



Improving Patient Safety:

Hypoglycemia Reassessment at Orange Regional Medical Center

What is the Society of Hospital Medicine's Glycemic Control eQUIPS Program?

The Society of Hospital Medicine's (SHM's) Glycemic Control Electronic Quality Improvement Program (GC eQUIPS) assists with optimizing glycemic control and minimizing hypoglycemia. The program is designed to enhance the efficiency and reliability of your quality improvement efforts and optimize best practices and methods for caring for the inpatient with hyperglycemia.

What is benchmarking and how does it help hospitals develop glycemic control target goals?

Benchmarking refers to the process by which SHM's glycemic control data center helps track performance via cross-comparison of internal data reporting of all participating hospitals to create an external performance report. SHM generates a benchmark report every six months that compares the performance of participating hospitals. The benchmark report:

- Allows comparison between like hospitals including community hospitals and academic medical centers
- Helps hospitals prioritize problem areas including hypoglycemia and glycemic control
- Provides local performance context
- Identifies averages and top-performing numbers to assist in goal development
- Can provide rationale for supporting a glycemic control program in a hospital
- Can assist hospitals in setting goals based on opportunities for improvement

The units of analyses for glycemic control and hypoglycemia include patient-days (patient-days with point-of-care blood glucose readings) and patient-stays (consecutive patient-days on an inpatient unit). Measures for hypoglycemia, severe hypoglycemia, glycemic control and uncontrolled hyperglycemia are included. SHM also helps track recurrent hypoglycemic days, and time intervals to recheck and resolve hypoglycemic events.

Background

The purpose of this case study is to highlight how Orange Regional Medical Center's involvement with SHM's Glycemic Control eQUIPS Program helped provide its staff with the necessary tools and data to overcome challenges in glucose management.

In 2012, Orange Regional Medical Center lacked formal assessment of glucose management. At the time, the point-of-care glucose average was approximately 200 mg/dL. To address these issues and take a deeper dive into data, the hospital formed an interdisciplinary team dedicated to quality diabetes care and the improvement of glucose-related outcomes.

In 2016, the Orange Regional Medical Center Glycemic Control Improvement Team started using SHM's Glycemic Control Implementation Guide. The team realized they lacked the benchmarks to further develop glycemic management targets and quantify improvement. The hospital became involved in SHM's Glycemic Control eQUIPS Program to acquire the necessary benchmarking and detailed reports needed to advance quality of inpatient care.

Case Study

Hypoglycemia in the hospitalized patient has the potential for significant harmful outcomes. Risks for adverse events increase proportionally with the frequency, severity and duration of hypoglycemia, making reassessment of glucose level post treatment an important patient safety indicator.

Using Glucometric Data

Setting Goals

May 2016 glucometric data demonstrated that Orange Regional Medical Center's reassessment of hypoglycemia within 30 minutes of initial hypoglycemic glucose event was below benchmarks. The Glycemic Control Improvement team developed target and stretch goals based on SHM's GC eQUIPS Benchmarking Report mean and top-quartile performance values, respectively.

Critical Care Units

[Target $\geq 36.5\%$, Stretch $\geq 42.3\%$]



Acute Non-Critical Care Units

[Target $\geq 39.7\%$, Stretch $\geq 51.1\%$]



Description: Orange Regional Medical Center's individual May 2016 results show 27.7% and 35.8% of hypoglycemic events with reassessment readings documented within 30 minutes in critical care and non-critical care, respectively. Orange Regional Medical Center's goal percentages of 36.5% in critical care and 39.7% in non-critical care based on the Fall 2015 benchmark report. See appendix for additional content.

Don't Miss the Bus! Retest in 15!

Orange Regional Medical Center's policies require reassessment within 15 minutes of hypoglycemia treatment. The Orange Regional Medical Center Glycemic Control Improvement Team initiated an education push for RN's in all units using our team's "glycemic bus" sporting the signature, "Don't miss the bus! Retest in 15!" Copies of department-specific hypoglycemic policies, candy treats and pens are offered with the logo "<70 Retest in 15!"



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Glycemic Bus Pass Awards

A.K.A. the Nugget (Nursing Unit Glucose Testing) Awards were presented for excellence in individual hospital unit performance.



Achievements

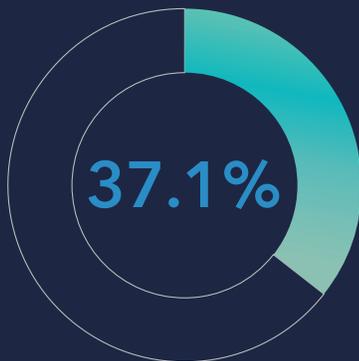
In October 2017, the hospital system acknowledged the Glycemic Control Improvement Team's efforts with a "Gold" award for its contribution to patient safety and quality.



Post-Intervention Data

Critical Care Units

[Target $\geq 36.5\%$, Stretch $\geq 42.3\%$] Exceeded target!



Acute Non-Critical Care Units

[Target $\geq 39.7\%$, Stretch $\geq 51.1\%$] Exceeded stretch!



