

2024 VIZIENT CONNECTIONS SUMMIT

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Innovating Together: A Multidisciplinary Care Approach to Reducing Hypoglycemic Events

Wellstar Douglas Medical Center

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Elizabeth Pennington, PharmD, Pharmacy Manager

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University of Florida Health Shands

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Learning Objectives

- Describe potential high-risk patient populations for hypoglycemic events.
- Discuss various methods employed through an interdisciplinary team (including nursing, pharmacy, and nutrition and food services) to reduce hypoglycemic risks after insulin administration.



Innovating Together: A Multidisciplinary Care Approach to Reducing Hypoglycemic Events

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Project Introduction

Hypoglycemia In Insulin Use Measure

- Metric Definition:
 - Received Insulin on the Day of or Day Prior to Having a **Blood Glucose Level of $\leq 50\text{mg/dl}$**
- Age ≥ 18 , Inpatient, Received Insulin
- Result from Serum, Point of Care, and Plasma Values
- Denominator is Determined per Patient Encounter with Episode of Hypoglycemia
- Exclusions:
 - Serum Potassium > 6.0
 - Exclude any Insulin Administrations on Day of and Day After Admission Date
 - Insulin Administrations on Day After Can be Considered Related to a Day 3 Hypoglycemic Event but Cannot be Used for a Same Day Event

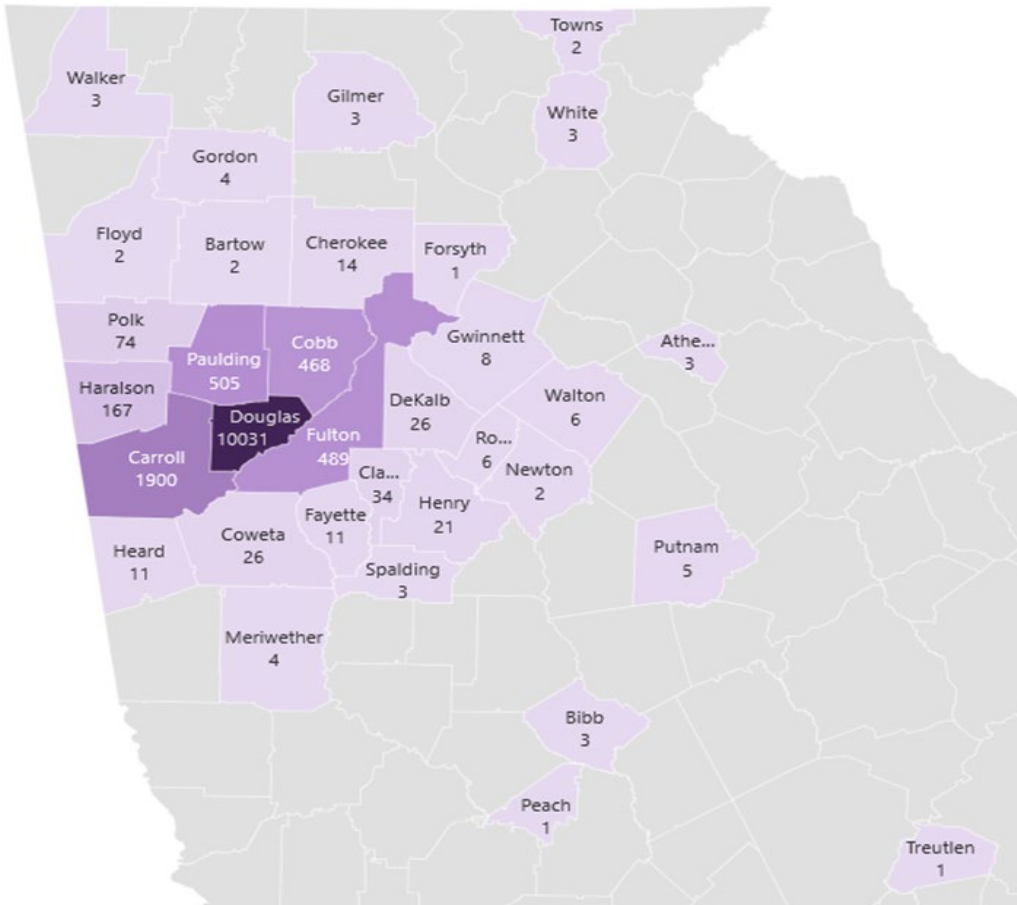


Wellstar Douglas Medical Center

- Community Hospital located in Douglasville, Georgia
- **108 Licensed Beds**
- Disease Specific Certifications:
 - Primary Heart Attack Center
 - Emergency Cardiac Care Center Level 2
 - Total Joint- Hip & Knee
 - Primary Stroke Center

Wellstar Douglas Medical Center (WDMC): Reducing Inpatient Hypoglycemic Events

Background: Total of 14,050 Patient Visits to WDMC, Medical Group Douglasville & Outpatient Services with Diagnosis of T1DM & T2DM in 2023



Douglas County GA Demographics:

Total Population: (2022) 143,316

- **African American: 45.9%**
- Asian: 1.6%
- Hispanic: 9.7%
- Non-Hispanic White: 40.5%
- Limited English: 4.5%
- **Adults with BMI >30.0 (2017) 33.2%**
- **Adults with Diabetes (2021) 13.4%**

Courtesy of the Wellstar Community Health Needs Assessment 2022

Wellstar Douglas Medical Center: Reducing Inpatient Hypoglycemic Events

Situation: Hypoglycemia After Insulin Use

- Top Opportunity for Improvement per the Q&A Scorecard for CY23
- Retrospective Chart Review Completed
- Multidisciplinary Team Assembled





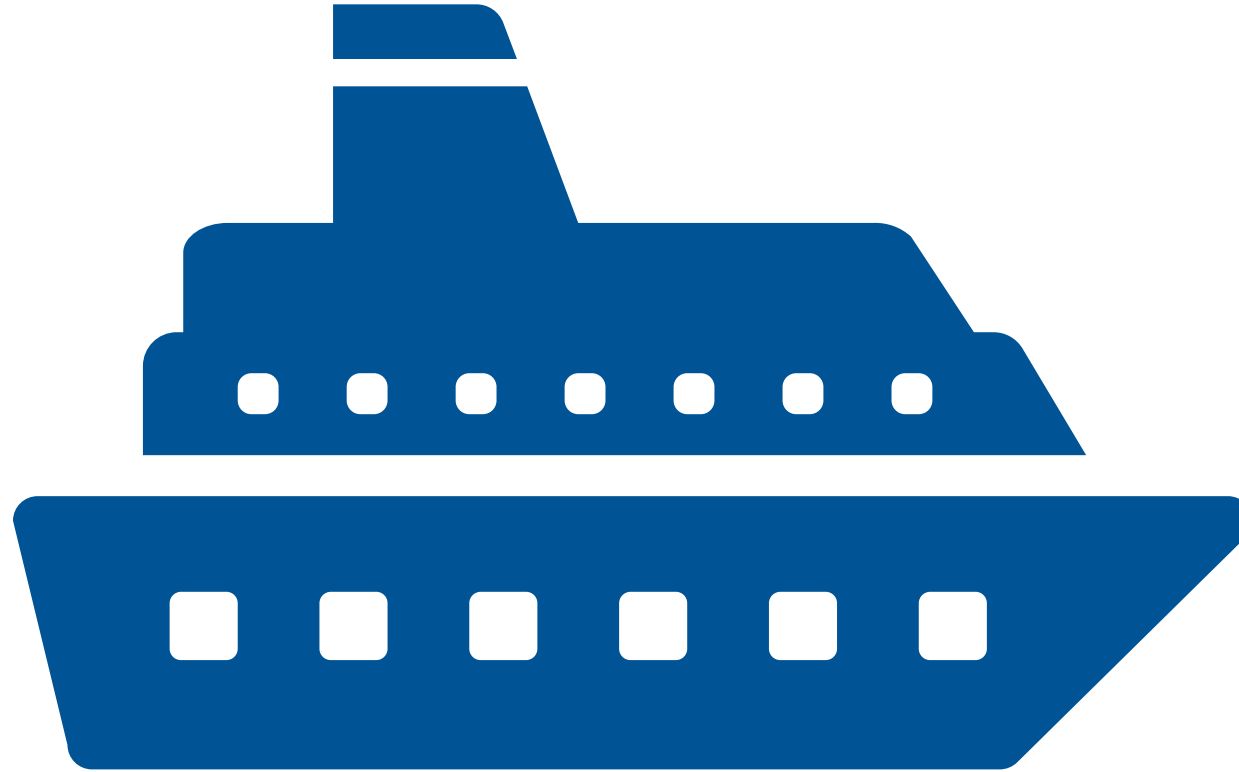
University of Florida Health Shands Hospital

