Benchmarking Glucose Results through Automation: The 2009 Remote Automated Laboratory System Report

Marcy Anderson, M.S., M.T.(ASCP),¹ Denise Zito, M.T.(ASCP)SI,¹ and Gail Kongable, M.S.N., FNP²

Abstract

Background:

Hyperglycemia in the adult inpatient population remains a topic of intense study in U.S. hospitals. Most hospitals have established glycemic control programs but are unable to determine their impact. The 2009 Remote Automated Laboratory System (RALS) Report provides trends in glycemic control over 4 years to 576 U.S. hospitals to support their effort to manage inpatient hyperglycemia.

Methods:

A proprietary software application feeds de-identified patient point-of-care blood glucose (POC-BG) data from the Medical Automation Systems RALS-Plus data management system to a central server. Analyses include the number of tests and the mean and median BG results for intensive care unit (ICU), non-ICU, and each hospital compared to the aggregate of the other hospitals.

Results:

More than 175 million BG results were extracted from 2006–2009; 25% were from the ICU. Mean range of BG results for all inpatients in 2006, 2007, 2008, and 2009 was 142.2–201.9, 145.6–201.2, 140.6–205.7, and 140.7–202.4 mg/dl, respectively. The range for ICU patients was 128–226.5, 119.5–219.8, 121.6–226.0, and 121.1–217 mg/dl, respectively. The range for non-ICU patients was 143.4–195.5, 148.6–199.8, 145.2–201.9, and 140.7–203.6 mg/dl, respectively. Hyperglycemia rates of >180 mg/dl in 2008 and 2009 were examined, and hypoglycemia rates of <40 mg/dl (severe) and <70 mg/dl (moderate) in both 2008 and 2009 were calculated.

Conclusions:

From these data, hospitals can determine the current state of glycemic control in their hospital and in comparison to other hospitals. For many, glycemic control has improved. Automated POC-BG data management software can assist in this effort.

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Author Affiliations: ¹Medical Automation Systems, Charlottesville, Virginia; and ²The Epsilon Group, Charlottesville, Virginia

Abbreviations: (AHA) American Hospital Association, (BG) blood glucose, (ICU) intensive care unit, (MAS) Medical Automation Systems, (NICE-SUGAR) Normoglycemia in Intensive Care Evaluation-Survival Using Glucose Algorithm Regulation, (POC) point of care, (RALS) Remote Automated Laboratory System

Keywords: blood glucose, hospital, hyperglycemia, hypoglycemia, ICU

Corresponding Author: Denise Zito, 2000 Holiday Drive, Suite 500, Charlottesville, VA 2290; email address dzito@rals.com