

Glucagon Emergency Administration Training Tool

A Resource for School
Nurses and School
Personnel

**This training has been developed by the
NYS Department of Health in
collaboration with the New York State
Board of Nursing and the New York
Statewide School Health Services Center.**

The NYS Education Department notes that districts should obtain Board of Education approval prior to use of this Glucagon Emergency Training Tool.

Safety and Reassurance

- My daughter felt a little low at tennis practice and checked her blood sugar. It was dangerously low. She was able to treat herself with glucose tablets, but what if she had waited to check herself? Luckily, she had glucagon in her gym bag, and her coach knew how to give it to her. It is reassuring to know there is a trained volunteer on hand so that she can safely participate in a sport she loves.

Full Participation

- My daughter wants to attend a field trip to Washington, D.C. It was suggested that I go on the trip to ensure my daughter's safety. I am a single mother and have another child to care for. Thankfully, a teacher who will be going along volunteered to be trained to inject glucagon in anticipation of an emergency. My daughter can now enjoy the much anticipated trip.

Overall Goal:

Optimal Student Safety at School and School-Sponsored Events

- Americans with Disabilities Act (ADA) of 1992
- Individuals with Disabilities Education Act (IDEA) of 1991
- Section 504 of the Rehabilitation Act of 1973

Basic Principles of the Good Samaritan Law

“Any person who, in good faith, renders emergency medical care or assistance to an injured person at the scene of an accident or other emergency without the expectation of receiving or intending to receive compensation from such injured person for such service, shall not be liable in civil damages for any act or omission, not constituting gross negligence, in the course of such care or assistance.”

Learning Objectives

Participants will learn:

- Diabetes basic care
- Symptoms and treatment of hypoglycemia (low blood glucose)
- Procedure for the emergency administration of glucagon

Diabetes Basics

Diabetes is a disease where the body does not produce insulin or does not use insulin properly.

Insulin is a hormone normally made by the body. It helps glucose (sugar) enter cells where it can be used for energy.

Without insulin, glucose remains in the blood stream and cannot be used for energy by cells.

Two Main Types of Diabetes

Type 1 Diabetes

▶ Pancreas makes too little or no insulin

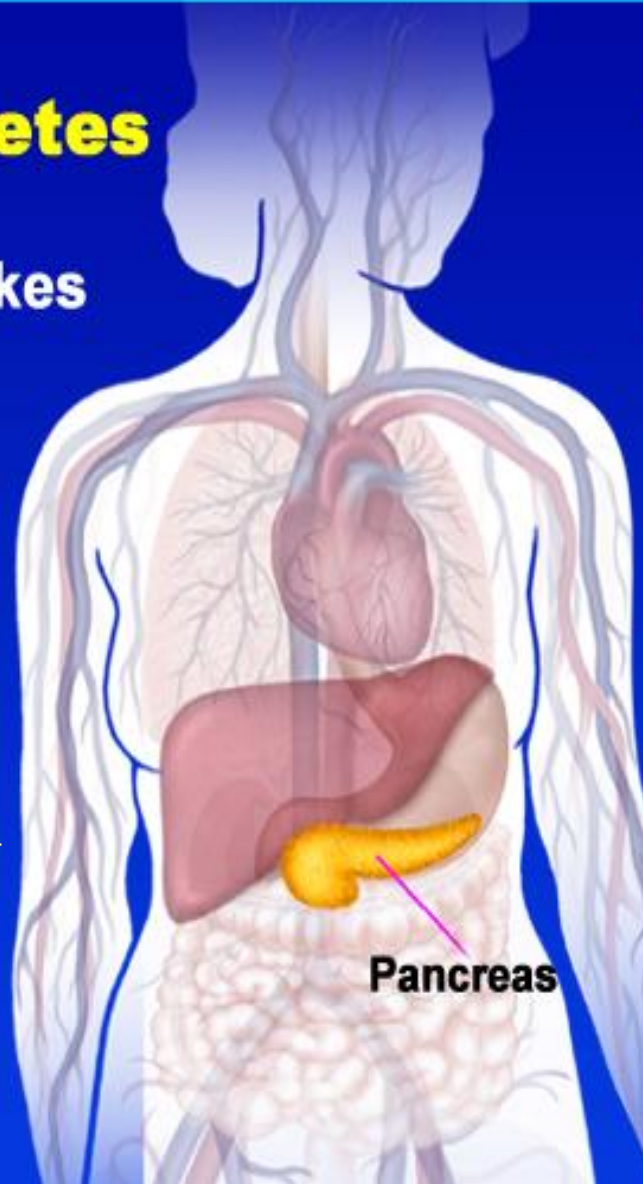
- Autoimmune*
- Genetics
- Environmental
- More common in children