- **Comprehensive Academic Medical Center** located in Gainesville, Florida
- **1,162 licensed beds** across 3 patients towers
- Level 1 Trauma, ECMO and Transplant Center
- NCI and Magnet Designations

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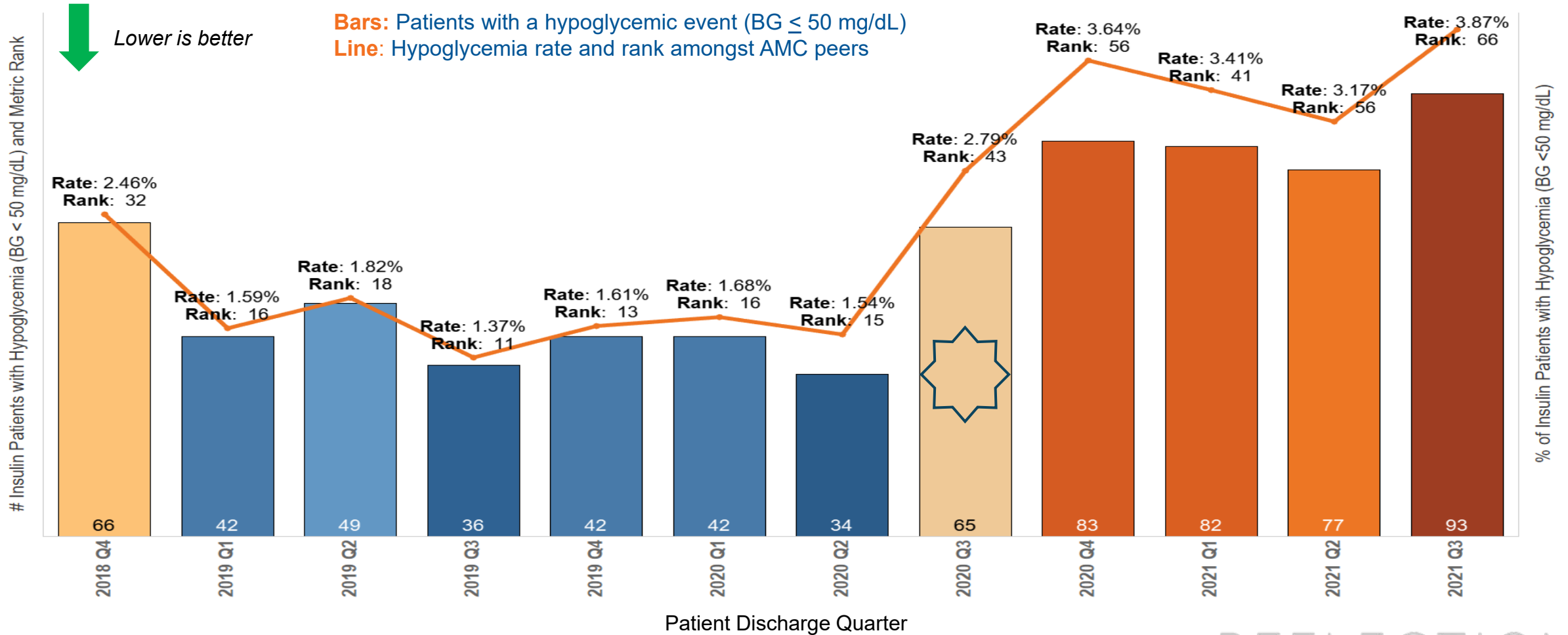
As Easy as Turning an Aircraft Carrier

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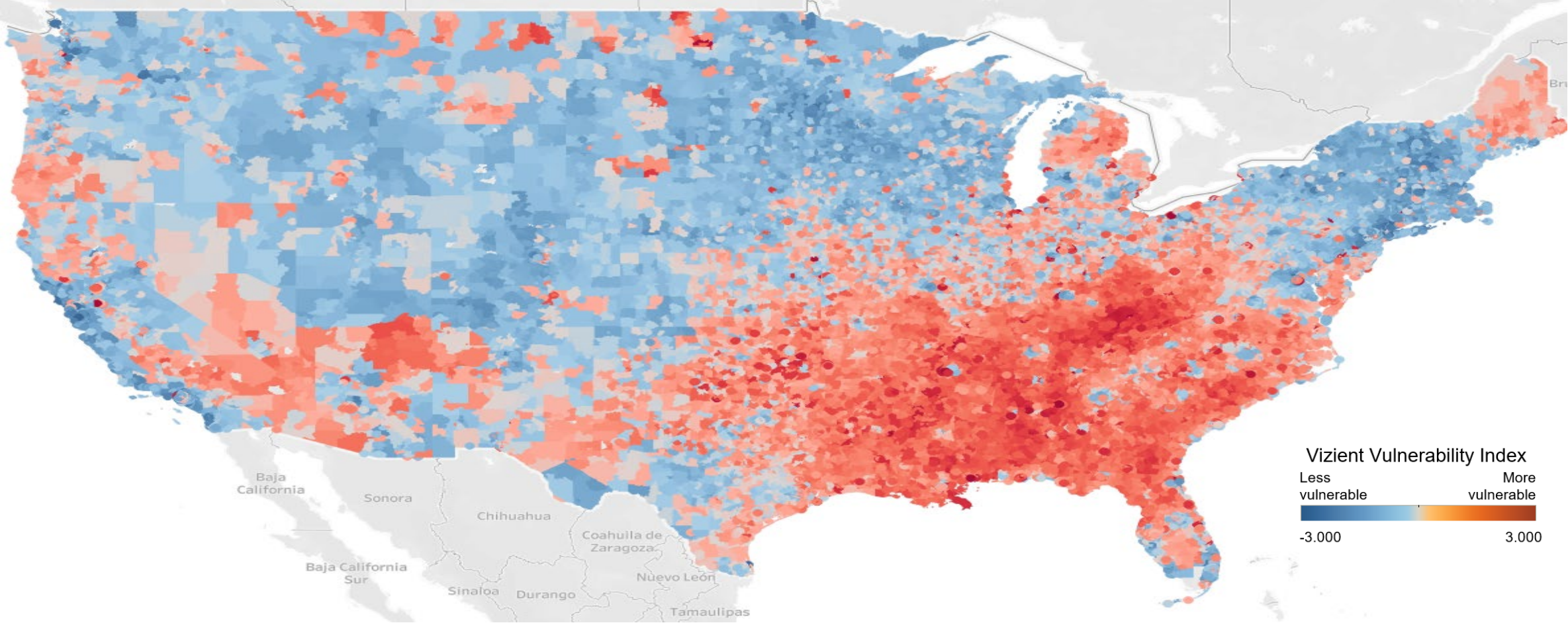
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UF Shands: Signal to Take Action: COVID-19



Abbreviations: BG = blood glucose

Vizient Vulnerability Index and the Southeast



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Social Determinants of Health Contributing to Health Disparities

