

Relationship Between Glycemic Control Using eGMS and Readmission Rates in Cardiovascular Patients Hospitalized with AMI, CHF or Undergoing CABG During the Implementation of a System Wide Glycemic Initiative

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OBJECTIVE

The CMS Hospital Readmission Reduction (HRR) program was initiated in 2012 to encourage hospitals to implement quality improvement programming to reduce the rate of readmissions through a hospital financial penalty. Uncontrolled inpatient hyperglycemia has been associated with increased readmission rates. Normoglycemia has been associated with improved patient outcomes, including decreased mortality, complications, length of stay and readmissions. This study evaluated the readmission outcomes of patients using an Electronic Glycemic Management System (eGMS) Glucomander (GM) for inpatient insulin management versus Standard Care (SC) in patients with Acute Myocardial Infarction (AMI), Congestive Heart Failure (CHF) and those undergoing Coronary Artery Bypass Grafting (CABG) procedures.

METHODS

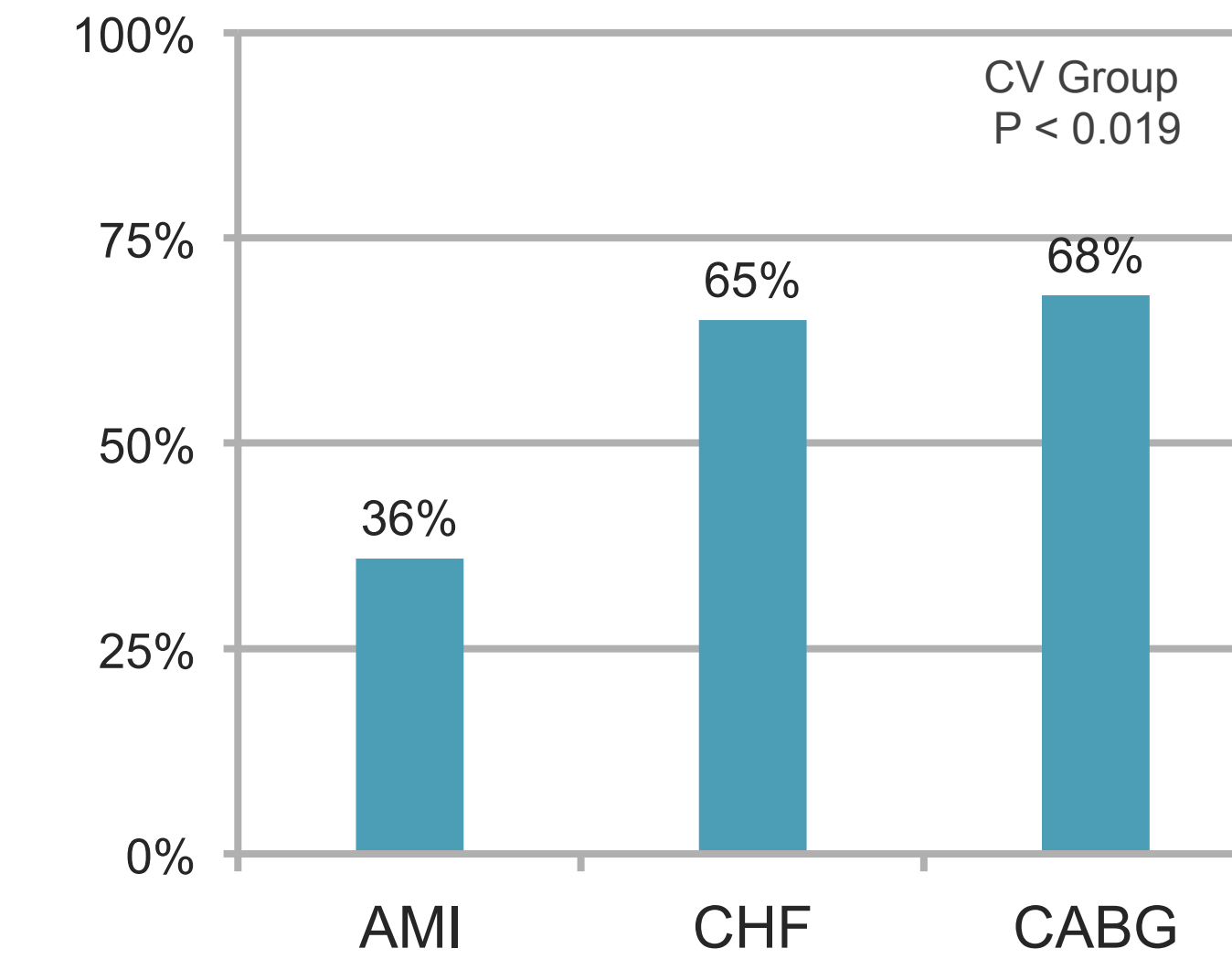
This retrospective study evaluated 3198 patients with AMI, CHF or undergoing a CABG procedure who were admitted to a 13 hospital health system over a 12 month timeframe from January 2015 through December 2015. Qualifying patients were treated with eGMS IV and/or SubQ insulin management or those treated by SC. The main outcome measure was Risk Adjusted Readmission Rates.

RESULTS

Patients (n=281) treated with eGMS had a Risk Adjusted Readmission rate of 0.75 for AMI, 0.34 for CHF and 0.65 for CABG. Patients (n=2917) treated with SC had a Risk Adjusted Readmission rate of 1.17 for AMI, 0.97 for CHF and 2.04 for CABG. The p values from the t-tests of the observed cardiac patient groups (p=0.019 SD 2.990, 2.618) determined statistical 95% significance p<0.05, particularly for CHF (p<0.009 SD 1.993, 0.905). Patients treated with eGMS had a reduced Risk Adjusted Readmission rate of 36% for AMI, 65% reduction for CHF and 68% for CABG.

	eGMS	Standard Care	Stats		eGMS	Standard Care	Stats
Average Admission Blood Glucose	241.5 mg/dL (SD = 185.8)	237.6 mg/dL (SD = 143.8)	P = 0.56	Blood Glucose Events Hyperglycemia > 180 mg/dL	9.14%	38.3%	P < 0.0001
Average Blood Glucose	136.1 mg/dL (SD = 64.2)	176.5 mg/dL (SD = 79.4)	P < 0.0001	Blood Glucose Events in Target Range 70-180 mg/dL	90.3%	58.9%	P < 0.0001
Average Final Blood Glucose	122.1 mg/dL (SD = 43.0)	184.1 mg/dL (SD = 68.8)	P < 0.0001	% of Patients Hypoglycemia < 40 mg/dL	0.52%	7.58%	P < 0.03
Blood Glucose Events Hypoglycemia < 40 mg/dL	0.01%	0.39%	P < 0.0001	% of Patients Hypoglycemia < 70 mg/dL	12.0%	29.4%	P < 0.0001
Blood Glucose Events Hyperglycemia < 70 mg/dL	0.50%	2.78%	P < 0.0001				

Risk Adjusted Readmission Reduction



Risk Adjusted Readmission Rate

	eGMS	Standard Care
Patients	281	2917
AMI	0.75	1.17
CHF	0.34	0.97
CABG	0.65	2.04

CONCLUSION

The evidence presented in these results suggest that glycemic control using eGMS can effectively reduce the rate of readmission for patients with cardiovascular disease who are in need of insulin management. There is enough evidence supporting a decrease in Risk-Adjusted readmission rates among groups treated with eGMS management.

AFFILIATIONS

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