



Children with diabetes

Glucagon training for school staff



- Understand what diabetes is.
- Recognize a hypoglycemic reaction.
- Understand the intended purpose and the side effects of glucagon.
- Be able to administer glucagon if needed.

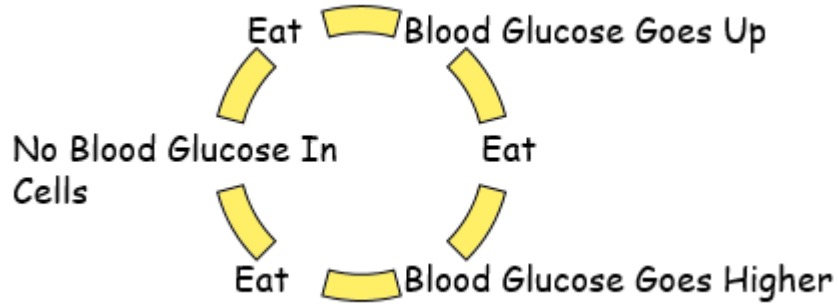
Goals for today



- Diabetes is a condition in which the body cannot use, or does not produce enough insulin.
- Without insulin, the body cannot get the blood glucose into the cells for energy.



What is diabetes?



High levels of blood glucose build up in the blood.

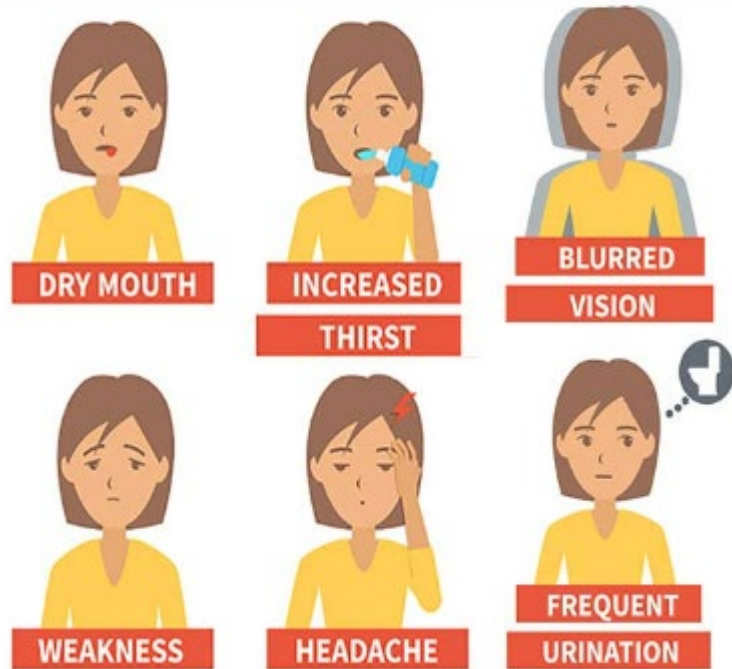
The blood glucose cannot get into the cell to provide energy.

Without insulin...



This is called
hyperglycemia

HYPERGLYCEMIA



Hyperglycemia signs and symptoms:

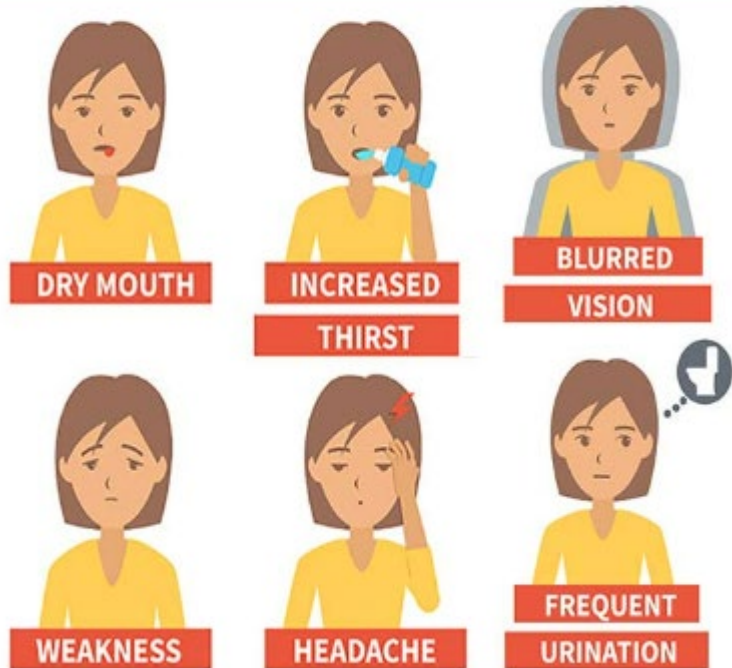
- Frequent urination
- Increased thirst
- Increased hunger
- Fatigue/weakness
- Weight loss
- Blurry vision
- Fast, deep breathing
- Slow or confused thinking