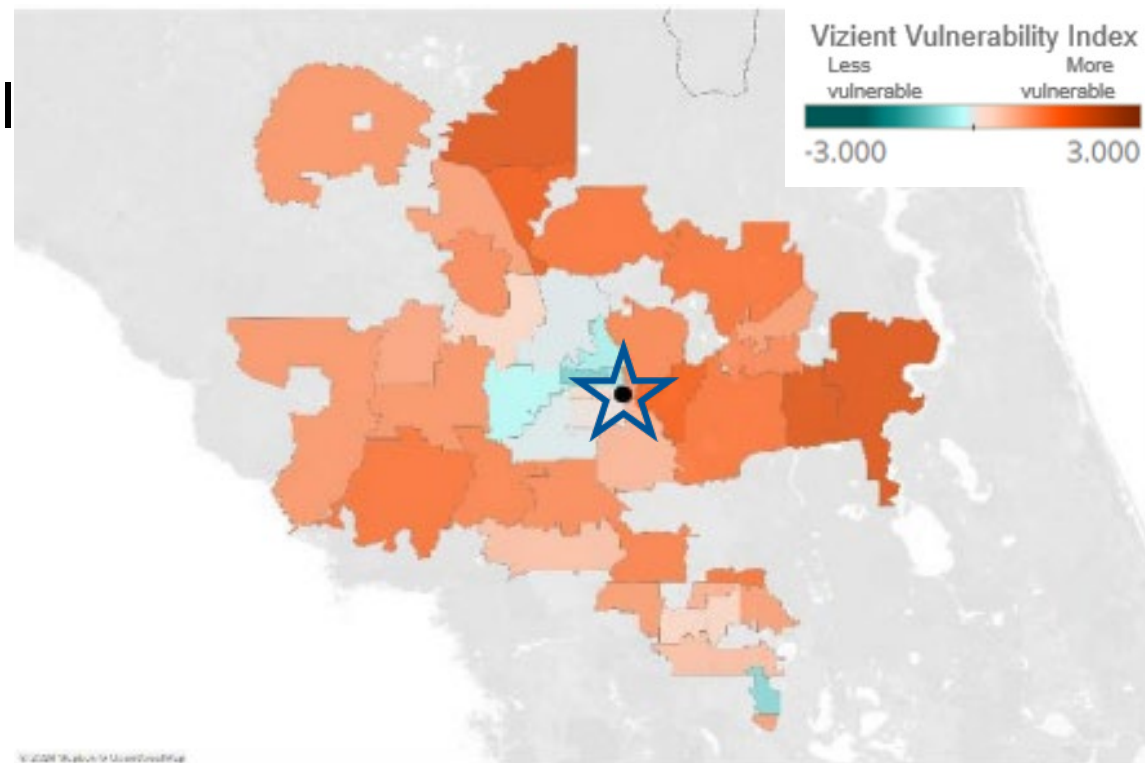


- The communities served have high vulnerability scores exceeding the national average

Median 1.0; IQR 0.6-1.3

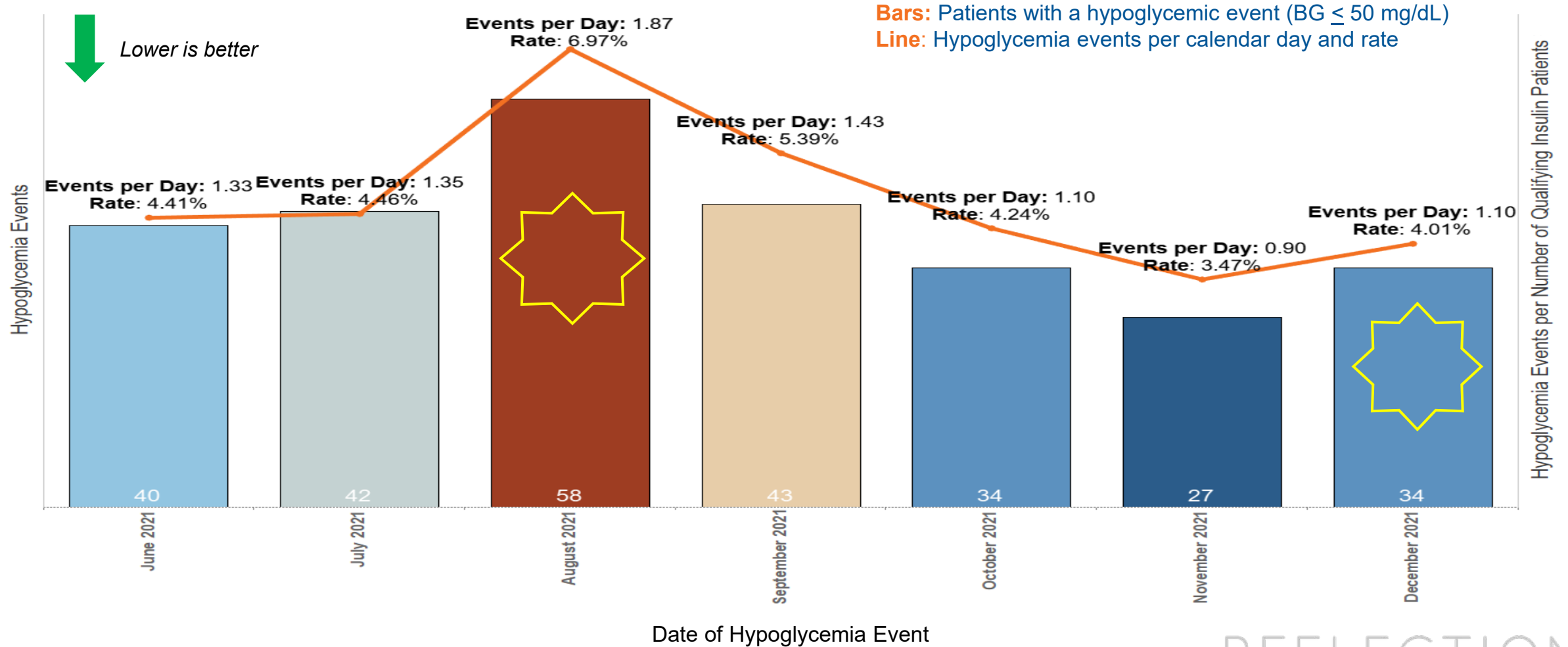
Current Percent from neighborhood with Vizient Vulnerability Index >1 is 22.3% for UF Health Shands

- Face economic, education, neighborhood resources, clean environment, and public safety obstacles to care



	Distinct Patients	Percent Under 18	Percent over 65	Percent with Behavioral Health Diagnoses	Percent Medicaid	Percent Uninsured	Percent Homeless (Diagnosis Code)	Percent with Social Need Diagnosis Codes	Percent from Neighborhood with Vizient Vulnerability Index >1
-- Vizient-Wide Totals	133,498,339	15.8%	24.7%	22.2%	21.2%	4.4%	0.6%	2.2%	15.4%
100001 UF Health Jacksonville	228,107	15.5%	18.1%	29.5%	24.5%	3.5%	1.3%	7.0%	26.1%
100084 UF Health Leesburg Hospital	79,234	10.4%	46.2%	23.9%	16.8%	6.9%	0.4%	1.5%	16.7%
100113 UF Health Shands Hospital	325,493	23.7%	23.0%	25.4%	23.9%	5.3%	0.5%	2.9%	22.3%
100290 UF Health The Villages Hospital	81,330	5.0%	62.2%	27.2%	9.0%	4.5%	0.2%	1.3%	13.3%

UF Shands: "Real-Time" Hypoglycemia Event Tracking



Abbreviations: BG = blood glucose

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Assessment/Action/Results

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Wellstar Douglas Medical Center: Reducing Inpatient Hypoglycemic Events

Action: Multidisciplinary Plan

Discussion at Morning Facility Safety Huddle

Pharmacy

Real Time Tool: **Events per 1000 Insulin Administrations** (EMR, ADS Dispensing)

ADS Insulin Availability

Per Protocol Agreements

Monitoring/Interventions on High-Risk Patients via EMR

Nursing: Pilot Testing on Unit

Meal Tray Timing with POC Testing and Insulin Administration

IDR Identification of High-Risk Patients

NPO/Low Nutritional Intake/Tube feeds

Abbreviations: ADS: automated dispensing systems; EMR: electronic medical record; IDR: interdisciplinary rounds; NPO: nothing by mouth; POC: point of care.

