

Variability of blood glucose concentration

[Health & Medicine](#)



In describing their materials and methods, the researchers note that they are using a multi-center, retrospective observational study; the data collection for which was part of a pre-existing quality assurance activity approved by local institutional ethics committees. The research was focused upon four hospitals and controls established to include population data from all patients admitted to the intensive care units from January 2000 to October 2004. The timeframes were constructed specifically to ensure the collection of complete blood glucose data and patient characteristics. The authors proceed to note very specific controls regarding data integrity and collection methods. It should be noted that only two of the hospitals in the study collected prospective information to allow the researchers to identify diabetic patients; an important determiner in blood glucose management in general and critically-ill patient mortality specifically. After a detailed explanation of the statistical analysis methodology and final model construction, the authors present their statistical results.

A population of over 7, 000 patients was studied, encompassing over 168, 000 blood glucose measurements. The researchers' present tabulations for both clinical characteristics and ICU survivor comparisons. They demonstrate the result of their multivariate logistic regression analysis to reveal those glucose control indices with statistical significance. The authors utilize clear figures and tables to illustrate the minutiae of their methodology, and their narrative gives reasonable support to the significant aspects covered in their discussion.

In the initial portion of the discussion section, the researchers present their conclusion that " variability of glucose concentration was a significant and independent predictor of ICU and hospital mortality and that it as a stronger

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predictor of ICU mortality than mean glucose concentration" (p. 248). They proceed to note that the strengths of their study include the large population under review, the number of measurements taken, as well as the heterogeneity of the multi-center design. They duly note the weaknesses of a retrospective study, the fact that in spite of a large data set there were only four ICUs considered, as well as institutional mortality differences and other potential limitations. Each of these possible weaknesses is rebutted in turn. One major deficiency in the study, that of not considering the use and dosages of certain medications such as corticosteroids, is used as a point to call for additional research.

After discussing the impact of multi-day stays upon the variables, and citing additional studies which largely correlate with their findings, the authors conclude that the " SD and coefficient of variability of glucose were independent predictors" of mortality rates in hospitals (p. 251), but that further clinical investigations using other settings and ICUs is desirable.