Hyperglycemia causes:

- Too much food
- Not enough insulin
- Decreased activity
- Illness or stress

Hyperglycemia: Signs and Symptoms

HYPERGLYCEMIA



Mild/moderate hyperglycemia treatment

- Allow liberal bathroom privileges
- Encourage student to drink water or sugar-free drinks
- Check blood glucose
- Contact parent if over 300 (or whatever the student-specific number is)

Severe hyperglycemia treatment

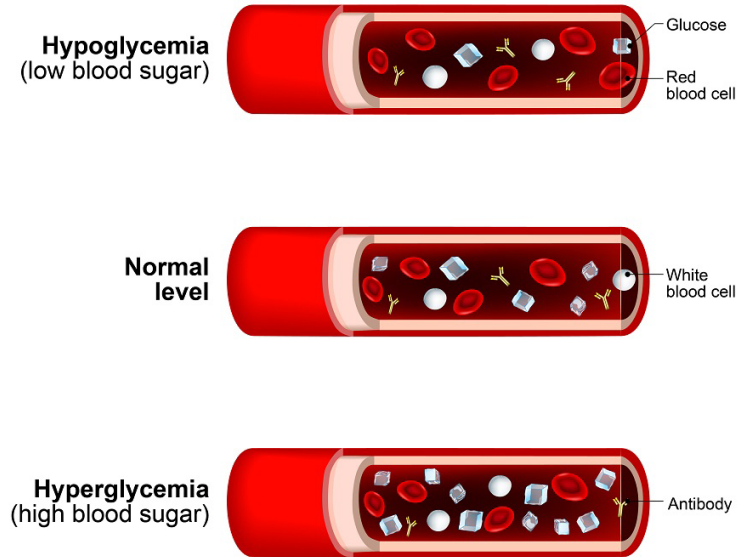
- If student vomits or is lethargic – call parent/guardian.
- If parent/guardian is unavailable, call 911.

Hyperglycemia: Treatment



- Not typically an emergency
- Since symptoms for hyper/hypo can be similar – always good to verify with finger stick
- Allow free access to water and bathroom
- Exercise will bring it down
- Parent/guardian can treat most highs when the students gets home from school.

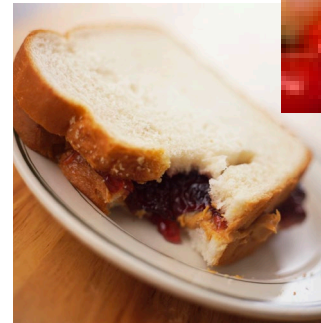
THE GLUCOSE LEVEL



Hyperglycemia (continued)



- Good nutrition is important to everyone, however a student with diabetes must plan their meals carefully.
- A balanced diet, with a moderation of concentrated sweets is the best.
- Counting the carbohydrates in foods is called Carb Counting.
- Insulin is given according to the carbs eaten.



Meal Plans

- Daily blood glucose checking is an important part of diabetes control.
- Blood glucose checks are usually done before meals, at bedtime, and with exercise.
- When in doubt, CHECK the blood glucose if the student is not feeling well or is complaining of feeling “low”.



Blood Glucose Testing



- Continuous Glucose Monitoring (CGM) automatically tracks glucose levels day and night.
- Reads interstitial fluid, not blood, so readings may vary from glucometer.
- Can set alarms to notify for high or low blood glucose.
- Some CGMs can be used to make treatment decisions, others must have number verified with glucometer.