Wellstar Douglas Medical Center: Reducing Inpatient Hypoglycemic Events



IDR: TEMPOSS		
	RN Reports the following objective/measurable data	Notes
T	Telemetry: What is the Tele Rhythm? Does the order need to be Renew, Ok to Expire or DC? Pulse Ox ordered properly? needed?	
E	Events: What were the overnight events? What are your concerns?	
M	% Meals & Mobility GUAG Score: % Meals? GUAG Score? Maximum, Moderate, or Independent What is the Fall Risk Score? Telesitter?	
P	Potty/Pain: When was the last BM? Foley Catheter/Pure wick? Can the catheter be removed? Pain controlled?	
O	Oxygen, Orders & Other: What device? How many Liters? Baseline? Saturation % Home O2 Eval needed? Daily Weight orders? Is the patients' weight accurate? Strict I&Os order? Documented? Are there any other orders needed?	
S	Skin Protection and Wound Care: Wounds present? Foam Dressing? Prevention or Treatment? EHOB (Waffle Mattress)? Wound Care Consult? Nutrition Consult needed?	
S	Sugar Stable? DM Hx or Insulin Orders? NPO or Decreased Nutritional Intake? Renal Failure? Gastroparesis? Hypoglycemic Event? >300 BGG? 3AM POCT Needed?	

Interdisciplinary Rounding (IDR) Tool



Identify Patients at Risk for Hypo/Hyperglycemic Events



TEMPOSS: Telemetry, Events, Meals/Mobility, Potty/Pain, Oxygen/Orders/Other, Skin, Sugar

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3N Glycemic Management Project: Meals to Medications in 30 Minutes



New Process
GO-LIVE 2/20/24

Patient Population: All patients with Active BBG Orders

- Patient Preorder Meal
- Prepare Meal
- Notify CP
- Deliver Tray
- Responder 5 Notification
- Select Tray in Room

NFS

- Obtain Blood Glucose (BBG)
- Notify RN
- Document on Room Communication Board

CP

- Educate Patient
 - Encourage Patient to Preorder Meals
- Debrief CP
- Administer Anti-Diabetic Medications

RN

RN to provide Patient Education & Menu

Isolation Trays will be left at nurse's station and no longer batched. Tray should be delivered to room within 10 minutes.

GOAL: Order to Deliver 45 Mins

GOAL: Meal to Medication 30 Minutes

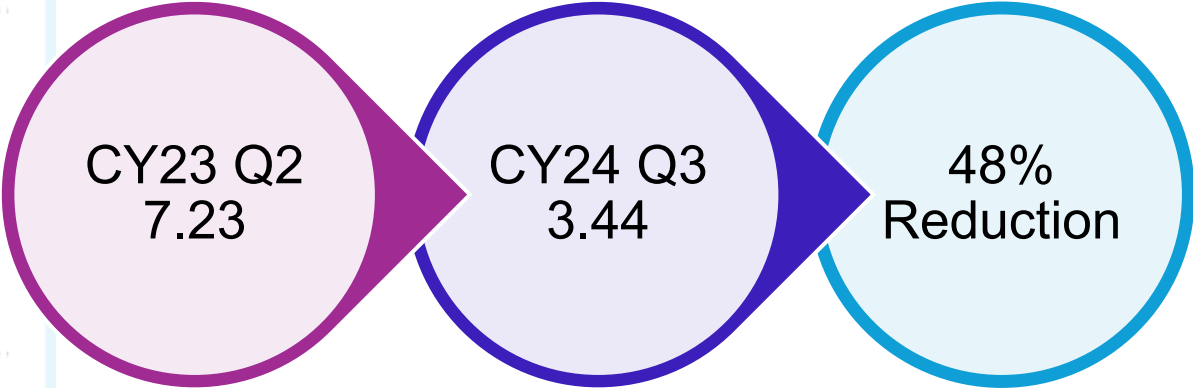
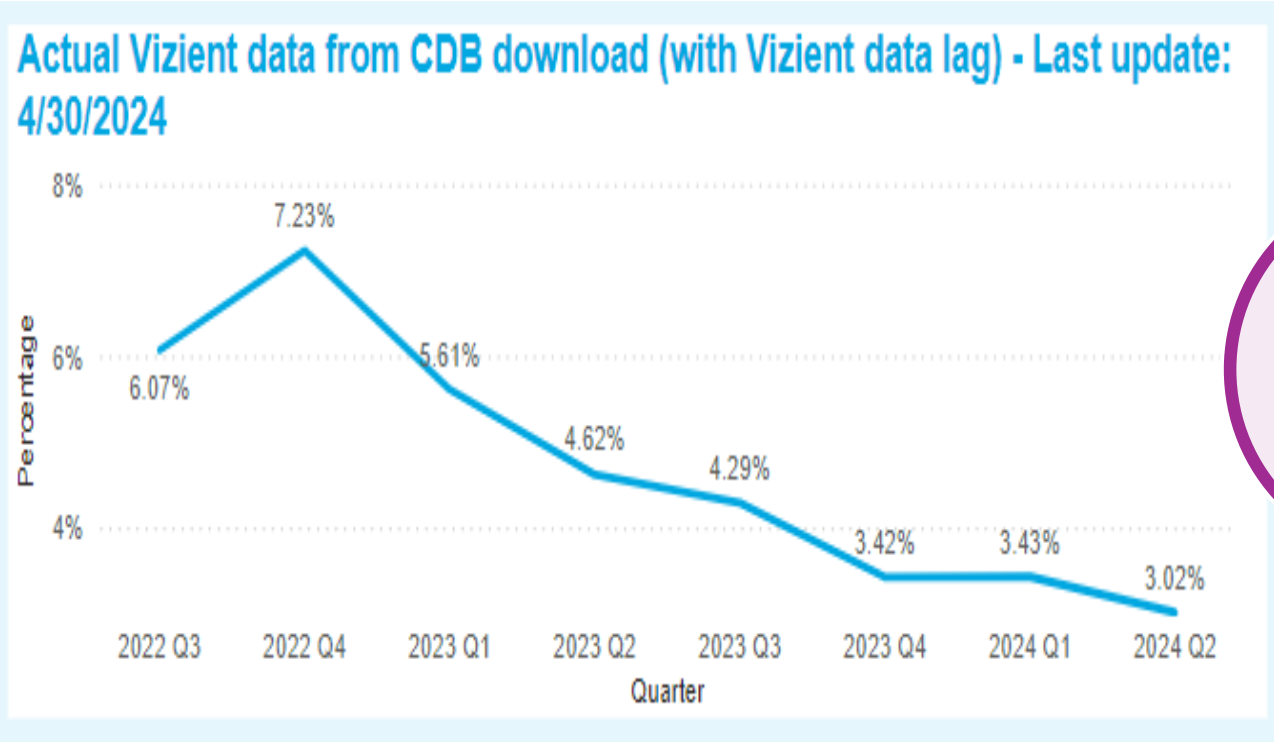


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Wellstar Douglas Medical Center: Reducing Inpatient Hypoglycemic Events



