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# Guidelines for Continuous Glucose Monitors

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## Guidelines for the Use of Continuous Glucose Monitors (CGM) and Other Sensors in the School Setting

The purpose of this guidance document is to provide general information about CGM and glucose sensor use in the school setting to monitor a student's blood glucose (blood sugar). Specific questions unique to individual students should be directed to the student's diabetes care provider. This document will be updated as new devices are approved by the U.S. Food and Drug Administration (FDA), so we encourage you to check back frequently.

The use of CGMs and glucose sensors by students with type 1 diabetes (T1D) has increased dramatically over the past three years. According to data from a large T1D clinic registry, approximately 50% of children with T1D under the age of 18 have adopted this technology, and these numbers continue to rise as the technology becomes more accessible, easier to use, and further reduces disease burden<sup>1</sup>.

The use of a CGM or glucose sensor provides valuable information about glucose levels for the student, parent/guardian, school team (e.g., school nurse), and diabetes provider. CGMs, for example, update glucose data every five minutes, providing up to 288 readings per day. In addition, CGMs have trend arrows that, in combination with the current glucose level, allow the user to know what the current glucose level is, where it is going, and how fast it is changing. Of note, the REPLACE-BG study demonstrated the safety of direct dosing from CGM data without confirmatory fingersticks<sup>2</sup>. However, a fingerstick glucose may be needed if hypoglycemia (low blood glucose) or hyperglycemia (high blood glucose) is noted on the CGM or if the child has symptoms which do not match the CGM reading.

### A summary of benefits:

- 1. Immediate access to glucose levels.** CGMs continuously provide updated glucose data every five minutes. **Personalized alerts** are also displayed on the device to prompt an immediate response when the student's glucose level is above or below the prescribed target.
- 2. Trend arrows** that predict a rise or fall in the student's glucose level, and the speed it is increasing or decreasing. Newer devices can predict hypoglycemia and provide alerts to avert it.
- 3. Insight into cause and effect** and the ability to see how different foods, activities, stress, and other factors may affect glucose levels.
- 4. Retrospective data review**, in which patterns can be identified to inform changes to the student's insulin regimen or behavior (e.g., indication before a meal vs. post-meal insulin dosing vs. indication that the prescribed amount of insulin is not being administered).
- 5. Remote** monitoring of the student's glucose to minimize the frequency of unnecessary educational disruptions. For more information, see Additional Considerations—Data-Sharing below.

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6. **Pairing** between certain CGMs and insulin pumps in a hybrid closed loop with automatic insulin adjustments based on CGM readings.

## Types of CGMs:

### Dexcom G6 Realtime CGM

- Transmitter is not disposable
- Compatible with reader, pump (Tandem t:slim X2 with Control IQ or Basal IQ and Omnipod 5), and smart devices
- Data can be used to make insulin dose decisions
- Readings are not affected by acetaminophen

### Abbott Libre 2 Realtime CGM

- Sensor/transmitter is disposable
- Compatible with reader and smart devices (not insulin pumps)
- CGM can be used to make insulin dose decisions
- Acetaminophen may cause inaccurate readings

### Medtronic Guardian Connect/Link 3 Realtime CGM System

- Transmitter is rechargeable, not disposable
- Requires calibration every 12 hours
- Compatible with reader, pump (Medtronic Minimed 600 and 700 series), and smart devices
- A blood glucose meter must be used to make insulin dose decisions
- Acetaminophen may cause inaccurate readings

## General guidelines:

**ALWAYS consult the student's Diabetes Medical Management Plan (DMMP) before using a CGM or sensor data to make treatment decisions.**

Even if a student is using a device that has been approved by the FDA for treatment decisions, the student may not have permission from their diabetes care provider (e.g., physician, nurse practitioner, or physician/medical assistant), who prescribed it, to do so. Ultimately, the diabetes care provider assumes responsibility for determining the student's readiness to use a particular device for the purpose of making dosing decisions in the school setting.

The appropriateness for using a CGM or sensor to make treatment decisions must be confirmed in the DMMP or updated school orders.

**Current CGMs on the market are accurate and readings should not be directly compared to glucometer readings.**

The CGM consists of a thin, flexible sensor that sits in the skin, a transmitter that is affixed to that sensor, and a receiver or other device which displays the glucose reading. The sensor measures glucose concentrations in the interstitial fluid and converts that information to an estimated blood glucose. As the CGM is not measuring blood glucose levels directly, there can be discrepancies (generally proportional to the glucose level) compared with a blood glucose meter. In particular, this is expected if the glucose level is changing rapidly. The most recent data indicates that CGMs are highly accurate. However, there are times it is advised to check a blood meter glucose, which should be included in the child's DMMP and are discussed below.

