

Inpatient Utilization of Point of Care Glucose Concomitant Testing

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Project Objectives

- Quality enhancement project –determine opportunities to improve utilization of POC glucose testing
- Identify and quantify concomitant testing through retrospective review
- Objectives
 - Frequency of concomitant glucose testing
 - Assess benefits and risks of reducing POC glucose
 - Reasons why concomitant testing happens

Introduction

- Quality Initiative at Denver Health Medical Center to appropriately utilize point-of-care (POC) glucose testing
- Reduce the number of POC glucose performed
- Is there a need for redundant concomitant POC glucose in the management of our patients?
- Retrospective review of data to determine utilization of concomitant POC glucose

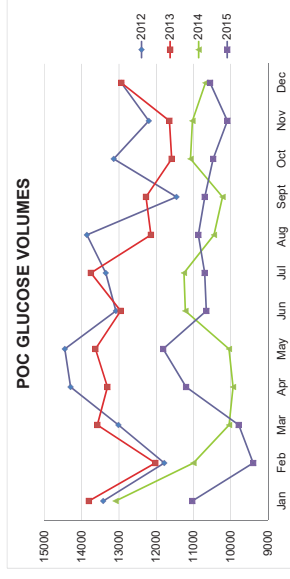
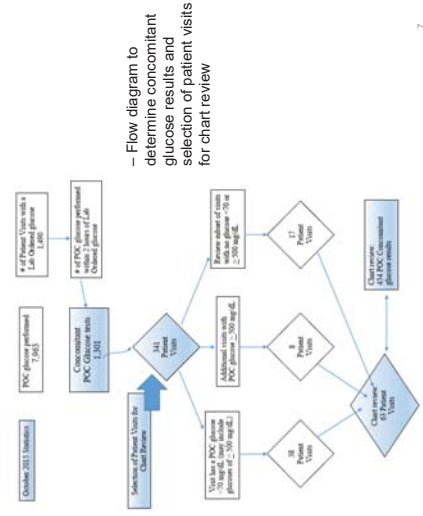
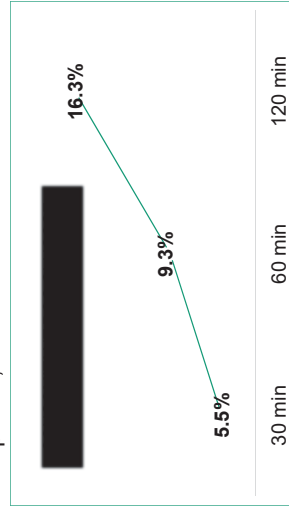


Research Design

- Retrospective review of POC glucose and Lab glucose performed Oct 1-31, 2015
- Inclusion – All inpatients, non-neonate, who had a glucose test performed by lab which was ordered as “random glucose”, “basic metabolic panel”, or “comprehensive metabolic panel”, and the patient had POC glucose test performed within two hours of lab performed glucose.
- Exclusion - Outpatients, neonate population
- Individual chart reviews performed
- IRB approval obtained for QA/QI from Rutgers

Results – Percent of Concomitant POC Glucose

7,963 POC glucose performed in October, 2015 for inpatient, non-neonate



Denver Health Medical Center, Denver, CO
 Statistics for total number of POC glucoses performed each month for years 2012, 2013, 2014, and 2015.

Methods

- Data Extraction
- Chart Review
- Correlation of Glucose Results

Table 1 - Categorization of all POC concomitant glucose by results and time

POC Glucose Value (mg/dL)	POC performed within 30 min of lab ordered	POC performed within 31-60 min of lab ordered	POC performed within 61-120 min of lab ordered	Total
10 to 600	449 (53.8%)	297 (22.8%)	584 (43.4%)	1,331
<40	6	3	3	12 (0.9%)
41-69	24	20	74 (5.7%)	74 (5.7%)
70-160	250	159	317	726 (55.8%)
161-499	152	108	207	467 (35.9%)
>500	8	7	22 (1.7%)	22 (1.7%)

Table 2 - Categorization of POC concomitant glucoses in Chart Review by results and time

