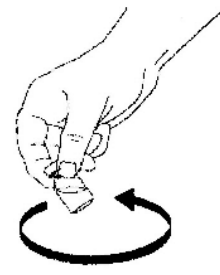
Turn patient on his/her side to prevent patient from choking and:



Flip off Top
from bottle;
wipe rubber
stopper with
alcohol swab



Inject all liquid
from syringe into
bottle

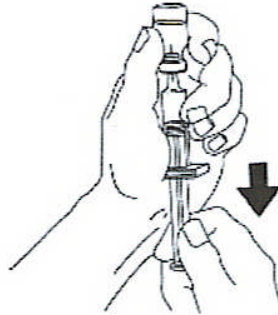


Swirl bottle gently
until dry glucagon is
dissolved and clear
like water

1. Remove the flip-off seal from the bottle of glucagon. Wipe rubber stopper on bottle with alcohol swab.
2. Remove the needle protector from the syringe. **DO NOT REMOVE THE PLASTIC CLIP FROM THE SYRINGE.**
3. Inject the entire contents of the syringe into the bottle of glucagon.
4. Remove syringe from the bottle.
5. Swirl bottle gently until glucagon dissolves completely.

GLUCAGON SHOULD NOT BE USED UNLESS THE SOLUTION IS CLEAR AND OF A WATER-LIKE CONSISTENCY. IF YOU CANNOT INJECT GLUCAGON FOR ANY REASON IMMEDIATELY CALL 911.

How to Draw Glucagon into the Syringe



1. Using the same syringe, hold bottle upside down and, making sure the needle tip remains in solution.
2. Gently withdraw all of the solution (1 mg mark on syringe) from bottle.
3. The plastic clip on the syringe will prevent the rubber stopper from being pulled out of the syringe; however, if the plastic plunger rod separates from the rubber stopper, simply reinsert the rod by turning it clockwise.
4. The usual adult dose is 1 mg (1 unit). For children weighing less than 44 lb (20 kg), give 1/2 adult dose (0.5 mg).
5. For children, withdraw 1/2 of the solution from the bottle (0.5 mg mark on syringe).

Note: You can also use any syringe used to inject insulin to also inject glucagon.

DISCARD UNUSED PORTION

How to Inject Glucagon

Inject glucagon the same way that you inject insulin. You can inject into the fat or muscle (fat is preferred, but don't worry - just get it under the skin). THERE IS NO DANGER OF OVERDOSE.

Using the following directions, inject glucagon IMMEDIATELY after mixing:

1. Cleanse injection site on buttock, arm, or thigh with alcohol swab.
2. Insert the needle into the loose tissue under the cleansed injection site, and inject all (or ½ for children weighing less than 44 lb) of the glucagon solution. Inject just as you would insulin.
3. Apply light pressure at the injection site, and withdraw the needle. Press an alcohol swab against the injection site.
4. Turn the patient on his/her side. When an unconscious person awakens, he/she may vomit. Turning the patient on his/her side will prevent him/her from choking.
5. Call 911, but don't leave the person alone if at all possible.

FEED THE PERSON AS SOON AS HE/SHE AWAKENS AND IS ABLE TO SWALLOW.

Give them a fast-acting source of sugar (such as a regular soft drink or fruit juice) and a long-acting source of sugar (such as crackers and cheese or a meat sandwich).

If the person does not awaken within 15 minutes, give another dose of glucagon if paramedics have not arrived yet.

A doctor should ALWAYS be notified whenever severe hypoglycemic reactions occur.

What to do After Injecting Glucagon

- Keep person on their side; glucagon can cause vomiting
- Do not leave the person if at all possible
- Call 911 if necessary, then call parents
- Feed the person as soon as they are able to eat
- If person does not revived in 15 minutes give another shot of glucagon
- Watch for reactions to glucagon shots

Severe side effects are very rare but a few people may be allergic to one of the inactive ingredients in glucagon. Other side effects may include:

- rapid heartbeat
- nausea and vomiting
- feeling "hung-over"

If you experience any reactions which are likely to have been caused by glucagon, contact your doctor immediately.

If the person does not respond to glucagon

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