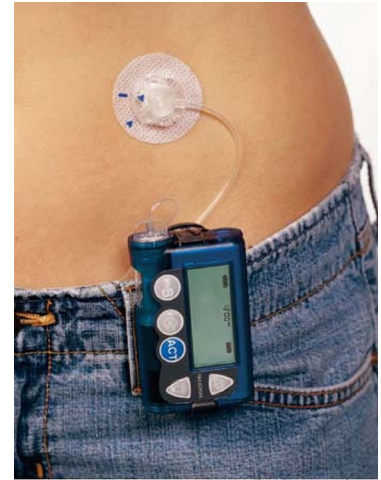


Continuous Glucose Monitoring Systems



Insulin

- Insulin is a hormone secreted by the pancreas. With diabetes it must be given as an injection.
- The dose will vary with the blood glucose level, food intake and exercise.
- Can be given via a syringe and vial, an insulin pen, or an insulin pump.

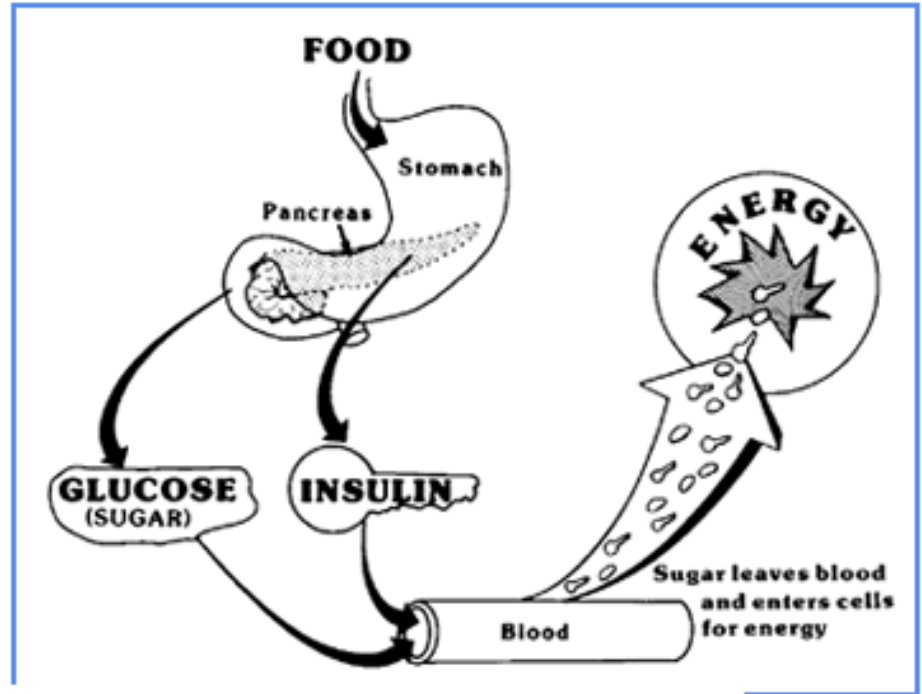


AP / Medtronic Diabetes



Insulin should.....

- Lower the blood glucose.
- Facilitate the blood glucose getting into the cells to provide energy.





Exercise

When the student exercises, the body uses the blood glucose more effectively, which can lead to low blood glucose (hypoglycemia).





Insulin can
cause blood
glucose to fall
too low when:

- Too much insulin is given.
- Not enough food is eaten.
- Too much exercise
- This is called hypoglycemia



Hypoglycemia is a medical emergency!

Hypoglycemia can be life threatening if not treated because the only energy source for the brain is blood glucose.



Mild hypoglycemia symptoms

- Hunger
- Sleepiness
- Dizziness
- Emotional
- Irritability

Moderate hypoglycemia symptoms

- Blurry vision
- Weakness
- Confusion
- Poor coordination

Severe hypoglycemia symptoms

- Combative
- Seizure
- Loss of consciousness
- Death

HYPOGLYCEMIA



Symptoms for hypoglycemia



Mild/moderate hypoglycemia treatment

- Give fast acting sugar source (typically 15 grams of carbohydrates), then wait 15 minutes and check again.
- Repeat if necessary.
- Follow with a protein snack.

