Glytec

Uniting People, Process and Technology to Achieve Optimal Glycemic Management

Glytec Clinical Webinar

Jordan Messler, MD, SFHM, FACP Chief Medical Officer Glytec

August 9, 2022



Introduction

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Chief Medical Officer

Glytec

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Adjunct Faculty, Medical Humanities, USF Morsani College of Medicine

Past Physician Editor, Society of Hospital Medicine's The Hospital Leader Blog





Review the Status Quo of glycemic management

How people, process and technology can improve patient outcomes

Introduction to Glucommander

Case Studies





Glytec

The Status Quo of Glycemic Management

Hypoglycemia

Common, Costly, Largely Preventable

Common ¹	Preventable ²	Costly ³		
7-22% patients in the hospital with <70 mg/dl	40% patients with hypoglycemia have a repeat event Patients with hypoglycemia	Severe hypoglycemia tied to excess costs up to \$21K per episode 38.9% higher costs for each <40 mg/dl		
	often don't have their medication regimen changed			
		LOS increase 1-3 days for hypoglycemia events		

Hypoglycemia Impact on Costs

\$21,444 Average excess cost per patient stay with <40 mg/dl

Advent Health

Cost of Not Preventing Severe Hypoglycemia⁴

\$33,560 Cost for 1 recurrent severe hypoglycemic event

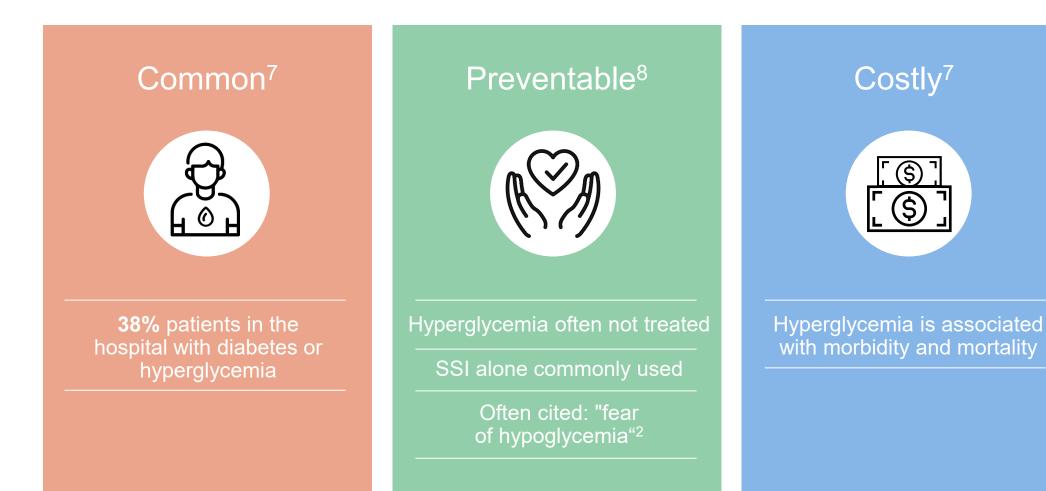
Cost of Allowing Hypoglycemia to Recur⁵

\$2,934 Savings



Per Prevented Hypoglycemic Event⁶

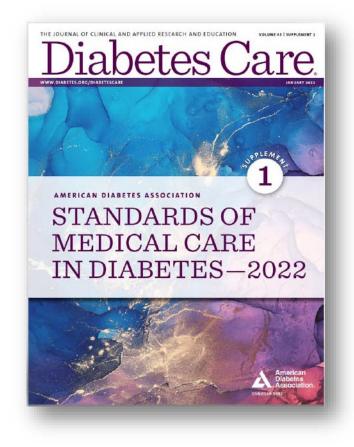
Hyperglycemia





Standards: We Know What Works

American Diabetes Association

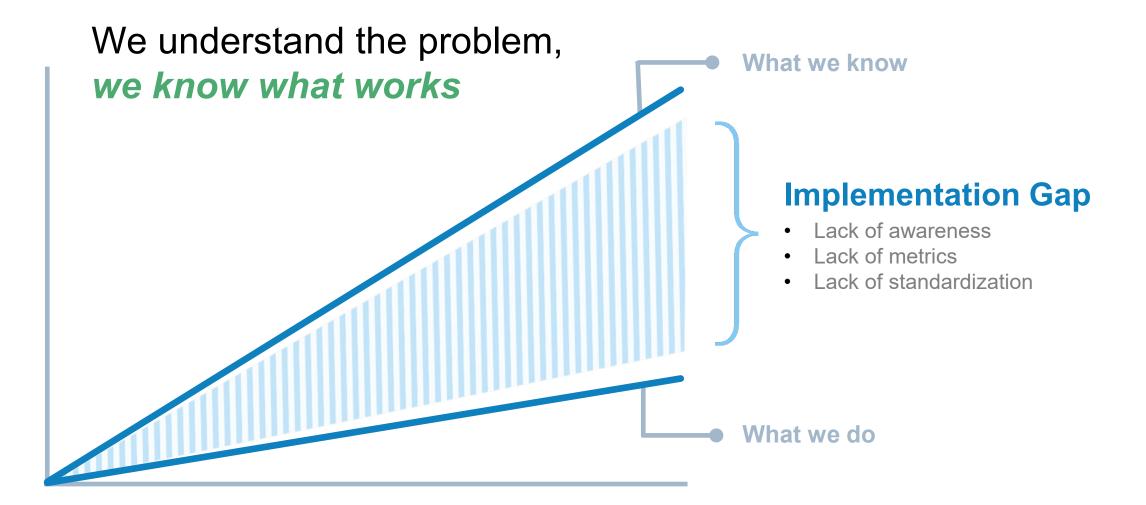


Endocrine Society



Implementation Guides (SHM)

The Challenge





What We Do





Patient Safety

1 in 3

Hospitals with no clear measurements to track glycemic management⁸



Prevent Hypoglycemia

Glycemic Management Success

Drive Optimal Utilization Protocols/Policies/ Order Sets

Treat Hyperglycemia



How else do you overcome the implementation gap?





Steps to Engage Physicians⁹

- Select quality issues that clinicians care about
- Emphasize patient-centered outcomes
- Intrinsic motivation as leader: mastery, autonomy, purpose
- Incentives applied at organizational levelunits/group/hospital
- Build capacity for transdisciplinary research

CMS Quality Reporting Measure: It's Here!

As part of the Hospital Inpatient Quality-Reporting (IQR) Program, hospitals that fail to meet all program requirements may be "subject to a one-fourth reduction in their Annual Payment Update under the IPPS."

To avoid payment penalties, hospitals must report on 4 of 11 eCQM metrics.

