
Recommendations for Continuous Glucose Monitoring in School

Background. Patients with diabetes who use insulin typically test their blood sugar (glucose) often (3-10 finger sticks per day) to assess the effectiveness of the previous insulin dose and to determine the next dose. Many students with insulin dependent diabetes (aka Type 1 diabetes) are bringing continuous glucose monitors (CGM) to school (e.g. *Dexcom*,[®] *Medtronic*[®]). These devices provide continuous glucose monitoring throughout the day and night, allowing people to see their glucose levels and track how quickly they're increasing or decreasing. Many devices are combined with *Bluetooth* technology, so that glucose levels are visible on a computer screen or smartphone. A typical system consists of a glucose sensor placed subcutaneously, a non-implanted transmitter, and a receiver worn like a pager which records glucose levels at frequent intervals and monitors trends. CGM levels must be re-calibrated at least twice daily.

The benefits of CGM are that it allows patients and their healthcare providers to understand patterns of glucose changes. Knowing about decreases in glucose, as denoted by arrows¹, can result in treatment that prevents hypoglycemia. Similarly arrows in the opposite direction warn of pending hyperglycemia.

Proper calibration is one concern with CGM. Lack of adherence to prescribed methodologies can lead to erroneous glucose data, which in turn can lead to possible mistreatment of diabetes by patients and caregivers. Some soreness may be caused by inserting the sensor. Future development and technological advancements aim to allow for improved sensors and calibration software.

The FDA has now approved the use of certain CGM devices' values to determine dosing of diabetes medications in pediatric patients. Treatment decisions such as insulin dosing and additional carbohydrate intake should be based on readings from a blood glucose meter *if* there is a discrepancy between reading and symptoms or if there is a question that the sensor's glucose reading may not be accurate.

¹ Change in Glucose: *Dexcom*[®] one arrow = 2mg/dl/min; two arrows = 3mg/dl/min;
Medtronic[®]: one arrow = 1-2mg/dl/min; two arrows = > 2mg/dl/min;

Use of CGM at School. These recommendations are based on the input of pediatric endocrinologists in San Diego County.

Students may wear CGM devices at school with varying levels of prescribed use:

- (a) The student wears a CGM at school, but the physician prescribes no involvement of school staff caretakers with the CGM device. In these circumstances, the role of the CGM may be to inform the patient, family and endocrinologists about patterns of glucose during the day.
- (b) Physicians may prescribe that students and staff members are to respond to audible alarms that signify a rapid change in glucose levels or a low glucose level.
- (c) Physicians may prescribe CGM readings to supplant a routine or unplanned finger stick.

Related School District Policy

1. At this time, The FDA has now approved the use of CGM values on some devices to determine dosing of diabetes medications in pediatric patients (under age 18). CGMs must be calibrated by blood glucose meters. Treatment decisions, such as insulin dosing, should be based on readings from a blood glucose meter if the CGM is not FDA approved or is not calibrated.
2. Schools cannot rely solely on CGM alerts to detect low glucose. Occasionally there are false readings. As differences are observed between CGM devices and actual blood glucose values, schools must also have blood glucose meters available for treatment decisions, when there is doubt about the validity of the CGM's sensor reading.
3. School districts must always arrange to have staff available to students who sense they have low glucose. School districts can arrange to respond to students (or parents) concerned with a low CGM reading as long as there are physician-prescribed responses for school staff to follow when these events occur.
4. Physicians may prescribe that student and/or staff respond to audible alarms that signify a rapid change or low glucose level. However schools can cease to provide this service if an excessive number of "false alarms" and/or alarms that do not result in a helpful intervention occur (more than once per day). These are disruptive to the student's education, to classmates and to staff members with other responsibilities. Hearing alarms too often may cause "alarm fatigue" in patients, who can inadvertently learn to ignore alarms.
5. School staff will not continually monitor CGM readings. If this is deemed to be necessary or helpful by a prescribing physician, continuous monitoring may be done remotely by parents or by office staff of the prescribing physician. This means it will not be necessary to have staff put CGM displays onto their computers, smart phones or other electronic devices.

6. As with medications that are required twice-daily, schools are not responsible for functions that occur twice-daily on a CGM device. Calibrations should be done at home, not school. Exceptions may be made if the prescribing physician has a compelling reason to have calibrations performed so frequently that they cannot be performed exclusively during non-school hours.
7. A credentialed school nurse may train school staff, LVNs, and RNs to respond appropriately to CGM alarms (e.g., check blood glucose by finger stick or arrange for student to be sent to a health office professional, accompanied by a responsible third party).
8. All instructions regarding CGM use (i.e., how school and student are to respond to various levels or changes in CGM readings) must be prescribed in detail by the student's endocrinologist (or diabetes nurse educator working with the endocrinologist). This detail includes: how staff and student should respond to specific glucose ranges of CGM device, how to respond to alarms for other reasons (e.g., rapid increase or decrease in glucose), and when a finger prick glucose test should be taken to verify CGM results. Prescribing professionals must remain available for questions and clarifications by school staff.
9. An individualized school health plan (ISHP) may be developed by the credentialed school nurse for each student in order to facilitate that prescribed management is readily understood by all potential caretakers at school, and to add detail specific to that school setting.
10. If the student has a 504 plan or IEP plan, the ISHP should include specific prescribed orders and the ISHP should be referenced in these documents. Details of the medical orders should remain in the ISHP, and not detailed in either IEP or 504 plans. IEP and 504 plans require that an entire team meeting occur. Changes in the ISHP and changes in the order require only the parent, the school nurse and the prescribing doctor to agree.
11. As with all prescribed medications or instructions in school, only a medical doctor (DO, MD) or licensed nurse-practitioner or physicians' assistant who is managing that student's diabetes may change a diabetes-related order. Changes in orders must be in writing and verifiable from the prescriber (e.g., fax from physician's office, e-mail, prescription pad with letterhead).
12. School staff cannot comply with order changes coming from parents.
13. Parents who wish to have variations in prescribed orders during the school day must use one or more of the following options:
 - a) Arrange for the doctor to prescribe multiple "contingencies" (e.g., "If this patient is unusually physically active that day, changes in insulin or carbohydrates will be _____").
 - b) Parent may come to school to administer insulin, carbohydrate, glucose testing or other diabetes management that varies from a physician-prescribed order.
 - c) Parent may send a designee to school (family member, trusted friend) to care for student's diabetes. This person must not be a school staff member and must be pre-approved by school and have pre-approved parent-signed permission to be a designee.

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- d) Parent and physician may make the student independent of school staff for diabetes management (except for emergencies), and the parent can direct the student's care by text or telephone.
- e) Parent may reach their child's physician and ask that the physician's office fax or e-mail a change in orders.
- f) Schools cannot comply with open physician orders such as: "*follow parent instructions to change xxx*").

A handwritten signature in blue ink, appearing to read 'Howard Taras', is written over a horizontal line.

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Date