Severe hypoglycemia treatment

- Don't give anything by mouth.
- Position on side if possible.
- Administer glucagon (if ordered).
- Call 911
- Call parent/guardian
- Stay with student

HYPOGLYCEMIA

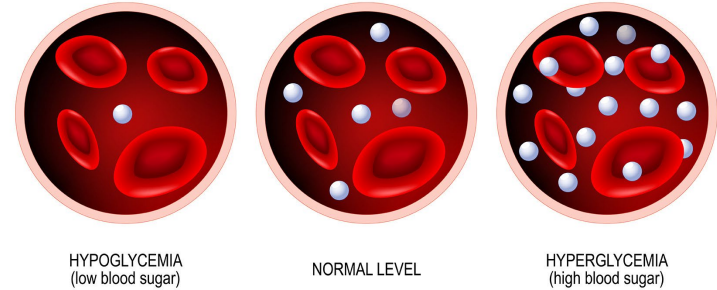


Actions for hypoglycemia



- When in doubt or unable to check the blood glucose, treat as a hypoglycemic reaction (more life-threatening).
- Remember the 15-15 rule: give 15 grams of carbohydrates, wait 15 minutes, then recheck the blood glucose. Repeat if needed.
- Fast acting sources of sugar
 - a. 6 oz of regular soda (not diet) or fruit juice
 - b. 3-4 glucose tablets
 - c. glucose gel

THE GLUCOSE LEVEL



Hypoglycemia or Hyperglycemia?



- Glucose gels and/or tablets can be used to treat hypoglycemia
- Examples: Insta-glucose, Glucose 15, Glucose tablets, Dextrose tablets
- Gels are placed in the student's mouth toward the cheek and back teeth.



Hypoglycemia with decreased awareness

Treatment for an
unconscious student



- Identify someone to call 911
- Turn him/her on their side
- Give Glucagon
- Call the parent



Treatment for an unconscious student



1. Syringe and vial (e.g., Lilly, Novo Nordisk)
(all ages, dose specific)
2. Baqsimi nasal powder
(ages 4 and up)
3. Gvoke Hypopen (auto-injector)
(ages 2 and up)
4. Gvoke (prefilled syringe)
(ages 2 and up)
5. Zegalogue (auto-injector)
(ages 6 and up)
6. Zegalogue (prefilled syringe)
(ages 6 and up)
7. (ages 6 and up)

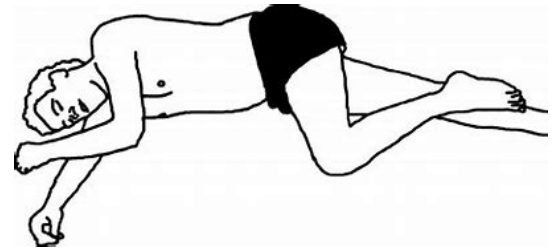


Ways to Administer Glucagon



The most common side effects are mild - nausea and vomiting. These reactions may also occur with hypoglycemia.

Keep the student positioned on his or her side to avoid aspiration.



Glucagon Adverse Reactions



Why is it necessary to administer glucagon?

- The goal of diabetes care is to keep the blood glucose closer to normal. Despite best efforts hypoglycemia will occur.
- Glucagon is the fastest means to raise the blood glucose level.

Steps for glucagon
administration:
syringe and vial

1. Identify someone to call
911

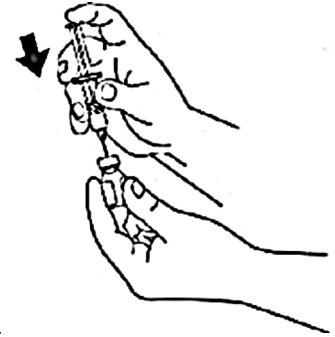
2. Remove flip top seal from
vial containing dry
powder

3. Remove needle protector
from syringe

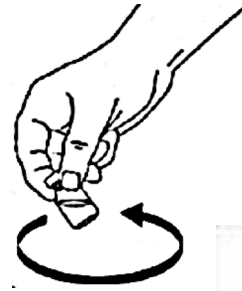


Syringe and vial

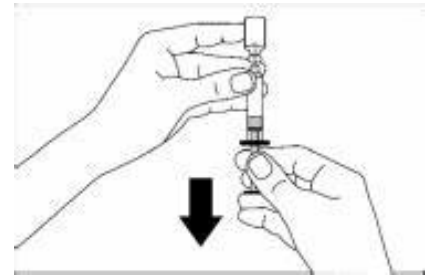
4. Slowly inject all sterile water in syringe into the bottle containing the powder