Two NEW eCQM Metrics:

Severe hypoglycemia:

% patient stays BG < 40 within 24 hours of administration of insulin/anti-hyperglycemic agent

Severe hyperglycemia:

% hospital days with one or more BG > 300, excluding the first 24-hour period after admission

Measure Announcement: August 2021

Hospitals will need to start collecting data on Jan 1, 2023

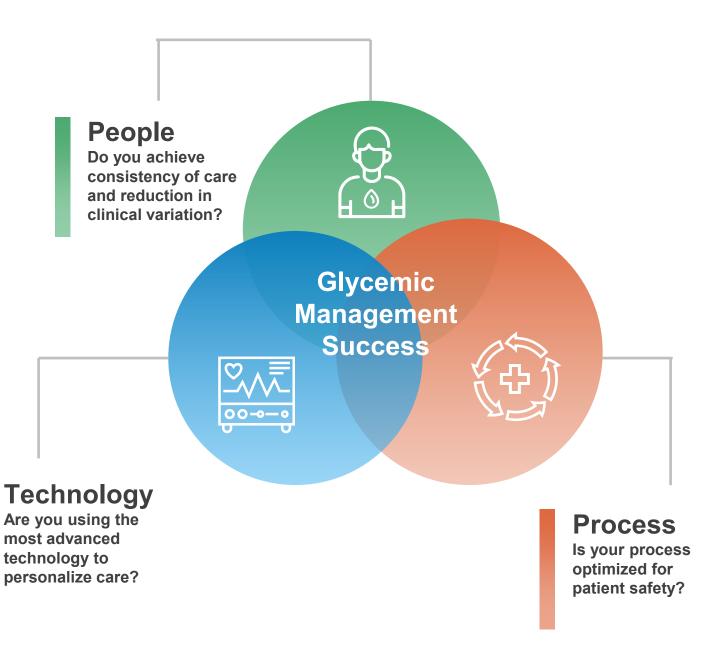


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Elements of a Best-in-Class Glycemic Management Program

Best-in-Class Glycemic Management Programs

- "Best-in-Class Glycemic Management Programs" tend to have elements in common even if details differ
- Overcoming the challenges requires a holistic strategy that addresses:
 - People
 - Process
 - Technology



People:

Why is there a lack of consistency of care and reduction in clinical variation?

- Lack of administrative support
- No Glycemic Management Team: multidisciplinary
- Mismatch of staffing ratios
- Unable to overcome fear of hypoglycemia

Process:

Why aren't projects to improve successful?

- Lack of standardization¹⁰
- No hospital-wide/system-wide Diabetes
 Steering Committee
- Unclear policies/protocols
- Lack of metrics



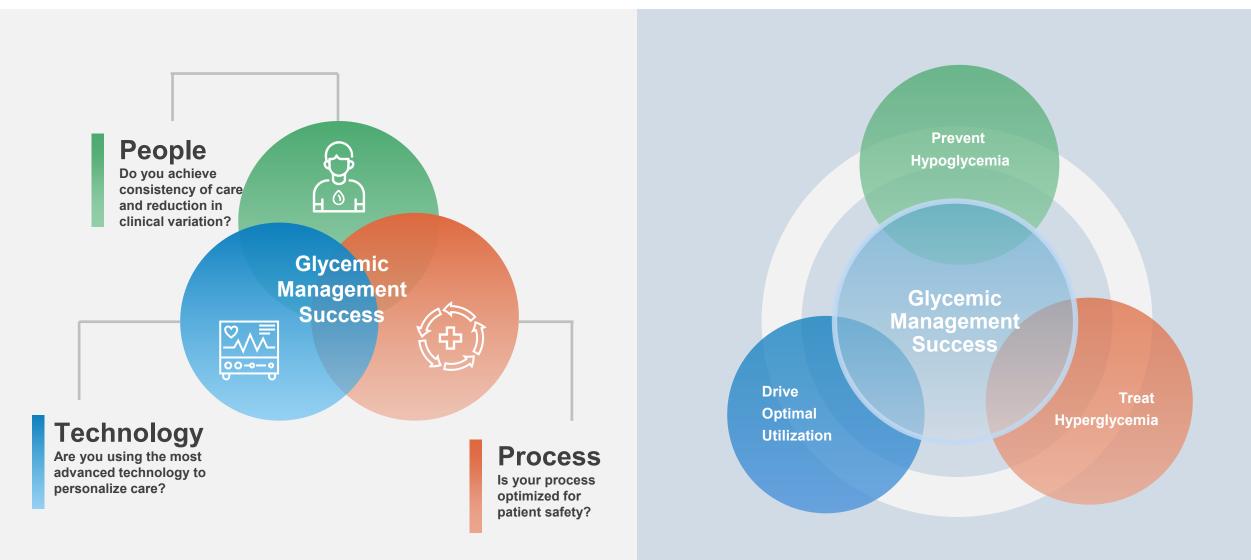
Technology:

Are you using the most advanced technology to personalize care?

• Technology is a tool NOT a strategy

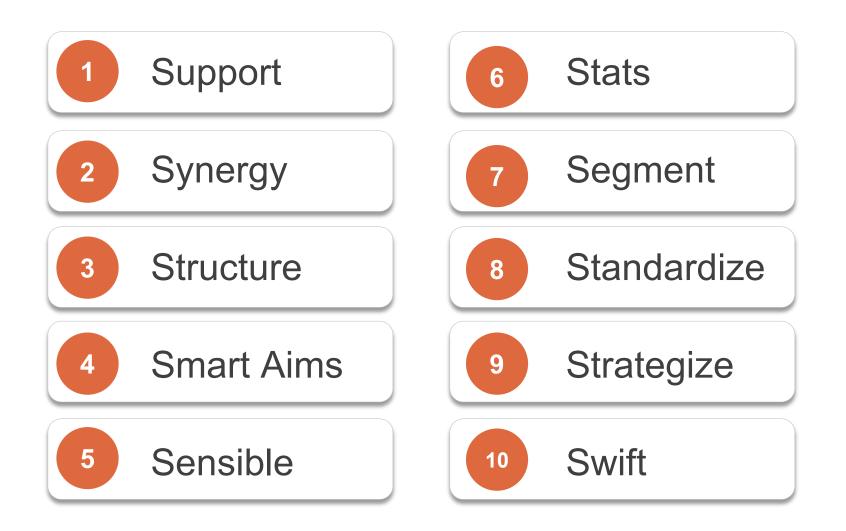


Roadmap to Glycemic Management Success

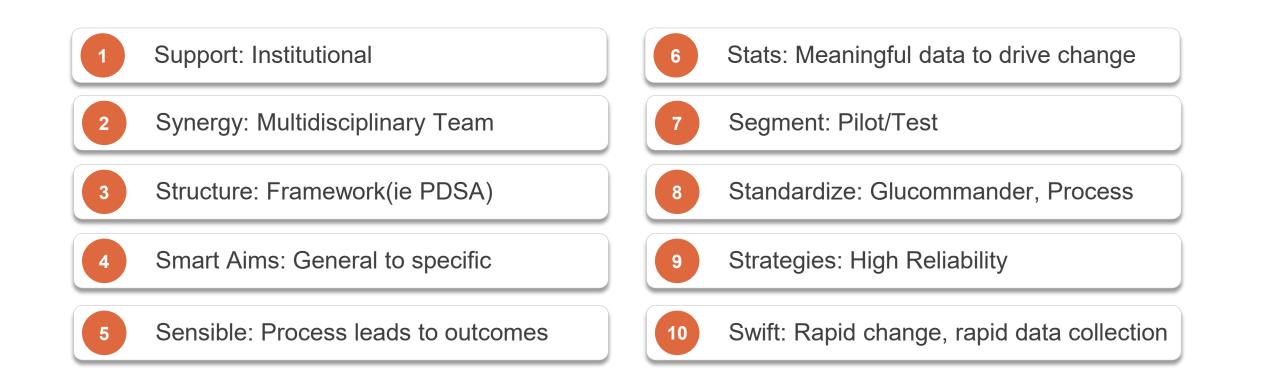




Top 10 Quality Improvement Checklist



Top 10 Quality Improvement Checklist





Glytec

eGMS[®] with Glucommander[™]

