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Children's Wisconsin

Diabetes Medical Management Protocols for Schools

Health Care Provider Contact Information:

Website: Childrenswi.org/diabetes

Children's Wisconsin Diabetes Clinic – Main Campus

Non-Urgent Phone Number	414-266-3380
Urgent Issues	414-266-2860. The Nurse/Doctor on-call will be paged.
Fax Number	414-266-3964
Email	diabetesclinic@childrenswi.org

Children's Hospital of Wisconsin Diabetes Clinic – Appleton; Fox Valley; De Pere

Non-Urgent Phone Number	920-969-5353
Urgent Issues	414-266-2860. The Nurse/Doctor on-call will be paged.
Fax Number	414-337-7203
Email	FVDiabetesclinic@childrenswi.org

An emergency action plan should be discussed and completed at the beginning of every school year with the family

Notify parents/guardians or additional contacts in the following situations:

1. Loss of consciousness, seizure, or if glucagon is given.
2. If blood sugars remain 300 mg/dL or higher for 4 hours or longer. If available, check ketones and provide this information to family.
3. Moderate to large ketones.
4. Nausea and vomiting, altered breathing or altered level of consciousness.
5. If the student is unconscious, having difficulty breathing and/or lethargy call 911 for Emergency Assistance.
6. Any other situations identified in the student specific medical order.

Treating Low Blood Sugar (Hypoglycemia)

Symptoms of Hypoglycemia

Mild	Moderate	Severe
Hungry	Mood/behavior change	Confused/unable to follow commands
Shaky/weak/clammy	Inattentive/spacey	Unable to swallow
Blurred vision/glassy eyes	Slurred speech	Unable to awaken (Unconscious)
Dizzy/headache	Anxious/irritable	Seizure
Sweaty/flushed/hot	Numbness or tingling around lips	Convulsion
Tired/drowsy	Poor coordination	
Fast heartbeat	Unable to concentrate	
Pale skin	Personality change	
May have no symptoms		

Treatment of Low Blood Sugar

- Treat blood sugar if under 70 mg/dL unless otherwise notified on student's medical orders. This can be individualized per student and health care provider to provide safe care in the school based on sensitivity and age of the student. Please follow the student specific medical order or our standard protocol below.
- Give 10 to 15 grams of fast-acting carbohydrates. Examples include:
 - 3 to 4 ounces of juice or regular soda
 - 3 to 4 glucose tablets

- 2 rolls of Smarties
- 11-15 skittles
- Recheck blood sugar in 15 minutes
- If blood sugar is still under 70 mg/dL, give another 15 grams of fast-acting carbohydrate.
- When using a continuous glucose monitor (CGM)
 - Students using a CGM may need to use a finger stick on a meter to confirm a low blood sugar prior to treatment, especially if symptoms don't match the CGM reading.
 - If the sensor reads "LO" without a glucose number, check blood sugar on a meter. If an upward or stable trend is not seen, use a meter to check blood sugar prior to repeating the treatment.
- If child needs to go to the office for treatment, please have a partner (adult or student) walk with them, in the event that they are dizzy or lightheaded.

Treatment of a Severe Low Blood Sugar with Glucagon

- Administer glucagon if student is confused or unable to follow commands, unable to swallow, unable to awaken (unconscious), or having a seizure or convulsion.
- After administering glucagon, call 911 and keep the student on the side as glucagon may cause vomiting.
- There are 3 forms of Glucagon:
 - **Baqsimi:** Glucagon Nasal Spray for children 4 years and above.
 - **Gvoke:** Premixed **sub-cutaneous injection** for children 2 years and above
 - **Injectable glucagon: Intramuscular** injection of glucagon for all age groups that requires reconstituting with saline (provided in the prescription kit).
- If student uses an insulin pump and exhibits symptoms of severe low blood sugar, give glucagon and either suspend the insulin pump or disconnect the tubing.

Guidelines for Glucagon Nasal Spray:

Refer to this link for instructions: <http://pi.lilly.com/us/baqsimi-us-ifu.pdf>

- It is dispensed as a fixed dose of 3 mg. It is prepackaged for single use and will need to be discarded after use.