5. Gently swirl vial until all powder is dissolved and solution is clear (don't shake vial)



6. Withdraw all glucagon solution from vial



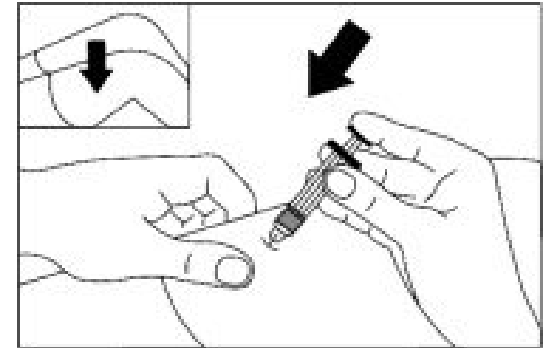
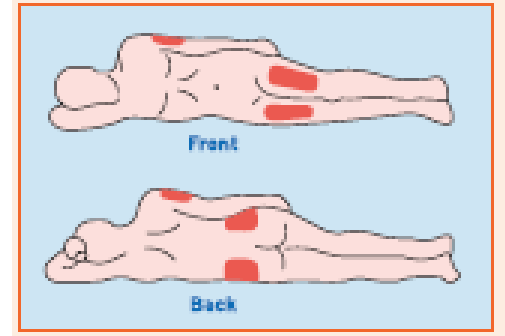
Syringe and vial

7. Turn student on his/her side

8. Insert needle straight in (90 degree angle)
arm (deltoid) muscle
leg (outer thigh)

Note: Inject through clothing only if necessary

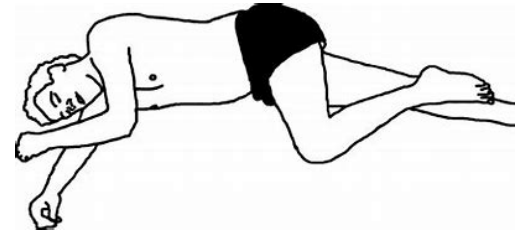
9. Withdraw needle, apply light pressure at
injection site



Syringe and vial

10. Place used needle back in kit and close the lid
(do not recap)

11. Turn person on their side.



12. Give used kit to EMS personnel

13. Document the date, time, dose on the
medication administration form.

Steps for glucagon administration: Baqsimi nasal powder

<https://www.baqsimi.com/how-to-use-baqsimi>

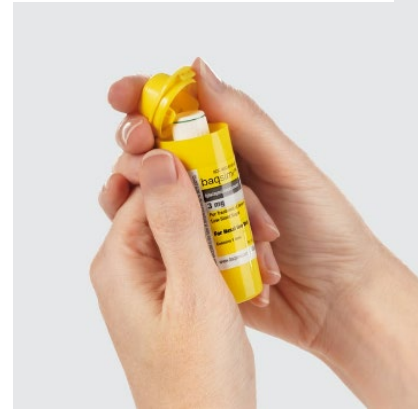
1. Gather medication and put on gloves.
2. Identify someone to call 911.
3. Do not remove shrink wrap or open the tube until you are ready to use it. If shrink wrap is missing or the tube is opened, do not use.



