



# DIABETES MANAGEMENT

Responsibility:	<i>Superintendent, Human Resource Services</i>
Legal References:	PPM161 MFIPPA
Related References:	Board Policy 1006 - Supporting Students with Prevalent Medical Conditions Board Policy 1008 - Equity and Inclusion <i>AP1460 Administration of Medication</i> <i>Appendix A – Hypoglycemia Emergency Action Flowchart</i>
Revisions:	September 2018, March 2019, October 2022
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### 1. Preamble

- 1.1 The procedures that follow provide guidelines and expectations for responding to children with diabetes. It outlines the nature of diabetes, its various types and related issues of concern.
- 1.2 Diabetes Management is a protocol to be used by school and community personnel to support and ensure the safety of children with diabetes in our schools. The development of this document was a collaborative project involving representatives from Home and Community Care Support Services – Waterloo Region (HCCSS), the Canadian Diabetes Association and Waterloo Region District School Board (WRDSB) internal and external stakeholders (including families).

### 2. Purpose

- 2.1 To provide school personnel in the WRDSB with information and guidelines regarding the requirements of care for students with diabetes.
- 2.2 To provide information about the management of risks associated with diabetes for all parties involved.
- 2.3 To develop information and resources for school personnel about the management of diabetes in school children including the importance of communication and Plan of Care.

### 3. Definition

- 3.1 Diabetes mellitus is a disease resulting from a lack of insulin. Insulin is a hormone produced by the pancreas. Without insulin, carbohydrates (starch and sugars) in the food we eat cannot be converted into the energy (called blood glucose or “blood sugar” [note: terms ‘blood glucose’ and ‘blood sugar’ are interchangeable]), which required to sustain life. Instead, unused glucose accumulates in the blood and spills out into the urine.
- 3.2 Children and adolescents with diabetes are different; however, both are unable to make any insulin and must take insulin injections each day.

#### 4. Plan of Care – Alert Form

- 4.1 It is essential that the school develops a Plan of Care for each student who has diabetes and that all staff are aware of how to implement it. Each plan should be developed in conjunction with the student's parent(s)/caregiver(s) and summarized on the Plan of Care Alert-Form.

#### 5. Philosophy of Diabetes Management

- 5.1 The ultimate goal of diabetes management within the school setting is to have the child be independent with their care. This independence includes the specific management of diet, activity, medication (insulin) and blood sugar testing. Independence of care also includes the development of self-advocacy skills and a circle of support among persons who understand the condition and can provide assistance as needed.
- 5.2 The role of the school is to provide support as the child moves from dependence to independence and to create a supportive environment in which this transition can occur. Nevertheless, the ultimate responsibility for diabetes management rests with the family and the child.
- 5.3 It is important that the school develops awareness for all staff, that each student has a Plan of Care and that there are clear emergency procedures for all teachers who have a child with diabetes.

#### 6. General Information

- 6.1 School-aged children with Type 1 diabetes spend 30 to 35 hours a week in the school setting. This represents more than half of their waking weekday hours. School personnel can support a student with diabetes by learning about the disease and by having frequent, open communication with parent(s)/caregiver(s) and the child. This will help to reduce apprehension and anxiety in the child and parent(s)/caregiver(s), provide a positive attitude toward the child's participation in school activities and contribute to the student's well-being.
- 6.2 When the blood glucose is in proper balance, the child or adolescent will behave and achieve as others. In terms of academic performance, physical activity, behaviour and attendance at school, the teacher's expectations of the student should be the same as for a child who does not have diabetes.

#### 7. Emergency Versus Non-Emergency

It is important to distinguish between non-emergency and emergency situations.

- 7.1 **Non-Emergency Situations**  
In non-emergency situations, including routine care, students with diabetes or their parent(s)/caregiver(s) will administer the insulin injections. Diabetic nursing support may be an option for newly diagnosed and younger students.
- 7.2 **Emergency Situations (Life Threatening)**  
In emergency, life-threatening situations, where a student suffering from low blood sugar is unable to self-administer the appropriate treatment because they are unresponsive or unconscious, the response of school staff shall be a 911 call for Emergency Medical Services. Glycogen injections (Glucagon) in these situations will not be administered by school staff. Emergency Glucagon in a **noninvasive format** (i.e. Baqsimi nasal spray) may be administered by school staff when prescribed by a doctor and when training and direction have been provided.