Guidelines for GVOKE:

Refer to this link for instructions: <https://www.gvokeglucagon.com/how-to-use-gvoke>

- 0.5 mg for patients under 45 kg or 100 lbs
- 1.0 mg for patients over 45 kg or 100 lbs

- Injection can be given into any of the sites used for insulin administration
- Injection should be directly into skin, not through clothes if possible

Guidelines for Intramuscular Injectable Glucagon:

Refer to this link for instructions: <https://www.glucagenhypokit.com/instructions.html>

- 0.5 mg under 25 kg or 55 lbs (Under 6 years if weight is unknown)
- 1.0 mg over 25 kg or 55 lbs (Over 6 years if weight is unknown)
- Injection can be given into the muscle in the thigh or the arm.

Treating High Blood Sugar (Hyperglycemia)

Symptoms of Hyperglycemia

Mild	Moderate	Severe
Frequent urination	Mild symptoms, and:	Mild and Moderate symptoms, and:
Extreme thirst/ dry mouth	Nausea/vomiting	Labored breathing
Negative to small ketones	Stomach pain/cramps	Weakness
Tiredness/fatigue	Dry/itchy skin	Confusion
Increased hunger	Unusual weight loss	Unconsciousness
Blurred vision	Small, moderate or large ketones	Large ketones
Flushed skin		Sweet, fruity breath
Lack of concentration		

Treatment of High Blood Sugar:

- Per the medical orders, provide correction dose or supplemental dose of insulin when applicable. See insulin and insulin pump orders.

- If blood sugar is high as defined by the medical order or if the student is sick, check ketones if applicable.
- If blood sugar is high without ketones, then recheck in 2 hours unless otherwise specified in the medical order.
- If blood sugar reads “HI”, use 450 mg/dl for correction calculation and recheck in two hours.
- When using a CGM
 - If sensor glucose is reading “HI”, a blood glucose should be confirmed with a glucometer before treatment.
- When using a pump
 - Check the pump set site, connection and the insulin reservoir. Questions to ask:
 - Is the site red or swollen?
 - Is the site wet?
 - Does it smell? Insulin has a distinctive smell.
 - Is a part of the adhesive removed?
 - If pump site looks OK, give a correction through the pump and check BGs in 2 hours.
 - If the blood sugar has not decreased by least 50 mg/dl after 2 hours, give a correction dose with a syringe or pen.
- If blood sugar is high with ketones, follow the directions below.

Trace/small ketones	Moderate to large ketones
Allow free bathroom access	Follow all items for trace, small ketones, and
Encourage water and/or other sugar-free fluids	Call parents/guardians
Re-check blood sugar in 2 hours	Arrange for student to be taken home if student is ill and unable to function in the school environment. May need to consult with parent or health care provider.
Follow all additional medical orders for this specific student for treatment of high blood sugars.	Follow all additional medical orders for this specific student for treatment of high blood sugars.

Sick Day

If a student comes to school sick or becomes sick at school do the following:

- Check blood sugar level every 2 hours
- Check ketones every 2 hours
- Offer sugar-free fluids
- Call parents and guardians
- Arrange for student to be excused from school

Blood or Sensor Glucose Monitoring

The parent and student are responsible for showing the school nurse how their glucometer and/or CGM works. It is important for all school nurses to know how to access the memory in the meter, procedure for testing, and if calibration is needed. **All students with insulin-dependent diabetes** will need a glucometer at school for testing blood sugars. This may apply to both students with type 1 and type 2 diabetes. Each student will have a schedule for monitoring blood sugars at school. Follow the outlined procedure in the medical order for each student. **Whenever possible, glucose monitoring should occur in the classroom to limit any time missed for this student.**

Times that students may test/monitor:











- Reasonable number of blood sugar checks is typically 2 to 4 times in a school day. If student is testing other than at meal time, it is recommended that the student be allowed to test in the classroom.
- Before eating all meals.
- Before eating snacks that require a student to give insulin.
- Before and after physical activity depending when gym is scheduled and how sensitive the student is to exercise.
- Before boarding a bus for transportation home from school or dismissal if walking home from school.
- Anytime the student feels symptoms of a low or high blood sugar level.
- When the student is sick.

