



Children's Hospital of Wisconsin

Diabetes Medical Management Protocols for Schools

School will be Responsible to Obtain Parent Contact Information

Health Care Provider Contact Information:

Children's Hospital of Wisconsin Diabetes Clinic – Main Campus

Non-urgent contact phone number: 414-266-3380
Urgent management issues: 414-266-2860 and the Nurse/Doctor on call will be paged.
Fax Number: 414-266-3964
Website: www.chw.org, navigate to the Diabetes Specialty Page
Email: diabetesclinic@chw.org

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

Non-urgent contact phone number: 920-969-7970
Urgent management issues: 414-266-2860 and the Nurse/Doctor on call will be paged.
Fax Number: 414-337-7203
Website: www.chw.org, navigate to the Diabetes Specialty Page
Email: FVdiabetesclinic@chw.org

CHW Health Care Providers:



Our care team is comprised of Pediatric Endocrinologists, Nurse Practitioners, Diabetes Educators, Dietitians, Social Worker, and Psychologists. Contact the parents or the diabetes clinic to identify the direct care providers for this particular student.

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

1. Loss of consciousness, seizure, or if glucagon is given
2. If blood sugars remain 350 mg/dL or higher for 4 hours or longer
3. Moderate to large ketones
4. Nausea/vomiting, altered breathing or altered level of consciousness
5. Correction dose of insulin is given other than a meal or snack time
6. If the student is unconscious, having difficulty breathing and/or lethargy call the Diabetes Clinic Emergency phone line 414-266-2860 or call 911 for Emergency Assistance.
7. All students need an emergency plan completed by the School Nurse accessible to all staff.
8. Any other situations identified in the student specific medical orders

Treating Low Blood Sugar/Hypoglycemia

Symptoms of Hypoglycemia

Mild to... 	Moderate to... 	Severe Symptoms
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 – Basic Protocol

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.

May treat with one of the following:

Give 10 to 15 grams of fast acting carbohydrate:

3-4 oz of juice or sugar soda	3 -4 glucose tablets
2 to 3 oz of milk	Skittles
Smarties	

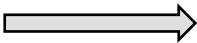
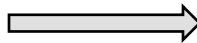
- Recheck blood sugar in 15 minutes
- If blood sugar is still under 80 mg/dL, give another 15 grams of fast acting carbohydrate.
- Students using a Continuous glucose monitor must always use a finger stick on a blood sugar meter to confirm a low blood sugar prior to treatment.

Treatment of a Severe Low Blood Sugar with Glucagon:

- Administer Glucagon if student is: confused/unable to follow commands, unable to swallow, unable to awaken (unconscious), or having a seizure or convulsion.
- Glucagon dose:
 - 0.5 mg for children under the age of 5 years
 - 1.0 mg for children over the age of 5 years
- Preferred Injection sites can include the thigh or the arm. After administering the glucagon call 911 and keep the student on the side as glucagon may cause vomiting.
- If student uses an insulin pump and exhibits symptoms of severe low blood sugar, in addition to giving glucagon either suspend the insulin pump or disconnect the tubing.

Treating High Blood Sugar/Hyperglycemia

Symptoms of Hyperglycemia

Mild to... 	Moderate to... 	Severe Symptoms
Frequent urination/bedwetting	Mild symptoms, and	Mild and Moderate symptoms, and
Extreme Thirst/ dry mouth	Nausea/vomiting	Labored breathing
Sweet, fruity breath	Stomach pain/cramps	Weakness
Tiredness/fatigue	Dry/itchy skin	Confusion
Increased hunger	Unusual weight loss	Unconsciousness
Blurred Vision	Small, Moderate or Large urine ketones	Large urine ketones
Flushed Skin		
Lack of concentration		
Negative to Small Urine ketones		

Treatment of High Blood Sugar:

- Per the medical orders provide correction dose/supplemental dose of insulin when applicable. See Insulin and insulin pump orders)
- If using an insulin pump check the pump set site, connection and the insulin reservoir
- With an insulin pump if the blood sugar remains out of range at the next check then the correction insulin dose must be given with syringe or pen.
- If blood sugar is high as defined by the medical order and if the student is sick check urine ketones if applicable to this student
- If blood sugar is high without urine ketones then recheck in 2 hours unless otherwise specified in the Medical order.
- If blood sugar is high with urine ketones follow the directions below.