- 7.2.1 Emergency Medical Services personnel require the following, if available:
- Student's name;
  - Date of birth;
  - Health Number;
  - Emergency contact information;
  - Medical history – available on the Plan of Care;
  - Observations about what the student was doing prior to the event;
  - Medications and any treatment prior to EMS arrival.

## 8. Definitions: Three Main Types of Diabetes

### 8.1 Type 1 Diabetes

Type 1 Diabetes usually affects children and adolescents and is the focus of this document. In Type 1 Diabetes, the pancreas is unable to produce insulin and injections of insulin are essential.

### 8.2 Type 2 Diabetes

Type 2 Diabetes comprises 90% of diabetes in Canada. It usually develops in adulthood, although recently increasing numbers of children in high-risk populations are being diagnosed. In Type 2 Diabetes, the pancreas may produce some insulin, but the body is unable to use the insulin that is produced effectively.

### 8.3 Gestational Diabetes

Gestational Diabetes affects 4% of pregnant women and usually goes away after the baby is born.

## 9. Issues of Concern

### 9.1 Adjustment Period After Diagnosis

When a child has recently been diagnosed with diabetes, the parent(s)/caregiver(s) usually feel a variety of emotions. The fact that diabetes is a serious condition with significant complications and that their child will have to live with the complexities of its management for the rest of their lives or until a cure is found, is quite overwhelming. The first year after diagnosis may be difficult while the family and student work with the Diabetes Health Care Team to adjust to all they have to learn and do to cope with life with diabetes.

### 9.2 Hypoglycemia (Low Blood Glucose) – An Emergency

Hypoglycemia is an emergency situation caused by LOW blood sugar. The situation can develop within minutes of the child appearing healthy and normal.

#### 9.2.1 Mild to Moderate hypoglycemia

Common in the school setting. School personnel need to know the causes, symptoms and treatment of hypoglycemia. School personnel can misinterpret symptoms of mild to moderate hypoglycemia. The nature of the emergency is often misunderstood, placing a student at serious risk. The Signs and Symptoms of Hypoglycemia chart in this section is a guide to be consulted.

#### 9.2.2 Severe Hypoglycemia

Occurs in 3-8/100 students with diabetes per year and occurs most commonly at night. Severe hypoglycemia is rare in the school setting. In severe hypoglycemia, the student may be unconscious or conscious. There may be seizures. If the student is unconscious, having a seizure or unable to swallow, **do not** give food or drink. Roll the child on their side and seek medical assistance immediately. When prescribed by a physician, emergency glucagon in a nasal spray format (i.e. Baqsimi) may be administered at this time.

Causes	Symptoms	Treatment
<p>Low blood glucose usually develops as a result of one or more of the following:</p> <ul style="list-style-type: none"> <li>insufficient food due to delayed or missed meal;</li> <li>more exercise or activity than usual without a corresponding increase in food and/or;</li> <li>too much insulin.</li> </ul> <p>Low blood sugar is below 4 mmol/l on a blood glucose meter. Symptoms may not always be present.</p>	<p>A person who is experiencing hypoglycemia will exhibit some of the following signs:</p> <ul style="list-style-type: none"> <li>cold, clammy or sweaty skin;</li> <li>pallor;</li> <li>shakiness, lack of coordination (i.e., deterioration in writing or printing skills);</li> <li>irritability, hostility, and poor behaviour;</li> <li>a staggering gait;</li> <li>eventually fainting and unconsciousness.</li> </ul> <p>In addition the child may complain of:</p> <ul style="list-style-type: none"> <li>nervousness;</li> <li>excessive hunger;</li> <li>headache;</li> <li>blurred vision and dizziness;</li> <li>abdominal pain and nausea.</li> </ul>	<p>It is imperative at the first sign of hypoglycemia you give sugar immediately.</p> <p>If the parent(s)/caregiver(s) have not provided you with more specific instructions which can be readily complied with, give one of the following:</p> <ul style="list-style-type: none"> <li>4 oz./125 ml of fruit juice;</li> <li>2 teaspoons/10 ml or 2 packets of sugar;</li> <li>2 glucose tablets;</li> <li>2 teaspoons/10 ml honey.</li> </ul> <p>After treating with sugar, wait 15 minutes, retest blood glucose. If meal or snack is longer than 1 hour away, add small snack (10-15g of starch with protein i.e., granola bar, cheese/crackers).</p>

When symptoms of low blood glucose are apparent, sugar can be given immediately. If possible (and safe to do so) the student's blood glucose levels should be confirmed using their regular testing procedures (i.e. finger poke or continuous glucose monitor). In terms of academic performance, physical activity and attendance at school, the teacher's expectations of students should be the same as if they did not have diabetes, unless the student's blood glucose levels are outside of their optimal range.

