

Table 1

Standards of Care for Diabetes Management in the School Setting & Licensed Child Care Facilities

modified from www.coloradokidswithdiabetes.com

These are general standards of care for students with Type 1 Diabetes to be used in conjunction with the Provider Orders (Table 2 or 3). The student's diabetes healthcare-provider may indicate exceptions to these standards on the student's individual orders.

- 1. Communication:** To facilitate appropriate execution of the diabetes healthcare-provider's orders and to ensure safety of the student, the school nurse/Child Care Nurse Consultant (CCNC) will have authorization to exchange health information with the healthcare-provider to assist in developing, updating and carrying out the Individualized Healthcare Plans (IHP; Table 2 or 3). The school nurse/CCNC has permission for care coordination per signed diabetes healthcare-provider orders, which aligns with both Health Insurance Portability and Accountability Act (HIPAA) and Family Educational Rights and Privacy Act (FERPA) regulations. The student's healthcare plan is developed by the school nurse/CCNC in collaboration with the parent/guardian(s) and healthcare-provider. Communication of blood/CGM glucose readings and coordination of care between student, school nurse/CCNC, healthcare-providers, school staff/teachers and/or parents may include a variety of options (e.g., cell phone applications, web-based applications, email, or texting). Shared data plans and/or Wi-Fi will need to be provided by the parents if necessary for cellphone service and/or remote site monitoring.
- 2. Diabetes Healthcare-Provider Orders:** Orders should be obtained annually for the start of each school year and ongoing as needed or annually/ongoing based on enrollment into a child care facility. If ongoing changes to the insulin dosing is a total of ± 3 units per dose outside the current orders on file, then parents should contact the diabetes healthcare-provider for new orders to reflect these changes. Additional school or district specific medication forms are unnecessary unless they contain additional information not specified for this student's diabetes care.
- 3. Monitoring Blood Glucose (BG):** *The student's healthcare-provider should indicate individualized blood/CGM glucose target ranges on the student's individual order (e.g., Table 2 or 3).*

Standard Target Ranges Before Meals: The student's target ranges are indicated by the diabetes care-provider. If the target range is not indicated, please refer to Table 2 or 3, or to the ADA recommendation of a pre-meal range of 90-130 mg/dL (per reference 1 below).

The frequency of routine blood/CGM glucose monitoring should take into consideration the student's schedule and participation in classroom learning/activities. Too frequent routine glucose monitoring may impact learning and school participation. On average, a student would have routine glucose monitoring one to three times during the school day unless otherwise indicated on orders or using a CGM.

4. Hypoglycemia (low sugar level, insulin reaction)

- Student should be treated immediately (*i.e., classroom, playground*) if symptomatic or if blood glucose is below target range. If the student needs to go to the Health Office, the student **must** be accompanied by a responsible person.
- A student with hypoglycemia should be treated first, prior to notifying parents.
- Check finger-stick blood glucose with a glucose meter if student reports feeling low. If no blood glucose meter is available, assume that blood sugar is low and treat accordingly.
- **Mild symptoms:** If blood glucose is **below** target range and/or student is symptomatic (e.g., shaky, hungry, pale), treat with ~ 15 g fast-acting carbohydrate (e.g., 4 oz juice, 3 glucose tabs, etc.; if student < 5 y.o. give ~ 7.5 g of fast-acting carbohydrate unless otherwise indicated). **Retest** in 10-15 minutes. Repeat 15g (7.5g for < 5 y.o.) fast-acting carbohydrate every 10-15 minutes until **within** target range. When blood glucose is **within** target range, follow with 15g snack (protein and carbohydrate) or lunch/meal (unless otherwise indicated on orders). Do not give insulin for this snack unless indicated (see "Note" in this chapter).



The term blood/CGM glucose indicates that the value may be from a finger-stick or a continuous glucose monitor (CGM).