Trace/small urine ketones	Moderate to large urine 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	• Offer sugar-free fluids	• Arrange for student to be excused from school
• Check urine ketones	• Call parents & guardians	

Blood Sugar Monitoring

The parent and student need to show you the blood sugar meter and how it functions prior to school starting. 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 diabetes will need a method at school for testing blood sugars. This applies to both students with Type 1 and Type 2 diabetes. Each student will have a defined schedule for testing blood sugars at school. Follow the outlined procedure in the medical order for each

student. Whenever possible the blood sugar testing should occur in the classroom to limit any time missed for this student.

Possible times that students may test include the following times:

- Reasonable number of blood sugars per day 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 (CGM)

- Most common continuous glucose monitors include:
 - Dexcom sensors (www.dexcom.com)
 - Medtronic sensors (www.minimed.com)
- CGM's consist of 3 parts:
 - A sensor that is inserted under the skin and remains in place for 6 to 7 days.
 - A transmitter that is attached to the sensor that records and transmits glucose data continuously.
 - A receiver that provides visual display of the student's real time glucose data.
- A student may have either the manufacturer provided receiver, a smart device or data displayed directly on the screen on some insulin pumps. Some of the supported devices include iPhone, iPad, or an iPod). If they do not have a data plan the student may need access to the school's WiFi network. The student and parents will inform you on which this student uses. All current sensors have to be calibrated at least 2 times per day to remain accurate.
- 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 may occur at school with designated school personnel and outlined in the student's IHP. It would be recommended that the school nurse clarify the following with the student and family:
 - Access to the CGM receiver
 - Access to the wireless network
 - Data sharing with school staff : the CHW program recommends that while this is a possibility and may be medically appropriate in a limited number of students responding to the high and low alarms will be the major role for school personnel. In some focused 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 the majority of students with a CGM device.
 - Data sharing with parents or off-site caregivers

- Students using a continuous blood sugar monitor will typically use a finger stick blood sugar to confirm the blood sugar level that requires treatment with food or insulin. In 2016 the Dexcom CGM G5 was approved to use for making insulin dosing decisions if the sensor is appropriately calibrated. Typically we are always requiring a blood sugar be done when a student is alarming out of range for both highs and lows. In addition having a finger stick blood sugar at lunch time is reasonable to require with all students wearing a CGM.
- Check the blood sugar in the following situations:
 - Any high or low blood sugar alert
 - Any symptoms of a high or low blood sugar
 - Before giving insulin or medication to lower a blood sugar
 - Anytime the CGM is not functional
- Students may have scheduled times to check the CGM within a school day. Most commonly this is before physical activity such as gym or recess. Negotiate student’s specific management with student and the parent.
- If you are requested by a parent to integrate directional arrows into a treatment plan at school 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.

Here is a reference chart to interpret directional arrows on a CGM device:

Symbols: Vary on the different sensors	What it means
↑↑ ↑	Glucose is rising > 2 mg/dl per minute
↑ ↗	Glucose is rising 1- 2 mg/dl per minute
○ →	Glucose is level – changing < 1 mg/dl per minute
↓ ↘	Glucose is falling 1-2 mg/dl per minute
↓↓ ↓	Glucose is falling > 2 mg/dl per minute

P. Chase, Understanding Insulin Pumps & Continuous Glucose Monitors: The Pink Panther, First Edition, 2007.

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 2 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 to administer 24 hours per day.