The Complete Solution for Best-in-Class Glycemic Management

Glycemic Management Technology for Clinicians

Beginnings The eGMS PIONEER

2006: First eGMS to receive FDA clearance for IV insulin titration



Track Record
The eGMS EXPERT & LEADER

Tried, Tested, Validated: Trusted

- The most-studied and used solution
- The only end-to-end platform that empowers partner success across the continuum of care





Recent Recognition

- Inc. 5000
 - 2021 Fastest-Growing Private Company Honoree
- Gold, Medical Design Excellence Awards

Digital Health Products & Mobile Medical Apps Category



Glytec's eGlycemic Management System & Glucommander

The complete platform for best-in-class glycemic management



- Personalized insulin dosing decision support at the point of care
- Interface guides clinicians in best practice workflows
- FDA-cleared technology

Glucommander™



Glytec's complete eGMS platform supports your entire care team, including providers, nursing, diabetes educators, pharmacy, quality, IT and hospital leadership with:

- Analytics & Reporting
- **Surveillance** at-risk patient identification
- Workflow alerts for BG checks & patient monitoring



- Integrates with your EHR
 Get more out of your
 investment
- HITRUST Certified
- Cloud-based software

Intro to eGMS

EHR-Integrated Software that Unites Glycemic Management Teams Around Patient Safety

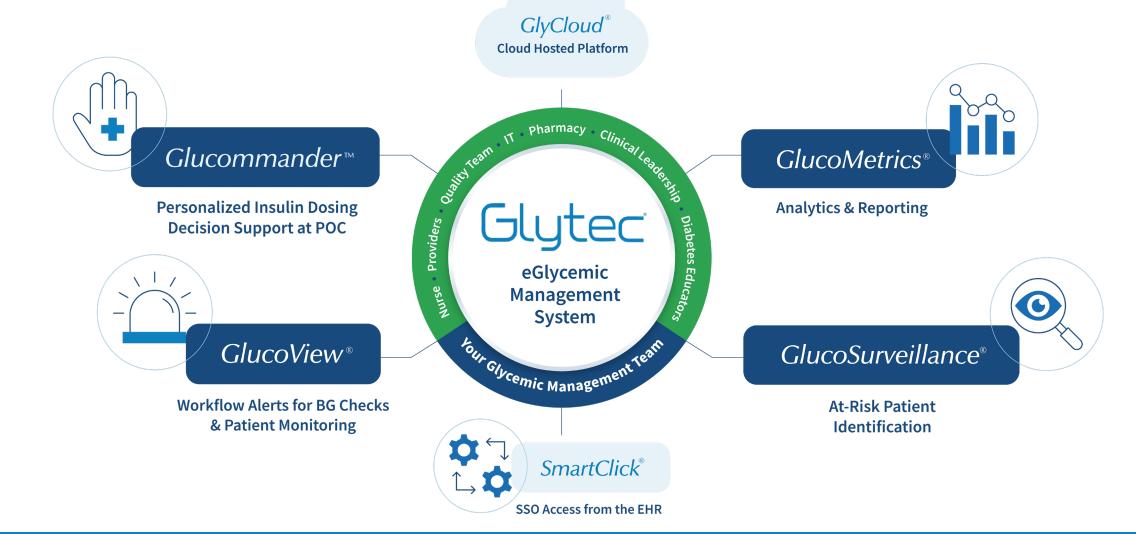


Personalized Insulin Dosing Decision Support at POC



Intro to eGMS

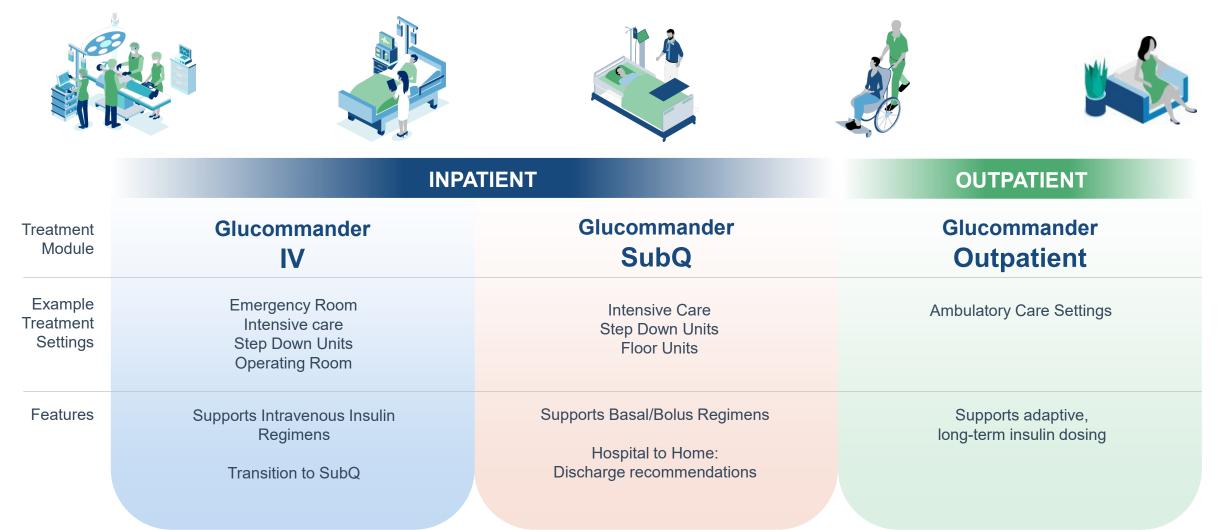
EHR-Integrated Software that Unites Glycemic Management Teams Around Patient Safety