### 9.2.3 Notes

- It may take some coaxing to get the child to eat or drink but you must insist.
- If there is no noticeable improvement in about 10 to 15 minutes, repeat the treatment. When the child's condition improves, they should be given solid food. This will usually be in the form of the child's next regular meal or snack.
- Until the child is fully recovered, they should not be left unsupervised. Once the recovery is complete, the child can resume regular class work. If, however, it is decided that the child should be sent home, it is imperative that a responsible person accompany them.
- Parent(s)/caregiver(s) should be notified of all incidents of hypoglycemia. Repeated low blood glucose levels are undesirable and unnecessary and should be drawn to the parent(s)/caregiver(s)'s attention so that they can discuss the problem with their doctor.
- Do not give food or drink if the child is unconscious. Roll the child on his/her side and seek medical assistance immediately.**

## 9.3 Glycogen (Glucagon)

9.3.1 Glycogen is an emergency drug that is used to treat hypoglycemia. It should only be used under the direction of a physician. Glycogen is a naturally occurring substance produced by the pancreas and it enables a person to produce his or her own blood glucose to correct a hypoglycemic state.

- 9.3.2 School staff should be educated about the potential for hypoglycemia in a student with diabetes, however, school staff will not administer glycogen injections.
- 9.3.3 School staff may administer noninvasive formats of glycogen (i.e. Baqsimi –nasal spray) when prescribed by a physician and when training/demonstration of administration has been provided.
- 9.3.4 In an emergency situation, where a student is severely hypoglycemic, trained EMS paramedics may do a glycogen injection. It is important to note that hypoglycemia presenting in a school setting would not normally be an immediate life-threatening condition, ambulances with advanced care paramedics can respond immediately. Paramedics will make the proper assessment and provide treatment, as required. For specific guidelines for sports, field trips and other co-instructional activities, please see section 13.
- 9.4 **Hyperglycemia – High Blood Glucose**
- 9.4.1 Hyperglycemia is not usually an emergency condition requiring immediate treatment, however, prevention of hyperglycemia is key to delaying or avoiding serious complications. The parent(s)/caregiver(s) and the child's physician need to be aware of persistent hyperglycemia.
- 9.4.2 **High Blood Glucose**  
Children with diabetes sometimes experience high blood glucose. The earliest and most obvious symptoms of high blood glucose are increased thirst and urination. If noticed, these should be communicated to the parent(s)/caregiver(s) to assist them in long-term treatment. They are not emergencies that require immediate treatment.
- 9.4.3 **Causes**  
High blood glucose often develops as a result of one or more of the following:
- Too much food
  - Less than the usual amount of activity
  - Not enough insulin;
  - Illness
- 9.4.4 In the classroom, the behaviour of students with hyperglycemia may be taken for misbehaviour (i.e., frequent requests to go to the bathroom or requests for frequent drinks).
- 9.5 **Interference with School Activities**
- 9.5.1 When blood sugar levels are outside the target range (i.e., hypoglycemia or hyperglycemia) the student's learning, behaviour and participation may be affected.
- 9.5.2 Hyperglycemia and hypoglycemia may also affect the student's behaviour however, having diabetes is not an excuse for inappropriate behaviour.

## **10. Blood Glucose Monitoring: Testing Blood Sugar**

- 10.1 **Why do it?**  
Monitoring of blood glucose is mandatory for achieving the target blood sugar levels. Blood sugar levels will change with eating, physical activity, stress or illness. Sometimes the blood sugar fluctuates for no apparent reason.
- 10.1.1 **Knowing blood sugar levels will:**
- Help the student understand the balance of food, insulin and exercise
  - Help the doctor adjust insulin and food
  - Help avoid the consequences of hypoglycemia and hyperglycemia
  - Monitoring will give early warning without waiting for the onset of symptoms

