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

INSULIN BASICS

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American Diabetes Association®

GOAL: OPTIMAL STUDENT HEALTH AND LEARNING

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

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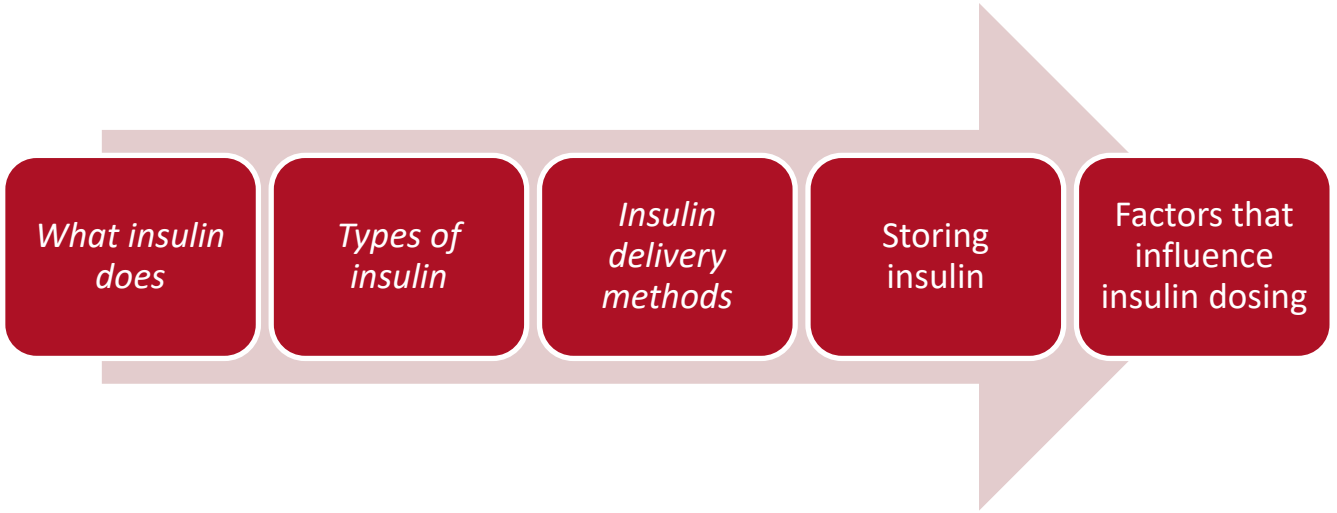
LEARNING OBJECTIVES

Participants will be able to understand:



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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 doses 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 <u>necessary</u>:

- *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*

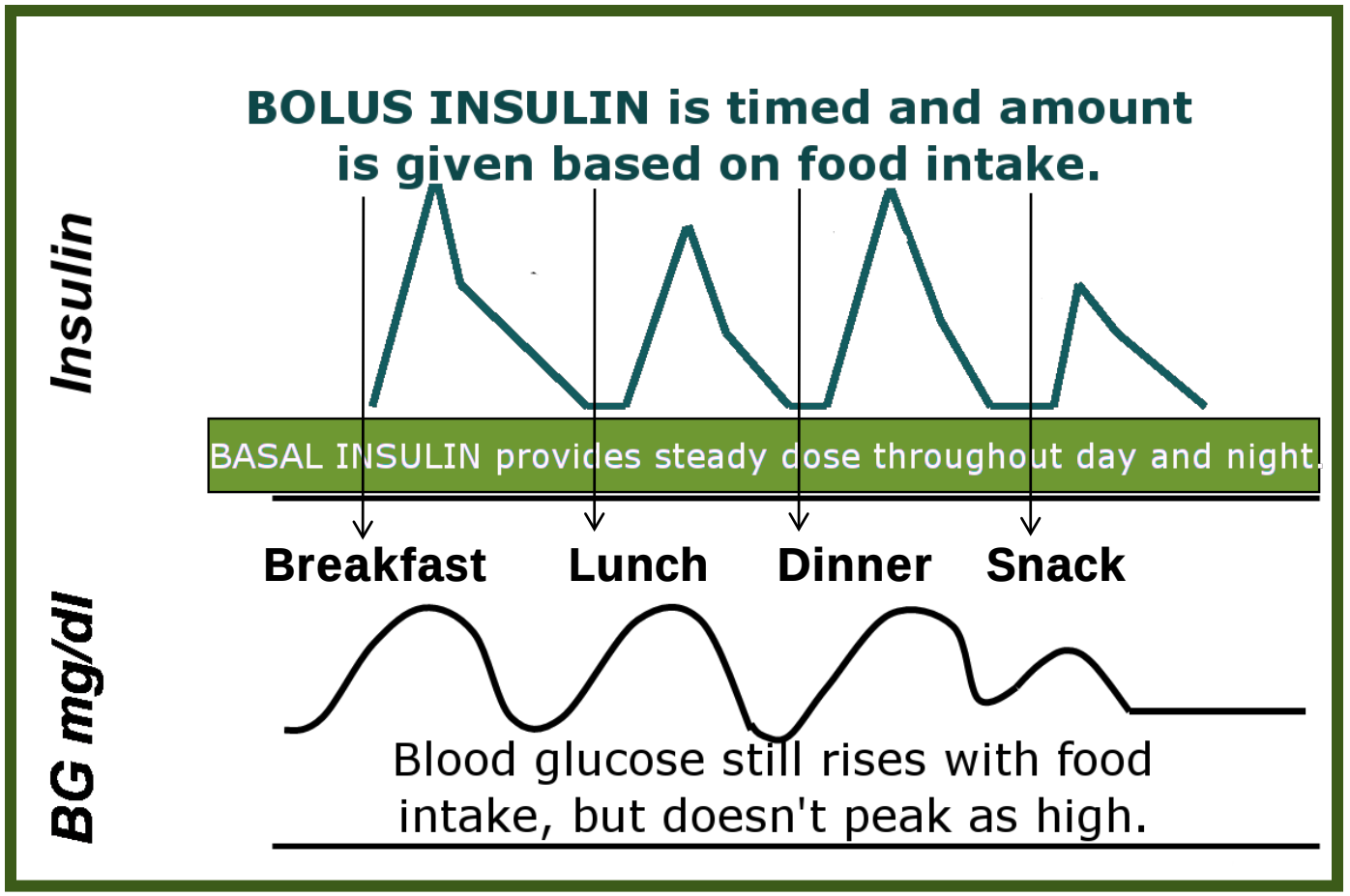
INSULIN DELIVERY METHODS

Insulin syringe

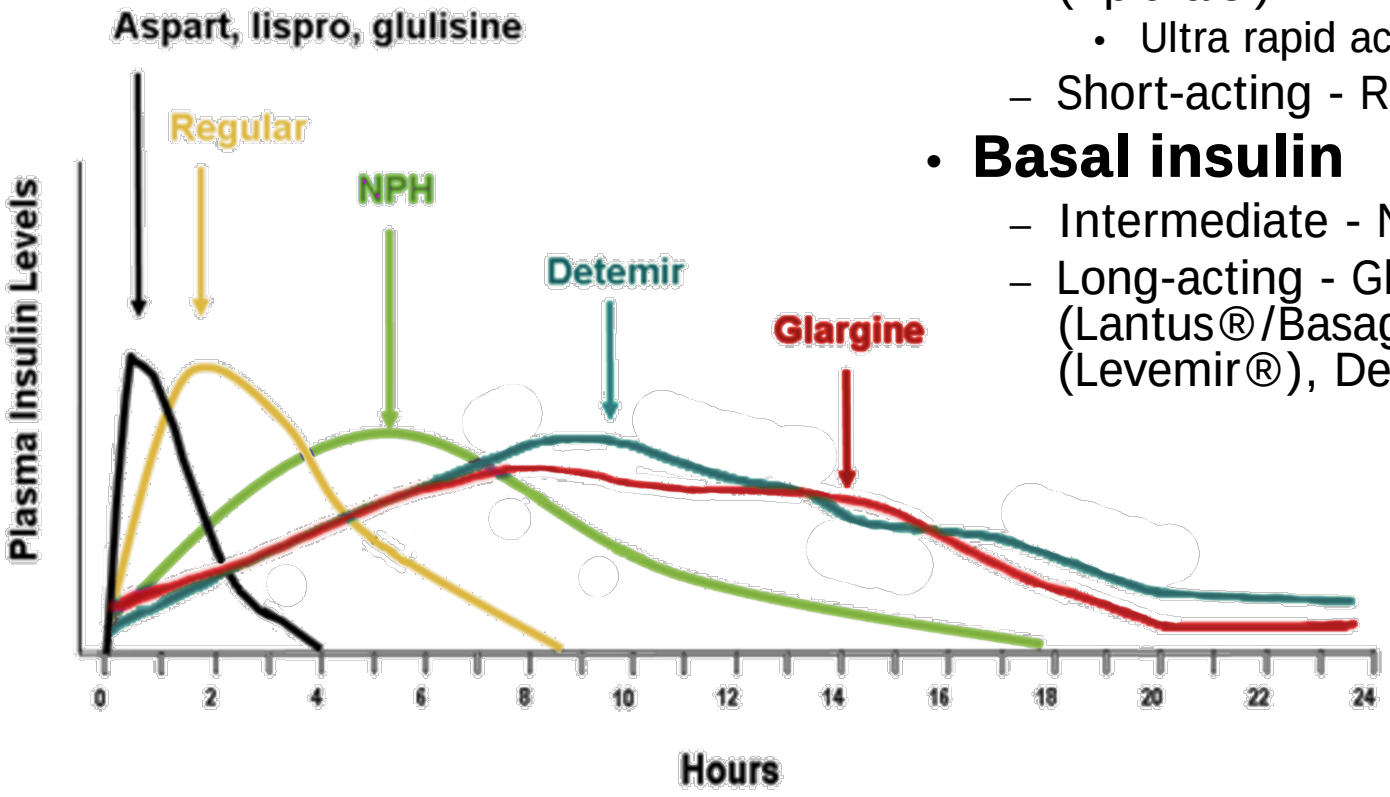
Insulin pen

Insulin pump or pod

BASAL AND BOLUS INSULIN



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