Type 2 Diabetes

▶ Cells do not use insulin well (insulin resistance)

▶ Ability for pancreas to make insulin decreases over time

- Obesity
- Heredity
- Inactivity
- More common in adults



Diabetes Basics

- Children with diabetes must monitor their blood glucose levels.
- Safe blood glucose levels are achieved through a careful **balance of food intake, exercise** and **insulin**.
 - Insulin and exercise - ↓ blood glucose
 - Food - ↑ blood glucose
 - Stress, illness or injury - ↑ ↓ blood glucose

Diabetes Basics

- Sometimes, blood glucose levels are too high resulting in a condition called **hyperglycemia**.
- If this happens, insulin must be administered to lower blood glucose levels. **Insulin administration** for children with type 1 diabetes is essential for survival.
- Sometimes, blood glucose levels drop below the safe range resulting in a condition called **hypoglycemia**.

Diabetes Care in Schools

Emergency Hypoglycemia Care Plan*

summarizes symptoms and treatment for hypoglycemia and provides emergency contact information.

The student's individual **Emergency Hypoglycemia Care Plan*** (developed from the Diabetes Medical Management Plan) will be distributed to the appropriate trained volunteers and made available to administrators and staff as appropriate.

*We highly recommend that Best Practices be followed: All Emergency Hypoglycemia Care Plans should have a permission section or form for parental consent allowing the information to be shared with appropriate school personnel on an as needs basis.

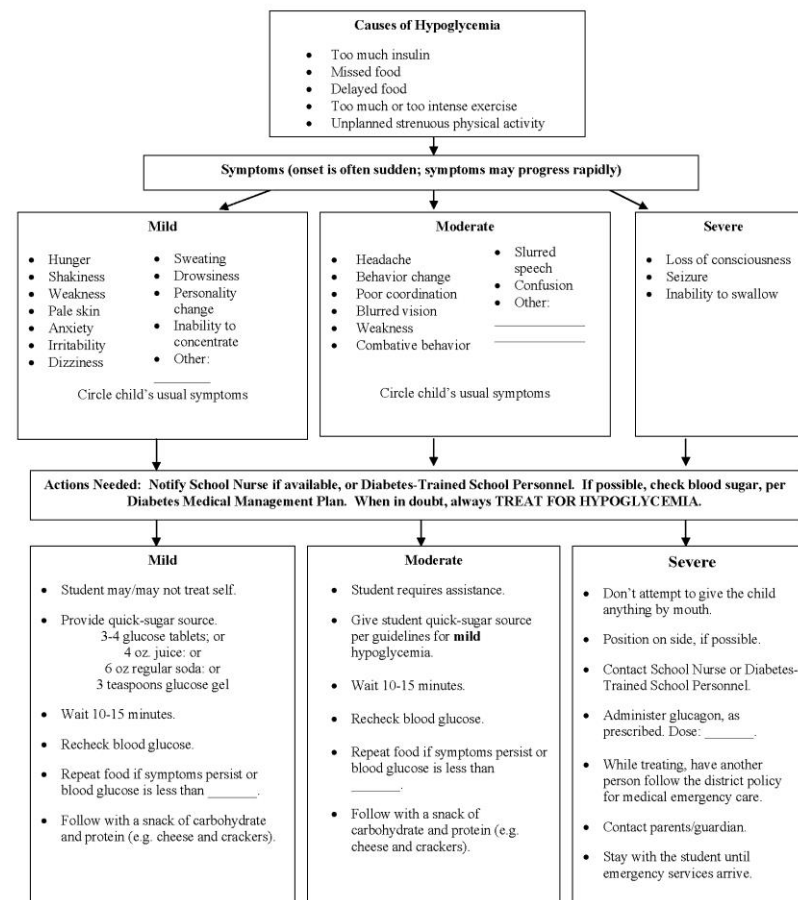
Emergency Hypoglycemia (Low Blood Glucose) Care Plan For a Student with Diabetes

