A Novel Method for Assessing Insulin Dose Adjustments by Patients with Diabetes

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Abstract

Background:
Insulin treated diabetic patients often do not adjust their insulin doses. We developed a method to provide a quantitative and qualitative assessment of this behavior.

Methods:
Fourteen patients provided logbook pages of their self-monitoring of blood glucose (SMBG) data and insulin doses. We compared the actual decisions of patients in real-life to what they would decide on the same SMBG, as an a posteriori exercise. We also compared these decisions and those proposed by 6 diabetologists on the same sets of data to the recommendations made by HumaLink, an automated insulin dosage system.

Results:
1) Patients in real-life modified their insulin doses least often. However, given a chance to make these decisions a posteriori, they modified their insulin doses more often. HumaLink proposed changes even more often, and diabetologists were the most aggressive in changing insulin doses. 2) The decisions proposed by the patients in real-life or a posteriori and by the diabetologists were compared to the recommendations made by HumaLink, using a decisions analysis grid (DAG). For these three groups, full disagreement with HumaLink (patient or physician increases while HumaLink decreases and the opposite) was observed for less than 5% of the cases. 3) By comparison to HumaLink, patient decisions seemed guided by the desire to avoid hypoglycemia. By contrast, decisions by diabetologists seemed often to be guided by the desire to avoid hyperglycemia.

Conclusion:
These methods provide an objective evaluation of insulin dose adjustments by patients with diabetes and may be useful to assess the effectiveness of educational programs.

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Abbreviations: (SMBG) self-monitoring of blood glucose, (DCCT) diabetes control and complications trial, (BG) blood glucose, (DAG) decisions analysis grid, (HbA1c) glycated hemoglobin, (IRB) Institutional Review Board

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