

Outcomes eNews

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Insulin Infusion Protocols for Critically Ill Patients: A Highlight of Differences and Similarities

Lama H. Nazer, PharmD, BCPS Sheryl L. Chow, PharmD, BCPS, and Etie Moghissi, MD, FACP, FACE

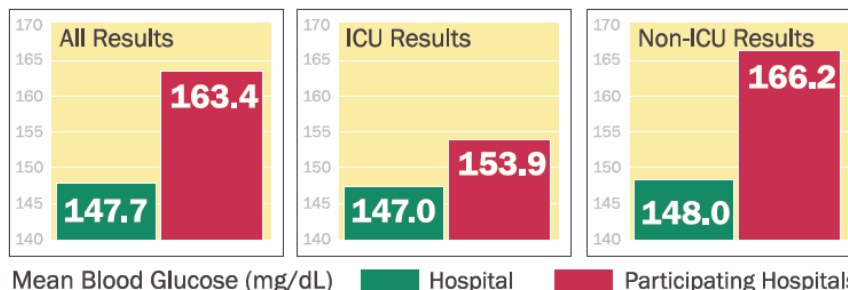
Hyperglycemia is a common occurrence in critically ill patients with and without diabetes. Stress during critical illness increases the levels of counter regulatory hormones and cytokines associated with hyperglycemia. Medications, such as corticosteroids, epinephrine, and norepinephrine, which are commonly administered in the intensive care unit (ICU), may also result in elevated glucose levels. In addition, hyperglycemia may result from parenteral and enteral nutrition and from dextrose solutions that are commonly used for administration of drugs or fluids.

Hyperglycemia in critically ill patients has been associated with an increase in the rates of mortality, infections, acute renal failure, blood transfusions, and critical illness polyneuropathy. The poor outcomes noted in such patients may be the result of several proposed mechanisms, including impaired preconditioning, phagocyte destruction, platelet hyperactivity, inflammatory changes, cellular adhesion, and oxidative stress. Glycemic control through the use of insulin infusion therapy has been shown to reduce morbidity and mortality significantly in acutely ill patients (2-7). Recently published studies have stimulated interest in managing hyperglycemia through the implementation of insulin infusion protocols (IIPs).

[Click here to access a pdf file of the rest of this publication >](#)

MAS Launches Glucose Benchmarking Report with 130+ Hospitals Providing Over 11 Million Results

Medical Automation Systems (www.rals.com) has announced the release of the much anticipated first RALS®-Annual Report providing mean blood glucose results for hospitals across the U.S. during the year 2006 compared to mean blood glucose results for all participating hospitals.



The charts above illustrate a sample of a specific hospital's results compared to the aggregate results of the 130+ participating hospitals.

Each hospital knows its own results information, but the identity of the other participating hospitals (the aggregate) is not revealed. This appears to be the first time that this kind of information has been made available.

With this information, hospitals wishing to improve the overall management of their glucose program can establish an internal and/or external baseline for all performance measurements.

The RALS-Annual Report helps participants understand their specific environment and suggests ways to change that environment. Not only can hospitals compare their performance against others, but they can measure the impact of any protocol change (i.e. Tight Glycemic Control or IV insulin dosing).

In 2006, there were over 130 participating hospitals, with over 11.3 million blood glucose test results. Of this total, approximately 2.5 million came from the ICU and approximately 8.8 million from the non-ICU. For more information, [click here](#).

Improving Outcomes With Evidence-Based Protocols

Andrew F. Shorr, MD, MPH

Based on several randomized trials, enhanced blood glucose (BG) control (eg, in the 80-110 mg/dL range) has been independently associated with enhanced survival. Reflecting on this, many intensive care units (ICUs) have implemented tight BG control protocols, which often rely on the liberal utilization of insulin drips in critically ill patients. Issues have been raised, however, regarding these protocols. One is that complex order sets are needed to support these protocols. In turn, the potential for medication error and resultant hypoglycemia are significant. The complexity of insulin order sets also occasionally meets resistance from nurses who ultimately implement them.

Anthony Lee, MD of Columbus Children's Hospital, Columbus, Ohio, studied ways to reduce these concerns. He and his colleagues hypothesized that converting an insulin dosing protocol from a paper-based system to a computerized one would decrease the rate of errors and improve nursing satisfaction.

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