- **Bolus dose and correction doses:** the settings for the calculations are pre-set for programming the correction bolus dose and correction dose into the pump. The trained school personnel or student will need to enter into the pump how many carb is 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 and resource phone numbers are:

- Animas insulin pumps (www.animascorp.com)
- Medtronic insulin pumps (www.minimed.com)
- Omnipod insulin pumps (www.myomnipod.com)
- Tandem insulin pumps (www.tandemdiabetes.com)

Students over the age of 10 years may be able to be independent in dosing the insulin with a pump but may need some supervision. Students under the age of 10 years need close supervision with all the insulin delivery with a pump. Students may be able to know how to do parts of the button pushing on a pump but needs to be documented by the school. Some older students also may need supervision depending on the level of diabetes control. Discuss with the parent's the level of supervision needed for all students.

- 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
 - Trouble shoots 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:
 - When a pump fails to work then the student is at higher risk to go into life threatening Diabetic Ketoacidosis and his pump set will need to be changed or given insulin using an alternate method; insulin syringe or pen device. 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.
 - 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 is not required to change pump sets unless fully trained and feel competent.
- 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 improve to under 200 mg/dL in 2 hours then it is likely 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.

Diabetes supplies that may be kept at school

- 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.

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	Urine/blood ketone testing supplies

Meals & 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 carb contents for food offered in a schools setting.
- All students with Type 1 diabetes are typically allowed to eat a flexible amount of carbohydrate at meals and some snacks.
- Students with Type 2 diabetes are often on a fixed meal plan to control portions of food eaten.
- Some students may also have restrictions due to other medical diagnosis, intolerances or allergies.
- Establish a meal and snack schedule based on the student's classmates and parent/guardian's direction. If need clarification then consult with the CHW diabetes health care team. Typical plan will consist of a Breakfast, AM Snack, Lunch, and PM snack. An additional snack may be required for extra exercise. In children over the age of 12 years the snacks are less common.
- Refer to the student specific orders for details related to the meal plan and specific restrictions. Not all students will have restrictions.

Insulin Dosing in between meals or snacks:

- Students may need an extra dose of insulin at a non-meal/snack time. Insulin doses should be at least 2 or more hours apart to maintain the student's safety.
- If a student presents and needs a correction dose for a high blood sugar and it is less than 2 hours before a regularly scheduled meal dose then the student may give the correction and then at the upcoming meal test and dose for the carb eaten only and not repeat the correction. For example if the student tests at 11 AM and blood sugar is 385 mg/dL, the student can give a correction dose but then lunch is scheduled at 1145 AM. So at 1145 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 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.

Physical Activity & Sports

- Always have fast-acting carbohydrates available at times of physical activity and sports.
- Students should not participate in physical activity if urine or blood ketones are moderate to large.
- In general if blood sugar is under 70 mg/dL or is over 350 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.

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	
CGM sensor when applicable	Glucagon Emergency Kit
Fast acting carbohydrate sources, Juice, glucose gel or glucose tablets	Cell Phone or access to communication device if needed.
Bag lunch and/or snacks	

Insulin Dosing Rounding Rule

ROUNDING RULE FOR ½ UNITS:

- 0.1-0.3 round down to whole unit
- 0.4-0.7 round to the ½ unit
- 0.8-0.9 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:

Children's hospital will be discontinuing the use of dosing charts except in specific special circumstances. We will be encouraging students and schools to utilize approved Insulin Dose calculator APPs as noted below. These function like a calculator that is inside an insulin pump and can recommend the correct dose to give at a meal, snack or correction for a high blood sugar.

- My care connect dosing calculator – Student will need to have an account created to utilize this APP (www.mycareconnect.com) this is an account that allows the student to both calculate and document cares at home and school. If is coordinated with an APP called "Blue Loop".



- Sick Day App - This app helps caregivers or people with diabetes manage blood sugar levels and ketones during sick days, when managing diabetes can be difficult due to increased stress on the

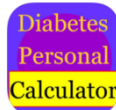
body. Answer a few simple questions on blood sugar levels, ketones and appetite, and the app provides next steps for managing your condition. (www.chw.org/sickday)



- CalorieKing for carb counting. (<http://www.calorieking.com>)



- The Diabetes Personal Calculator APP is another possible APP



- 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 Treatment Team