GLUCAGON ADMINISTRATION

STUDENTS WITH TYPE 1 DIABETES

AUGUST 2016
PURPOSE

- To train designated school staff how to recognize low blood sugar and administer glucagon for treatment of severe low blood sugar.
**LEARNING OBJECTIVES**

- Will be able to state the causes of low blood sugar.
- Will recognize the symptoms of low blood sugar.
- Will know how to respond to low blood sugar in a student with diabetes.
- Will be able to administer glucagon by injection.
Causes and Symptoms of Low Blood Sugar
**LOW BLOOD SUGAR**

- Low blood sugar occurs when the sugar (glucose) level in the blood drops below what the body needs to function normally.

- Low blood sugar is usually the result of:
  - Too much insulin.
  - Not eating enough food, missing or delaying meals or snacks.
  - Extra physical activity, especially intense or prolonged activity.
  - Illness involving vomiting or diarrhea.

Source: BC Children’s Hospital Diabetes Clinic (2013)
SYMPTOMS OF LOW BLOOD SUGAR

Mild - Moderate
- Sweaty
- Shaky
- Hungry
- Pale
- Dizzy
- Mood changes
- Irritable
- Tired/sleepy

Severe
- Seizures
- Unconscious
- Blurry /double vision
- Difficulty concentrating
- Confused
- Poor coordination
- Difficulty speaking
- Headache

Source: BC Children’s Hospital Diabetes Clinic
RESPONDING TO A LOW BLOOD SUGAR
TREATING LOW BLOOD SUGAR IN A CONSCIOUS STUDENT ABLE TO SWALLOW

- Provide fast-acting glucose (if able to swallow). Give one of the following:
  - 15 grams of glucose in the form of glucose tablets
  - 15 mL (1 tablespoon) or 3 packets of table sugar dissolved in water
  - 175 mL (3/4 cup) of juice or regular soft drink (not diet)
  - 15 mL (1 tablespoon) of honey

- Recheck blood sugar levels in 10-15 minutes.
  - If no response or inadequate response, retreat with fast acting glucose.

- Contact a parent/guardian.
TREATING SEVERE LOW BLOOD SUGAR IN A STUDENT WHO IS UNCONSCIOUS OR UNABLE TO SWALLOW

- Identify someone to call 911 immediately (state there is an unconscious student with diabetes with severe low blood sugar).

- Identify a responsible adult to call the student’s parent/guardian.

- Turn the student on his/her side.

- Administer glucagon by injection.
ADMINISTERING GLUCAGON
WHAT IS GLUCAGON?

- A medication (hormone) given by injection that is used to treat severe low blood sugar

Glucagon comes in a kit. The kit includes:
  - A small bottle (vial) that contains glucagon. The glucagon is a dry powder.
  - A syringe that contains 1 cc of sterile liquid.
Step 1: Remove the cap from the bottle.

Source: Lilly (2013)
Step 2: Inject the liquid from the syringe into the dry powder bottle.

Source: Lilly (2013)
ADMINISTRATION OF GLUCAGON

Step 3: Gently shake the bottle to dissolve the powder. Do not vigorously shake the bottle.

Step 4: Draw the fluid back into the syringe

Source: Lilly (2013)
How Much Glucagon Should I Give?

<table>
<thead>
<tr>
<th>If the student is:</th>
<th>Give this much glucagon:</th>
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<tbody>
<tr>
<td>Five years old or less</td>
<td>0.5 mg</td>
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<tr>
<td>6 years or older</td>
<td>Full bottle (1 mg)</td>
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Administration of Glucagon

Step 5: Turn the student on his/her side. Insert the needle straight (90 degree angle) into the middle outer thigh area.

- Inject the medication.
- Withdraw the needle, apply light pressure at the injection site.
- Do not recap the needle. Discard safely into a sharps container or back into the kit.
VISUAL AIDES

- Eli Lilly has an online tutorial showing how to mix up and give Lilly Glucagon™: [How to mix glucagon slide show and app](#)


- Glucagon Injection Training Video ([start at 1:12-6:00](https://www.youtube.com/watch?v=CfrBjojzlqQ))
AFTER ADMINISTERING GLUCAGON
**AFTER ADMINISTRATION OF GLUCAGON**

- Always remain with the student until the Emergency Medical Services (EMS) arrive. Be prepared to inform EMS of the situation when they arrive.

- The student should remain on their side.

- It may take 10 to 20 minutes for the student to fully respond.

- Once the student is alert and able to swallow, give juice or other fast acting sugar.

- After the fast acting sugar, give longer acting carbohydrate such as cheese and crackers.
**After Administering Glucagon**

- Ask parents to replace the glucagon kit.
- Complete required documentation.
- Debrief: what went well, what could have been done differently?
TIME TO PRACTICE!!
**Resources**

- Eli Lilly Website:  [http://www.lillyglucagon.com/](http://www.lillyglucagon.com/)

- Novo Nordisk Website:  [http://www.glucagenhypokit.com/](http://www.glucagenhypokit.com/)

- BC Government Diabetes in Schools Pages  [http://www2.gov.bc.ca/gov/content/education-training/administration/kindergarten-to-grade-12/school-health/diabetes](http://www2.gov.bc.ca/gov/content/education-training/administration/kindergarten-to-grade-12/school-health/diabetes)


- BC Children’s Hospital Endocrinology & Diabetes Unit  [http://endodiab.bcchildrens.ca](http://endodiab.bcchildrens.ca)

- Child Health BC  [http://www.childhealthbc.ca/](http://www.childhealthbc.ca/)
## SELF ASSESSMENT

| General Information | General understanding of low blood sugar:  
| - Defines hypoglycemia.  
| - Understands the causes and symptoms of low blood sugar.  
| - Knows how to treat low blood sugar.  |
| **Treatment** | Recognizes and understands the importance of prompt treatment of low blood sugar:  
| - Recognizes low blood sugar and be able to administer glucose.  
| - Describes appropriate treatment including accessing emergency services and glucagon administration.  
| - Knows where treatment for low blood sugar is stored.  |
| **Glucagon Administration** | Recognizes a severe low blood sugar:  
| Understands:  
| - The purpose of glucagon.  
| - How it should be stored.  
| - When it is used.  
| - Knows where to inject glucagon.  
| - Demonstrates preparation steps for administering glucagon.  
| - Demonstrates how to administer glucagon.  
| - Discusses further care for the student and next steps.  |