



Diabetes Management in Maine Schools

Evidence-Based Guidelines for Pre K
and School-Aged Students



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Maine Revised Statutes [Title 20-A section 6403-A \(5\)](#) directs the Commissioner to issue guidelines on the provision of school health services and health-related activities (1985 & rev. 2019). This guide, published by the Maine Department of Education, offers guidelines for school health services and diabetes management.

While this document aims to summarize current resources for school nurses, it does not replace clinical nursing judgment in their practice. The school nurse is responsible for complying with all federal, state, and local laws, rules, regulations, and ordinances, as well as relevant standards of practice.

Introduction

Diabetes is a chronic health condition that can lead to complications during the school day. School nurses are the hub for care management for students with chronic health conditions. This management includes collaborating with students and family members, care coordination with health care providers, facilitating team meetings related to student care, coordinating training for identified staff to provide emergency care, and maintaining confidential documentation (National Association of School Nurses, 2022). It is important to implement a comprehensive diabetes care plan and to share necessary information with staff members and coaches involved with the student, ensuring appropriate care throughout the school day, on the bus, on field trips, in after-school activities, and at athletic events. The purpose of this resource guide is to assist school nurses, educators, and school staff in helping students with diabetes participate fully and meet goals for glucose control and stability, academics, physical education, and extracurricular activities. This can be accomplished through clinical assessments, monitoring, nutrition, exercise, staff/student education, and risk reduction measures (National Association of School Nurses, 2022).

This document provides up-to-date information collected after review of the most current content available from the National Institutes of Health (NIH), American Diabetes Association (ADA), and National Association of School Nurses (NASN) to support the safest care practices for students with diabetes in Maine schools. NASN's Type 1 Toolkit, [School Nursing Evidence-Based Clinical Practice Guideline: Students with Type 1 Diabetes](#) contains several sample policies and procedures, care plans, training slides, visual representations of content, as well as professional development opportunities.

Legislation

Federal laws mandate that all students attending public schools can fully participate during the school day and during extracurricular school activities, regardless of disability (U.S. Department of Education, n.d.; American Diabetes Association, n.d.). The level of self-management of diabetes during a school day is determined on an individual basis in collaboration with the student, parent, and health care provider (American Diabetes Association, n.d.-b). In Maine,

schools may stock undesignated ready-to-use glucagon in a secure location for a student with a known diagnosis of diabetes if their prescribed glucagon is not available or is expired (Maine Revised Statutes, Title 20-A § 6307-A, 2023). A diabetes medical management plan (DMMP) provided by the physician will guide the development of the 504 plans, outlining the accommodations the student will need with parental input and consent (American Diabetes Association, n.d.-b) The school administrative unit has a legal obligation to ensure that these accommodations are provided as described in the plan. [ADA Sample 504 Plan](#)

- [Americans with Disabilities Act \(ADA\)](#)
- [Individuals with Disabilities Education Act \(IDEA\)](#)
- [Family Educational Rights and Privacy Act \(FERPA\)](#)
- [Free and Appropriate Public Education \(FAPE\)](#)
- [Section 504 of the Rehabilitation Act of 1973](#)
- [Frequently Asked Questions About Section 504 and the Education of Children with Disabilities](#)

Role of the School Nurse in Diabetes Management

As with other health conditions in schools, the school health team plays a central role in student safety. Diabetes management requires a team approach. The school nurse collaborates with the student, family, and health care providers, along with school staff, to help meet and maintain student goals at school (National Association of School Nurses, 2021). For more information about assembling school health teams, refer to the Maine guidelines for school health services. Complications of diabetes can be dramatically reduced or prevented with intensive glucose control. An individualized plan of care must be developed for each student, allowing the student to safely and fully participate in all school activities. The school nurse works to improve the health and safety of school-aged children with diabetes by utilizing and successfully implementing the guidelines provided within this document (National Association of School Nurses, 2021).

- Improved management of diabetes
- Decreased time spent out of the classroom
- Improved student academic success
- Full participation in all school activities
- Decreased hospitalizations
- Improved quality of life
- Improved mental well-being

School Nursing Practice Framework™
Supporting Students to be Healthy, Safe and Ready to Learn



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Delegation by the School Nurse

Delegation of health-related tasks/services must be determined on an individual basis. Factors to be considered for delegation include safety, student acuity, stability of the condition of the student, training, capability of the staff, and nature of the task. The school nurse must exercise professional judgment in determining delegation or coordination/oversight activities. For more information, visit [Delegation, Coordination, & Oversight](#).

Family Engagement

As a school nurse, it is essential to have a comprehensive understanding of the diverse student population, including cultural, ethnic, and religious considerations (National Association of School Nurses, 2022). The school nurse works towards health equity within the community in these ways:

- Building relationships and collaborating
- Identifying student and family needs
- Accepting and celebrating different cultures
- Exploring personal biases and beliefs
- Validating student and family experiences

Emergency Preparedness

School nurses consider students with chronic health conditions when preparing for an emergency. The following resources can assist schools in preparation, particularly for students with diabetes:

[American Academy of Pediatrics: Disaster Preparedness for Children and Youth with Special Health Care Needs](#)

[American Diabetes Association: Emergency Lockdown Preparation](#)

[Centers for Disease Control and Prevention: New Beginnings Mini-Lesson: Emergency Preparedness](#)

Professional Development

The school nurse is accountable for the quality of health care they provide and for the coordination of training, as well as oversight of unlicensed staff performing health tasks. When educating school staff, the school nurse employs a three-tier training model similar to an educator's [Multi-Tiered Systems of Supports \(MTSS\)](#). Tier one training is for all staff and provides general information about diabetes, creating a safe, positive school culture that supports students in being ready to learn and participate in all school activities (National Association of School Nurses, 2022). Tier two training is designed for staff members who have direct responsibility for a student with diabetes and offers more detailed guidance on staff roles and responsibilities, including an overview of emergency care plans and appropriate responses to diabetes-related emergencies. Tier three training is intended for designated staff who

provide hands-on support, assist the school nurse, or work in the health office, and includes instruction on student-specific diabetes care. The preparation of the health plan will help ensure the quality of care and a safe learning environment. The nurse has the responsibility of counseling and coordinating with the student, parent, physician, teachers, transportation personnel, and coaches.

