Journal of Diabetes Science and Technology
Volume 2, Issue 5, September 2008

ORIGINAL ARTICLES

An Electronic Protocol for Translation of Research Results to Clinical Practice: A Preliminary Report

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Abstract

Introduction:

We evaluated the feasibility of using an electronic protocol developed for research use (Research-eProtocol-insulin) for blood glucose management in usual intensive care unit clinical practice.

Methods:

We implemented the rules of Research-eProtocol-insulin in the electronic medical record of the Intermountain Healthcare hospital system (Clinical-eProtocol-insulin) for use in usual clinical practice. We evaluated the performance of Clinical-eProtocol-insulin rules in the intensive care units of seven Intermountain Healthcare hospitals and compared this performance with the performance of Research-eProtocol-insulin at the LDS Hospital Shock/Trauma/Respiratory Intensive Care Unit.

Results:

Clinician (nurse or physician) compliance with computerized protocol recommendations was 95% (of 21,325 recommendations) with Research-eProtocol-insulin and 92% (of 109,458 recommendations) with Clinical-eProtocol-insulin. The blood glucose distribution in clinical practice (Clinical-eProtocol-insulin) was similar to the research use distribution (Research-eProtocol-insulin); however, the mean values (119 mg/dl vs 113 mg/dl) were statistically different ($P = 0.0001$). Hypoglycemia rates in the research and practice settings did not differ: the percentage of measurements ≤40 mg/dl (0.11% vs 0.1%, $P = 0.65$) and the percentage of patients with at least one blood glucose ≤40 mg/dl (4.2% vs 3%, $P = 0.23$) were not statistically significantly different.

Conclusion:

Our electronic blood glucose protocol enabled translation of a research decision-support tool (Research-eProtocol-insulin) to usual clinical practice (Clinical-eProtocol-insulin).

J Diabetes Sci Technol 2008;2(5):802-808

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Abbreviations: (ICU) intensive care unit, (SD) standard deviation

Keywords: clinical, clinical protocol, computer protocol, glucose, intensive care, replicability

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