Glucommander Treatment Modules

Consistency Across the Continuum of Care

for patients with and without diabetes



Glytec

Task Edit View	Patient	Chart Links No	otifications Navigation	Help						
A Home 🖄 Message Center 🛉 Patient List Tracking Shell 🔮 eResource 💲 UpToDate										
		lote 🛃 Suspend 📇 Charg	ges 🖆Charge Entry 🛇Exit	Calculator	ecimen Collection 🛛 🍄 Pati	ent Education	Glucommander Dashboa			
DOE, JOHN	×							🔶 List 🔶 🏥 F	Recent Name	- Q
Name: Moore, Roger Allergies: Latex		3: 04/25/1945 ation: None	Age: 77 years Resucitation Status: Full C	Dose Wt: 1 Code Encounter	102 Kg Sex ⁻ Type: Inpatient	: Male	MRN: 210603 Location: ICU	1021 Att	ending: Smith, John	
		< > •							Full Screen 😏 2	min ago
Menu	Ŧ	/in 🖻 🖹 🗨 🔍 🏤	<u></u>							
Workflow	_		3				Current Lleer	Nurse, Training		×
Results Review							Current Oser.	. Nuise, maining		
Orders	+ Add	🔄 🚑 MOORE, F	ROGER		Back	Transition to I	V Hosp to Home	Discontinue SubQ	Print Lock S	creen
Documentation	+ Add									
Allergies	+ Add	PATIENT DE	TAILS 😼 Edit	INSULIN DO	OSES 🗸 Given	🗙 Not Given	😻 Edit Doses	ORDER SET	🦻 E	dit
Clinical Images	+ Add									_
Problem List		NAME: MOORE, ROG	ER.	Basal Dose: Due Today MEAL BOL glargine (Lantus) lispro (Hu						
Form Browser		ACCT NUMB	FR: DOB:				1		CF: 27	
MAR		2205242029.			27 Units	Breakfast	✓ 13 Units			_
Patient Advisories		HEIGHT:	WEIGHT:	21:00	Confirm	Lunch	-	Bedtime Enter BG		
Histories		180 cm	102 kg				✓ 11 Units			
MAR Summary		BMI: 31	A1C: 7.4							
Medication List	+ Add	FACILITY: G	eneral Hospital		Dinner		11 Units			
Notes	+ Add	UNIT: Floor 2	,	Void Basal		Mary Tananan		Void BG		
Intake/Output	+ Add	Void Basal View Tomorrow Void BG			-					
Visit Summary										-
Lines/Tubes/Drains	Lines/Tubes/Drains O All O SubQ Refresh									
Glucommander		Blood Glucose Trend								

Glucommander™ uses technology to provide personalized recommendations that **more safely, more effectively manage patients' blood glucose**

Nurse confirms blood glucose value

Enter Blood Glucose	Value	
MRN: M990000122	NAME: CALLAHAN, DANIEL	
Verify current bloo	d glucose value:	
Enter BG Value:	250 mg/dl Edit BG	\sim
BG Resulted:	02/21/2020 at 11:11	
	Cance	Continue
	Cance	

Step 2

Nurse enters provider prescribed insulin infusion rate



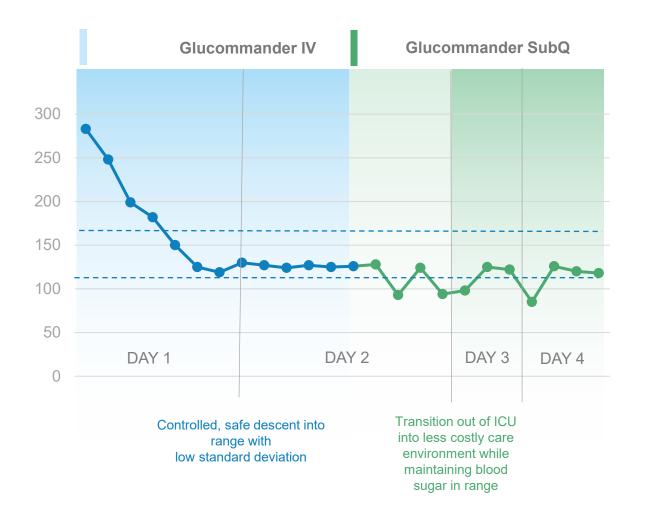
Glucommander's algorithm safely titrates the insulin recommendation to get patient blood glucose into range

Step 3

Nurse monitors countdown for BG recheck



Glucommander gets patients into target range faster and more safely, and reduces length of stay & cost of care





Time to Target Range: 5 hours median time to target BG¹¹



Patient Safety & Hypo Reduction: 99.8% reduction in severe hypoglycemia (IV)¹²



Length of Stay Reduction: 3.18 Days Reduction in LOS¹³

Cos \$3,0

Cost of Care Reduction:

\$3,654 Reduction in overall cost of care per CABG patient¹⁴



Glytec[®] Case Examples

Critically ill patient with hyperglycemia

- 75yo M presents with acute SOB, cough, fever. COVID-19 test negative
- Diagnosed with sepsis due to severe pneumonia
- Started on IV antibiotics, pressors
- Monitored in the ICU, with BG 330 mg/dl



IV Insulin What We Know & What We Do

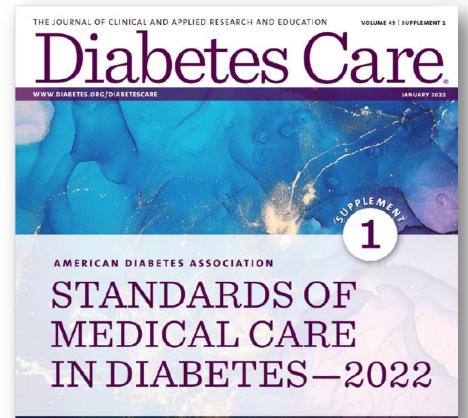
Implementation Gap



What We Know

Insulin Therapy Critical Care Setting In the critical care setting, continuous intravenous insulin infusion is the most effective method for achieving glycemic targets. Intravenous insulin infusions should be administered based on validated written or computerized protocols that allow for predefined adjustments in the infusion rate, accounting for glycemic fluctuations and insulin dose.

Insulin therapy should be initiated for treatment of persistent hyperglycemia starting at a threshold ≥180 mg/dL (10.0 mmol/L). A





What are your institutional challenges with IV insulin management?

Top challenges for nursing that we hear

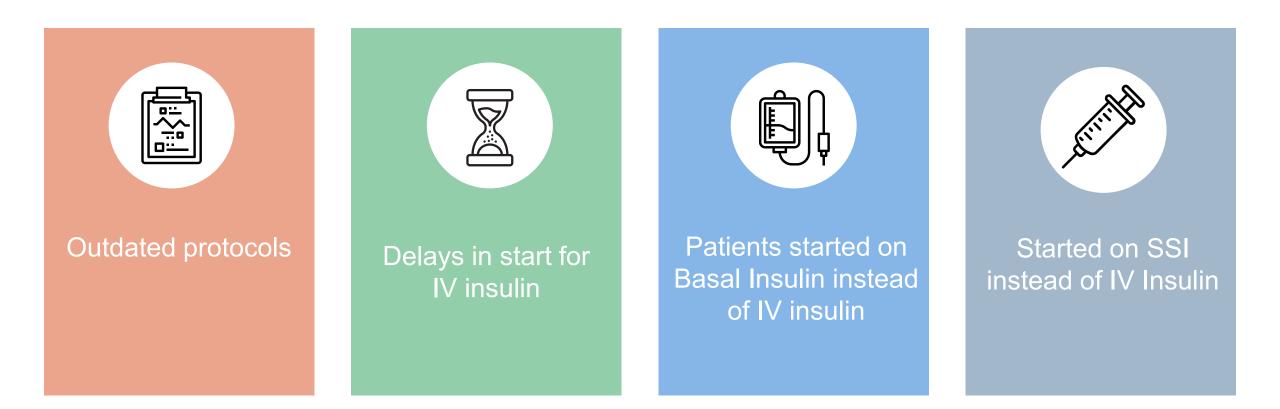
- Calculations
- Multiple Steps
- Unable to complete timely hourly checks, without alerts
- Various protocols
- Protocols drop glucose too fast
- Unable to cover meal carbohydrates while on IV insulin

Why do your nurses still have to do calculations?