While educating school staff about diabetes care, it is recommended to utilize resources provided by professional organizations, being sure to consider the following:

- Specific device information, safe handling, and contact information for support
- How to suspend an insulin pump, review history, and charge or change batteries
- How to give a bolus with a meal, a correction, or a combination
- When to check ketones
- When and how to contact the school nurse, family, or healthcare provider

[CDC: Diabetes Self-Management Education and Support \(DSMES\) Toolkit](#)

[ADA Find a Diabetes Education Program](#)

[NASN Type 1 Diabetes TOOLKIT](#)

[ADA Diabetes Care Tasks in School: Training](#)

Care Plans at School

The school nurse is responsible for providing a care plan for the student with diabetes that includes basic management, emergency management, and situations specific to the student, such as transportation to and from school (National Association of School Nurses, 2022). Decisions regarding parameters for riding the bus are controlled locally, in conjunction with physician orders, parental agreement, and school administrative unit procedures. Nurses may print and share the *Important Information for all School Staff* poster found in [Appendix A](#). The following are some examples of resources.

[NASN Diabetes Resources](#)

[ADA Diabetes Medical Management Plan](#)

[NIH Individualized Health Care Plan \(IHP\)](#)

[NDEP Hyperglycemia Emergency Care Plan](#)

[NDEP Hypoglycemia Emergency Care Plan](#)

Additional Resources

National Diabetes Education Program

[Helping the Student with Diabetes Succeed: A Guide for School Personnel](#)

[Continuous Glucose Monitoring Video](#)

Support for Parents

<https://www.diabetesresearch.org/PEP-Squad>

Examples of Food Applications

These tools help with calculating carbohydrates and nutritional information for foods

<https://www.calorieking.com/us/en/foods/search>

<https://figwee.com/>

Diabetes Mellitus Overview

Diabetes mellitus (DM) is a spectrum of metabolic diseases with pathology in glucose utilization due to beta cell destruction, insulin resistance, dysregulation of insulin release, or injury to the pancreas (Yameny, 2025; Sapra & Bhadari, 2023). Glucose is the body's primary source of energy. Insulin, a hormone produced in the pancreas, enables cell membranes to allow glucose to enter for utilization or storage. The functioning pancreas uses alpha cells and beta cells located within the islets of Langerhans to regulate glucagon and insulin production based on glucose levels, often impacted by food intake, stress, and activity. In the absence of insulin, blood glucose levels become elevated. If left untreated, blood glucose levels will continue to rise, causing excess glucose to be filtered and excreted from the kidneys as waste. This causes frequent urination and extreme thirst, often the first noticeable signs of diabetes, leading to dehydration and weight loss. Over time, elevated glucose levels can lead to serious health problems such as heart disease, vision loss, and kidney disease. There are many types of DM, each with its own physiological processes and associated complications. Some types of DM the school nurse may encounter include, but are not limited to, type 1, type 2, type 3c, steroid-induced, and gestational diabetes. According to the [2023-2024 Maine School Health Annual Report](#) data, 3.43/1000 students have type 1 diabetes, while 0.52/1000 students have type 2.

Type 1 Diabetes (T1D)

T1D accounts for approximately 5-10% of people with DM (U.S. Centers for Disease Control & Prevention, 2024). T1D is a chronic autoimmune disease in which the immune system attacks and destroys the insulin-producing beta cells in the pancreas (Khine & Quandt, 2025; American Diabetes Association, n.d.-d). Traditionally, T1D has been considered a diagnosis of younger individuals, but many can and are diagnosed as adults (American Diabetes Association, n.d.-d). Scientists are unsure of the cause of T1D; however, it is thought that a combination of genetic predisposition and environmental triggers, such as viruses, causes an autoimmune response (Yameny, 2025).

While clinical symptoms may appear to develop rapidly, long before clinical symptoms appear, islet autoantibodies appear and can be detected, allowing for early detection and intervention (Khine & Quandt, 2025; American Diabetes Association Professional Practice Committee for Diabetes, 2026b). For many individuals, the first indication of disease is clinical symptoms including persistent hyperglycemia, excessive thirst, frequent urination, fatigue, weight loss, and diabetic ketoacidosis. Once diagnosed, individuals may experience a honeymoon phase, where pancreatic beta cells continue to produce some insulin (American Diabetes Association, n.d.-d; American Diabetes Association Professional Practice Committee for Diabetes, 2026b).

The honeymoon phase can last from a week to a year, depending on the individual, but the remaining insulin-producing beta cells will fail. Individuals with T1D maintain homeostasis by using insulin replacement therapy, proper nutrition, and physical activity. Extended periods of hyperglycemia, even if not at critical levels, can lead to heart, kidney, nerve, and vision impairment.

While T1D cannot be prevented, research on the islet antibodies as a predictive biomarker has led to screening initiatives (Khine & Quandt, 2025). Children who participate in screening programs, allowing for early identification and interventions, exhibited lower rates of DKA, HbA1c, fasting glucose, and ketonuria at stage three T1D diagnosis or clinical diagnosis. Additionally, new pharmacological therapy, such as teplizumab, has been shown to delay the onset of clinical T1D.

Did you know?

[Trial.net](#) offers free T1D risk screening for individuals of first-degree or second-degree relatives diagnosed with T1D. [ASK: Autoimmunity Screening for Kids](#) offers health screenings for T1D and Celiac Disease for all U.S. children ages 1-17, regardless of family history of either disease.

Did you know?

Polycystic ovary syndrome (PCOS) affects 1 in 10 teens. Insulin resistance is related to PCOS, a risk factor for developing T2D.

Type 2 Diabetes (T2D)

T2D is the result of an imbalance between the body's insulin production and the inability to utilize insulin properly (Yameny, 2025; Sapra & Bhadari, 2023). Early in the disease process, insulin resistance occurs, and the beta cells compensate by producing more insulin. Eventually, the beta cells become dysfunctional and decline in mass, and the body is no longer able to compensate, resulting in elevated glucose levels. A complex combination of genetics and lifestyle contributes to the risk factors for developing T2D, including obesity, family history, inactivity, history of gestational diabetes, polycystic ovary syndrome, income levels, and some ethnicities (Sapra & Bhadari, 2023; Mayo Foundation for Medical Education and Research, n.d.).