Baqsimi

4. Remove shrink wrap by pulling on the red stripe.

5. Open lid and remove the device from the tube. Caution: do not press the plunger until ready to give the dose.



Baqsimi



6. Hold device between fingers and thumb. Do not push plunger yet.

7. Insert tip gently in one nostril until fingers touch the outside of the nose.

8. Push plunger firmly all the way in. Dose is complete when the green line disappears.



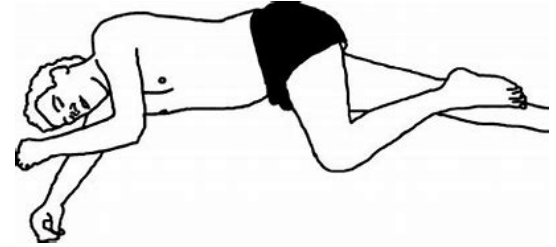
Baqsimi



9. Turn the person on their side.

10. Give used device to EMS personnel.

11. Document the date, time, dose on the medication administration form.



Baqsimi



Steps for glucagon administration: Gvoke hypopen *(auto-injector)*

<https://gvokeglucagon.com/#fullisi>

1. Identify someone to call 911.
2. Gather Gvoke and put on gloves.
3. Open the pouch and make sure the medication looks clear and almost colorless. If cloudy or has visible particles, do not use.



Gvoke Hypopen (auto-injector)

4. If alcohol is available, clean the injection site.

5. Pull red cap off.

6. Push yellow end down on skin and hold for 5 seconds.



Gvoke Hypopen (auto-injector)

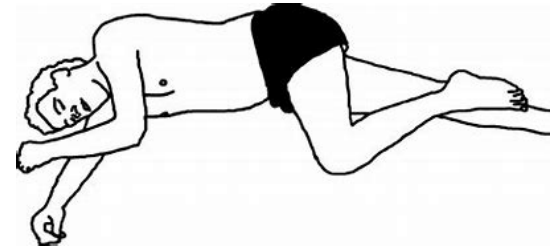
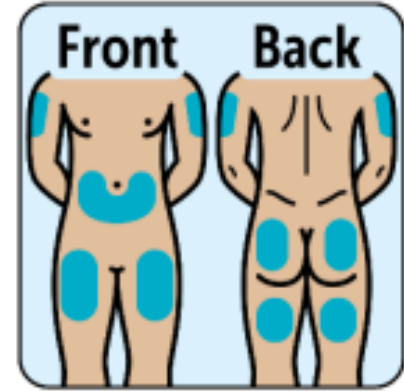


7. Administer to upper arm, stomach, or thigh.

8. Turn person on their side.

9. Give used device to EMS personnel.

10. Document the date, time, dose on the medication administration form.



Gvoke Hypopen (auto-injector)

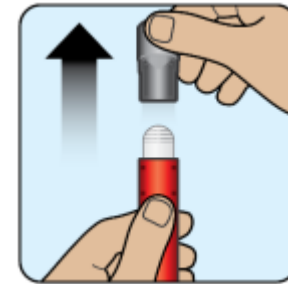


Steps for glucagon
administration:
Zegalogue auto-injector

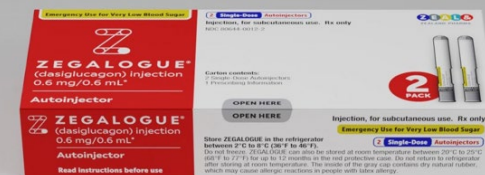
<https://www.zegalogue.com/zegalogue-autoinjector-instruction-for-use.pdf>

1. Identify someone to call 911.
2. Gather Zegalogue auto-injector and put on gloves.
3. Hold the red protective case upright and remove gray lid. Carefully remove Zegalogue device from the red protective case without dropping it.
4. If alcohol is available, clean the injection site.

Red protective case



Zegalogue Auto-injector



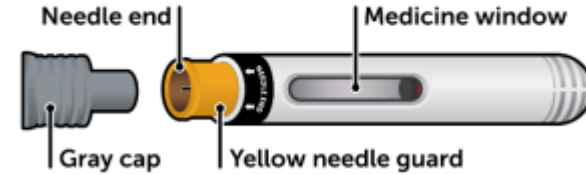
5. Pull gray cap straight off.

6. Push yellow end straight down on skin until the yellow needle guard is fully pressed down. You may hear the first click.

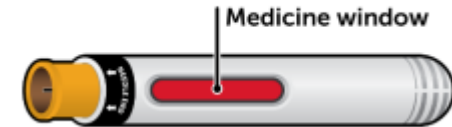
Hold in place and slowly count to 10. During this time the medication window will turn red and you may hear a second click.

Check that the medicine window is red, which means that the full dose has been given.