With the challenges of turnover, staffing, retention, what are you doing to reduce the burdens and cognitive load of your staff?



What We Do....Challenges of IV Insulin



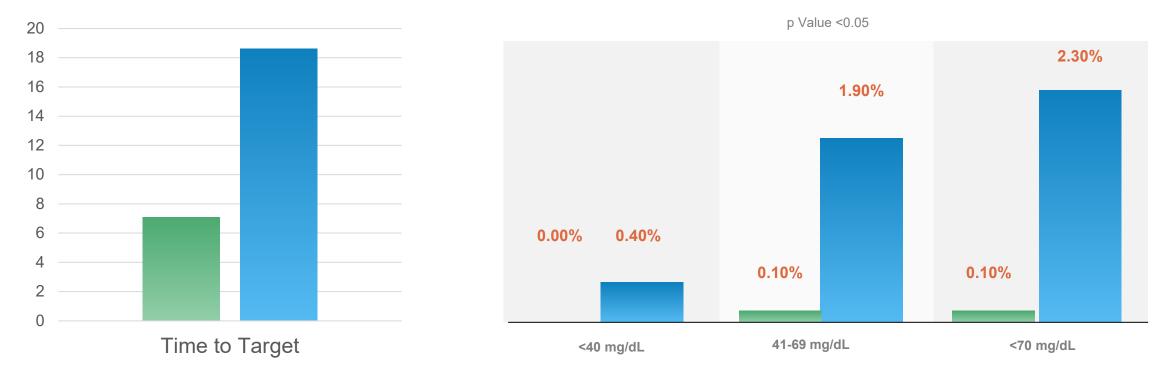


Grady: 2020 Study ICU: IV Glucommander vs. Basal Insulin

Basal Insulin not as effective as IV insulin¹⁵

Basal Insulin IV Glucommander

Hypoglycemia (%BGs) Among Insulin-Requiring Patients in the ICU



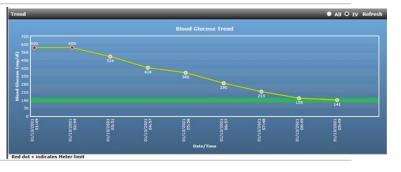
Glucommander IV



- Monitor patients
- Proactively identify patients with hyperglycemia Identify and recommend treatment



- Personalized Dosing
- No calculations





Manage carbohydrate intake while on IV insulin



Glucommander IV



GlucoSurveillance

Not on Glucommander, but would _ benefit from insulin management

Patients on Glucommander

Glucommander™d	wered by Curr	ent Patients	Add Patient	Learning Cent	er Repor	ts Admin	Logout		
CURRENT PATIENTS	General Hosp	ital		 All Units 	Y	Search Patients			
IV Insulin Infusion	IV Insulin Infusion Patients (9)			SubQ Insulin Injection Patients (3)					
Λ ALERT: Click to view patients that have experienced at least 2 BGs > 180 mg/dL over the past 24 hrs.							^		
Name	Room	MRN	1	DOB		Last BG			
FIFTY, DEE		MFYDE	8	03/18/194	9	446 mg/dL			
MISSION, READ		MMNRD8		07/05/1941		329 mg/dL			
SWEETIE, IMA		MSEIA	8	06/27/194	в	217 mg/dL			
PATTERSON, JAMES		MRN: MPnJs8		ED DOB	: 10/29/1962	BG Due:			
BASAL INSULIN: glargine (Lantus) INSULIN TYPE: aspart (Novolog)	LAST BG: 143 mg/dL BG TYPE: q4hr-08:00			OSE: 17 Units (1 Dos AL DOSE: N/A	e Per Day)	q4hr 12	:00		
BELLS, MIKE		MRN: MBsMe8		ED DOB	: 06/27/1952	BG Due:			
BASAL INSULIN: glargine (Lantus) INSULIN TYPE: aspart (Novolog)	LAST BG: 147 mg/dL BG TYPE: Breakfast	← (Messler, Jordan)	dan) BASAL DOSE: 24 Units (1 Dose Per Day) NEXT MEAL DOSE: 9 units		e Per Day)	Breakfast			
MOORE, ROGER		MRN: MMERR8		ED DOB	: 04/25/1945	BG Due:			
BASAL INSULIN: glargine (Lantus) INSULIN TYPE: lispro (Humalog)	LAST BG: 118 mg/dL BG TYPE: Breakfast	▲ (Messler, Jordan)		OSE: 27 Units (1 Dose AL DOSE: 13 units	e Per Day)	Break	fast		

Quality Improvement: Measure-vention

- Active surveillance
- Ability to intervene in real time



Glucommander IV: Real time Dashboard



Dashboards: GlucoView

- Status indicators for all patients in a unit
- See next BG due for all patients at a glance
- Nurses can plan and prioritize care

				Current User: Messler, Jord
2	GlucoView Glytec			Logout
K	CURRENT PATIENTS	General Hospital	▼ All Units	Search Patients
		IV Insulin Infusio	n Patients (6)	
2	POWERS, J		ED	Next BG Due:
	LAST BG: 121 mg/dL ▲ (Messler, Jordan) LAST INSULIN RATE: 0.9 units/hr	TARGET RANGE: 100-140 mg/dL NEXT BG DUE: 03/31/2022 at 12:54		50:46
	FITZGERALD, M		ED	Next BG Due:
	I AST FIG: 132 mg/dL ▲ (Messler, Jordan) LAST INSULIN RATE: 1.4 units/hr	TARGET RANGE: 120-160 mg/dL NEXT BG DUE: 03/31/2022 at 12:55		51:46
	ENDIV, M		ED	Next BG Due:
	LAST BG: 127 mg/dL (Messler, Jordan) LAST INSULIN RATE: 1.3 units/hr	TARGET RANGE: 120-160 mg/dL NEXT BG DUE: 03/31/2022 at 12:56	Converting to SubQ Insulin	52:46
	ENDIVSQ, M		ED	Next BG Due:
	LAST BG: 127 mg/dL ▲ (Messler, Jordan) LAST INSULIN RATE: 1.3 units/hr	TARGET RANGE: 120-160 mg/dL NEXT BG DUE: 03/31/2022 at 12:56	Converting to SubQ Insulin	52:46
	BRADDIX, C		ED	Next BG Due:
	LAST BG: 141 mg/dL → (Messler, Jordan) LAST INSULIN RATE: 1.3 units/hr	TARGET RANGE: 120-160 mg/dL NEXT BG DUE: 03/31/2022 at 12:57		53:46
	WATSON, M		ED	Next BG Due:
	LAST BG: 120 mg/dL → (Messler, Jordan) LAST INSULIN RATE: 1.9 units/hr	TARGET RANGE: 100-140 mg/dL NEXT BG DUE: 03/31/2022 at 13:47		1:43:46