Historically, the onset of T2D has occurred primarily in adults; however, lifestyles resulting in obesity have led to increased rates of T2D in children, teens, and young adults (Sapra & Bhadari, 2023). Individuals with T2D may be asymptomatic, but when symptoms do present, they are similar to the symptoms of T1D. Acanthosis nigricans is an additional symptom associated with insulin resistance, appearing as a thick, dark velvety skin often in the folds of the back of the neck, armpits, and groin (Mayo Foundation for Medical Education and Research, n.d.). Individual treatment plans may consist of both pharmacological and non-pharmacological lifestyle changes that are important to avoid microvascular and macrovascular complications to the eyes, brain, heart, kidneys, feet, and nerves (American Diabetes Association Professional Practice Committee for Diabetes, 2026a). Screening for diabetes in youth and adolescents is considered after the onset of puberty or at 10 years of age, if overweight or obese, and if there is at least one other risk factor; normal screenings should be rechecked every 2 years at a minimum.

Additional Types of Diabetes

Beyond the commonly known types one and two diabetes, there are multiple other types of diabetes recognized. Groups are based on cause, genetics, or associated medical conditions. Below are a few of the other types of diabetes that may be seen in schools.

- [Type 3c Diabetes](#)
- [Steroid-Induced Diabetes](#)
- [Gestational Diabetes](#)
- [Maturity Onset Diabetes of the Young](#)

Metabolic Disruptions

Hyperglycemia

In an individual diagnosed with diabetes, hyperglycemia is characterized by a blood glucose level exceeding 180 mg/dL within one to two hours after a meal (Cleveland Clinic, 2023a; Sapra & Bhadari, 2023). Signs of hyperglycemia may include increased thirst and/or hunger, frequent urination, headache, and blurred vision (Cleveland Clinic, 2023a). When blood glucose levels are frequently elevated or remain high over an extended period, an individual may develop symptoms such as fatigue, weight loss, vaginal yeast infections, skin infections, and slow healing of wounds (Cleveland Clinic, 2023a; Sapra & Bhadari, 2023; Yameny, 2025). Long-term effects of chronic hyperglycemia are increased morbidity and mortality due to macrovascular and microvascular complications, including retinopathy, nephropathy, neuropathy, gastroparesis, heart disease, and stroke. Hyperglycemia should be treated following the individual's diabetes medical management plan (DMMP). Untreated hyperglycemia can result in a hyperglycemic crisis, including diabetic ketoacidosis (DKA) or hyperosmolar hyperglycemic state (HHS) (Dhatariya, Mustafa, & Stathi, 2025). DKA and HHS are life-threatening emergencies requiring urgent treatment.

Diabetic Ketoacidosis (DKA)

DKA is a serious, potentially life-threatening complication in individuals with diabetes, most common in T1D (Dhatariya, Mustafa, & Stathi, 2025; Sapra & Bhadari, 2023; Yameny, 2025). DKA develops from an absolute deficiency of insulin, which prevents cellular glucose uptake, together with excess counter-regulatory hormones (including glucagon, catecholamines, cortisol, and growth hormone), leading to hyperglycemia. The body compensates by breaking adipose tissue down into ketones as an alternative energy source, resulting in systemic acidosis and fruity-scented breath. Potentially life-threatening symptoms include the following:

- polyuria
- polydipsia
- nausea/vomiting
- tachypnea
- tachycardia
- altered mental status
- Kussmaul respirations (deep, rapid breathing)

Treatment includes blood glucose monitoring, checking ketones, hydrating with water, and eating normally (Sapra & Bhadari, 2023; Cleveland Clinic, 2024). Untreated DKA could lead to hospitalization due to dehydration, electrolyte imbalances, fluid in the lungs, cardiac arrest, kidney and other organ damage, and coma. **Do NOT exercise**, as this can cause blood glucose and ketone levels to elevate further (Cleveland Clinic, 2024).

The most common precipitating factors for DKA include inadequate insulin dosing/pump failure, infection/illness, medical/surgical emergencies, medications such as glucocorticoids and SGLT-2 inhibitors (Dhatariya, Mustafa, & Stathi, 2025; Cleveland Clinic, 2024). Depending on the underlying cause, DKA can develop within hours to two days.

Hyperosmolar Hyperglycemic State (HHS)

HHS is a serious, potentially life-threatening complication in individuals with diabetes, most commonly associated with T2D (Sapra & Bhadari, 2023; Dhatariya, Mustafa, & Stathi, 2025). Unlike DKA, HHS is distinguished by the absence of ketones and metabolic acidosis. HHS is a result of insulin deficiency; however, residual insulin is enough to prevent the breakdown of adipose tissue into ketones but not enough to regulate blood glucose. Initial symptoms include polydipsia, polyuria, and weight loss. High blood sugar continues because the body makes more glucose and does not take up glucose well into its tissues. When blood sugar becomes very high, it causes excess urination, which leads to loss of fluids and dehydration. As HHS persists, renal filtration declines and osmolality increases, the body is not able to compensate, leading to life-threatening signs and symptoms, including the following:

- severe dehydration
- tachypnea

- tachycardia
- confusion
- focal neurological deficits
- lethargy
- seizures
- coma

HHS is a medical emergency likely requiring hospitalization (Cleveland Clinic, 2023b; Dhatariya, Mustafa, & Stathi, 2025). Treatment includes intravenous fluids, electrolytes, and insulin. Additionally, the underlying condition causing the HHS should be treated.

The most common precipitating causes for HHS include infections, stopping diabetes medications, medications such as corticosteroids and thiazide diuretics, and cardiovascular conditions such as stroke, pulmonary embolism, or heart attack (Cleveland Clinic, 2023b; Dhatariya, Mustafa, & Stathi, 2025). Unlike DKA, HHS has a gradual onset of several days to weeks.