(Symbols used: $<$ = less than; $>$ = greater than; \sim = approximately)

- **Moderate symptoms:** (e.g., not thinking clearly) Check blood glucose; if unable to drink juice, administer glucose gel. Re-treat as above until within target range. If unable to administer, and intranasal glucagon (Baqsimi, 3 mg) is available, it may be used. Follow with snack or lunch (see “Note” in this chapter).
- **Severe symptoms:** may include seizures, unconsciousness, unable or unwilling to take juice or gel: If BG meter is readily available, check blood glucose level prior to treating to confirm hypoglycemia. If on insulin pump, turn pump off or disconnect tubing.

ADMINISTER GLUCAGON AND CALL 911

- ◇ Glucagon dose is indicated on the Provider orders (Table 2 or 3). Doses of 0.5 ml (< 12 years) or 1.0 ml (12 years or older) are encouraged for accurate administration in the school setting. If intranasal glucagon (Baqsimi, 3 mg) is available, it may be used instead of injected glucagon.
- ◇ Trained personnel should be available for administration of injected glucagon.

Note:

For Injections: Do not give insulin for carbohydrates given to treat low blood glucose.

If at lunchtime, after blood glucose is within target range, send the student to lunch and give insulin after eating, based on the *recovered* blood glucose level and grams of carbs, unless otherwise indicated on orders.

For Insulin Pumps: Don’t enter the carbohydrate grams in pump that were given to treat the low blood glucose.

If at lunchtime, after blood glucose is within target range, send the student to lunch. After eating, enter grams of carbs eaten into pump and use the pump calculator to determine amount of insulin to be given, unless otherwise indicated on orders.

Notify Parents after student has been treated for hypoglycemia.

If more information related to hypoglycemia is desired, refer to Chapter 6 in this book, or to reference 2 below.

5. Hyperglycemia (high sugar levels)

No pump (see 7, Insulin Management below for insulin instructions):

- If BG is above the target range, and it has been over 3 hours since the last dose of insulin, provide insulin for BG correction as indicated in the orders below. If at lunchtime, include the insulin to cover the meal carbohydrates, as in the orders.
- The school nurse should take into consideration upcoming activities, including PE, lunch dosing, walking home, afterschool activities, etc., when giving insulin corrections for high BG (for both injections and pumps). *If the correction factor is not available, or there is not a sliding scale for insulin dosage, contact the diabetes care-provider for a one-time order.*
- If BG > 300 mg/dL (16.7 mmol/L) after two consecutive checks (≈ 1-2 hours apart), or illness, such as nausea/vomiting, TEST KETONES. Check one: ☐ blood ☐ urine.
- If no method to check ketones is available, call parents to come to do the ketone check or to take student home to monitor and treat.
- If ketones are below moderate in urine or 1.0 mmol/L in blood, student may require insulin injection. First, contact parent. If parents are not available, call diabetes care-provider for further instructions.
- Recommend student be released to parents when ketones are moderate or large in urine or > 1.0 mmol/L in blood, or if student has symptoms of illness (e.g., nausea, vomiting), in order to be treated and monitored more closely by parent/guardian.
- If ketones present, provide water and keep student from exercise.

With Pump (see 8, Pump Management below for insulin instructions):

- If BG is above the target range, and it has been over 3 hours since the last dose of insulin, provide insulin for BG correction as indicated in the orders below. If at lunchtime, include the insulin to cover the meal carbohydrates, as in the orders or as per the pump (see 8 below).

- The school nurse should take into consideration upcoming activities, including PE, lunch dosing, walking home, afterschool activities, etc. when giving insulin corrections for high BG (for both injections and pumps). *If the correction factor is not available, or there is not a sliding scale for insulin dosage, contact the diabetes care-provider for a one-time order.*
- If BG > 300 mg/dL (16.7 mmol/L) after two consecutive checks (\approx 1-2 hours apart), or illness, such as nausea/vomiting, TEST KETONES. Check one: ☐ blood ☐ urine ☐ ketones.
 - ◇ If no method to check ketones is available, call parents to come to do the ketone check or to take student home to monitor and treat.
 - ◇ If ketones are below moderate in urine or 1.0 mmol/L in blood, student may require insulin injection. First, contact parent. If parents are not available, call diabetes care-provider for further instructions.
 - ◇ Recommend student be released to parents when ketones are moderate or large in urine or > 1.0 mmol/L in blood, or if student has symptoms of illness (e.g., nausea, vomiting), in order to be treated and monitored more closely by parent/guardian.
 - ◇ If ketones present, provide water and keep student from exercise.
- Potential pump malfunction:** The concern for a student on a pump with prolonged hyperglycemia is the possibility of blocked insulin tubing and the risk of going into Diabetic Ketoacidosis (DKA). This can happen after 2 or 3 hours without insulin. Unlicensed assistive personnel should contact school nurse for further instructions regarding insulin by injection or new infusion set by parent or independent student.