## 10.2 How Blood Glucose is Monitored?

- 10.2.1 Blood sugar levels can be checked using a finger poke method which requires the use of a lancet, test strips and a meter. Students with diabetes work towards independence in conducting their own finger poke checks with the support of family members, healthcare professionals and the school diabetic nurse (as available/appropriate).
- 10.2.2 Blood sugar levels can also be checked using a Continuous Glucose Monitor (CGM). These devices automatically provide readings every few minutes all day and night. A sensor is inserted underneath the skin, where it measures “interstitial glucose”, or the glucose found in the fluid between cells. The sensor sends this information wirelessly to a monitor either continuously or when the sensor is scanned with a monitor.
- 10.2.3 The monitor may be on a student’s insulin pump, phone or it may be a separate device that the student keeps in a backpack, pocket or somewhere else nearby. Not all students who use a CGM will have an insulin pump.
- 10.2.4 A CGM does not replace traditional blood sugar checking. If finger poke checks are needed, details as to when will be documented in the student’s Plan of Care Plan.
- 10.2.5 If the CGM and meter results differ, the meter reading is considered the most reliable.
- 10.2.6 If a student uses a CGM, detailed instructions will be in the Plan of Care.

## 10.3 Ketone Monitoring

This monitoring is not usually done daily as with blood glucose testing; however, some students with diabetes monitor their ketone levels according to guidelines prescribed by their healthcare professional. Teachers and other school personnel have no responsibilities in this procedure.

10.3.1 it is important for the staff:

- To understand and accommodate the student who needs to monitor ketones
- To call the parent(s)/caregiver(s) immediately if any student with diabetes becomes ill, especially with vomiting

## 10.4 What Teachers Should Know about Ketones

- 10.4.1 Hyperglycemia (see High Blood Glucose) may result in ketones in the blood and urine.
- 10.4.2 In hyperglycemia, glucose stays in the blood and the body cannot use it for fuel. The body then breaks down fat for fuel. This process produces ketones as a by-product. If ketone levels continue to rise, the blood becomes acidic.
- 10.4.3 Rising ketone levels can spiral into the potentially dangerous condition known as Diabetic Ketoacidosis (DKA).
- 10.4.4 Left untreated DKA can kill.
- 10.4.5 DKA usually develops over several days, but frequent vomiting can cause the ketones to build up in just a few hours.
- 10.4.6 The flu and stomach viruses are common contributors to DKA.
- 10.4.7 Students on insulin pumps develop DKA more quickly than if they were using injected insulin.
- 10.4.8 High blood glucose plus ketones may mean that the student needs more insulin than their usual regimen.

- 10.4.9 If ketones are detected during the school day, the school will contact the parent(s)/caregiver(s) to pick up their child to allow for continued monitoring from home and to follow up with their healthcare providers as needed.

## 11. Insulin

11.1 **Insulin** is a hormone produced by the pancreas that controls the level of glucose in the blood. Insulin helps the glucose get into the cells so it can be used for energy. The pancreas is a very complex organ that constantly adjusts insulin levels, minute to minute, to keep the blood glucose in a healthy range.

People with type 1 diabetes **do not produce any insulin**, so it must be replaced by means of insulin injections (syringe or pens) or by an insulin pump.

Insulin amounts are dependent upon food intake, activity levels, stress and other factors. The formula for determining insulin dose is specific to each individual student.

Insulin management is individualized and determined by parent(s)/caregiver(s) and their healthcare professionals. School staff may not administer nor adjust insulin.

## 12. Student Diabetes Management: Roles and Responsibilities

### 12.1 Principal Roles & Responsibilities

#### School Principal shall:

- 12.1.1 Each June obtain a list of students who have Type 1 Diabetes from all feeder schools
- 12.1.2 Identify students who have Type 1 Diabetes through school registration, health forms
- 12.1.3 Generate a Plan of Care and Alert Form by ensuring parent(s)/caregiver(s) provide all pertinent medical information
- 12.1.4 Request medical documentation to confirm diagnosis **as needed** (i.e. letter from physician, evidence of a prescription)
- 12.1.5 **Contact School Health Support Services (i.e. Home and Community Care Support Services - HCCSS) to inquire about possible diabetic nursing support for newly diagnosed and younger students**
- 12.1.6 **Provide a safe, hygienic location to conduct diabetic management**
- 12.1.7 Provide each teacher (at the beginning of each semester) with a copy of the Plan of Care - Alert Form for each student. The Plan of Care Alert Form should be stored in a readily accessible location so teachers and occasional teachers can have ready access, but not easily viewed by students, parent(s)/ caregiver(s) or the general public.
- 12.1.8 Maintain a file for each Plan of Care - Alert Form for students with diabetes. The file must contain a copy of all of the forms mentioned above.
- 12.1.9 Train the Emergency Response Team to provide further support to the student with diabetes in the event of a medical emergency
- 12.1.10 **Determine the need for general all staff in-service on diabetes and/or provide resources as requested**
- 12.1.11 **Post the Plan of Care Alert Form** to ensure that all staff can identify these students. To maintain the student's personal privacy, these forms must not be easily visible to other students, parent(s)/ caregiver(s), or volunteers.