Attach photo here

Student's Name _____
 Grade _____
 Teacher _____
 Date of Plan _____
 Emergency Contact Information:
 Mother/Guardian _____
 Home Phone _____ Work Phone _____
 Cell Phone _____
 Father/Guardian _____
 Home Phone _____ Work Phone _____
 Cell Phone _____
 School Nurse _____ Telephone _____
 Diabetes-Trained School Personnel
 Name _____ Telephone _____
 Name _____ Telephone _____
 Name _____ Telephone _____
 Name _____ Telephone _____
 Name _____ Telephone _____

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Never leave a child with suspected low blood sugar alone.



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Diabetes Care in Schools (cont.)

The **school nurse** is the most appropriate person to provide routine and emergency care when needed.

However, a school nurse is not always available and hypoglycemia can occur at **ANY** time.

Hypoglycemia (Low Blood Glucose)

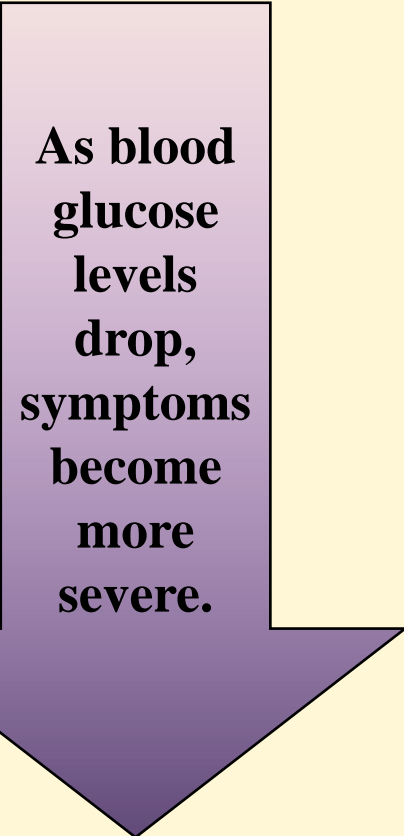
Hypoglycemia poses the most immediate risk to a student with diabetes because onset is sudden, it is not always preventable, and may progress to unconsciousness and convulsions if left untreated.

Possible Causes:

- Too much insulin
- Too little food or delayed meal or snack
- Extra physical activity
- Illness
- Medications
- May occur for no apparent reason

Hypoglycemia: Signs & Symptoms

Mild Symptoms



Hunger	Sleepiness	Sweating
Shakiness	Changed behavior	Anxiety
Weakness	Paleness	Blurry vision
Dilated pupils	Increased heart rate/palpitations	

Moderate Symptoms

Excessive Yawning	Extreme tiredness/fatigue	Confusion
Restlessness	Irritability/frustration	Sudden crying
Dazed Appearance	Refusal to take anything by mouth	

Severe Symptoms

Unconsciousness Seizures (convulsions)

Inability to swallow

Mild and Moderate Hypoglycemia

When mild or moderate symptoms occur, **immediate treatment** is required to prevent progression to severe hypoglycemia:

- **Treat at onset of symptoms by having student eat or drink fast acting carbohydrates (if able to swallow).**
- **NEVER leave the student unattended.**

Quick Acting Glucose for Mild to Moderate Hypoglycemia

Treatment: Give 15 grams of carbohydrates by mouth if able to swallow*

- 4 oz. fruit juice
- 3-4 glucose tablets
- 1 tube of glucose gel
- 6-8 oz. of sports drink
- 1 tablespoon of honey
- 6 oz. regular (not diet) soda (about half a can)
- 3 teaspoons table sugar (3 packets)
- One-half tube of cake gel

***After this treatment, utilize the school district policy and procedures for medical emergency care. Contact the appropriate medical staff for assessment of the student.**

Severe Hypoglycemia

If a student exhibits unconsciousness or unresponsiveness, seizures (convulsions), or is unable to swallow, this is an **EMERGENCY**:

- **TREAT**, then follow district policy for medical emergency care. Inform that you are treating a child with a hypoglycemic diabetes emergency. Intervene promptly. A student experiencing severe hypoglycemia will **ALWAYS** need assistance. **When in doubt, TREAT.**
- Treat on the spot and **NEVER** leave the student unattended.

Responding to Severe Hypoglycemia

If severe hypoglycemia develops, a **LIFE-SAVING** injection of **glucagon** (a hormone that raises blood glucose levels) must be given.

If the school nurse is not available, other school personnel should be **trained to administer glucagon** in the case of a severe hypoglycemic emergency.

Glucagon Kit Storage



As designated in the student's Diabetes Medical Management Plan, the kit should be:

- accessible to trained volunteer school personnel
- stored at room temperature
- monitored for expiration date

Emergency Kit Contents:

1 mg of freeze-dried glucagon (Vial)

1 ml of water for reconstitution (Syringe)



Glucagon - Lilly



GlucaGen – Novo Nordisk

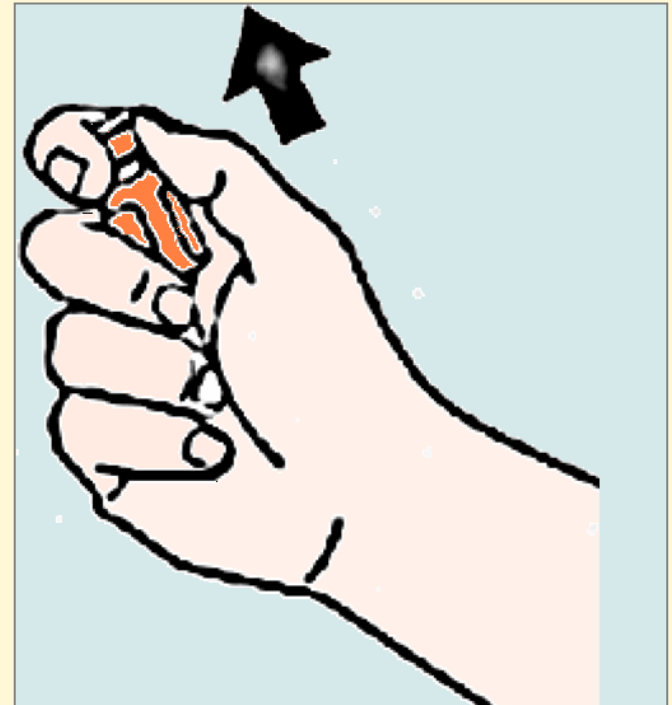
Combine glucagon and water immediately before use and discard any unused portion after injection.

First Steps

- Position student safely on side for comfort and protection from injury.
- NEVER attempt to place ANYTHING into the student's mouth.
- Notify the designated volunteer personnel trained to give glucagon.
- While treating, have another person follow the district policy for medical emergency care and contact parents/guardian per Emergency Hypoglycemia Care Plan.