Note: For all students (pump or no pump), the school nurse/CCNC and parent should contact the healthcare-provider for insulin dose adjustments if hyperglycemia occurs frequently.

6. Exercise and School Attendance (for students on insulin injections and/or pump):

Student Symptoms & Blood/CGM Sugar level	Ketone Level	Exercise	Stay in School
> 300mg/dL first time, no symptoms	None	Yes	Yes
> 300mg/dL – 2 consecutive times (over 1-2 hours apart), no symptoms	None	Yes	Yes
> 300mg/dL no symptoms	Trace-Small	Yes*	Yes
> 300mg/dL with symptoms	None	No	No
> 300mg/dL, with or without symptoms	Urine: Moderate-Large or Blood ketones > 1.0	No	No
> 300, 2 consecutive times, no symptoms	Unable to check ketones	No	No †
> 300, with symptoms	Unable to check ketones	No	No

*School nurse/CCNC should determine if type of exercise is appropriate (e.g., weather conditions – exercise may not be appropriate, student's hydration status, school's ability to monitor symptoms during exercise, etc.).

Note: *always check blood glucose and/or ketones before exercise if the student is not feeling well.*

† Parent may bring ketone-checking equipment to school to determine status.

7. Insulin Management (injections or pumps):

- Fast-acting insulins are interchangeable (e.g., Humalog, NovoLog, Apidra) unless student is allergic to a certain brand or otherwise indicated.
- The parent and/or unlicensed assistive personnel should contact the school nurse/CCNC if changes in insulin dosing are needed.
- In the school setting, fast-acting insulin is ideally given (injection or pump) approximately 5-20 minutes prior to lunchtime, unless otherwise indicated. Since it is difficult to determine precisely when the student will actually eat their meal at school due to varying factors, fast-acting insulin is not given earlier than 20 minutes

to avoid an episode of hypoglycemia. The two-digit rule may be used, if recommended by your care-provider. This is a rule using the first 2 digits of the blood glucose to how much in advance to give insulin prior to a meal, e.g., if blood glucose is 200 then give insulin 20 minutes (maximum time interval) before eating, or if 150 give 15 minutes before eating. If blood glucose is below 70 mg/dL, wait to give insulin until after the meal.

- Refer to student's individualized orders for snack dosing.
- After 28 days, opened vials/cartridges/pens of insulin will begin to lose their potency and be susceptible to bacteria contamination; therefore, the insulin should no longer be used in the school setting.
- Please check with parents to see whether they would like the used insulin to be returned to them or discarded.

8. Pump Management

- The computerized features/calculator of pump should be used for insulin boluses.
- **All** blood glucose values and carbohydrate grams to be eaten (with the exception of treatment for hypoglycemia) must be entered into the pump for delivery of pump-recommended boluses.
- Parents/guardians are responsible for ensuring all pump settings align with orders.
- The pump bolus calculator rarely should be overridden (e.g., in dosing changes). Encourage parents to follow up with their healthcare-provider for insulin pump dose adjustments if frequent overrides are being requested.
- Delegated staff should always get approval from their school nurse to override pump insulin calculations.

