Inpatient Glycemic Management & Preparing for the New CMS Measures

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Introduction

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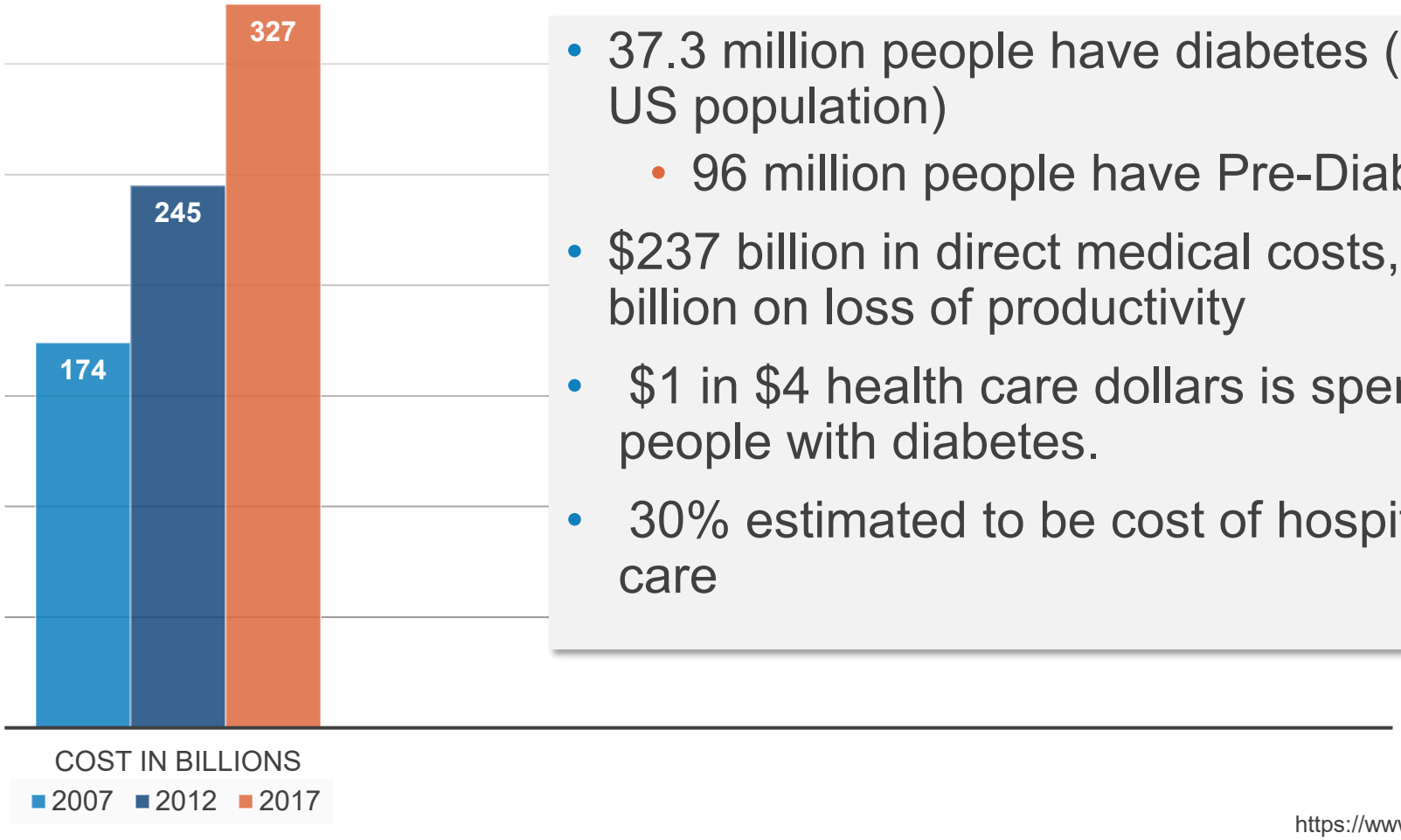
Objectives

- Describe why inpatient glycemic control matters
- Define goals and identify challenges of inpatient glucose control
- Discuss inpatient glycemic management best practices and how technology such as eGMS can help adhere to best practices and achieve goals
- Provide an overview of the two new CMS glycemic management eCQMs (electronic clinical quality measures)
- Summarize how inpatient leaders can prepare for the new measures

