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ORIGINAL ARTICLES

Institutional Blood Glucose Monitoring System for Hospitalized Patients: An Integral Component of the Inpatient Glucose Control Program

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Abstract

Background:
The ability to measure patient blood glucose levels at bedside in hospitalized patients and to transmit those values to a central database enables and facilitates glucose control and follow-up and is an integral component in the care of the hospitalized diabetic patient.

Objective:
The goal of this study was to evaluate the performance of an institutional glucometer employed in the framework of the Program for the Treatment of the Hospitalized Diabetic Patient (PTHDP) at E. Wolfson Medical Center, Holon, Israel.

Methods:
As part of the program to facilitate glucose control in hospitalized diabetic patients, an institutional glucometer was employed that permits uploading of data from stands located in each inpatient department and downloading of that data to a central hospital-wide database. Blood glucose values from hospitalized diabetic patients were collected from August 2007 to October 2008. The inpatient glucose control program was introduced gradually beginning January 2008.

Results:
During the follow-up period, more than 150,000 blood glucose measures were taken. Mean glucose was 195.7 ± 99.12 mg/dl during the follow-up period. Blood glucose values declined from 206 ± 105 prior to PTHDP (August 2007–December 2007) to 186 ± 92 after its inception (January 2008–October 2008). The decline was associated significantly with time ($r = 0.11$, $p < 0.0001$). The prevalence of blood glucose values lower than 60 mg/dl was 1.48% [95% confidence interval (CI) 0.36%] prior to vs 1.55% (95% CI 0.37%) following implementation of the PTHDP. Concomitantly, a significant increase in the proportion of blood glucose values between 80 and 200 mg/dl was observed, from 55.5% prior to program initiation vs 61.6% after program initiation ($p < 0.0001$).

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Abbreviations: (ANOVA) analysis of variance, (CI) confidence interval, (IGMS) institutional blood glucose monitoring system, (PTHDP) Program for the Treatment of the Hospitalized Diabetic Patient

Keywords: standards of care; hospitalization; institutional glucometer; point of care

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Abstract cont.

Conclusions:

The present study was designed to observe changes in institution-wide glucose values following implementation of the PTHDP. Information was extracted from the glucometer system itself. Because the aforementioned study was not a clinical trial, we cannot rule out that factors other than introduction of the program could explain some of the variability observed. With these limitations in mind, it nevertheless appears that the PTHDP, of which the institutional glucometer is an integral, essential component, was associated with improved blood glucose values in the hospitalized diabetic patient.

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