9. Continuous Glucose Monitors (CGM)

- CGM systems use a tiny sensor inserted under the skin to monitor glucose levels in interstitial fluid. Level sometimes varies from BG values; if so, always accept the BG result.
- In the school setting, delegated school staff should respond to low and high BG alarms rather than to the constantly fluctuating trends and numbers.
- The FDA has approved use of the Dexcom G5 and G6 and the FreeStyle Libre Flash CGM glucose values to make insulin treatment decisions without needing to test finger-stick blood glucose (BG) values. If more information is needed, please refer to reference 3 or 4 below.
- For all other CGMs, always confirm a CGM reading with a finger-stick glucose reading prior to insulin administration.
- Remote monitoring of the CGM in the school setting is generally not required, as the student is usually adult-supervised by trained school staff and frequent routine BG monitoring is scheduled as indicated. It is not the responsibility of school personnel to monitor the CGM readings. However, in certain unique cases (e.g., preschool age, non-verbal, impaired cognition, severe hypoglycemia unawareness) monitoring/remote monitoring may be appropriate, and the school nurse/CCNC, along with the Section 504 Team, will determine this need based on the student's individual unique need(s). When determined appropriate, the school nurse/CCNC will indicate these accommodations on a Section 504 plan and the IHP.
- Reasonable use of the CGM in the school setting will foster the student's ability to recognize when they have symptoms of hypo/hyperglycemia.
- Parents will set the alarms and notify the school nurse/CCNC of the parameters. Alarms should be used sparingly and only for safety, to avoid unnecessary disruption of the student's school activities (i.e., set alarms only for glucose levels that require an immediate action/response).

10. Partial Artificial Pancreas Systems in the school setting – These are FDA approved:

- **Medtronic MiniMed 670 G, 770 G or 780 G pump with hybrid artificial pancreas technology:** This has four levels of operation including 1) **Basal Insulin Delivery**, 2) **Suspend on Low**, 3) **Suspend Before Low** mode which automatically stops insulin 30 minutes before reaching the student's pre-selected low limits, then automatically restarts (without alerts) insulin when levels recover and 4) **Auto Mode** which is a considered a closed-loop system. It automatically adjusts basal insulin delivery every 5 minutes based on CGM sugar levels to keep student in target range around the clock. **The system is called hybrid because an insulin bolus for**

food (as discussed in 7, Insulin Management, see above) must still be given by the person or by the school nurse/CCNC.

- **Tandem t:slim X2 System with Control IQ Technology:** This artificial pancreas system has all of the features of the Medtronic System above. It uses the Dexcom G6 CGM for glucose levels. It has a feature to automatically correct high glucose values if a correction insulin bolus has not been given. It has been shown to increase the time with glucose levels in the desired range and to reduce the time spent in hypoglycemia. For more information on insulin pumps, contact the Diabetes Resource Nurse for your area, your pump representative, or reference 3 or 4 below.

11. Self-Care Management:

- Ability level to be determined by school nurse/CCNC & parent unless provider indicates otherwise (see Table 2 or 3).
- All students, regardless of age or expertise, may require immediate assistance with hypoglycemia and/or illness.

12. Student with private duty nurses: *The Standards of Care* may be individualized or exempt at the discretion of the parents and/or healthcare-provider and per any agreement with the school district.

13. Table 2 (for student using injections) or Table 3 (for student using insulin pump) will also be completed.

REFERENCES:

1. American Diabetes Association (January, 2021): Standards of Medical Care in Diabetes, Diabetes Care 44 (Supplement 1). www.diabetes.org/diabetescare
2. Chase, H.P., & Frohnert, B.I., (2020). *Understanding Diabetes (14th Ed)*. Denver, CO. Available at 303-863-1200, or www.childrensdiabetesfoundation.org. (Ordering forms are in the back of book.)
3. Chase, H.P., & Messer, L., (2017). *Understanding Insulin Pumps & Continuous Glucose Monitors (3rd Ed.)*. Denver, CO. Paros Press. Available at 303-863-1200, or www.childrensdiabetesfoundation.org.
4. Colorado Kids with Diabetes Care and Prevention Collaborative, www.coloradokidswithdiabetes.org

I agree with this standard of care.

Signed: _____ Date: _____
Parent(s)

This Table may be copied as desired.

NOTE: The entire Chapter 25 in the book, *Understanding Diabetes*, can also be used as a Standard of Care for all children with diabetes.