Cost of Diabetes



- 37.3 million people have diabetes (11.3% of the US population)
  - 96 million people have Pre-Diabetes
- $237 billion in direct medical costs, plus $90 billion on loss of productivity
- $1 in $4 health care dollars is spent on caring for people with diabetes.
- 30% estimated to be cost of hospital inpatient care

https://www.cdc.gov/chronicdisease/programs-impact/pop/diabetes.htm
https://www2.diabetes.org/about-us/statistics/cost-diabetes

Healthcare Financial Impact

Diabetes is associated with high healthcare costs

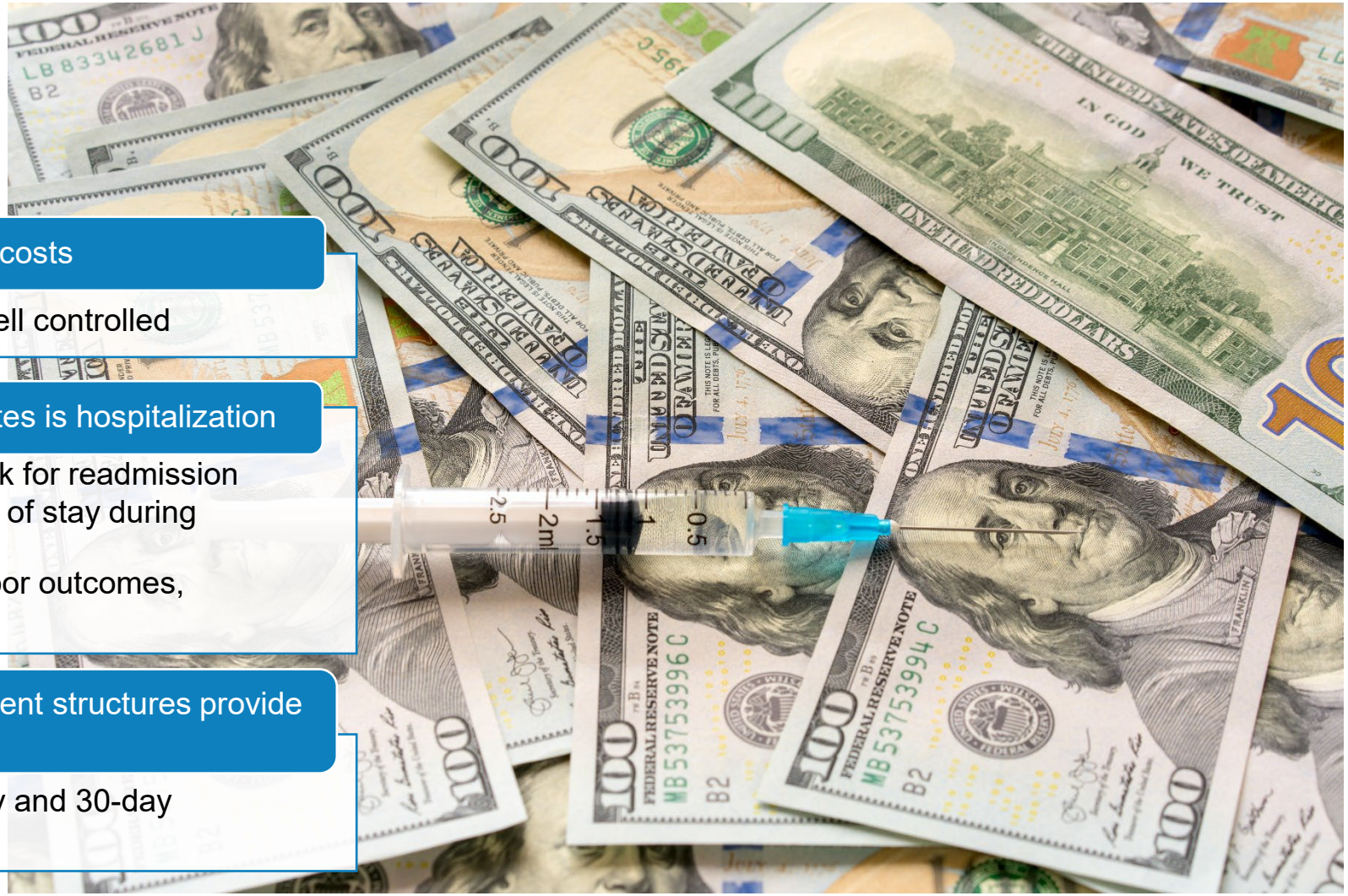
- Especially in those patients who are not well controlled