Glucommander IV: Alerts

Anion Gap Warning

- Alerts nurses to high anion gaps
- Prevents premature discontinuation of treatment before resolution of DKA

ALLEN, LI	SA		Back Transition to Sub(Q Discontinue IV Print Lock Scre
PATIENT DETAILS		DOSING INFORMATION	ORDER SET 🐉 Edit	
NAME: Allen, Lisa ACCOUNT NUMBER: 1000678 HEIGHT: 63 In.	COB: 08/06/1987 WEIGHT: 58.06 kg	CURRENT INSULIN 6.2 units/hr	LAST BG 379 mg/dL ANION GAP 15.0 mEq/L	BG DUE!
BMI: 23 FACILITY: De UNIT: Default	A1C: 7.2 efault Facility : Hospital Uni	TARGET RANGE 120-160 mg/dL	MULTIPLIER Initial Last 0.01 0.01954	Enter BG Start Meal

Quality Improvement (QI) Solutions

Process

- Real time identification of patients
- Improve ordering
 - Simple
 - One click
 - Embed in order sets
- Share metrics

People

- Engage stakeholders
- Create accountability structure
- Consider nurse or pharmacy driven processes





Reflect Back on the Case....

- Identified on GlucoSurveillance
- Nurse driven process to start IV insulin
- Low rates of hypoglycemia shared with team regularly, celebrating wins



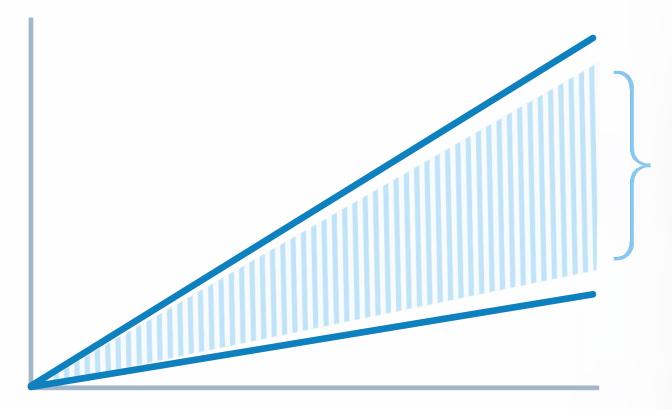
Glytec® SubQ Management



SubQ Case

- Admitted a 62yo M with T2D, presents with cellulitis, BG 220 mg/dl.
- At your institution, will the insulin be:
 - Basal/bolus?
 - Oral agents?
 - Basal only?
 - Sliding scale insulin only?
- Will the insulin doses be changed daily based on the response?

SubQ Management What We Know & What We Do



Implementation Gap



What We Know

16.4 Insulin therapy should be initiated for treatment of persistent hyperglycemia starting at a threshold ≥180 mg/dL (10.0 mmol/L) (checked on two occasions). Once insulin therapy is started, a target glucose range of 140–180 mg/dL (7.8–10.0 mmol/L) is recommended for the majority of critically ill and noncritically ill patients. A

16.5 More stringent goals, such as **110–140 mg/dL** (6.1– 7.8 mmol/L), may be appropriate for selected patients if they can be achieved without significant hypoglycemia. **C** THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION Diabetes Care AMERICAN DIABETES ASSOCIATION STANDARDS OF MEDICAL CARE IN DIABETES-2022

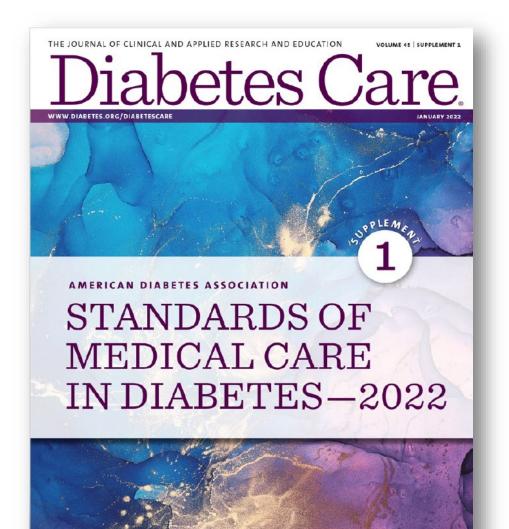


What We Know

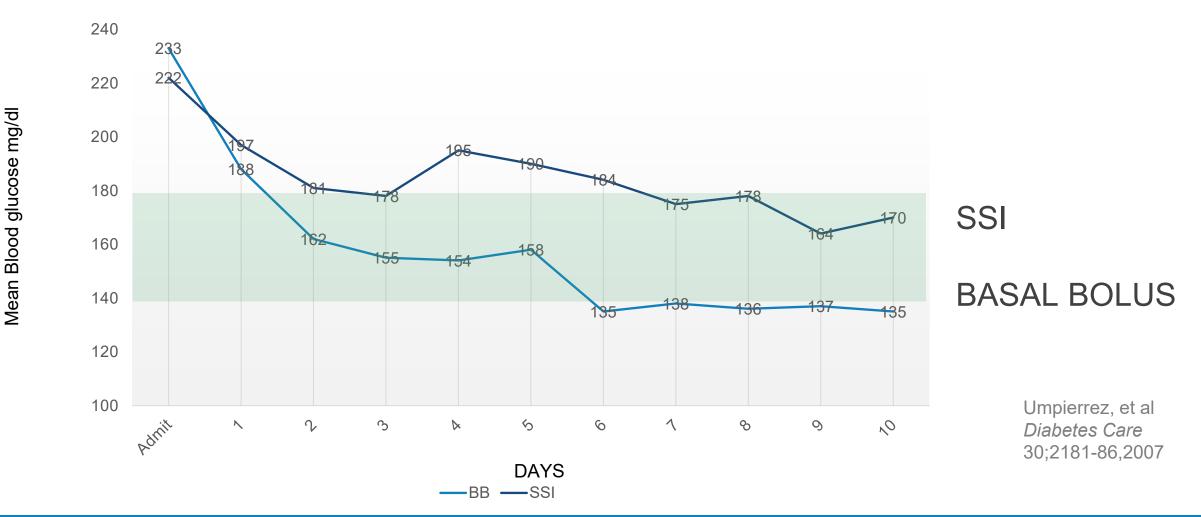
16.6 Basal insulin or a basal plus bolus correction insulin regimen is the preferred treatment for non–critically ill hospitalized patients with **poor oral intake or those who are taking nothing by mouth**. **A**

16.7 An insulin regimen with **basal**, **prandial**, **and correction** components is the preferred treatment for non–critically ill hospitalized patients with good nutritional intake. **A**