Results: Q&A Scorecard Metric Value Reduction

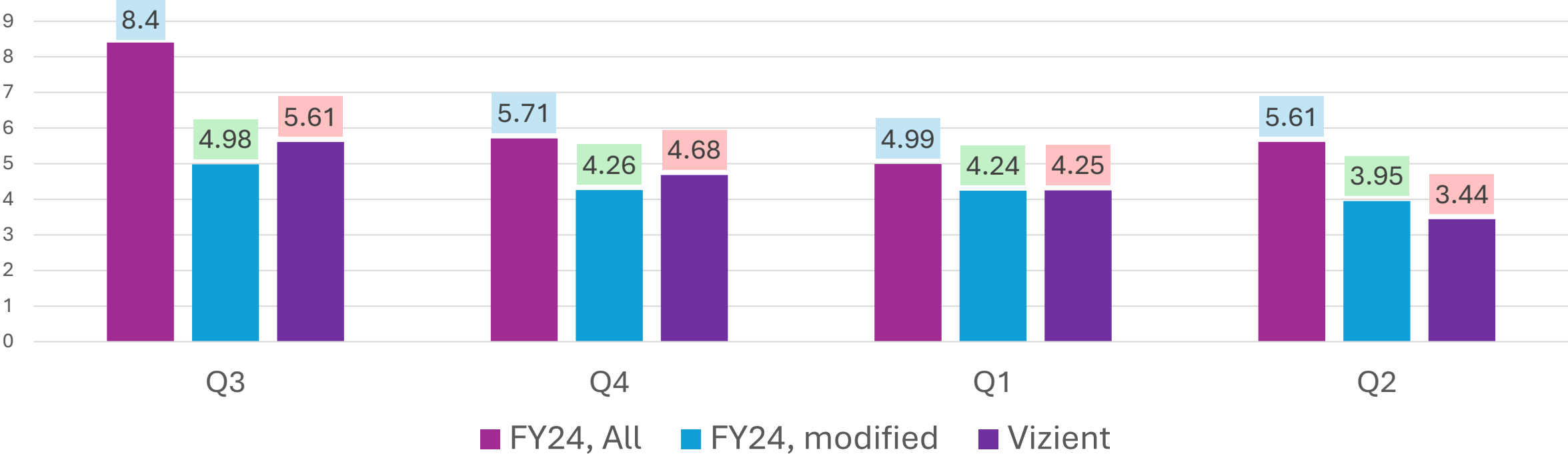


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Wellstar Douglas Medical Center: Reducing Inpatient Hypoglycemic Events



Results: FY24 Hypoglycemic Events per 1000 Insulin Administrations per Quarter – Vizient comparison

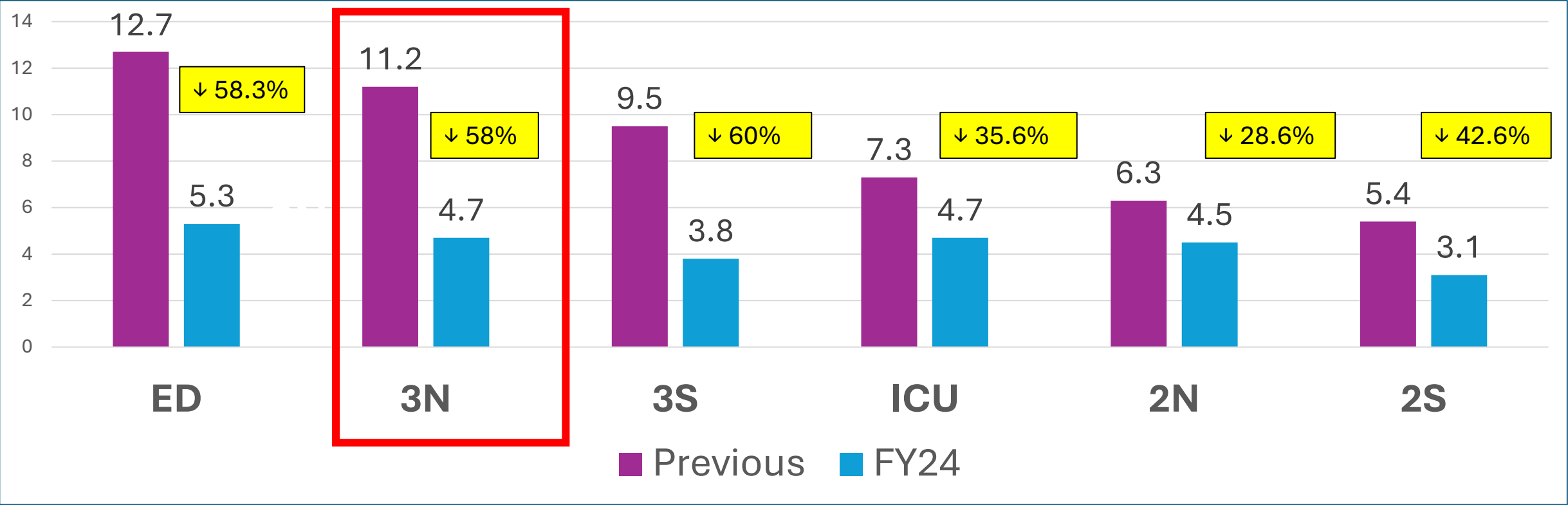


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Wellstar Douglas Medical Center: Reducing Inpatient Hypoglycemic Events



Results: FY24 (July-June)
Unit Event Reduction per Pharmacy Metric Per 1000 Events

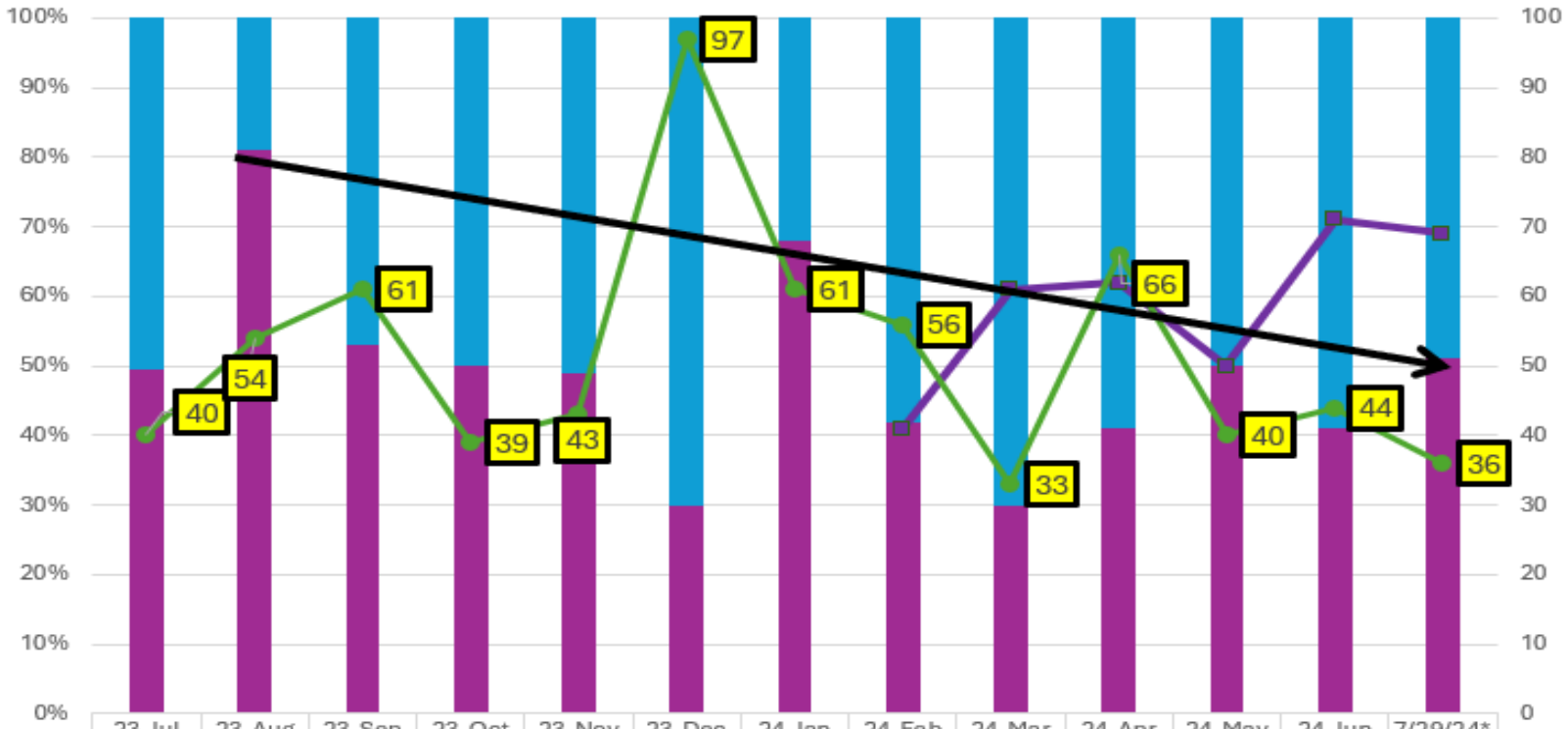


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Wellstar Douglas Medical Center: Reducing Inpatient Hypoglycemic Events