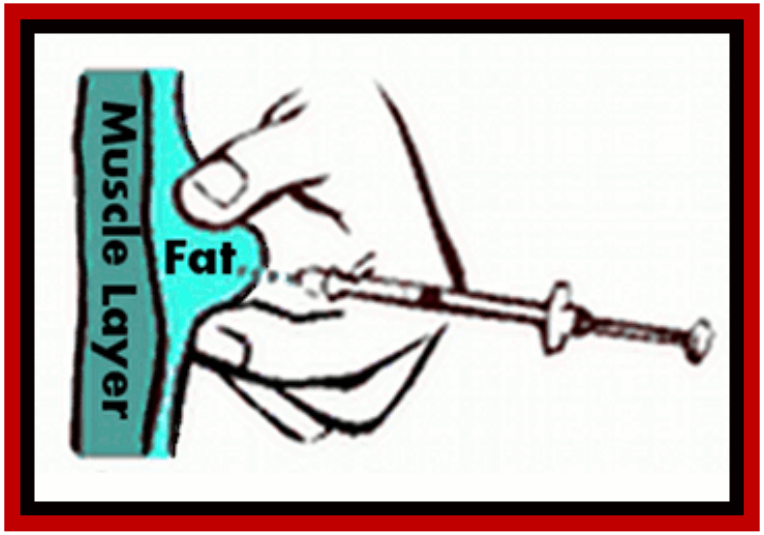
WHEN TO GIVE INSULIN

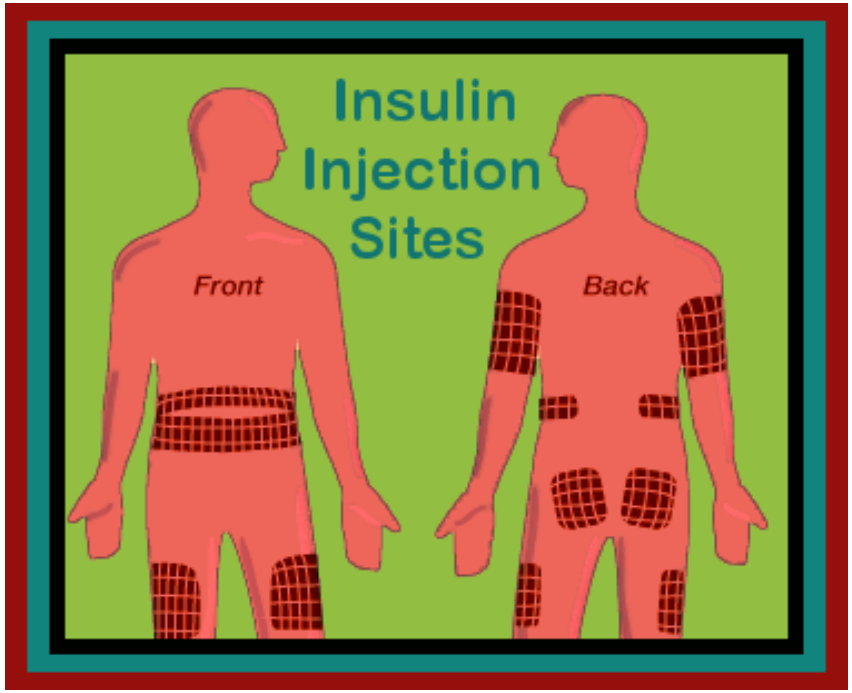
DMMP should specify dosing clearly

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*

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