Continuous Glucose Monitors

- Most common CGMs include:
 - Dexcom sensors (www.dexcom.com)
 - Freestyle Libre sensors (www.freestylelibre.us)
 - Medtronic sensors (www.minimed.com)
- A student may have either a receiver/reader, a smart device or data displayed directly on the screen of their insulin pump.
- If they do not have a data plan, the student may need access to the school's Wi-Fi network.
- CGM alerts are set for both high and low blood sugars. Students can turn off the alerts in various circumstances. Please identify the specific alerts that the student has set and how it will be used in the school setting. It is recommended that the minimum number of alarms be enabled in a school to keep the student safe and be engaged in the academic schedule.
- **Data Sharing:** Data sharing may occur at school with designated school personnel and outlined in the student's individual health plan (IHP). It would be recommended that the school nurse clarify what is expected and desired from the family and what is possible and appropriate for the school setting.
 - While it is possible to follow a patient's data throughout the day, the Children's Wisconsin diabetes program recommends the primary role for school personnel is limited to responding to the high and low sensor alarms. In some circumstances, the use of directional arrows can be outlined to assist with treatment around higher activity levels. Constant monitoring of the CGM data on a remote device in a school setting is not considered a reasonable accommodation for most students.
 - Determine if there will be data sharing with parents or off-site caregivers.
- Students may have scheduled times to check the CGM within a school day. Most commonly, this is before meals, snacks and physical activity such as gym or recess. Negotiate student's specific management with student and the parent.
- Students may be using the sensor reading to dose at school. Since a student may need to do a blood sugar test in some situations, we recommend all students have a blood sugar meter accessible to them at school for using when necessary for management decisions.
- In addition to scheduled sensor checks, we recommend checking the sensor glucose and/or a blood sugar in the following situations:
 - Any high or low blood sugar alert

- Any symptoms of a high or low blood sugar.
- If the blood sugar is moving quickly indicated by 2 arrows up or down, a blood glucose is recommended prior to dosing insulin. You will need to negotiate the specific student routine with the parent.
- Anytime the CGM is not functional, the student will require a blood sugar test.
- Reasonable accommodations must be considered when managing CGM data in school. In general, this means no greater than two corrections outside of a meal-time per school day.
- CGMs provide a wealth of data. The focus should be on helping the student balance academic success and classroom inclusion with optimal glucose management.
- If you are requested by a parent to integrate directional arrows into a treatment plan, consider the following recommendations:
 - May be used around gym or recess to determine if a snack, blood sugar test or insulin for a snack is needed.
 - May be used at the end of a school day to determine management when boarding a bus
 - A student could use a CGM to determine range or management around taking a test or exam
 - These specific guidelines will need to be negotiated by the school nurse and the student/parents.
 - BlueLoop app can use directional arrows to help determine changes to insulin dose based on the glucose trend. Speak to the family if they use these to determine dosing.

Trend Arrows

Dexcom	What it Means	Libre
	Glucose is rapidly rising	
	Glucose is rising	
	Glucose is relatively steady	
	Glucose is falling	
	Glucose is rapidly falling	

Treatment for Low Blood Sugars at Non-Meal Times Using a CGM with Downward Arrow(s)

- An impending low blood sugar treatment may be indicated for the student before they are below their target range when a CGM reading indicates arrow(s) is in the downward direction.
- Discuss with families regarding sensor sugar ranges and carbohydrate treatment amounts in the event that this occurs at school.

For more information on diabetes technology, please reference “diabetes technology” resource on the Children’s Wisconsin website.

Insulin Pumps at School

An insulin pump is a device that is attached to the student and delivers continuous subcutaneous insulin. All pumps have a type of pump set or permanent device that is attached to the child. These are rotated to different locations on the body every 1 to 3 days. The pump delivers 2 types of insulin doses:

- **Basal rate:** These are preprogrammed hourly rates that will run automatically, creating a background low level of insulin administered 24 hours per day.
- **Bolus dose and correction doses:** the settings for the calculations are pre-set for programming the food bolus dose and correction dose into the pump. The trained school personnel or student will need to enter into the pump how many grams of carbohydrate are being eaten, what the blood sugar is (some pumps have a linking meter that sends the blood sugar to the pump automatically), and then will need to confirm and deliver the dose of insulin prior to eating all food.