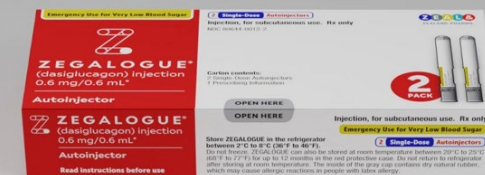
Before injection



After injection



Zegalogue Auto-injector

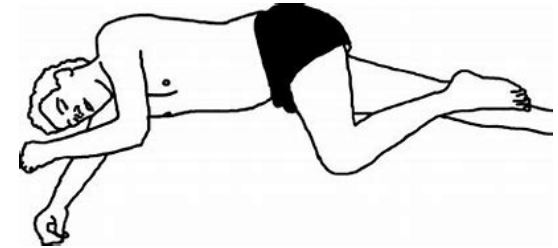
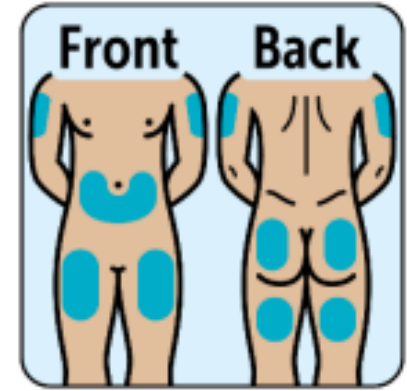


7. Administer to upper arm, stomach, or thigh.

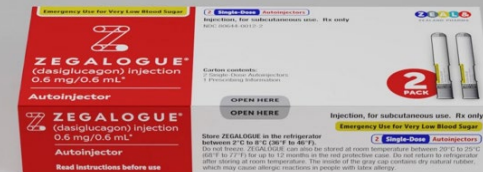
8. Turn person on their side.

9. Give used device to EMS personnel.

10. Document the date, time, dose on the medication administration form.



Zegalogue Auto-injector



Steps for glucagon administration: *Gvoke prefilled syringe*

<https://gvokeglucagon.com/#fullisi>

1. Identify someone to call 911.
2. Gather Gvoke prefilled syringe and put on gloves.
3. Hold the red protective case upright and remove gray lid.
Carefully remove Gvoke syringe from the red protective case without dropping it.
4. If alcohol is available, clean the injection site.

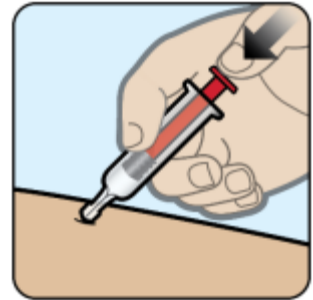
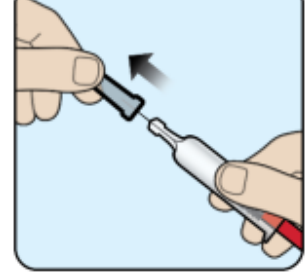


Gvoke prefilled syringe

5. Pull the gray needle cover straight off. Be careful not to bend the needle.

6. Pinch the skin and insert the needle at a 90 degree angle.

- Return syringe to red protective case and put gray lid back on. DO NOT recap the needle.



Gvoke prefilled syringe

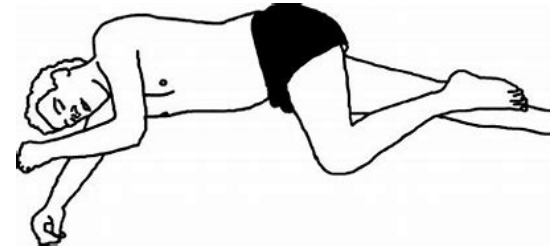
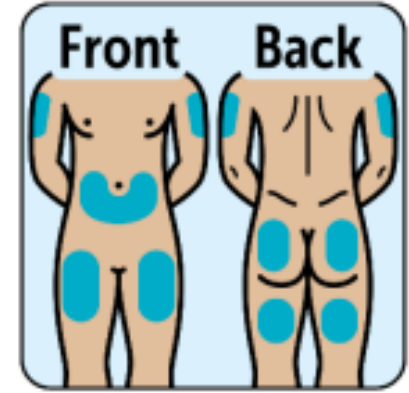