FY24 Insulin vs Non-Insulin with 3M Compliance Comparison

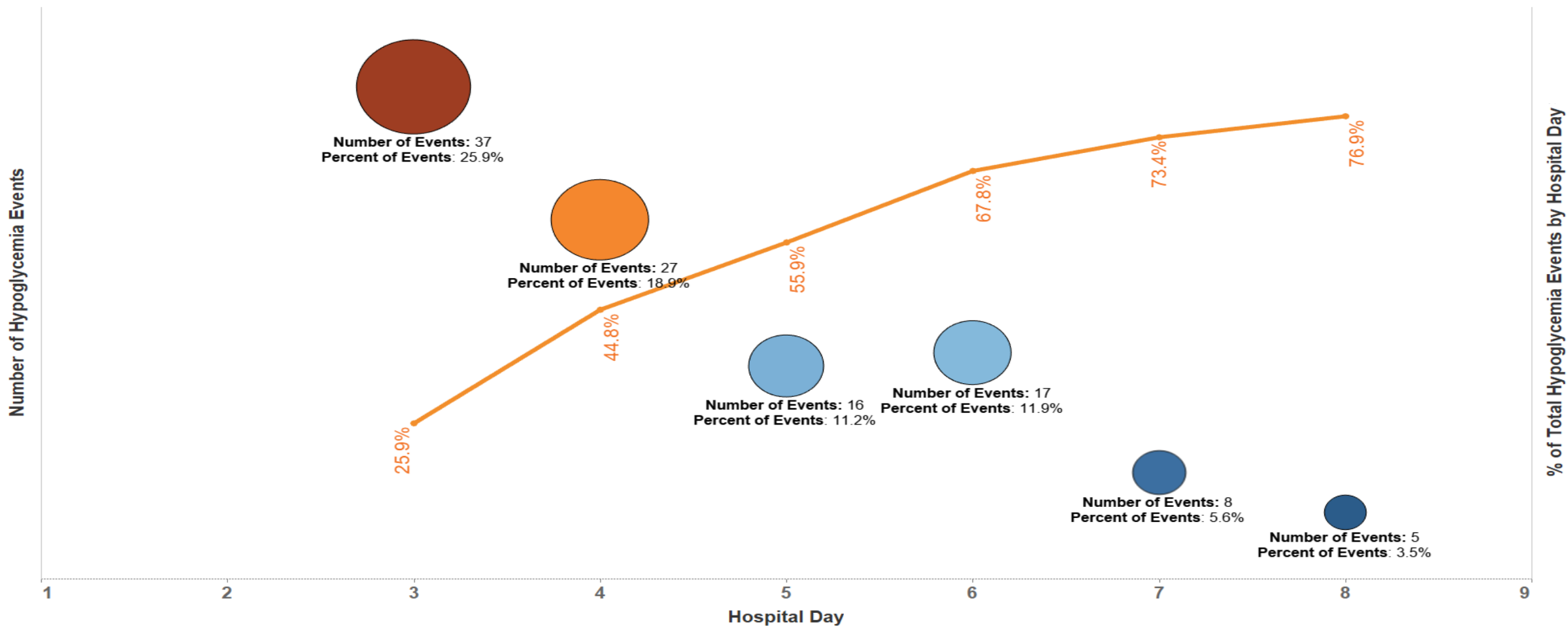


Insulin No	51%	19%	47%	50%	51%	70%	32%	58%	70%	59%	50%	59%	49%
Insulin Yes	50%	81%	53%	50%	49%	30%	68%	42%	30%	41%	50%	41%	51%
% 3M Compliance								41%	61%	62%	50%	71%	69%
Count	40	54	61	39	43	97	61	56	33	66	40	44	36

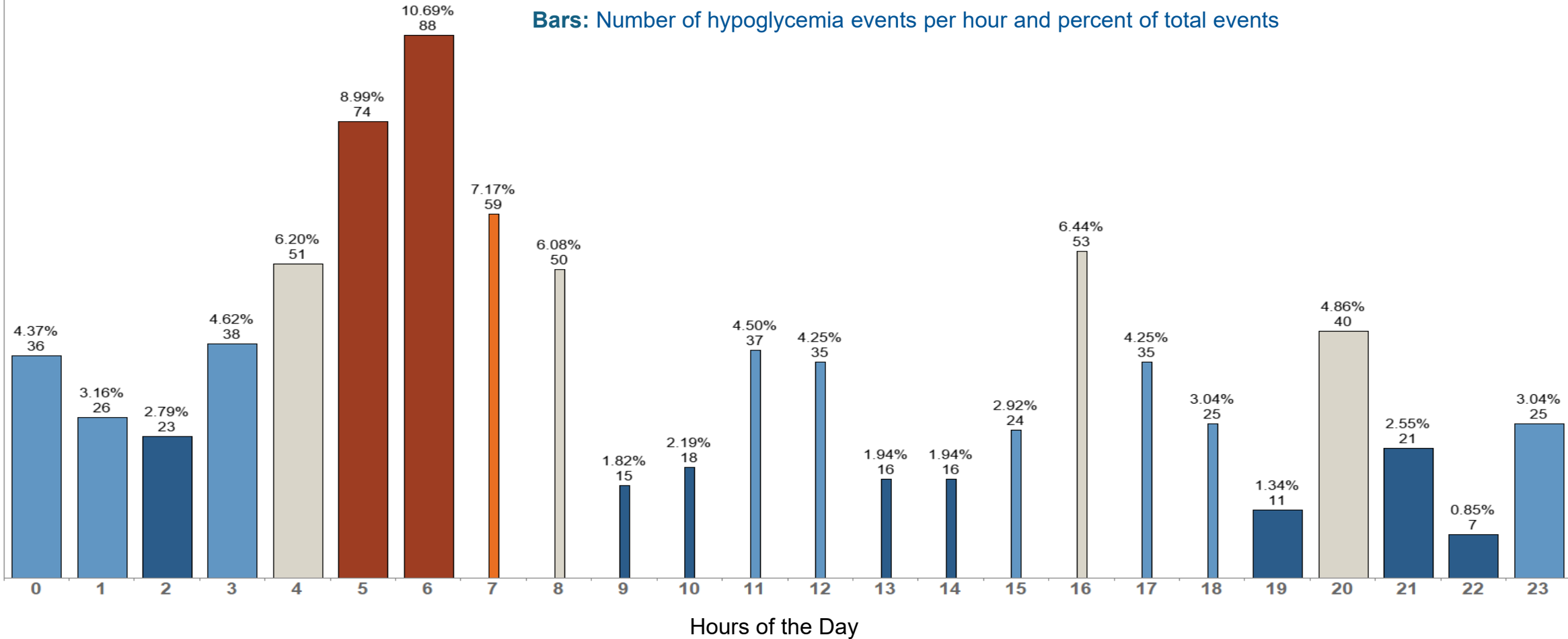
Insulin Yes Insulin No % 3M Compliance Count



UF Shands: 50+% of Hypoglycemia Events Occur on Hospital Days 3-5



UF Shands: 40+% of Hypoglycemia Events Occur Between 0400-0900



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UF Shands: Root Cause Analysis Evolution