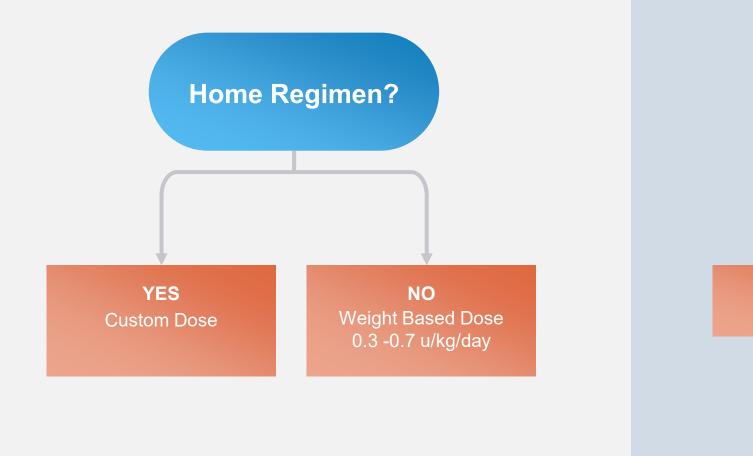
16.8 Use of only a **sliding scale insulin regimen** in the inpatient hospital setting is **strongly discouraged**. **A**

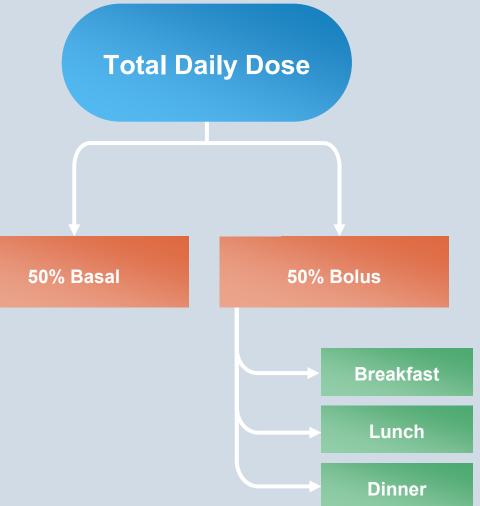


RABBIT 2 Trial











This is what we know...but what do we do?

- SSI only for hyperglycemia
- No changes to doses after hypoglycemia
- Lack of daily changes to doses
- Insulin stacking risks
- No changes of prandial (bolus) dosing for higher/lower meal intake

Glucommander SubQ



GlucoSurveillance

Glucommander™	^{pomered by} Glytec	Current Patients	Add Patient	Learning Center	Reports	Admin	Logout	
CURRENT PATIENTS	General H	ospital		✓ All Units	▼ Sea	arch Patients		
IV Insulin Infusion Patients (9)			SubQ Insulin Injection Pittients (3)					
ALERT: Click to view patients that have experienced at least 2 BGs > 180 mg/dL over the past 24 hrs.								
Name	Room	MRM		DOB		Last BG		
FIFTY, DEE		MFYDE	8	03/18/1949		446 mg/dL		
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BELLS, MIKE		MRN: MBsMe8		ED DOB: 06,	/27/1952	BG Due:		
BASAL INSULIN: glargine (Lantus) INSULIN TYPE: aspart (Novolog)	LAST BG: 147 mg. BG TYPE: Breakfa	/dL → (Messier, Jordan st		OSE: 24 Units (1 Dose Per AL DOSE: 9 units	Day)	Break	ast	
MOORE, ROGER		MRN: MMERR8		ED DOB: 04,	/25/1945	BG Due:		
BASAL INSULIN: glargine (Lantus) INSULIN TYPE: lispro (Humalog)	LAST BG: 118 mg BG TYPE: Breakfa	/dL 🔺 (Messler, Jordan st		OSE: 27 Units (1 Dose Per AL DOSE: 13 units	Day)	Break	ast	



Overcoming Clinical Inertia

Changes to basal and bolus insulin doses based on how patient responding



Personalize Care

Guided starting regimens

Prandial insulin doses based on carbohydrates consumed (I:C)

Correction insulin



Quality Improvement Solutions

Process

- Clear aim statements
- Order set guidance and measure utilization
- Mealtime Triad workflow
- GlucoMetrics, Insulinometrics
- Feedback

People

- Develop Champions
- Involve stakeholders
- Create diabetes SWAT teams
- Nurse driven processes



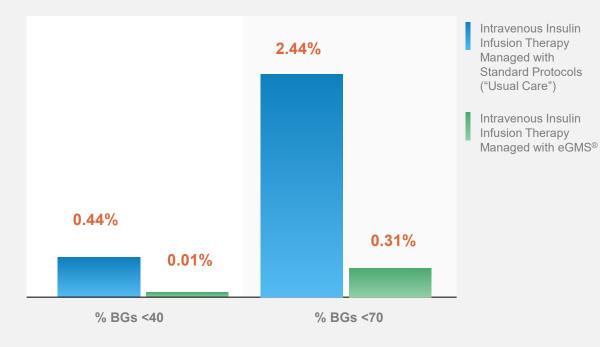
Reflect Back on the Case

- Started on basal/bolus, with Glucommander SubQ
- Adjustments made daily to both basal bolus insulin
- Received personalized mealtime and correction doses

Glucommander IV; Long-Term Success – 3 Years of Data¹⁷

Hypoglycemia Reduction

Incidence of Hypoglycemia (%BGs) Over 3 Years eGMS[®] Use Data Review: October 2016-December 2019



Practice Change Benefits noted at a Glucommander Site

- eGMS obviates the major limiting factor of IV insulin
 - Addresses fear of hypoglycemia
 - O Zero Sentinel Events with Glucommander IV
 - Focuses clinicians on best practice care
- Confidence in Expansion
 - Emergency Department: now LIVE!
 - Operating Room & PACU
 - Anesthesia managing I\
 - Critical Care OB
 - 4 new stepdown areas



Clinical results of switching to Glucommander IV and SubQ translate to cost savings

Cost Savings Case Study

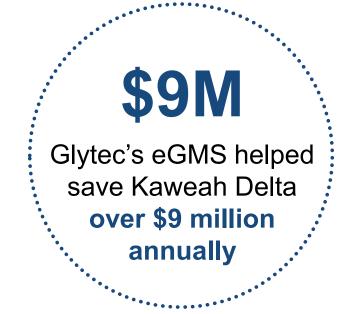
71% Reduction in **hypoglycemic** patients during stay