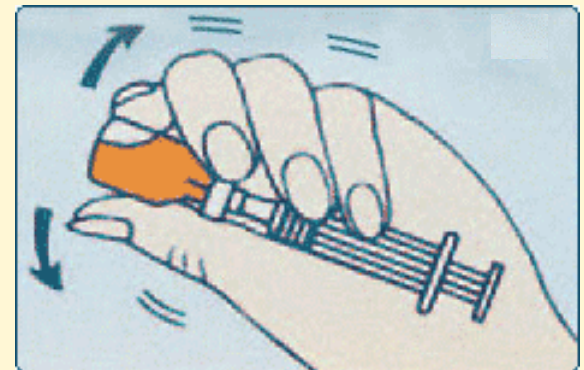
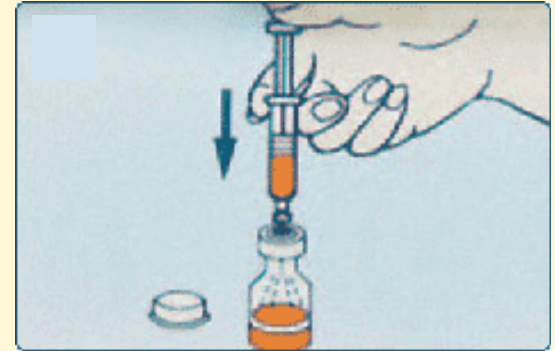
Preparation

- Remove cap from vial (glass bottle) of glucagon dry powder.
- Pull needle cover off syringe.



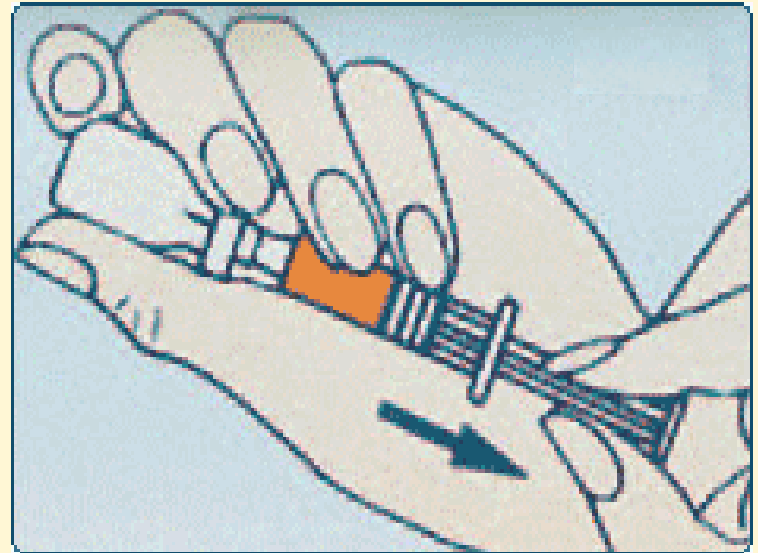
Mixing Solution

- Insert needle through rubber stopper on vial of glucagon and inject entire contents of syringe into vial of powder.
- Without removing the syringe, hold syringe and vial in one hand and gently shake until all powder is dissolved and solution is clear.



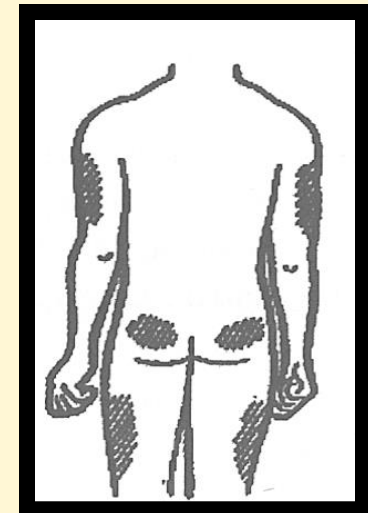
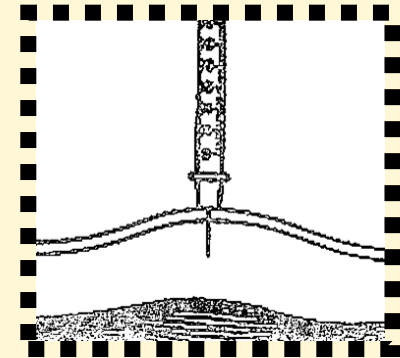
Withdrawing Solution