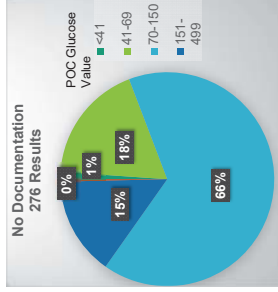
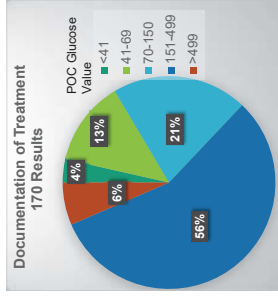
POC Glucose Value (mg/dL)	POC performed within 30 min of lab ordered	POC performed within 31-60 min of lab ordered	POC performed within 61-120 min of lab ordered	Total
10 to 600	136 (30.0%)	115 (25.3%)	203 (44.7%)	454
<40	6	3	3	12 (2.6%)
41-69	24	19	30	73 (16.1%)
70-160	59	54	106	219 (48.2%)
161-499	43	34	60	137 (30.2%)
>500	4	5	4	13 (2.9%)

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Results – Treatment Documentation

Review of Chart for documentation of treatment

- Insulin or dextrose administered
- Juice, meal, or dextrose gel for consumption



Results – Reason for Concomitant POC Glucose

Large number due to “AM draw”

- Approximately 3.5 POC glucose each day are performed within 30 min of AM lab collection
- Diabetic educator did not recommend use of am lab for hyperglycemia protocols
- RN often decides if POC glucose should be performed based on patient management

“Duplicate” category presents greatest opportunity for reduction in testing

- BMP not utilized for glycemic management by nursing staff
- Patients in DKA
- Patients with Sepsis

Conclusions

- Meter accuracy is **important** in the glycemic management of our sick patients.
- POC glucoses are reliable when performed by nursing staff at the bedside!
- Documentation of treatment provides insight into the management of the patient based on the POC glucose.
- The high percentage of POC glucoses performed with AM draws for BMP or at other times during the day which results in concomitant POC glucose demonstrates there is an opportunity to reduce the concomitant testing.

16

Results - Reason for Concomitant POC Glucose

“AM Lab draw”

“Lab not back”

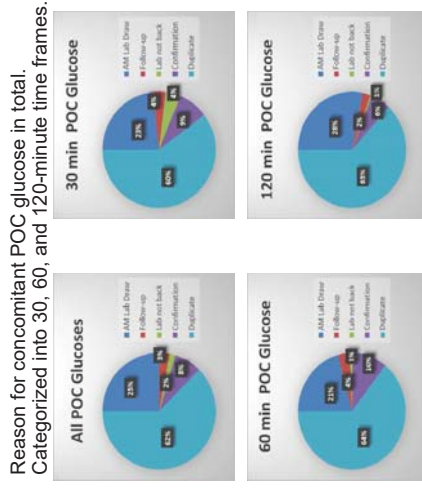
“Confirmation”

“Follow-up”

“Duplicate”

- Many POC glucoses are concomitant due to the frequent orders for BMP which are often performed every 2, 4, or 6 hours in our very sick patients.
- Insulin protocols for POC: prior to meal, at bedtime OR 0700, 1100, 1700, and 2100 may coincide with timed BMP.

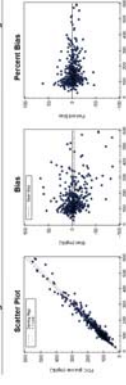
12



Reason for concomitant POC glucose in total. Categorized into 30, 60, and 120-minute time frames.

Alternate (Quantitative) Method Comparison

X Method: Lab glucose Y Method: POC glucose



Study correlation statistics

Slope: 0.96
Intercept: 2.2
R value: 0.96
Bias: -4.2
SD: 18.7

Regression Analysis

Deming	Linear
Slope: 0.96 (0.94 to 0.98)	Slope: 0.94 (0.92 to 0.96)
Intercept: 2.2 (1.6 to 2.7)	Intercept: 5.3 (4.6 to 6.0)
Max Error: 21.2	Max Error: 17.1
95% Confidence Intervals are shown in parentheses	

Supporting Statistics

Correlation Coefficient: 0.96	Number of Points: 10
Standard Error of Estimate: 18.7	Number of Points: 10
Standard Error of Slope: 0.01	Number of Points: 10
Standard Error of Intercept: 0.5	Number of Points: 10

Statistical comparison of concomitant POC glucose to Lab glucose collected within 30 minutes of each other. EP Evaluator®, Pathology and Laboratory Services— Denver Health Medical Center, Denver, CO

15

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Thank you! Questions?

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18