

Practical Considerations in the Use of Real-Time Continuous Glucose Monitoring Alerts

John Mastrototaro, Ph.D., John B. Welsh, M.D., Ph.D., and Scott Lee, M.D.

Abstract

Background:

The safety and efficacy of real-time (RT) continuous glucose monitoring (CGM) systems in the management of type 1 diabetes are increasingly apparent. Clinical trials have demonstrated the utility of these systems in lowering hemoglobin A1c, minimizing hypoglycemia, and reducing glycemic variability. These RT systems allow patients to conveniently monitor their glucose levels by displaying concentration and trending information. Several of these RT systems provide preset alerts that sound when absolute glucose thresholds are reached. Additionally, some systems allow for predictive algorithm-based alerts that incorporate rates of change. However, clinical trials have identified significant noncompliance in the use of these devices, most notably in the pediatric and adolescent populations.

A retrospective review of CGM reports shows that many patients set high and low alert thresholds at levels that result in frequent alerts, potentially resulting in patient nuisance, dismissal of consequential alerts, and eventual product abandonment. Therefore, setting the alert thresholds at appropriate high and low settings can determine the balance between either a perceived benefit by the patient and their long-term use of CGM systems or annoyance to the patient and discontinuation.

Conclusion:

Care should be taken to set CGM alerts at levels that result in a manageable number of notifications per day. In some cases, providers should consider not using alerts at all or consider using broad targets when initiating CGM to maximize alert specificity. Real-time CGM is safe and generally well tolerated; however, individualization of alert settings is necessary maximize the system's benefits and patient adherence.

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Author Affiliation: Medtronic Diabetes, Northridge, California

Abbreviations: (CGM) continuous glucose monitoring, (HbA1c) hemoglobin A1c, (JDRF) Juvenile Diabetes Research Foundation, (MDI) multiple daily injection, (RT) real time

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Corresponding Author: John Mastrototaro, Ph.D., Medtronic Diabetes, 18000 Devonshire Street, Northridge, CA 91325; email address john.mastrototaro@medtronic.com