33% Reduction in **hyperglycemic** patients during stay

24% Reduction in average **length of stay**

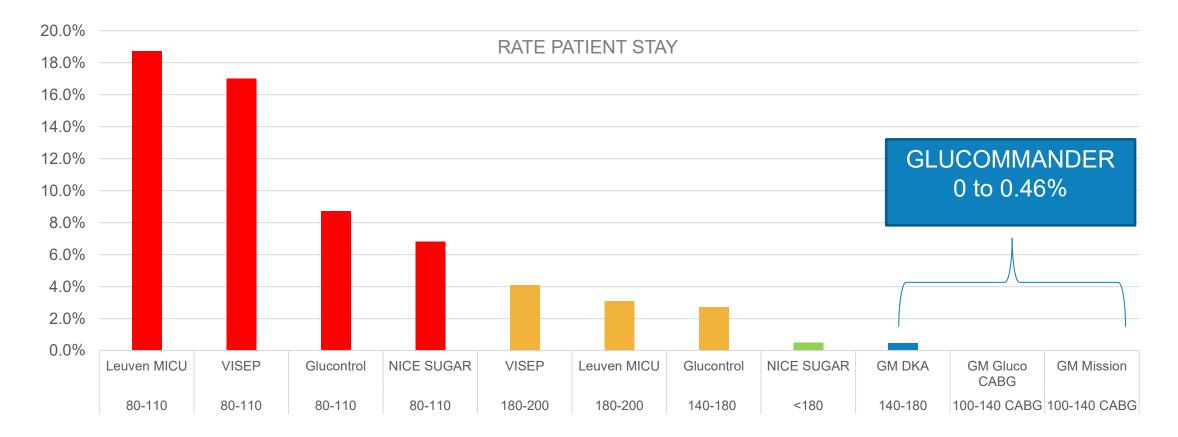




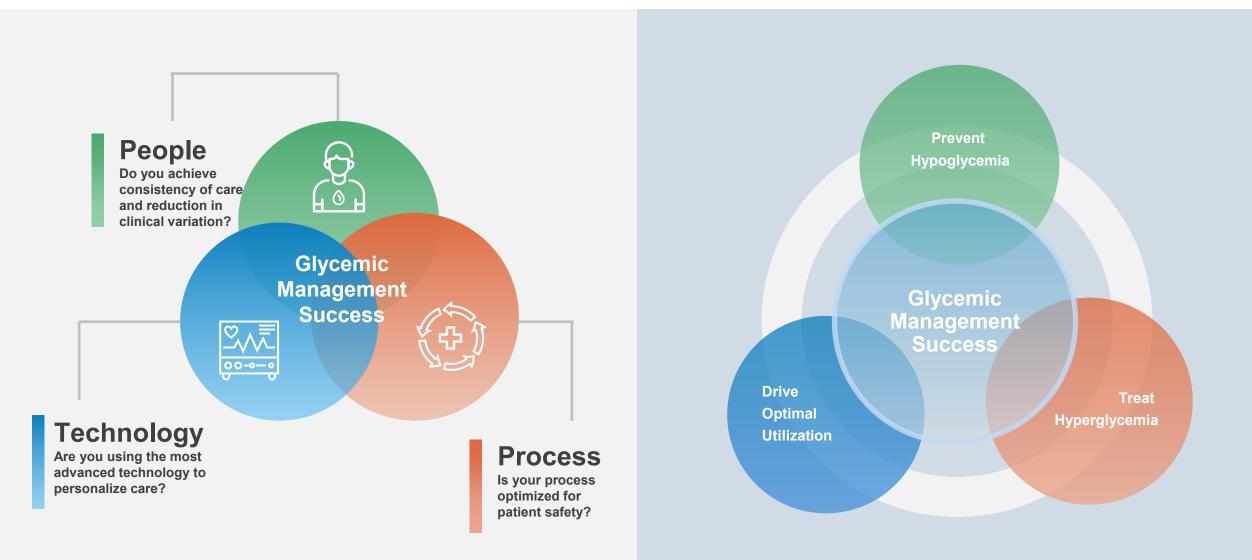


The Status Quo

Rate of Patients Having <40 mg/dl on IV Insulin Comparison to National Studies (patient-stay metric)

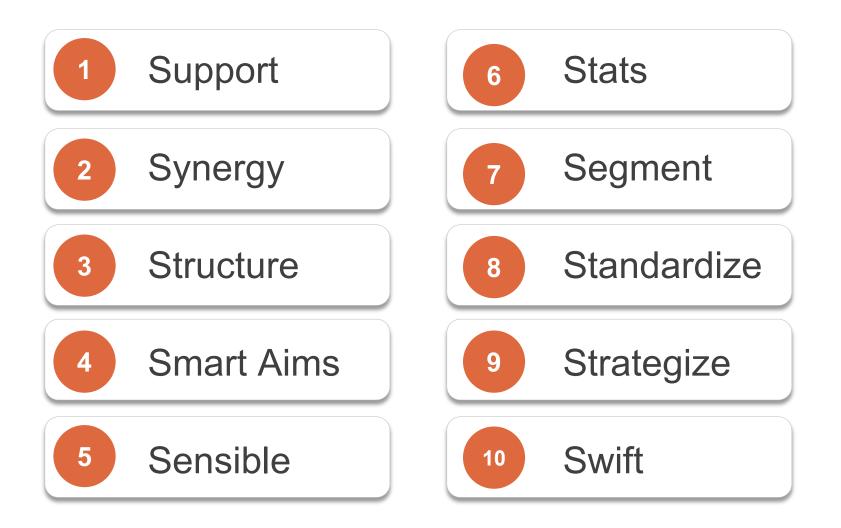


Roadmap to Glycemic Management Success





TOP 10 QI





Glytec's Model Partnership & Collaboration & the Future

300+ Hospitals & Health System Partners *From academic medical centers to community hospitals* **Strategic Business Partners** *Collaborations that add value*





Premier GPO

Glytec is the sole supplier of insulin management software in the Patient Safety Solutions category.



Roche Diagnostics USA

Glucommander will be the first software application available to run on Roche's smart-device next-generation hospital blood glucose system, cobas[®] pulse.*

*The cobas® pulse is in development and is not available for sale in the US.

Key Takeaways

- Implementation Gap exists: What We Know to What We Do
- Clear approach can help overcome that gap
 - People, Process, and Technology Framework
 - Quality Improvement Checklist
 - Understanding Motivators
- Improvement Strategies for IV and SubQ glycemic management
 - High reliable strategies: such as real time awareness of hyperglycemia and anion gap
 - Smart order set design
 - Glycemic committees and Glycemic Champions
- Use of eGMS





Glytec's Annual Conference on Glycemic Innovation & Collaboration

October 25-26, 2022 Virtual

Scan the QR Code or visit glytectimetotarget.com to register and learn more.







Hear from Hospital Leadership, Industry Experts, Glytec Customers and More!







Guillermo E. Umpierrez MD

Emory University School of Medicine



MD

University of Nebraska Medical Center

Curtiss B. Cook MD

Mayo Clinic Arizona



Joseph A. Aloi MD

Wake Forest Baptist Health



Barbara McLean MN, RN, CCRN, CCNS-BC, NP-BC. FCCM

Grady Health System

Sonia Cooper MSN, BA, RN, NE-BC

Sentara Healthcare

Topics Include

- CMS Glycemic Management Measures
- Glycemic Management Best Practices
- CGMs and the Future of Glycemic Management
- Customer Case Studies
- Implementation & Continuous Improvement

Register today at glytectimetotarget.com

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Questions?

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