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## Additional Considerations:

### Data-Sharing

Data-sharing is used when a student uses any CGM that has the option to pair their smart device with the CGM. This allows the student to receive glucose data on their device via Bluetooth. In addition to convenience, this gives the student the ability to share their glucose data with multiple followers, who might include the school nurse and their parent/guardian. The student's CGM data is shared via an app on a smartphone or tablet using a wireless network or cellular data. Students using the data-sharing feature of their CGMs may request access to the school's wireless network to enable this feature while avoiding smart device data charges.

The utility and need for remote monitoring should be individualized for each student based on age and unique needs. Remote monitoring of CGM data in the school setting by staff is usually not required as the child is supervised by trained staff and CGM alarms are used to identify glucose levels requiring action. However, in certain cases (e.g. preschool age, non-verbal, impaired cognition), closer monitoring, including remote monitoring, may be appropriate. The school nurse and 504 team should discuss each student's needs and determine if remote monitoring is necessary based on the DMMP/school orders.

### Parent/guardian considerations:

- Please discuss data-sharing with your designated school team members such as the school nurse and other officials—preferably those who participate in the development of your child's 504 plan—to negotiate expectations on behalf

of both your family and the school team to develop a plan for communication. Information from your child's DMMP or updated school orders will serve as a guide during this discussion because it includes recommendations for your child's diabetes management at school directly from your child's diabetes care team.

- If possible, have this discussion with your child's educational team prior to the start of school.
- Keep in mind that the school team members, including school nurses and school staff who are trained to care for students with diabetes, aim to provide support that will promote the student's safety. While it will be difficult for them to respond to all trend arrows and reply to frequent parental phone calls, it is important to keep this shared goal—your child's safety—in mind. Developing a collaborative relationship between the parent/guardian, diabetes care provider, and school staff is key.

### Hypoglycemia (low blood glucose)

- The DMMP will specify CGM alert levels for each student.
- Check with a traditional blood glucose meter (finger stick glucose meter) if hypoglycemia is noted on the CGM or if the child has symptoms which do not match the CGM reading.

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- For all CGM users, if the student exhibits symptoms of hypoglycemia and a blood glucose meter is not readily available for confirmation of the glucose level, the priority should be to treat the low glucose level per the DMMP.
- If CGM or sensor use and/or data sharing is disrupted due to device malfunction, Bluetooth glitch, or other interruptions, the student's DMMP should be referenced to ensure that appropriate diabetes management continues.

## Hyperglycemia (high blood glucose) and Ketones:

- If the CGM glucose reading is >250 mg/dL, check the student's blood glucose with a fingerstick. Provide correction insulin based on the fingerstick blood glucose level as per the DMMP.
- It is essential to check for serum or urine ketones if:
  - CGM reading is >300 mg/dL two times in a row for students who use multiple daily injections
  - CGM reading is >300 mg/dL one time for students on insulin pump therapy.
- If ketones are present, give the student correction insulin by injection (even if the student uses an insulin pump) and alert the student's family<sup>6</sup>.

## Use of Trend Arrows

The use of trend arrows and other advanced CGM features like predictive low glucose alerts should be clearly enumerated in the DMMP.

## Other concerns

- If a CGM or sensor falls off at school, the school nurse should help the student place all pieces into a sealable plastic bag to be sent home with the student. No portion of the CGM should be discarded while at school.
- Until the sensor is replaced, the child should be monitored by fingerstick with a glucometer.
- It is suggested that the sensor be replaced by the family at home.
- Please note that students who have been approved to self-manage their diabetes at school may reinsert the sensor while at school. The student's DMMP should be referenced to confirm that this is appropriate for the student.
- Confirm that appropriate diabetes care supplies are available and schedule routine inventory of the supplies.

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## References

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3. Forlenza GP, Argento NB, Laffel LM. Practical Considerations on the Use of Continuous Glucose Monitoring in Pediatrics and Older Adults and Nonadjunctive Use. *Diabetes Technol Ther*. 2017;19(S3):S13-s20.
4. Shah VN, Laffel LM, Wadwa RP, Garg SK. Performance of a Factory-Calibrated Real-Time Continuous Glucose Monitoring System Utilizing an Automated Sensor Applicator. *Diabetes Technol Ther*. 2018;20(6):428-33.
5. Wadwa RP, Laffel LM, Shah VN, Garg SK. Accuracy of a Factory-Calibrated, Real-Time Continuous Glucose Monitoring System During 10 Days of Use in Youth and Adults with Diabetes. *Diabetes Technol Ther*. 2018;20(6):395- 402.
6. Berget C and Wykoff L. Use of Technology in Managing Diabetes in Youth, Part 1: Continuous Glucose Monitoring: Information and Tips for the School Nurse. *NASN Sch Nurse*. 2020;35(2):63-69. [Guidelines-for-Dexcom-G5-G6-Aug-4-2019.pdf](#)

Be sure to check out additional Safe at School training resources and tools at [diabetes.org/safeatschool](https://diabetes.org/safeatschool).