Hypoglycemia

Hypoglycemia is common in individuals with diabetes; it occurs when blood glucose drops too low, depriving cells of the fuel needed to function (Mayo Foundation for Medical Education and Research, 2023; National Institute of Diabetes and Digestive and Kidney Health, 2021). For most individuals with diabetes, 70mg/dl or below is considered hypoglycemic. Hypoglycemia is most likely to occur in individuals with T1D who take insulin or diabetes medications, miss meals, engage in strenuous exercise, or are ill. Each student may experience or exhibit symptoms at varying blood glucose levels. Signs and symptoms include looking pale, tremors, hunger, sweating, headache, nausea, irregular heartbeat, irritability, lack of concentration, dizziness, and/or tingling of the lips. Hypoglycemia requires immediate treatment to restore glucose levels. Untreated hypoglycemia can lead to a life-threatening emergency as blood glucose levels continue to drop, causing severe symptoms such as confusion, loss of coordination, slurred speech, blurred vision, unresponsiveness, seizures, and even death. Hypoglycemia is treated with simple carbohydrates such as glucose gel, fruit juice, and honey; however, severe hypoglycemia is treated with glucagon. The school nurse should consult the individual student's DMMP for student-specific criteria and treatment of hypoglycemia.

If the DMMP is not available, a commonly suggested treatment is following the 15-15 rule if the blood sugar is below 70mg/dl (American Diabetes Association, n.d.-c).

Hypoglycemia unawareness is a complication that occurs in about 25% of people with T1D when repeated hypoglycemia episodes blunt the body's warning signals (Mayo Foundation for Medical Education and Research, 2023; National Institute of Diabetes and Digestive and Kidney Diseases, 2023). When this occurs, the individual is at higher risk of severe, life-threatening hypoglycemia. These students may benefit from blood glucose awareness training, modified treatments, and/or changes to blood glucose level goals. In [Appendix B](#), a printable poster outlines diabetes management for hypoglycemia and hyperglycemia.

15-15 RULE

For a blood glucose level between 55-69mg/dl

Eat 15 grams of carbohydrates

Recheck in 15 minutes

Pharmacological Treatment

An individual without diabetes produces insulin and glucagon in response to activity, stress, illness, and food intake to maintain homeostasis. Individuals diagnosed with diabetes experience a spectrum of dysregulation of glucose utilization due to beta-cell destruction, insulin resistance, dysregulation of insulin release, or injury to the pancreas (Yameny, 2025; Sapra & Bhadari, 2023). Many individuals diagnosed with diabetes will experience metabolic disruptions (hyperglycemia, DKA, HHS, hypoglycemia) without the assistance of pharmacological interventions. Additionally, some pharmacological interventions can delay the onset of diabetes (Khine & Quandt, 2025).

Insulin

Insulin, a hormone produced in the pancreatic beta cells, acts as a key to the cell membrane, allowing glucose to enter for utilization or storage (Sapra & Bhadari, 2023). The functioning pancreas uses alpha cells and beta cells located within the islets of Langerhans to regulate glucagon and insulin production based on glucose levels, often impacted by food intake, stress, and activity. In diabetes, glucose utilization is impaired due to beta cell destruction, insulin resistance, dysregulation of insulin release, or injury to the pancreas. When this occurs, the beta cells may not be able to produce enough insulin, and blood glucose levels become elevated. If this occurs, individuals with diabetes may require insulin supplementation. In cases such as T1D, where the pancreatic beta cells have been destroyed, daily insulin is the mainstay of treatment. Insulin has historically been injected either via a syringe, an insulin pen, or a pump. Inhaled insulin is currently FDA-approved for adults and is expected to be approved for children and adolescents ages 4-17 in late spring 2026 (American Diabetes Association, 2025a).

Blood glucose target ranges and treatments are individualized, determined by the provider, and outlined in each student's DMMP. In general, youth under 18 years of age with T1D have a

target of between 90-130 mg/dl before meals, with a hemoglobin A1c (HbA1c) of less than 7% (Kaiser Permanente, 2025). Glucose control is critical; however, aggressive management can lead to hypoglycemic episodes (Sapra & Bhadari, 2023). Due to the adverse or fatal outcomes of

National Association of School Nurses Learning Center

[Inhaled Insulin on the Horizon: What School Nurses Need to Know](#)

[From Data to Dialogue: A 56 Week Study of Inhaled Insulin in Pediatrics](#)

hypoglycemia, the school nurse understands that keeping blood glucose in the target range indicated on the student's DMMP is an important measure to monitor.

Insulin therapy is used to imitate the physiological function of the pancreas. In diabetes, such as T1D, where beta cells are destroyed or cannot produce enough insulin, exogenous insulin is administered to mimic the body's natural insulin response through the use of both long-acting (basal rate) and short-acting (bolus) insulins (Kesavadev, et al., 2025). In diabetes, such as T2D, where there is insulin resistance, other pharmacological therapies may be used for glycemic control, and insulin may be added later as needed.

There are three main types of pharmaceutical insulins available: animal, human, and analogs (Kesavadev, et al., 2025). Insulin analogs are produced through genetic modification, allowing for the management of onset, peak, and duration of therapy. The school nurse needs to understand the varying insulin types that a student may be using.

Type	Onset	Peak	Duration
Long acting	1-4 hours	No pronounced peak	20-24 hours
Ultra long-acting	0.5-1.5 hours	No pronounced peak	30-42 hours
Short acting	0.5-1 hours	2-4 hours	5-8 hours
Rapid acting	0.15-0.35 hours	1-3 hours	3-5 hours
Ultra-rapid acting	0.1-0.2 hours	1-3 hours	3-7 hours
Intermediate acting	1-3 hours	4-8 hours	14-24 hours

Glucagon

Glucagon is the hormone in the body produced in the alpha cells of the pancreas (Cleveland Clinic, 2025). It works in conjunction with the hormone insulin of beta cells to maintain stable blood glucose levels. Glucagon is released in response to drops in blood glucose, prolonged

fasting, and protein-rich meals. While insulin lowers blood glucose levels, glucagon raises blood glucose levels. Individuals with diabetes may not be able to release enough glucagon in response to decreasing blood glucose levels. Some medications, including insulin therapy or taking sulfonylureas, put individuals at increased risk for frequent and/or severe low blood glucose levels.

Individuals experiencing early symptoms of hypoglycemia are treated with simple carbs by mouth (Cleveland Clinic, 2025). If hypoglycemia persists and becomes dangerously low, such as an individual experiencing a seizure, unresponsive, or unable to take anything by mouth, manufactured glucagon may be administered. Manufactured glucagon is available as an injection (prefilled syringe, syringe, or autoinjector) or nasal powder (dry nasal spray) (Cleveland Clinic, 2025; MedlinePlus, 2025).