Most common types of insulin pumps are:

- Beta Bionics ilet insulin device (www.betabionics.com)
- Medtronic insulin pumps (www.minimed.com)
- Omnipod insulin pumps (www.myomnipod.com)
- Tandem insulin pumps (www.tandemdiabetes.com)

Steps towards Independence with Insulin Pumps

Students in elementary school need close supervision with all the insulin delivery with a pump. Students in middle school may be able to be independent in dosing the insulin with a pump but will need some supervision. Many high school students can be independent, but they may need supervision depending on the level of diabetes control and timing of diagnosis.

- Skills that the school will need to document for the student include:
 - Independently monitors own blood sugar
 - Independently counts carbohydrates
 - Administers insulin using the pump independently
 - Needs assistance with pump management
 - Inserts a new infusion set
 - Self-treats mild hypoglycemia
 - Troubleshoots all pump alarms
- All students at school need to have a backup delivery system in the event of an insulin pump failure. This can be either insulin syringes or insulin pen device.

Insulin Pump Malfunction

- A high blood sugar of concern when using a pump is typically when it is over 250 mg/dL. If a student corrects with the pump outside of a meal once and the blood sugar does not decrease by at least 50 mg/dl in 2 hours, then it is likely that the pump or pump set is not appropriately working. The rule with pump management is correct once and if not improving, then correct with a syringe or insulin pen. Refer to the student specific orders for individual management orders.
- When a pump fails to work, then the student is at higher risk to go into life-threatening Diabetic Ketoacidosis (DKA). Once a pump fails to function, the student will not have any insulin in the body after 2 to 3 hours from the point of failure.
- The pump set will need to be changed and/or insulin will need to be given using an alternate method – either with an insulin syringe or pen device.
- The family is responsible for providing the school with current pump settings, glucometer and insulin supplies for injections in the event of pump failure.
- Pump set supplies may be kept at school if the student is independent in changing the pump set and they are not showing any significant signs of illness. Most students are not capable of doing this skill independently until over 12 years of age.
- Parents need to be notified for all pump set failures at school. Younger students will need to have a parent or trained caretaker come to the school and either pick up the student if not able to remain at school or change the set.
- School nurses or staff are not required to change pump sets unless fully trained and feel competent. If a set is not replaced, it is safe to give insulin injections through the remainder of the school day.

Diabetes Supplies

- Parents/guardians are responsible for supplying the school with all diabetes supplies.
- If a student forgets to bring supplies to the school, then:
 - Notify the parent.
 - If parent is not available, call the Diabetes clinic urgent phone line to page a nurse for consultation.
 - Insulin being actively used may be stored at room temperature for 28 days before replacing. Unused insulin must be stored in the refrigerator but never frozen.

The following are supplies that families are expected to provide and replace:

Blood Sugar Monitor, blood sugar test strips, extra batteries	Insulin pen, pen needles and insulin cartridges
Continuous glucose monitor	Fast-acting source of glucose
Lancet device, lancets, gloves	Carbohydrate containing snacks
Insulin vials and syringes	Glucagon emergency kit
Insulin pump supplies	Ketone testing supplies

Disaster Planning

It will be the school's responsibility to determine a plan for all types of disasters that may occur in the school, including a lockdown situation. We recommend the plan be set up specific for each school district's policies and procedures. A parent can supply an extra box, or you may find more efficient to have a master disaster box for the entire school to address these needs of a student. Some things to consider in a school emergency are the following points:

- For a lockdown, a fast-acting glucose source should always be available to student. A policy to consider is to provide fast acting glucose source to all classrooms, and office locations. An example would be to have smarties available in each room which a student with diabetes may be held in the event of a lockdown.

- Please review the disaster plan with all parents as they can provide the school with some supplies and will be comforted to know the school is considering all situations for their child to maintain safety.