## 12.2 Classroom Teacher(s)/Support Staff Roles and Responsibilities

### Teacher and/or staff member shall:

- 12.2.1 Ensure a recent copy of the Plan of Care Alert Form is readily accessible in an organized, prominent and accessible format for occasional teachers or any other support staff.
- 12.2.2 Speak to each student and/ or parent(s)/ caregiver(s) to gain insight into the specific information in their diabetes and their management plan
- 12.2.3 Provide a supportive and inclusive environment for self-care practices and routines**
- 12.2.4 Develop open lines of communication with the student and encourage the student to inform you when he/ she feels the first symptoms or a general feeling of malaise.
- 12.2.5 Develop open lines of communication with the parent(s)/ caregiver(s) (i.e., phone calls, a communication book, etc.) as necessary
- 12.2.6 Ensure that the prescribed medication (i.e. diabetic kit) is taken on field trips
- 12.2.7 Provide a safe environment for the student, particularly during nutrition/ lunch breaks, class trips and special activities.
- 12.2.8 Support self-care practices and routines by following the established protocols outlined in the student's Plan of Care**

### Note:

- **School staff will not perform invasive procedures (i.e. finger poke checks, glucagon injections)**
- **School staff will not make medical judgements nor perform medical tasks (i.e. determine carb counts for food intake, calculate carb/insulin ratios, administer/adjust insulin doses)**

## 12.3 Parent(s)/Caregiver(s) Roles and Responsibilities

### Parent(s)/Caregiver(s) shall:

- 12.3.1 Provide a confirmation of diagnosis when requested (letter from the physician or evidence of prescription)
- 12.3.2 Provide all medical supplies, equipment, medications (i.e. insulin, emergency glucagon), extra snacks, and fast acting sugars required for diabetes management at school.**
- 12.3.3. Replenish supplies at the request of the school**
- 12.3.4 Label all snacks and food with appropriate carb counts (as needed)**
- 12.3.5 Collaborate with the school to complete the required WRDSB medical Plan of Care.
- 12.3.6 Help their child develop advocacy skills, recognize symptoms/triggers and communicate when feeling unwell to a staff member.

**If a student is not progressing towards independence in their diabetic care, then it may be due to other factors, such as language, cognitive ability, maturity level, behavioural issues and psychosocial barriers. This calls for communication between parent(s)/caregiver(s), teachers and possibly other professionals.**

## 13. Sports and Co-Instructional Activities

- 13.1 Children with diabetes should be encouraged to participate in as many activities as they choose. They should not be excluded from school field trips. School sports and other co- instructional activities can promote self-esteem and a sense of well-being.
- 13.2 For children who wish to participate in vigorous physical activity, good planning is essential, so that the blood glucose balance is maintained. The major risk of unplanned vigorous activity is low blood glucose. Eating additional food can prevent this.



- 13.2.1 Parent(s)/caregiver(s) should be notified of special days that involve extra activity so that they can ensure that the child has extra food to compensate.
- 13.3 Sports or other activities that take place during mealtime require extra planning. Timing of meals and snacks may be varied and the insulin dose adjusted so that children with diabetes can safely participate.
- 13.3.1 It is advisable that both the parent(s)/guardians and the child with diabetes carry some form of fast-acting sugar such as glucose tablets or juice boxes on outings or sports events.
- 13.4 It is critical that the child's teachers, especially Physical Education Teachers and Coaches, are familiar with the symptoms, treatment and prevention of hypoglycemia and hyperglycemia. It is also important for teachers to communicate in advance, changes in the student routines and schedules that may impact insulin testing and insulin levels (i.e., unplanned vigorous physical activity not normally in a student timetable).

## 14. Resources

- 14.1 Appendix A – Hypoglycemia Emergency Action Flowchart

Canadian Diabetes Association  
<https://www.diabetes.ca/>

Diabetes at School  
<https://diabetesatschool.ca/>

Diabetes Education Centres in Waterloo Region:

Cambridge Memorial Hospital  
Diabetic Nurse Educator  
Telephone: (519) 621-2333  
Ext. 2345

Grand River Hospital  
Diabetes Nurse Educator  
Telephone: (519) 749-4300  
Ext. 2491



# HYPOGLYCEMIA EMERGENCY ACTION FLOWCHART (Low Blood Sugar)