Side effects of glucagon include nausea, vomiting, a change in the ability to taste food, injection site swelling or redness, headache, and a rapid heartbeat (MedlinePlus, 2025). Due to the risk of vomiting and aspiration, turn the individual onto their side and call 911. An unconscious individual with hypoglycemia who has been administered glucagon generally wakes up within 15 minutes. If the individual does not awaken within 15 minutes, a second dose of glucagon may need to be administered.

Glucagon is a lifesaving medication that may be administered in Maine schools by unlicensed school personnel who have been trained. According to [Rule Chapter 40](#), this requires a local written policy that includes the following (Maine Department of Education, 2022).

- Appropriate training, as outlined in the [Medication Administration in Maine Schools: Evidence-Based Guidelines](#)
- An Individualized Health Plan and Emergency Plan indicating medications needed for management in school
- Current written request from parent/guardian, with documented understanding that glucagon may be administered by a trained UAP
- Current written order from the prescribing healthcare provider, including the name of the student, medication, dose, route, and when to administer

The family is responsible for supplying glucagon to the school to be stored according to the manufacturer's instructions. Additionally, in Maine, schools may stock undesignated ready-to-use glucagon in a secure location for a student with a known diagnosis of diabetes if their prescribed glucagon is not available or is expired (Maine Revised Statutes, Title 20-A § 6307-A, 2023). The [National Association of School Nurses: School Nursing Evidence-Based Clinical Practice Guideline: Students with Type 1 Diabetes](#) provides model procedures for the administration of intranasal and injectable glucagon rescue medication.



This image is a representation of what a **glucagon kit** may look like. The liquid in the syringe must be introduced into the powder in the vial, reconstituted, and drawn up for injection.

Baqsimi[®] (nasal glucagon): A convenient form of glucagon comes as a dry nasal powder spray. Each intranasal device comes with one dose of glucagon. Learn more at [Baqsimi](#).



Gvoke[®] (premixed glucagon injection): This glucagon comes premixed and ready to use in a pen form. Learn more at [Gvoke](#).



Zegalogue[®] (premixed dasiglucagon injection): A next generation ready to use glucagon analog. Learn more at [Zegalogue](#).



Medications Less Frequently Administered at School/

Medications Administered at Home

Breakthroughs in the pharmacological prevention and treatment of diabetes have made tremendous progress in recent years. There are many more pharmacological options available to individuals with varying health benefits.

Disease Modifying Therapy

Teplizumab is the first US Food and Drug Administration-approved medication for delaying the clinical onset of T1D (Ziegler, Cengiz, & Kay, 2025). Teplizumab is a humanized anti-CD3 monoclonal antibody administered via intravenous infusion, targeting the cells that play a key role in pancreatic beta cell destruction. It delays the onset of T1D by an average of 2 years.

Blood Glucose Stabilizing Therapies

Blood glucose-stabilizing medications play a significant role in managing blood glucose (Sibony, Segev, Dor, & Raz, 2023; Kesavadev, et al., 2025). These medications have an additional benefit of reducing cardiovascular and renal risk factors. The pharmacologic management of diabetes is rapidly evolving; [Appendix C](#) provides an overview of current FDA-approved blood glucose stabilizing medication classifications for the pediatric population, their effects, and potential adverse effects. This is not an exhaustive list; always refer to the student's DMMP.

Non-Pharmacological Treatment

Non-pharmacological interventions are effective in improving HbA1c levels, quality of life, and anxiety outcomes in adolescents with T1D (Lee, Lee, Shin, & Park, 2024). These interventions encompass a broad range of lifestyle and supportive strategies, including regular physical activity, adherence to a healthy and balanced diet, diabetes education, and psychological and social support, all of which aim to optimize metabolic control and overall well-being.

Dietary Modification

Individuals with diabetes can benefit from appropriate dietary modifications to tighten glycemic control, manage complications, and, in the case of T2D, delay or prevent the onset of diabetes (White, 2023; American Diabetes Association Professional Practice Committee for Diabetes, 2026a). Medical nutrition therapy may be advised by the provider for anyone with diabetes, which is coordinated with a dietitian. Individual nutrition management should take into consideration food preferences, religious or cultural needs, family finances, family literacy and numeracy, physical activity level, and ability to self-manage (American Diabetes Association Professional Practice Committee for Diabetes, 2026a). Maine resources that are potentially helpful those managing their diabetes:

[Maine General Health: Diabetes & Nutrition Care](#)

[Maine Health: Living Well with Diabetes](#)

Physical Activity

Individuals with diabetes who participate in regular physical activity experience improvements in glycemic control, decreased risk for cardiovascular disease, and improved mental health (White, 2023; American Diabetes Association Professional Practice Committee for Diabetes, 2026a). Some medications may need to be adjusted with physical activity due to the risk of hypoglycemia. Physical activity is contraindicated in cases of DKA and HHS. The school nurse should monitor the effects of physical education class, recess, and athletics on individual student's blood glucose. For students on insulin therapy, insulin dosing may need to be adjusted to accommodate physical activity.

Psychological and Social Support

Childhood and adolescence are marked by rapid and dynamic cognitive, developmental, and emotional changes (American Diabetes Association Professional Practice Committee for Diabetes, 2026a). Managing diabetes during childhood and adolescence places significant demands on both youth and their families, requiring routine assessment of psychosocial functioning, social determinants of health, and diabetes-related distress in youth as well as their parents or caregivers during clinical visits. Attention should also be given to the effects of diabetes on quality of life and the potential development of behavioral health concerns, including diabetes distress, symptoms of depression and anxiety, fear of hypoglycemia and hyperglycemia, disordered eating behaviors, and eating disorders.

Students with T1D often demonstrate low levels of self-care behaviors due to several barriers, including social stigma, discrimination, challenges in managing hypoglycemia in school settings, and a lack of privacy (Lee, Lee, Shin, & Park, 2024). In recent studies, 33.3% of children with T1D report administering insulin in restrooms, a practice that has been associated with increased depressive symptoms. Evidence suggests that interventions such as motivational interviewing, digital storytelling, and virtual group appointments can enhance self-care behaviors and self-efficacy while reducing diabetes-related distress and HbA1c levels. These findings underscore the importance of maintaining continuous motivation, providing sustained psychological support, and integrating non-pharmacological approaches into routine diabetes care.