Meals and Snacks at School

- Students may need assistance in counting carbohydrates depending on level of independence. All students will need carbohydrate resources to determine the correct carbohydrate count for food offered in a school setting.
- All students with type 1 diabetes are typically allowed to eat a flexible amount of carbohydrate at meals and some snacks.
- Establish a meal and snack schedule based on the student's classmates and parent/guardian's direction. If clarification is needed, then consult with the CW diabetes team. A typical plan will consist of a breakfast, morning snack, lunch, and afternoon snack. An additional snack may be required for extra exercise.

Insulin Dosing in between meals or snacks:

- Students may need an extra dose of insulin at a non-meal or snack time.
- Insulin doses should be at least 2 or more hours apart to maintain the student's safety.
- If a student needs a correction dose for a high blood/sensor sugar and it is less than 2 hours before a regularly scheduled meal dose, then the student may give the correction. Then, at the upcoming meal, they should dose for the carbs eaten only, and not repeat the correction.
 - For example, if the student tests at 11:00 AM and blood/sensor sugar is 385 mg/dL, the student can give a correction dose. If lunch is at 11:45 AM, the student can inject the insulin only for his food coverage without an additional correction. The student then can check 2 hours after lunch and if still having a high blood/sensor sugar, can give an additional dose if needed. You will need to refer to the student's medical orders if extra dosing is allowed at school. Refer to CGM guidelines on Children's Hospital Diabetes webpage

Physical Activity & Sports

- Always have fast-acting carbohydrates available at times of physical activity and sports.

- Students should not participate in physical activity if ketones are moderate to large.
- In general, if blood sugar is under 70 mg/dL, the student should not engage in physical activity until the blood sugar is corrected.
- Refer to the student specific orders for any special guidelines for participation in physical activity or sports.

Supervision of Students at School

All students have varied levels of independence with their diabetes management. This is based on knowledge of own self-care, developmental maturity, length of time managing diabetes, and level of diabetes control. The level of supervision must be agreed upon by the parent, student, and school staff in agreement with the school district policies & procedures.

All School Sponsored Activities

- Notify parent/guardians 1 to 2 weeks in advance of all specialized activities/field trips or parties so accommodations can be arranged for the student with diabetes.
- The following diabetes supplies should be available to the student during school sponsored activities and events:

A copy of the student's Diabetes Management Plan (DMMP), Section 504 Plan, and Emergency Action Plan.	Insulin injection/insulin pump supplies and appropriate storage of insulin to prevent spoilage. Insulin should never be frozen or overheated. It can be at room temperature.
Blood sugar monitor and strips	Glucagon
CGM sensor and reader when applicable	Cell Phone or access to communication device if needed.
Fast acting carbohydrate sources, Juice, glucose gel or glucose tablets	Bag lunch and/or snacks

Simplified Emergency Instructions for All Staff Members

- All staff members should (at minimum):

- Have access to the Emergency Action Plan
- Know symptoms and protocol for treating a low blood sugar
- Know where glucagon is stored
- Have awareness of alarms and who to contact in the event that it sounds

Insulin Dosing Rounding Rule

ROUNDING RULE FOR ½ UNITS:

0.1-0.3 round down to whole unit

0.4-0.6 round to the ½ unit

0.7-0.9 round up to whole unit

ROUNDING RULE FOR WHOLE UNITS:

0.1-0.4 round down to whole unit

0.5-0.9 round up to whole unit

Insulin Dose Calculation Resources

- My Care Connect dosing calculator – Student will need to have an account created to utilize the information (www.mycareconnect.com). This account allows the student to both calculate and document cares at home and school. It is coordinated with an APP called “Blue Loop”. This APP also has the ability to integrate the directional arrows on a CGM to adjust insulin dosing, if requested by the parent. These adjustments use the Pediatric Endocrine Society Guidelines to make the adjustments.



- Discuss with the family if the calculations are done with a formula or using an identified App.

These are protocols that we use with all children with diabetes managed with insulin injections, insulin pump and/or oral medication at school. Refer to the specific medical orders for this student for individual details regarding the students care and management in the school setting.

CHW Diabetes Team