

Display of Glucose Distributions by Date, Time of Day, and Day of Week: New and Improved Methods

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Abstract

Objective:

There is a need for improved methods for display of glucose distributions to facilitate comparisons by date, time of day, day of the week, and other variables for data obtained using self-monitoring of blood glucose (SMBG) and continuous glucose monitoring (CGM).

Method:

Stacked bar charts are utilized for multiple ranges of glucose values, e.g., very low, low, borderline low, target range, borderline high, high, and very high. Glucose ranges for these categories can be defined by the user, e.g., <40, 40–70, 71–80, 81–140, 141–180, 181–250, and 251–400 mg/dl. Glucose distributions can be displayed by time of day, in relation to meals, by date, or by day of week. The graphic display can be generated using general purpose spreadsheet software such as Microsoft Excel or with special purpose software.

Result:

Stacked bar charts are extremely compact and effective. They facilitate comparison of multiple days, multiple time segments within a day, preprandial and postprandial glucose levels, days of the week, treatment periods, patients, and groups of patients. They are superior to use of pie charts in terms of compactness and in their ability to facilitate comparisons using multiple criteria and multiple subsets of the data. One can identify episodes of hypoglycemia and hyperglycemia and can display standard errors of estimates of percentages. Interpretation of these graphs is readily learned and requires minimal training.

Conclusion:

Use of stacked bar charts is generally superior to use of pie charts for display of glucose distributions and can potentially facilitate the analysis and interpretation of SMBG and CGM data.

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Abbreviations: (CGM) continuous glucose monitoring, (SMBG) self-monitoring of blood glucose

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