

2014 CPOCT: Abstract Submission for POC vs Central Laboratory Glucose

Glucose correlation between Siemens point-of-care RAPIDPoint 500 Blood Gas System and two central laboratory platforms – RAPIDLab 1265 Blood Gas System and ADVIA 1800 Clinical Chemistry System

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Objective: To provide an assessment of whole blood glucose measurement obtained on the Siemens point-of-care RAPIDPoint® 500 blood gas system compared to a laboratory-based whole blood glucose measurement on the RAPIDLab® 1265 Blood Gas System and a plasma reagent-based chemistry glucose measurement on the ADVIA® 1800 Clinical Chemistry System.

Relevance: The accuracy of glucose measurement techniques impacts the clinical decision process. The accuracy of POC glucose monitoring devices (POCGMD) can depend on several factors including the POC device measurement technology, operator consistency and technique, collection of the sample and characteristics of the patient. Recent studies have been performed to assess the measurement of blood glucose accuracy in POC devices compared to central laboratory devices that exhibit "higher accuracy."¹

Methodology: Method comparison studies for glucose were performed between whole blood samples on POC (RAPIDPoint 500) and central lab (RAPIDLab 1265) systems and between whole blood samples on POC (RAPIDPoint 500) and plasma samples on the central lab (ADVIA1800) clinical chemistry system in accordance with the CLSI EP09-A3 guideline. 100 samples were run for both glucose studies across 2 RAPIDPoint 500 systems, 2 RAPIDLab 1265 systems and 1 ADVIA 1800 Clinical Chemistry System. Correlation statistics including weighted Deming slopes, intercepts, and coefficients of determination (r^2) were generated for the following comparisons:

- RAPIDPoint 500 Blood Gas System vs. RAPIDLab 1265 Blood Gas System
- RAPIDPoint 500 Blood Gas System vs. ADVIA 1800 Clinical Chemistry System

Validation: Weighted Deming regression statistics for each comparison across clinically significant measurement intervals for the glucose measurand are shown in Table 1. The slopes fell between 1.01 and 1.03, with $r^2 \geq 0.9973$.

Conclusion: From this study, we conclude that agreement of the glucose measurement was demonstrated between the Siemens POC and central lab platforms.

Table 1. Method comparisons for glucose between RAPIDPoint 500 system and central laboratory platforms

Comparison	Measurand	n	Median Bias	Slope	Intercept	r^2	Interval
RAPIDPoint 500 Blood Gas System vs. RAPIDLab 1265 Blood Gas System	Glucose (mg/dL)	100	2.1%	1.01	-5	0.9981	32 to 674
RAPIDPoint 500 Blood Gas System vs. ADVIA 1800 Clinical Chemistry System	Glucose (mg/dL)	100	2.1%	1.03	-2	0.9973	28 to 692

¹ Rebel A. The Accuracy of Point-of-Care Glucose Measurements

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