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Bed-side Analysis of Blood Glucose

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Patients with newly diagnosed diabetes are treated with i.v. infusions of insulin. In order to monitor the infusion it is necessary to use a rapid, reliable method for glucose analyses. Blood glucose levels of the same samples were measured in a clinical chemical laboratory as well as in the pediatric ward.

Totally 111 capillary blood samples from 13 patients were analyzed independent of time of the day. The laboratory determinations were performed in two different laboratories by the ordinary laboratory staff with either the glucose analyzor YSI or a glucose dehydrogenase method applied to a Greiner G-300. In the ward the analyses were performed by the nurses in charge using the test-strip BM-test-BG and a reflectometer (Glucocheck II). The two measurments are considered as independent because the answer from the laboratory reached the ward more than one hour after the achievment of the strip-method result.

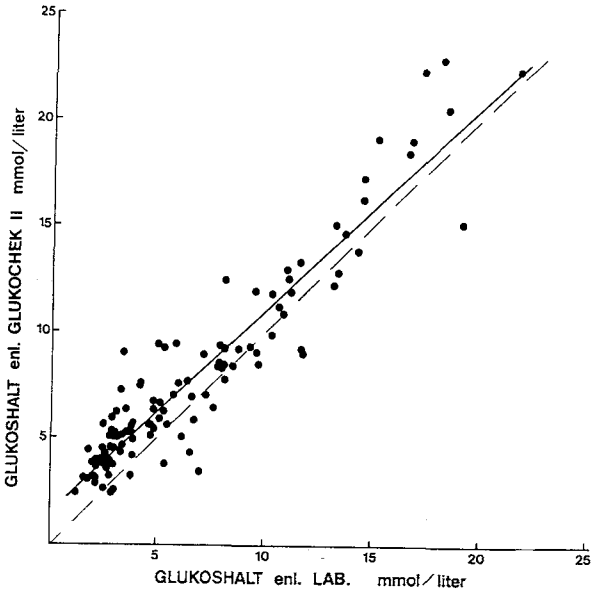

FIGURE
Measurments and regression line for glucose content in 111 blood samples assayed by the laboratory (x-axis) and the ward (y-axis). For methodological details - see text.
The hatched line indicates a 1:1 relationship. The regression equation is: $y=0.956x + 1.43$, which is significantly different from the 1:1 relationship.

The investigation shows that the use of Glucocheck II/BM-test-BG for bed-side blood glucose monitoring gives results with a poor agreement to the results of the same samples from the chemical laboratory.