Description: Orange Regional Medical Center's individual May 2017 results show 37.1% and 56.7% of hypoglycemic events with reassessment readings documented within 30 minutes in critical care and non-critical care, respectively. Orange Regional Medical Center's critical care results exceeded the target goal and non-critical care results exceeded the stretch goal. See appendix for additional content.

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Hypoglycemia Reassessment at Orange Regional Medical Center

The Glycemic Improvement Scorecard

Derived from point-of-care data uploaded to the GC eQUIPS database and the subsequent reports, Glycemic Improvement Scorecards are sent to all hospital leaders and physicians each month. The scorecard shows mean glucose, percentage of readings in target range; number of patient-days with glucose results <40 mg/dL, <70 mg/dL, >299 mg/dL; and percentage of hypoglycemic events retested in 30 minutes. Combined data is provided for staff by critical care, non-critical care and other units (rehabilitation and behavioral health) and on a unit-by-unit basis.

By December 2017, year-to-date scorecard results indicated that this important safety initiative has provided sustainable results.

Critical Care Units

[Target ≥36.5%, Stretch ≥42.3%] Exceeded target!



Acute Non-Critical Care Units

[Target ≥39.7%, Stretch ≥51.1%] Exceeded Stretch!



Description: Orange Regional Medical Center's individual December 2017 results show 40.6% and 55.6% of hypoglycemic events with reassessment readings documented within 30 minutes in critical care and non-critical care, respectively. Once again, Orange Regional Medical Center's critical care exceeded the target goal and non-critical care results exceeded the stretch goal. See appendix for additional content.

Conclusion

The use of glucometrics for inpatient diabetes management is integral to patient safety and attaining optimal outcomes, and is vital to the improvement process. Glucometrics allow for:

- Evaluation of inpatient glucose values and performance comparison to other hospitals
- Identification of areas in need of improvement
- Development of problem-focused action plans
- Assessment of the effectiveness of interventions and sustainability of results

For more information on SHM's GC eQUIPS program, please visit

<https://www.hospitalmedicine.org/clinical-topics/glycemic-control/>

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Hypoglycemia Reassessment at Orange Regional Medical Center

Appendix

Below is an overview of Non-Critical Care Data from the Fall 2015 Benchmark Report which encompasses data from all participating GC eQUIPS hospitals. Orange Regional Medical Center used this report to establish target and stretch goals for reducing hypoglycemic events based on the mean and top quartile results shown in the tables.

*N/A connotes where individual hospitals' results would be displayed

		Patient-Stay	Patient-Day
Day weighted mean glucose	Hospital	#N/A*	#N/A*
	Top Quartile	≤144.1	≤146.2
	Mean	151.3	153.6
	Median	150.1	152
	Range	130.5 - 182.6	130.4 - 185.2
Percent stays or days with uncontrolled hyperglycemia (mean glucose ≥180 mg/dL)	Hospital	#N/A*	#N/A*
	Top Quartile	≤16.7%	≤18.1%
	Mean	22.4%	23.7%
	Median	21.8%	22.6%
	Range	2.5% - 46.6%	3.2% - 42.1%
Percent readings per stay in range (71 - 179 mg/dL)	Hospital	#N/A*	
	Top Quartile	≥76.9%	
	Mean	70.7%	
	Median	71.7%	
	Range	45.7% - 92.2%	
Percent of stays or days with hypoglycemia (<70 mg/dL)	Hospital	#N/A*	#N/A*
	Top Quartile	≤10.3%	≤3.9%
	Mean	13.1%	5.0%
	Median	12.7%	4.8%
	Range	5.7% - 23.4%	2.2% - 9.6%
Percent of stays or days with severe hypoglycemia (<40 mg/dL)	Hospital	#N/A*	#N/A*
	Top Quartile	≤0.9%	≤0.2%
	Mean	1.5%	0.4%
	Median	1.3%	0.4%
	Range	0.0% - 4.7%	0.0% - 1.7%
Percent of days with severe uncontrolled hyperglycemia (>299 mg/dL)	Hospital		#N/A*
	Top Quartile		≤5.5%
	Mean		8.0%
	Median		7.2%
	Range		1.3% - 21.0%

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Glycemic Exposure, Glycemic Control, and Safety Parameters

Time (minutes) between glucose <70 mg/dL and next documented reading	Hospital	#N/A*
	Top Quartile	≤53.7
	Mean	70.2
	Median	69.3
	Range	19.1 - 138.6
Time (minutes) between glucose <70 mg/dL and documented resolution of hypoglycemia	Hospital	#N/A*
	Top Quartile	≤69.0
	Mean	91.0
	Median	85.6
	Range	30.6 - 232.5
Percent of hypoglycemic events with next reading documented within 30 minutes	Hospital	#N/A*
	Top Quartile	≥42.3%
	Mean	36.5%
	Median	32.3%
	Range	9.0% - 94.6%
Percent of patients with hypoglycemia with at least one recurrent hypoglycemic day	Hospital	#N/A*
	Top Quartile	≤22.2%
	Mean	26.3%
	Median	26.6%
	Range	6.7% - 47.6%