Hypoglycemic Event Analysis Tool (HEAT)

Calorie Intake at Time of Event:

NPO, PO, Tube Feed, TPN

Dietary status change in past 24 hr

Amount of last meal consumed ___%

Causative Factors

Prescribing Related

Basal heavy regimen

High dose sliding scale insulin

Inpatient regimen not adjusted to

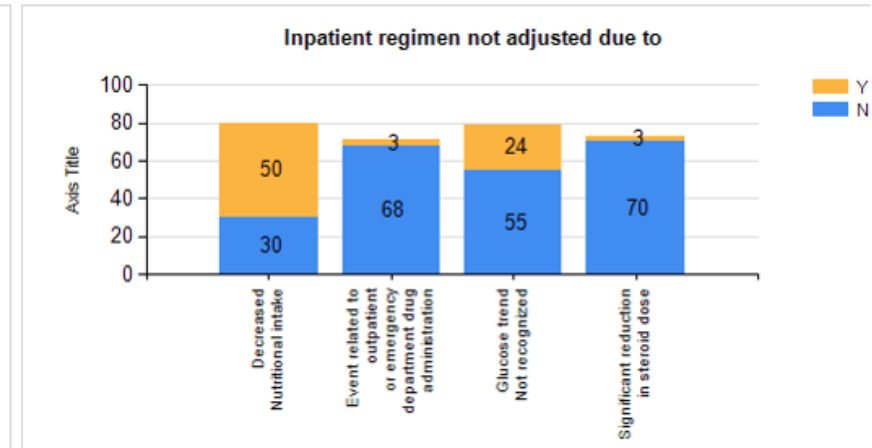
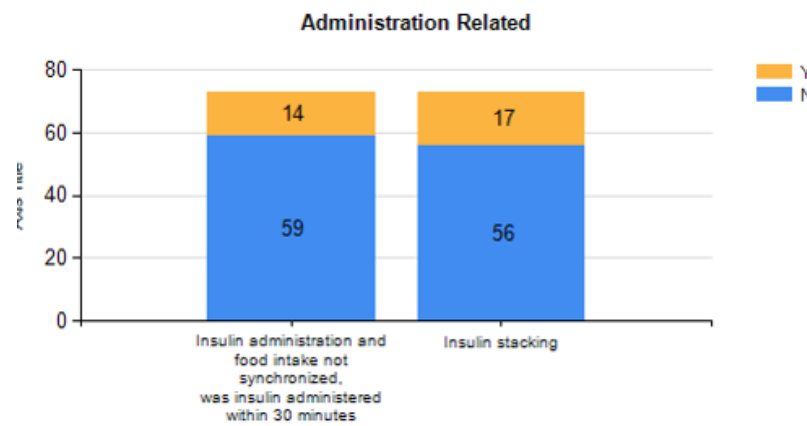
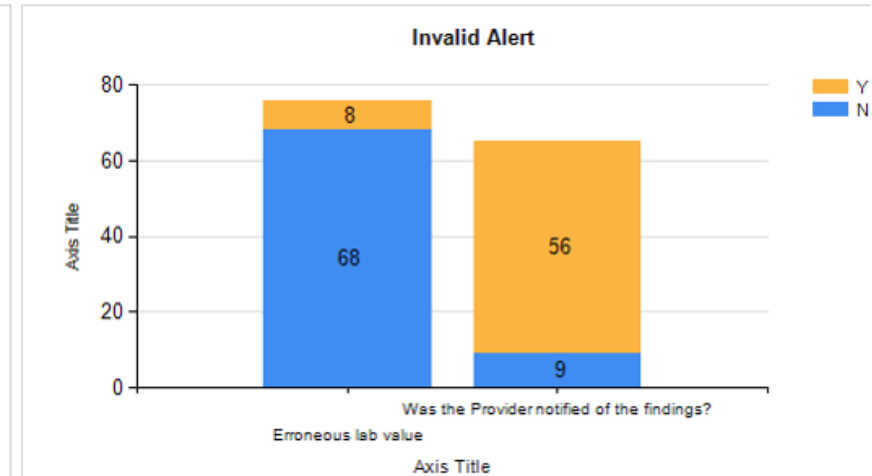
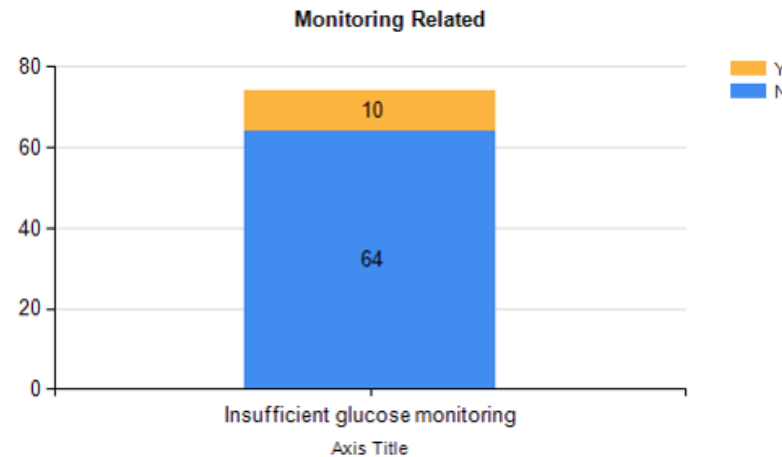
Glucose trend, steroid reduction, decreased intake

Process Related

Insulin and food intake not synched

POC glucose not linked to insulin

POC glucose not synched with food



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UF Shands: Clinical Decision Support Tool Evolution

HIT₃ S₂

Hypoglycemia in past 24 hours **Yes/No**

Insulin

Basal - 0.2 to 0.4 units/kg, lower range for Type 1 or renal failure **Yes/No**

Prandial - Has CHO intake changed, poor intake, TF off/changed to cyclic or NPO **Yes/No**

T-3

Timing - BS check within 30 min of insulin administration, and with 30 min of meal **Yes/No**

Tube Feed - Will Tube Feeds be interrupted after prandial insulin dose **Yes/No**

Trends - Have BS been consistently trending down since admit, watch ~ day 5-6 **Yes/No**

S-2

Steroids - Have steroids been tapered **Yes/No**

Surgery/Procedures - Does insulin need to be held or adjusted for temporary NPO **Yes/No**

Action Taken: _____



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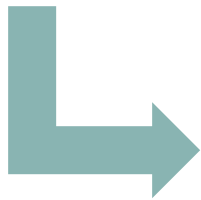
Glycemic Management

- 1 At least one BG 200-249 mg/dL in past 24 hours
- 2 At least one BG 250-299 mg/dL in past 24 hours
- 3 At least one BG greater than 300 mg/dL in past 24 hours
- 1 BG greater than 180 mg/dL twice in the past 24 hours
- 2 At least one BG 80-99 mg/dL
- 3 At least one BG less than 80 mg/dL
- 1 BG decrease of 20% or more in past 24 hours

4





Hypoglycemia Prediction

- 1 BG less than 80 mg/dL in past 24 hours
- 1 BG decrease of 20% or more in past 24 hours
- 1 BG decrease greater than or equal to 100 mg/dL in past 10 hours
- 1 Creatinine clearance less than 30 mL/min
 - Active corticosteroid(s)
 - Basal insulin greater than 0.25 units/kg
 - Total daily insulin greater than 0.5 units/kg
 - Cyclic enteral nutrition and basal insulin greater than 0.3 units/kg