- Inspect. Solution must be clear and colorless.
- Slowly withdraw the amount of solution from the vial into the syringe as specified in the student's Emergency Hypoglycemia Care Plan.
- Check for air bubbles in syringe. Tap any visible air to the top of the syringe and push gently on the plunger until air is removed.



Injecting Glucagon

- Clean injection site on buttock, upper arm, or thigh with alcohol swab, if available.
- Insert needle at a 90-degree angle and inject glucagon into large muscle (upper arm, thigh or upper outer area of buttock).



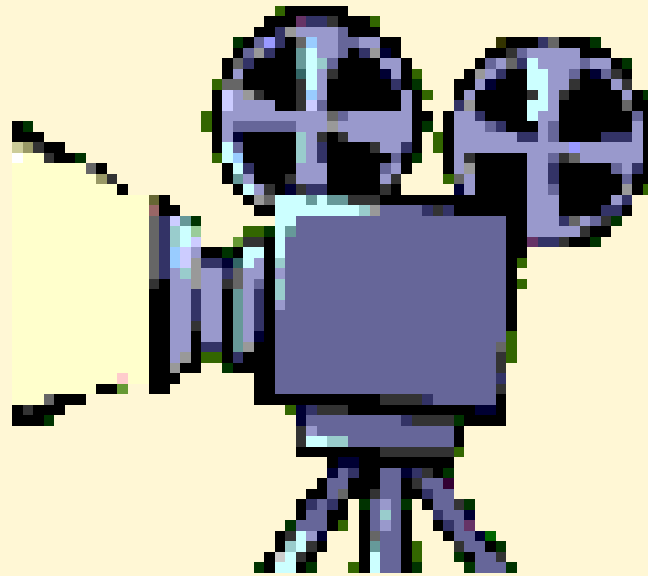
Injecting Glucagon

- Withdraw needle, then apply slight pressure at injection site. Discard needle into a sharps container or, if unavailable, back into its case.
- Do **not** recap needle.

After Injecting

- It may take 10-15 minutes for the student to regain consciousness.
- Vomiting may occur - keep the student positioned on side to prevent choking.
- Remain with student until Emergency Medical Services (EMS) assumes control.

How To Administer Glucagon!



Next Steps

- Once the student is awake and able to drink, give sips of fruit juice or regular soda and advance diet as tolerated.
- Remain with the student until emergency medical services assumes control. The student should not resume normal activities.
- Notify appropriate parties of incident details and attend debriefing meeting with school nurse. School nurse will document incident in appropriate health records.

Don't Be Surprised If. . .

- The student does not remember being unconscious or is incoherent or lethargic.
- The student feels nauseated, vomits, or has a headache.

Considerations

Recovery time from a severe hypoglycemic episode varies according to the duration and level of the blood glucose prior to treatment.

Some signs and symptoms, such as headache, may persist for several hours, although the blood sugar level is satisfactory. Continued monitoring is important.

Quick Review

- Mild to moderate hypoglycemia can be treated with a quick acting source of carbohydrate (15 grams).
- Signs of severe hypoglycemia include:
 - Unconsciousness
 - Seizures
 - Inability to swallow

Quick Review, continued

- Severe hypoglycemia is a medical emergency requiring immediate administration of glucagon.
- Treat, then follow the district policy for medical emergency care.

Thank you!

“I feel more confident in sending my child to school knowing that he will be well taken care of in the event he has a low blood sugar. I am grateful to the school nurse and volunteers who are looking out for my son.”