7. Administer to upper arm, stomach, or thigh.

8. Turn person on their side.

9. Give used device to EMS personnel.

10. Document the date, time, dose on the medication administration form.



Gvoke prefilled syringe

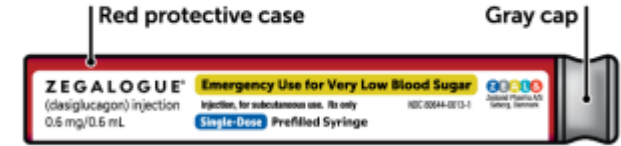


Steps for glucagon
administration:
Zegalogue *prefilled
syringe*

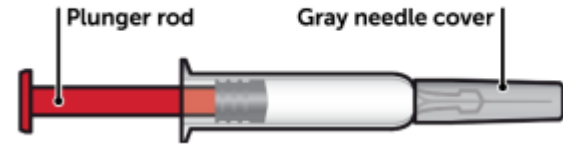
<https://www.zegalogue.com/zegalogue-PFS-instruction-for-use.pdf>

1. Gather Zegalogue prefilled syringe and put on gloves.
2. Identify someone to call 911.
3. Hold the red protective case upright and remove gray lid. Carefully remove Zegalogue syringe from the red protective case without dropping it.
4. If alcohol is available, clean the injection site.

Red protective case



Prefilled Syringe



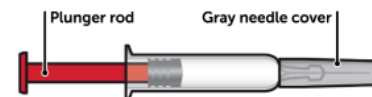
Zegalogue prefilled syringe

Red protective case



ZEGALOGUE®

Prefilled Syringe

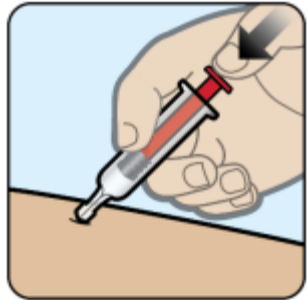
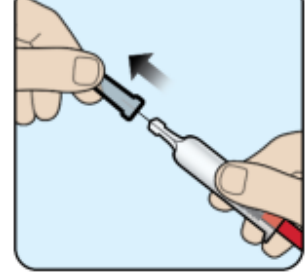


5. Pull the gray needle cover straight off. Be careful not to bend the needle.

6. Gently pinch the skin and insert the entire needle into the skin at a 45 degree angle.

After inserting the needle, release the pinched skin and slowly press the plunger rod all the way down until the syringe is empty and the plunger rod stops.

Return syringe to red protective case and put gray lid back on.
DO NOT recap the needle.



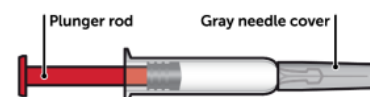
Zegalogue prefilled syringe

Red protective case

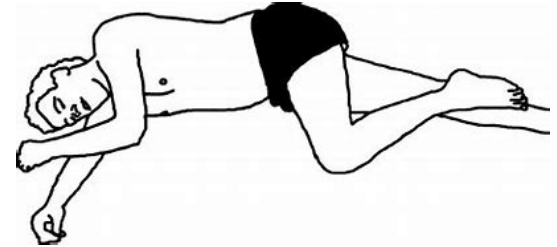
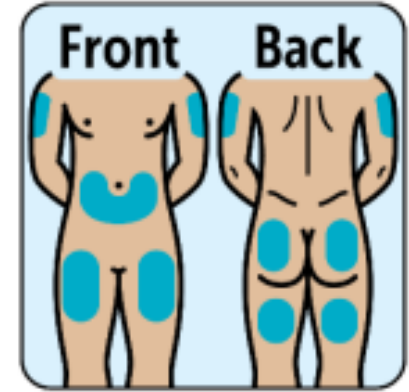


ZEGALOGUE®

Prefilled Syringe



7. Administer to upper arm, stomach, or thigh.
8. Turn person on their side.
9. Give used device to EMS personnel.
10. Document the date, time, dose on the medication administration form.



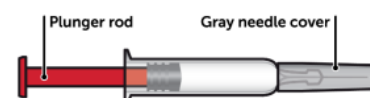
Zegalogue prefilled syringe

Red protective case



ZEGALOGUE®

Prefilled Syringe



Let's Practice!