Diabetes Education

Diabetes self-management education and support (DSMES) is imperative at diagnosis, routinely and as needed, and includes nutrition therapy, physical activity and exercise recommendations, psychosocial care, glycemic monitoring, insulin delivery, and goals (American Diabetes Association Professional Practice Committee for Diabetes, 2026a). As students spend a significant amount of time in schools, the school nurse is well-equipped to provide privacy, ensure appropriate accommodations are in place, assess students' ability to perform self-care tasks, and assist in the transition to self-management. Diabetes self-management goals and age-appropriate development can be reviewed in [Appendix D](#). NASN provides guidance

regarding the general ability and levels of T1D self-care by developmental milestones in the [School Nursing Evidence-Based Clinical Practice Guideline: Students with Type 1 Diabetes](#).

Technology in Diabetes Management

Advancements in diabetes technology are associated with reductions in HbA1c, increased time in range, and improved quality of life, including diabetes-related distress and improved sleep quality (de Visser, et al., 2025; American Diabetes Association Professional Practice Committee for Diabetes, 2026a). In addition to traditional diabetes management of capillary blood glucose testing and multiple daily injections of insulin, individuals have access to continuous glucose monitors, insulin pumps, and smart pens to aid in blood glucose management. The choice of which technology will work best for each individual student is made among the student, family, and healthcare team. It is important that students are supported in their use of diabetes technology at school.

Despite rapid advancements in diabetes technology, effective communication among the school nurse, family, educational team, and diabetes management medical team remains essential. Many diabetes-related technologies now offer simulation applications that school nurses can use to educate themselves and to train school staff, supporting safe and informed diabetes care in the school setting.

Continuous Glucose Monitors (CGM)

A CGM uses a small, flexible sensor inserted under the skin to measure glucose levels in the interstitial fluid (American Diabetes Association, 2025b). Because CGMs measure interstitial glucose rather than blood glucose, readings may lag behind capillary blood glucose levels by approximately 5–10 minutes. CGMs may provide real-time readings or require intermittent scanning.

Best practice guidelines recommend offering CGMs to all youth with diabetes who are receiving insulin therapy, regardless of diabetes type (American Diabetes Association, 2025b). CGMs are highly accurate, and most are approved by the Food and Drug Administration (FDA) for insulin dosing. The student's DMMP should clearly state that the student uses a CGM and outline circumstances when CGM readings should not be used for insulin dosing. Early initiation of a CGM within the first six months is associated with improved HbA1c (Mann, et al., 2025).

When a student uses a CGM, the school nurse or trained school staff should follow the DMMP by reviewing CGM readings and trend arrows at times when blood glucose would normally be checked, such as before meals, during physical activity, and before boarding the bus (American Diabetes Association, 2025b). CGM alarm settings should be customized by the parent and student, with guidance from the student's diabetes care provider. Reliance on CGM monitoring by the school nurse or trained school personnel alone is insufficient for the identification and management of hypoglycemia in the school setting.

If a CGM device fails or becomes dislodged, the student, a parent, or trained school staff may assist as appropriate (American Diabetes Association, 2025b). Manufacturer user guides should be consulted for FDA-approved sensor placement sites specific to each CGM device. Compare different CGMs currently FDA-approved for pediatric use in [Appendix E](#). It is recommended that local policy limit or prohibit school nurses and staff from using personal devices to monitor student CGM data. For guidance on continuous glucose monitoring, refer to the [ADA Safe at School®: Guidance for the Use of Continuous Glucose Monitoring in the School Setting](#).

Important considerations

- Hydroxyurea or Hydroxycarbamide may falsely elevate glucose readings (MedlinePlus, 2024).
- Acetaminophen may falsely elevate glucose readings (Dexcom Inc, 2022; Dexcom Inc, 2025; Medtronic, 2025).
- Ascorbic acid may falsely elevate glucose readings (Abbott Diabetes Care Inc, 2023; Abbott Diabetes Care Inc, 2024).
- Sunscreen & insect repellent may cause plastic to crack (Dexcom Inc, 2022).

Insulin Pumps and Smart-Pens

An insulin pump contains a cartridge filled with rapid-acting insulin and is programmed to deliver insulin subcutaneously through a soft, flexible cannula (Al-Beltagi, Saeed, Bediwy, & Elbeltagi, 2022). Insulin pump therapy closely mimics normal pancreatic function by delivering insulin in two distinct ways. First, the pump provides a continuous, low-dose basal rate to meet background insulin needs. Second, bolus doses are administered as needed, such as in response to meals or elevated blood glucose levels. Use of insulin pumps has been shown to improve glycemic control, to reduce the risk of metabolic disturbances, to increase treatment flexibility, and to minimize human error. Many insulin pumps connect via Bluetooth to a smart device. Insulin pumps differ in their features, functionality, and levels of automation. A comparison of insulin pumps currently approved by the FDA for pediatric use is provided in [Appendix F](#).

Some individuals may prefer using an insulin pen rather than wearing an insulin pump. A smart insulin pen is a reusable insulin injector paired with a smartphone app to support precise insulin management (American Diabetes Association, n.d.-a). The system calculates and tracks insulin doses, provides reminders, alerts, and generates reports to help optimize care. Information on smart insulin pens currently FDA-approved for pediatric use can be found in [Appendix G](#).

Automated Insulin Delivery (AID)

AID systems, also referred to as closed-loop systems, consist of three key components: an insulin pump, a CGM, and a control algorithm (Breakthrough T1D, n.d.). Although these systems are not fully automated and still require user input, many insulin delivery adjustments occur in the background based on real-time CGM data. Advances in AID technology have reduced the number of decisions and calculations users must make, decreased the frequency of hyperglycemia and hypoglycemia, minimized the need for finger-stick glucose checks and

injections, and improved time-in-range. Despite these benefits, users are required to wear two devices, may experience increased alarms leading to “alarm fatigue,” and must continue to count carbohydrates, administer bolus doses, and adjust for factors such as physical activity. AID systems are recommended for children and adolescents who use multiple daily insulin injections and who, either independently or with caregiver support, are able to safely operate the device (American Diabetes Association Professional Practice Committee for Diabetes, 2026a). For information on compatible CGMs and insulin pumps, visit [Appendix E](#) and [Appendix F](#).

