

LOS ANGELES UNIFIED SCHOOL DISTRICT
Medical Services Division
District Nursing Services Branch

**CARBOHYDRATE COUNTING AND INSULIN COVERAGE CALCULATION
IN SCHOOL SETTING**

I. GENERAL GUIDELINES

A. PURPOSE

1. Carbohydrate Counting:

Carbohydrate counting is an evidence-based strategy recommended by the American Diabetes Association (ADA) and supported by the CDC for students with diabetes. It estimates the amount of insulin needed based on carbohydrate intake and is essential for pre-meal and mealtime glucose control.

2. Insulin Coverage Calculation:

The amount of insulin needed per grams to cover carbohydrate intake is calculated using an individualized insulin-to-carbohydrate (I:C) ratio outlined in the student's Diabetes Medical Management Plan (DMMP).

B. GENERAL INFORMATION

1. Insulin-to-Carb Ratio:

- This personalized ratio (e.g., 1 unit of insulin for every 10g of carbs) is determined by the healthcare provider and written in the DMMP.
- It is adjusted based on glucose monitoring trends and other health factors.

2. Meal Timing:

- Administer insulin before meals, aligning insulin action with carbohydrate absorption to prevent post meal hyperglycemia.
- Delayed insulin dosing may result in elevated blood glucose.

3. DMMP Guidance

- All carb-counting and insulin decisions must follow the DMMP, and BUL-3878.3 ("Assisting Students with Prescribed Medication at School").

C. ROLES AND RESPONSIBILITIES

1. Licensed Nurse

- Ensures all diabetic care (including insulin administration) aligns with the current DMMP.
- School nurse trains designated personnel ensuring competency in carbohydrate counting, insulin calculations, and emergency response.
- Maintains accurate records in Welligent, the district-mandated health documentation system.

2. Designated Trained School Personnel:

- May assist students with carb counting and supervision of insulin delivery only after documented training by the school nurse.
- Must recognize and respond appropriately to signs of hypoglycemia and hyperglycemia per training and the student's Diabetes Emergency Care Plan.

3. Parents and Caregivers:

- Must provide carbohydrate counts for all home-prepared meals/snacks.
- Must inform the school nurse of any medication or dietary changes, per the student's health care provider.

II. PROCEDURE

A. MEAL DETAILS AND CARBOHYDRATE CONTENT

Before meals or snacks:

Carb content must be estimated using:

- Nutrition Facts Labels (regulated by the FDA).
- School menu data (e.g., LAUSD's Yum Yummi: <https://lausd.yumyummi.com>).
- Manufacturer websites or verified food databases (as needed).

B. CALCULATE INSULIN DOSE FOR COVERAGE

Calculation Method

Use the I:C ratio from the student's DMMP.

Formula: Insulin Dose = Total Carbohydrates ÷ Denominator of I:C Ratio

Example:

For 60g of carbs and a 1:10 I:C ratio → $60 \div 10 = 6$ units of insulin

Individualized Adjustments

- Ratio may vary by student and time of day.
- Physical activity and illness may affect needs (consult DMMP).

Special Considerations

- If carbs consumed are **less than the I:C ratio**, calculate an accurate fractional dose.
- Use **rounding rules**.
- Do not skip coverage unless specifically ordered in the DMMP.

C. ROUNDING RULE

Follow DMMP or LAUSD-specific rounding rules:

1. For 0.5-unit pens/syringes:

- 0.0–0.24 → round down
- 0.25–0.74 → round to 0.5
- 0.75–0.99 → round up

2. For whole-unit only devices:

- 0.0–0.49 → round down
- 0.5–0.99 → round up

"Rounding policies must follow the specific instructions in the DMMP. If not specified, apply the LAUSD standard rounding rule in accordance with the capabilities of the insulin delivery device being used."

D. DOCUMENTATION REQUIREMENTS

A. Diabetes Protocol Log (for all trained school personnel and licensed nurses):

Must include:

- Time of insulin administration
- Meal/snack carbohydrate count
- Pre- and post-meal BG readings (if required)
- Insulin dose administered
- Injection or infusion site

B. Welligent Documentation (by Licensed Nurses only):

Include all of the above and ensure entries are timely, complete, and consistent.

RESOURCES & REFERENCES

- American Diabetes Association (ADA): *Standards of Care in Diabetes*
- California Education Code Sections 49423 & 49414.5
- California School Nurses Organization (CSNO) Guidelines
- Centers for Disease Control and Prevention (CDC): *Helping the Student with Diabetes Succeed: A Guide for School Personnel*
- LAUSD Bulletin BUL-3878.3
- LAUSD Food Services: <https://achieve.lausd.net/cafela>
- National Association of School Nurses (NASN): *Position Statement on Diabetes Management in the School Setting*
- U.S. Food & Drug Administration (FDA): *Nutrition Facts Labeling Requirements*