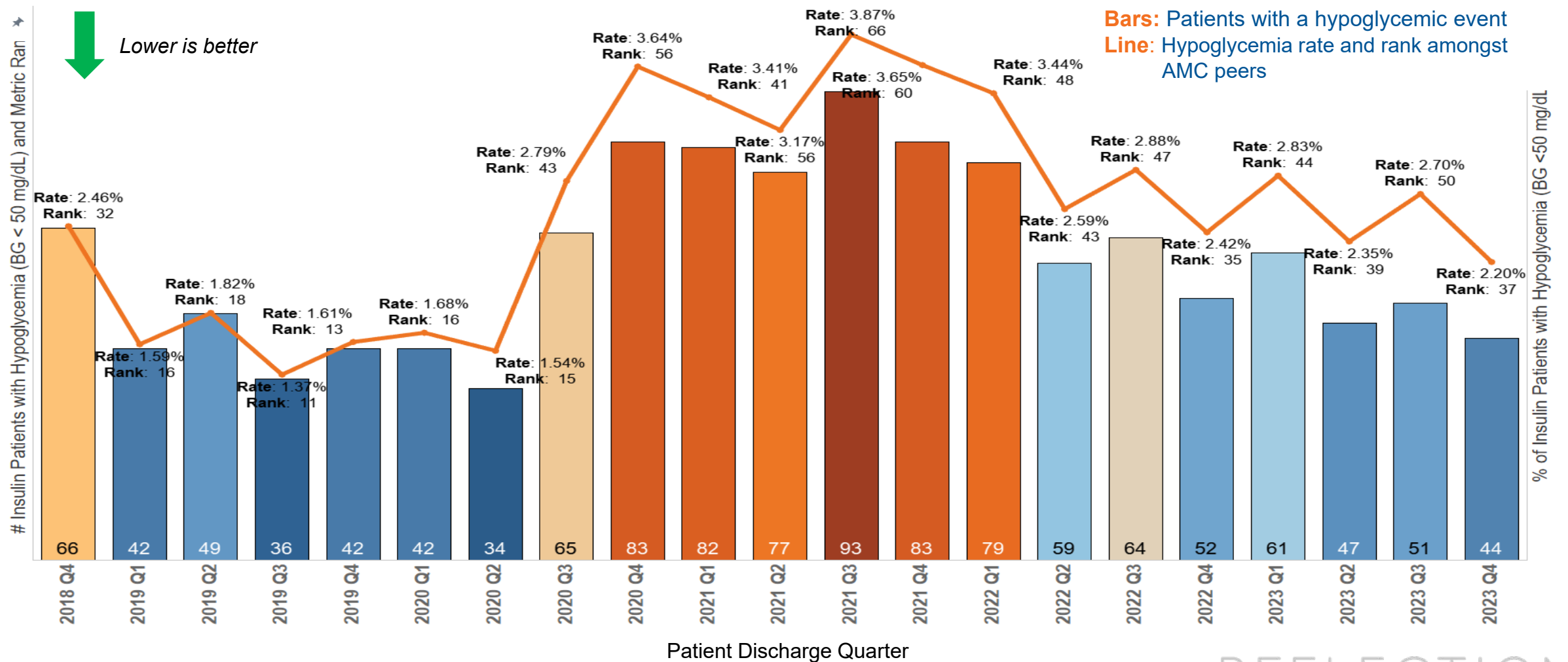


Abbreviations: BG = blood glucose; CHO = carbohydrate; NPO = nothing by mouth; TF = tube feeds

Partner with Pharmacy and Therapeutics Committee to

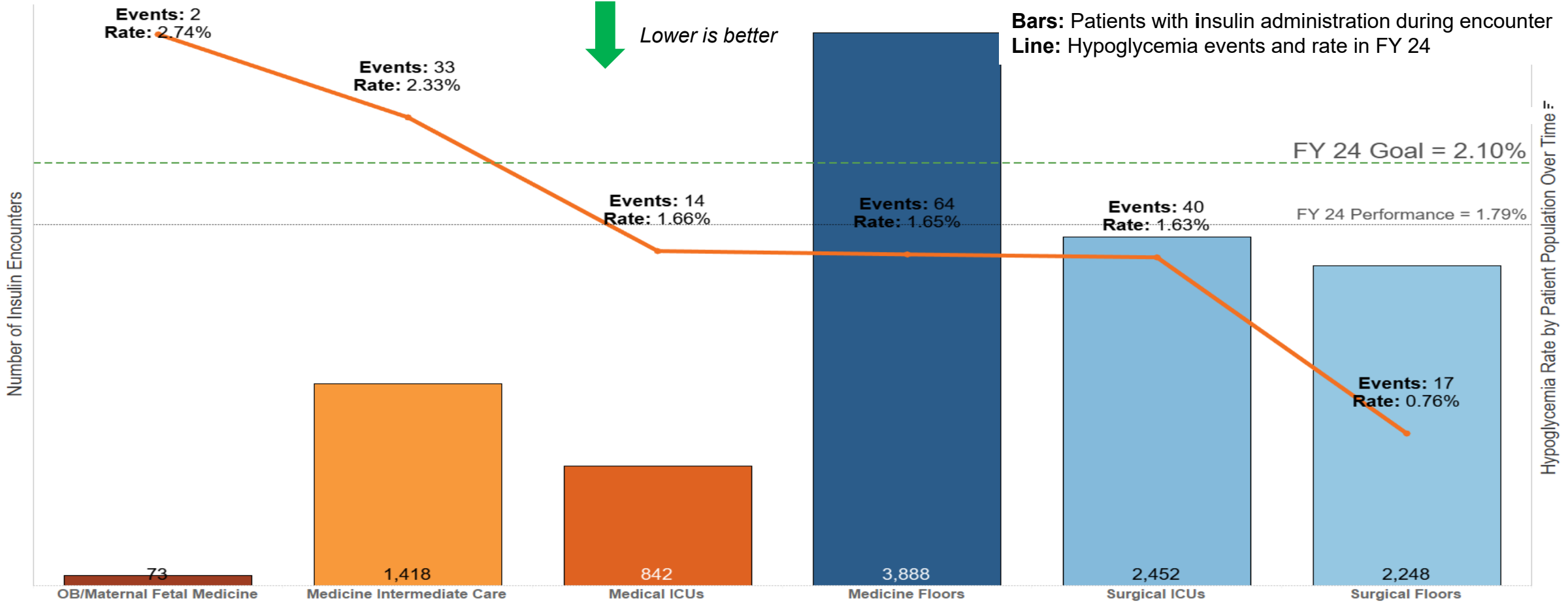
	Limit insulin formulary
	Require an Endocrinology consult to continue home insulin pump, insulin 70/30, NPH, and U-500
	Require insulin to be ordered from an order set
	Raise correction factor insulin threshold from 151 to 181 mg/dL to decrease hypoglycemia risk

UF Shands: Turning the Ship: Hypoglycemia Metric Rate Improved 43.2%



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UF Shands: Multiple PDSA Cycles and FY 24 Performance



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Lessons Learned

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Wellstar Douglas Medical Center: Lessons Learned



- **No one fix**, multifaceted process
- **Proactive** with identifying at risk populations
- **Appropriate Orders**
- **Meal tray delivery**, point of care testing, insulin administration
- Identify **greatest risk** which will include:
 - Low BMI, ESRD/HD, NPO/CLD, Low Intake, Tube Feeds

Abbreviations: BMI = body mass index; CLD = clear liquid diet; ESRD = end stage renal disease; HD = hemodialysis; NPO = nothing by mouth

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- **One size does not fit all** for PDSA projects
- **Global pandemic** does not mean taking a long walk off a short pier
- Some services **embrace protocolized care, some reinvent the wheel**
- Some services are **early adopters, some are laggards who need external accountability**

Key Takeaways

Wellstar Douglas Medical Center: Key Takeaways



- Executive leadership support with **setting staff expectations**
- **Accurate real time data** is paramount to monitor performance
- Front line **team member input** is instrumental

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UF Shands: Key Takeaways

- **Vulnerable patients** have unique needs with **numerous obstacles to care**
- **Multidisciplinary** approach promotes **patient safety and quality**
- **Integrate clinical decision support** to optimize glycemic management monitoring
- **Cost neutral** strategies in a challenging health care market

Questions?



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