Technology is an asset in diabetes care. Technology includes insulin delivery methods, blood glucose monitoring, data sharing, and the necessary components (National Association of School Nurses, 2022). Some thoughts to consider:

- Access to a CGM receiver
- Ability to keep the receiver charged
- Access to a secure wireless network
- Capability of remote communication
- The potential complications of insulin pump failure

Closing

Implementing best practice in the management of diabetes ensures that students with this chronic condition can access their education. This guidance document has explained that coordinated care by the school nurse involves individualized health planning, training staff, and adhering to federal, state, and local requirements. Promoting coordinated, well-planned school health practices ensures student safety, supports academic success, and enables students with diabetes to participate fully in the school environment.

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Appendix A

IMPORTANT INFORMATION FOR ALL SCHOOL STAFF

Please be advised that when blood sugar drops to low levels individuals may suffer severe confusion, visual disturbances, emotional dysregulation, appear fatigued, or experience an inability to communicate effectively.



For any student experiencing any of these symptoms:
CALL THE NURSE. DO NOT SEND THE STUDENT ALONE.
If reasonable, begin treatment for low blood sugar in the classroom.

Appendix B

DIABETES MANAGEMENT: HIGH & LOW BLOOD SUGAR

HIGH BLOOD SUGAR

Hyperglycemia Causes

- Not enough insulin
- Pump malfunction
- Too much food
- Decreased Activity
- Illness, infection, or stress

What to Do

- Check blood sugar.
- Check for ketones per roadmap.
- Allow unrestricted fluids & bathroom use.
- Call parents.

- Cold sweats
- Pale appearance
- Faintness or dizziness
- Headaches

- Pounding heart, shaking, nervousness
- Blurred vision
- Hunger
- Irritability

If left untreated there is a potential for loss of consciousness, seizure, or coma.

LOW BLOOD SUGAR

Hypoglycemia Causes

- Too much insulin
- Not enough food, delayed eating
- High activity levels, exerting oneself

What to Do

- Never leave the student alone. Escort to health office.
- Check blood sugar and follow roadmap.
 - If unable to test, treat for low blood sugar.
- If unconscious, do not give anything by mouth.
- Give glucagon. Turn on side and call 911.

- Increased thirst
- Increased urination
- Fatigue

- High blood sugar
- Ketones in urine

If left untreated, there is a potential for weakness, body aches, abdominal pain, heavy and labored breathing, loss of appetite, nausea, or vomiting.

Appendix C

BLOOD STABILIZING THERAPIES

↑ aggravation/increase, ↓ improvement/decrease

Drug Name	Effects	Adverse Effects
Biguanides	HbA1c ↓ Body Weight ↓→	Gastrointestinal disorders ↑ Reversible vitamin B12 deficiency ↑ Lactic Acidosis ↑
SGLT2-1	HbA1c ↓ Body Weight ↓ Blood Pressure ↓ Major adverse cardiovascular events ↓ Hospitalization for heart failure ↓ Progression of disease ↓	Diabetic ketoacidosis ↑ Genital infection ↑ Urinary tract infection ↑ Hypovolemia ↑ Acute kidney injury ↑ Canagliflozin: Amputation ↑ Bone fracture ↑
GLP-1 RA	HbA1c ↓↓ Body Weight ↓ Systolic Blood Pressure ↓ Major adverse cardiovascular events ↓	Gastrointestinal disorders ↑ Semaglutide: Macular edema ↑

(Sibony, Segev, Dor, & Raz, 2023)

Appendix D

SUCCESSFUL DIABETES SELF-MANAGEMENT

Goals for Self-Management

Knowledge

- Reading and interpreting food labels
- Managing portions
- Eating out successfully

Understanding

- Recognizing the impact of activity, illness, and rest
- Responding to how blood glucose levels feel
- Monitoring trends with successful insulin adjustment
- Checking blood glucose and administering insulin

Numeracy

- Calculating carbohydrates
- Dosing insulin correctly
- Making corrections as necessary

Sense of Self

- Navigating social situations
- Risk reduction skills
- Ability to ask for help

Age Appropriate Development

Ages 3-5

- Trust in parents/caregivers for care
- Begins to help with supervised tasks
- Help check blood sugar: Clean finger turns on meter and inserts test strip
- Begins to identify high and low readings, and how it feels

Ages 6-12

- Can prick finger and test blood glucose levels
- Can begin to read and locate carbohydrate content of foods
- Can begin to calculate dose of insulin
- Can begin to help with insulin administration
- Learning short and long-term benefits of control

Ages 13-14






- Can perform the majority of daily tasks without supervision
- Collaborates with caregivers about management
- Begins to interact with care team independently
- Manages an insulin pump with supervision
- Caregivers begin to oversee rather than manage routine tasks

Ages 15-18

- Development of independence
- Diabetes is part of lifestyle
- Integrates physical selfcare with social and emotional care
- Understanding long-term health outcomes
- Understands importance of communication and collaboration

Appendix E

CONTINUOUS GLUCOSE MONITOR COMPARISON






				
<p>Dexcom G6 (Dexcom Inc, 2022)</p>	<p>Dexcom G7 (Dexcom Inc, 2025)</p>	<p>Abbott Freestyle Libre 2 (Abbott Diabetes Care Inc, 2024)</p>	<p>Abbott Freestyle Libre 3 (Abbott Diabetes Care Inc, 2023)</p>	<p>Medtronic Simplera Sync (Medtronic, 2025)</p>
<p>Ages 2+</p>	<p>Ages 2+</p>	<p>Ages 4+</p>	<p>Ages 4+</p>	<p>Ages 7+</p>
<p>Abdomen or Upper buttock use (2-17 years)</p>	<p>Back of upper arm or Upper buttock use (2-6 years)</p>	<p>Back of upper arm only</p>	<p>Back of upper arm only</p>	<p>Back of upper arm only</p>
<ul style="list-style-type: none"> • 2-hour warm-up period • Sensor lasts 10 days • Provides reading every 5 minutes • Separate sensor and non-disposable transmitter • No scanning required • No calibration required 	<ul style="list-style-type: none"> • 30-minute warm-up period • Sensor lasts 10 days with 12-hour grace period • Provides readings every 5 minutes • Disposable single integrated sensor/transmitter • No scanning required • No calibration required 	<ul style="list-style-type: none"> • 1-hour warm-up period • Sensor lasts 14 days • Provides readings up to every minute • Disposable single integrated sensor/transmitter • Requires scanning at least every 8 hours or data will be lost • No calibration required 	<ul style="list-style-type: none"> • 1-hour warm-up period • Sensor lasts 14 days • Provides readings up to every minute • Disposable single integrated sensor/transmitter • No scanning required • No calibration required 	<ul style="list-style-type: none"> • 2-hour warm-up period • Sensor lasts 6 days, with a 24-hour grace period • Provided readings every 5 minutes • Disposable single integrated sensor/transmitter • No scanning required • Calibration required

