

Acceptability and Utility of the mySentry Remote Glucose Monitoring System

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Abstract

Background:

The mySentry system (Medtronic Inc.) is the first to amplify and relay continuous glucose monitoring (CGM) and insulin pump data to a remote site within the house. Its usability and acceptability were evaluated in families having a child with type 1 diabetes.

Methods:

Each enrolled family included a child (age 7–17 years) who used a Paradigm REAL-Time Revel sensor-augmented insulin pump (Medtronic). After a 1-week run-in phase, families set up and used the mySentry system for a 3-week study phase. Opinion surveys were completed by parents, and pump and CGM data were collected and analyzed retrospectively. No formal hypothesis testing was performed, and the study was not powered to detect changes in nocturnal glycemia.

Results:

Thirty-five families completed the study. Enrolled children (61.1% female) had a mean (\pm standard deviation) age of 11.9 ± 2.70 years and a mean age at initiation of pump therapy of 7.1 ± 3.19 years. Baseline survey results indicated that most parents were fearful of their unawareness of their children's nocturnal glucose excursions. The mySentry system met the predefined acceptability criteria for general experience, product usability, and training materials. There were no unanticipated device-related adverse effects. Among children who experienced nocturnal hypo- or hyperglycemic episodes in both phases of the study, there was a trend toward less frequent and less prolonged episodes during mySentry use.

Conclusion:

The mySentry system met all predefined criteria for acceptability and did not demonstrate safety issues. Alerting parents to abnormal glucose values or trends may attenuate nocturnal hypoglycemia and hyperglycemia by prompting appropriate and timely intervention.

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Abbreviations: (AUC) area under the curve, (CGM) continuous glucose monitoring, (RF) radio frequency, (SD) standard deviation, (SG) sensor glucose, (SMBG) self-monitored blood glucose

Keywords: continuous glucose monitoring, nocturnal hypoglycemia, remote glucose monitoring, sensor-augmented therapy

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