Diabetes Care Tasks at School: What Key Personnel Need To Know

INSULIN BASICS

Safe at School

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GOAL: OPTIMAL STUDENT HEALTH AND LEARNING

Accurate and timely insulin dosing is a vital piece of a comprehensive plan.
LEARNING OBJECTIVES

Participants will be able to understand:

- What insulin does
- Types of insulin
- Insulin delivery methods
- Storing insulin
- Factors that influence insulin dosing
**VOCABULARY**

**Target Range** – a range of numbers that represents an individual’s ideal blood glucose level; determined by health care team with the individual (student with diabetes and parent/guardian)

**Basal Insulin** – sometimes called “background” insulin, the insulin working steadily throughout the day

**Bolus Insulin** – a single dose of insulin, given for food or correction

**Carb or Meal/Snack Bolus** – insulin does with food

**Correction Bolus** – insulin dosed when blood glucose level is too high and needs to be corrected (made lower)
INSULIN IN SCHOOLS TODAY

• Most students need to take insulin in school

• Insulin dosing varies from student-to-student and changes over time

• Student’s need for assistance will vary as the student progresses in self-management

• Insulin dosing and timing will be specified in the DMMP; physician orders may include provisions for the parent/guardian and/or capable students to modify dosing

• Specific school procedures for administration should be documented
WHAT IS INSULIN?

Insulin is a hormone that is necessary:
  • **Moves glucose from blood into cells for energy**

Students with type 1 diabetes do not produce insulin

Without enough insulin, high blood glucose results:
  • **Energy levels are low**
  • **Dehydration**
  • **Complications**
INSULIN DELIVERY METHODS

- Insulin syringe
- Insulin pen
- Insulin pump or pod
BASAL AND BOLUS INSULIN

BOLUS INSULIN is timed and amount is given based on food intake.

BASAL INSULIN provides steady dose throughout day and night.

Blood glucose still rises with food intake, but doesn't peak as high.

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INSULIN TYPES

• **Bolus insulin**
  - Rapid-acting – Lispro (Humalog®), Aspart (Novolog®), Glulisine (Apidra®)
    - Ultra rapid acting - Fiasp®
  - Short-acting - Regular

• **Basal insulin**
  - Intermediate - NPH
  - Long-acting - Glargine (Lantus®/Basaglar®), Detemir (Levemir®), Degludec (Tresiba®)
STORING INSULIN

• Review the product storage instructions and check the expiration date

• Generally store at room temperature less than 86 degrees

• Refrigerate unopened vials and insulin pens

• Be careful NOT to freeze
WHEN TO GIVE INSULIN

DMMP should specify dosing clearly

Generally:

• Before meals or snacks
• For blood glucose levels significantly above target range
• For moderate or large ketones
INSULIN INJECTIONS

- Inject into fat layer under skin
- Rotate sites
- Student should choose site

- Common sites: abdomen, thigh buttocks, upper arms
DOsing Insulin at School

Generally, students will only take rapid or short-acting insulin at meal or snack times:

- Some students will use a standing insulin dose
- Others will have a varied dose, depending upon:
  - what food is eaten (carb bolus)
    and/or
  - whether blood glucose is within the target range (correction bolus)
CARB BOLUS TO COVER MEALS/SNACKS

The insulin to carb ratio varies student to student, is specified in the DMMP:

- **Recorded** as 1 unit insulin per X gms of carb
- **Example**: 1:10 ratio; 1 unit of insulin for every 10 grams of carb eaten
- **Calculate**: Meal of 60 grams CHO
  - $60/10 = 6$
  - 6 units of insulin are needed to cover this meal

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CORRECTION BOLUS TO LOWER BLOOD GLUCOSE

Amount to lower blood glucose to target, usually calculated by sliding scale or correction factor:

- **Sliding scale**: give units of insulin for each interval of BG
  
  - Example: 1 unit if 150-200, 2 units if 201-250, 3 units if 250+

- **Correction factor**: Blood glucose level – target blood glucose/correction factor = units insulin to be given
  
  - Example: $BG=150$ (actual) minus Target $BG=100 = 50$ divided by Correction factor (50) = 1 unit insulin needed
INSULIN BOLUS FOR BOTH CARBS AND CORRECTION

• For some students, dosing at meal time may include both a carbohydrate ratio dose and a correction dose

• Total dose = Carb ratio dose + Correction dose

• If student’s blood glucose is below target range, the correction may mean giving less than the usual dose; follow DMMP for each student
ROUTINE AFTER GIVING INSULIN

Check site for leakage

Document on log sheet

Correction doses:
  • Retest per DMMP to check effectiveness

Meal/snack doses:
  • Timeliness in relation to eating
  • Supervision of food amount per DMMP
Module 7 Pre – and Post – Tests: **INSULIN BASICS**

This tool may be freely duplicated and distributed for training purposes
1. Insulin is ________ that moves glucose from the blood into the cells for energy.
   1. A steroid
   2. A hormone
   3. A pain killer
   4. An oral medication

2. Bolus insulin is given to cover meals/snacks and:
   1. Increased physical activity
   2. To make the student more alert
   3. To correct hyperglycemia
   4. None of the above

3. Insulin is administered through a:
   a. Mouth
   b. Syringe
   c. Pump or pod
   d. Meter
   e. Pen
   f. b, c, e
   g. None of the above

4. Basal insulin is a slow steady stream of insulin.
   a. True
   b. False
WHERE TO GET MORE INFORMATION

American Diabetes Association
1-800- DIABETES
www.diabetes.org/safeatschool