<p>Dexcom G6 (Dexcom Inc, 2022)</p>	<p>Dexcom G7 (Dexcom Inc, 2025)</p>	<p>Abbott Freestyle Libre 2 (Abbott Diabetes Care Inc, 2024)</p>	<p>Abbott Freestyle Libre 3 (Abbott Diabetes Care Inc, 2023)</p>	<p>Medtronic Simplera Sync (Medtronic, 2025)</p>
<ul style="list-style-type: none"> • Separate Receiver: Optional • Compatible with some smart devices (e.g., phone, watch, tablet) via an app 	<ul style="list-style-type: none"> • Separate Receiver: Optional • Compatible with some smart devices (e.g., phone, watch, tablet) via an app 	<ul style="list-style-type: none"> • Separate Receiver: No • Compatible with some smartphones via an app 	<ul style="list-style-type: none"> • Separate Receiver: No • Compatible with some smartphones via an app 	<ul style="list-style-type: none"> • Separate Receiver: No • Compatible with some smartphones and smart devices
<p>Compatible AIDs & Pens</p> <ul style="list-style-type: none"> • Beta Bionic iLet • Insulet Omnipod® 5 • Tandem t:slim X2™ • Tandem Mobi • Medtronic InPen™ 	<p>Compatible AIDs & Pens</p> <ul style="list-style-type: none"> • Beta Bionic iLet • Insulet Omnipod® 5 • Tandem t:slim X2™ • Tandem Mobi • Medtronic InPen™ 	<p>Compatible AIDs & Pens</p> <ul style="list-style-type: none"> • Insulet Omnipod® 5 • Tandem t:slim X2™ 	<p>Compatible AIDs & Pens</p> <ul style="list-style-type: none"> • Beta Bionic • iLet twiist™ 	<p>Compatible AIDs & Pens</p> <ul style="list-style-type: none"> • MiniMed™ 780G • Medtronic InPen™
<ul style="list-style-type: none"> • Hydroxyurea or Hydroxycarbamide may falsely elevate glucose readings • Acetaminophen may falsely elevate glucose readings • Avoid Sunscreen & Insect Repellant (cause plastic to crack) 	<ul style="list-style-type: none"> • Hydroxyurea or Hydroxycarbamide may falsely elevate glucose readings • Acetaminophen may falsely elevate glucose readings 	<ul style="list-style-type: none"> • Ascorbic acid may falsely elevate glucose readings 	<ul style="list-style-type: none"> • Ascorbic acid may falsely elevate glucose readings 	<ul style="list-style-type: none"> • Hydroxyurea or Hydroxycarbamide may falsely elevate glucose readings • Acetaminophen may falsely elevate glucose readings

FINGERSTICKS ARE REQUIRED FOR DIABETES TREATMENT DECISIONS IF SYMPTOMS OR EXPECTATIONS DO NOT MATCH READINGS.

Appendix F

INSULIN PUMP COMPARISON

					
Insulet Omnipod[®] 5 (Insulet Corporation, 2025)	Beta Bionic iLet (Beta Bionics, Inc, 2025)	Tandem t:slim X2[™] (Tandem Diabetes Care, Inc, 2022)	Tandem Mobi System (Tandem Diabetes Care, Inc, 2023)	twiist[™] (Sequel Med Tech, LLC, 2025)	MiniMed[™] 780G System (Medtronic, 2025)
T1D - Ages 2+ T2D – Ages 18+	Ages 6+	Ages 6+	Ages 6+	Ages 6+	Ages 7+
<ul style="list-style-type: none"> • Tubeless, patch style • Holds 85-200 units of insulin • Smartphone app or controller screen 	<ul style="list-style-type: none"> • Tubed pump • Cartridge holds up to 180 units • Pre-filled cartridges are also available • Smartphone app 	<ul style="list-style-type: none"> • Tubed pump • Cartridge holds up to 300 units of insulin • Smartphone app or Pump touch screen 	<ul style="list-style-type: none"> • Tubed pump • Cartridge holds up to 200 units • Smartphone app 	<ul style="list-style-type: none"> • Tubed pump • Cassette holds up to 300 units of insulin • Smartphone app (Apple iPhone only) 	<ul style="list-style-type: none"> • Tubed pump • Reservoir holds up to 300 units of insulin • Pump buttons
Compatible CGMs: <ul style="list-style-type: none"> • Dexcom G6/G7 • Abbott Freestyle Libre 2 	Compatible CGMs: <ul style="list-style-type: none"> • Dexcom G6/G7 • Abbott Freestyle Libre 3 	Compatible CGMs: <ul style="list-style-type: none"> • Dexcom G6/G7 • Abbott Freestyle Libre 3 	Compatible CGMs: <ul style="list-style-type: none"> • Dexcom G6/G7 	Compatible CGMs: <ul style="list-style-type: none"> • Abbott Freestyle Libre 3 	Compatible CGMs: <ul style="list-style-type: none"> • Abbot Instinct • Medtronic Simplerla Sync[™] • Medtronic Guardian[™] 4

PUMP INFUSION SETS SHOULD BE CHANGED EVERY 48-72 HOURS. INTENDED FOR USE WITH U-100 RAPID-ACTING INSULIN.

Appendix G

INSULIN SMART PEN



Medtronic InPen™

(Medtronic, 2025)

Ages 7+

300-unit cartridges holding U-100
rapid-acting insulin

Dial insulin in ½ units increments up
to 30 units

Connects to the Smartphone app

Compatible CGMs:

- Dexcom G6/G7
- Medtronic Simplerla Sync