The highest healthcare cost related to diabetes is hospitalization

- Patients with diabetes carry the highest risk for readmission
- Patients with diabetes have longer lengths of stay during hospitalization
- Uncontrolled glucose is associated with poor outcomes, increased morbidity and mortality

Value-based purchasing and capitated payment structures provide an incentive to improve care.

- Measurements related to the length of stay and 30-day readmissions



CMS considers 30-day readmission a marker of quality

The System is Overburdened

Fast Fact Poor glycemic management increases in-hospital mortality, length of stay and other poor outcomes for patients.[5]

1 in 3

Americans has **glycemic control issues** (diabetes or prediabetes).[1]

30-40%

Of inpatients **require insulin therapy** during their hospital stay.[2]

2.3x

Americans with diabetes have **2.3x greater health care costs** than those without.[3]

16.3%

Insulin is involved in **16.3% of medication error reports** for high-alert medications, more than any other drug.[4]

1. Centers for Disease Control and Prevention. National Diabetes Statistics Report, 2020. Atlanta, GA: Centers for Disease Control and Prevention, US Department of Health and Human Services; 2020. https://www.cdc.gov/diabetes/data/statistics/statistics-report.html
2. Dudley D, Narapanya G, Yurso M, Gaines M, Crowe J. Reducing Critical Hypoglycemia Through Quality Improvement Initiatives and Implementation of an eGlycemic Management System®. IHI National Forum on Quality Improvement in Healthcare. December 2019. https://glytecsystems.com/evidence/reducing-critical-hypoglycemia-through-quality-improvement-initiatives-and-implementation-of-an-eglycemic-management-system/
3. Economic Costs of Diabetes in the U.S. in 2017. American Diabetes Association. Diabetes Care 2018 Mar; dci180007. https://doi.org/10.2337/dci18-0007
4. Pennsylvania Patient Safety Authority. Focus on high-alert medications. Pa Patient Saf Advis. 2004;1(3):6. http://patientsafety.pa.gov/ADVISORIES/Pages/200409_06.aspx
5. Gaines M, Pratley R, Tanton D. Financial Implications of Poor Glycemic Management & Improvement Strategies for Optimal Outcomes. IHI National Forum on Quality Improvement in Health Care. 2018. https://glytecsystems.com/evidence/financial-implications-of-poor-glycemic-management-improvement-strategies-for-optimal-outcomes/

Hyperglycemia

Common

38% patients in the hospital with diabetes or hyperglycemia[1]

Preventable

Hyperglycemia often not treated

SSI alone commonly used

Often cited: "fear of hypoglycemia"[2]

Costly

Hyperglycemia is associated with morbidity and mortality

Hyperglycemia is associated with increased length of stay

Reference:

1. Umpierrez, Scott D. Isaacs, Niloofar Bazargan, Xiangdong You, Leonard M. Thaler, Abbas E. Kitabchi, Hyperglycemia: An Independent Marker of In-Hospital Mortality in Patients with Undiagnosed Diabetes, The Journal of Clinical Endocrinology & Metabolism, Volume 87, Issue 3, 1 March 2002, Pages 978–982, https://doi.org/10.1210/jcem.87.3.8341

2. Cook CB, Elias B, Kongable GL, Potter DJ, Shepherd KM, McMahon D. Diabetes and hyperglycemia quality improvement efforts in hospitals in the United States: current status and barriers to implementation. Endocr Pract. 2010;16(2):219–230. https://www.endocrinepractice.org/article/S1530-891X(20)41977-9/fulltext

Hypoglycemia

Common

7-22% patients in the hospital with <70 mg/dL

Preventable

40% patients with hypoglycemia have a repeat event

Patients with hypoglycemia often don't have their medication regimen changed

Costly

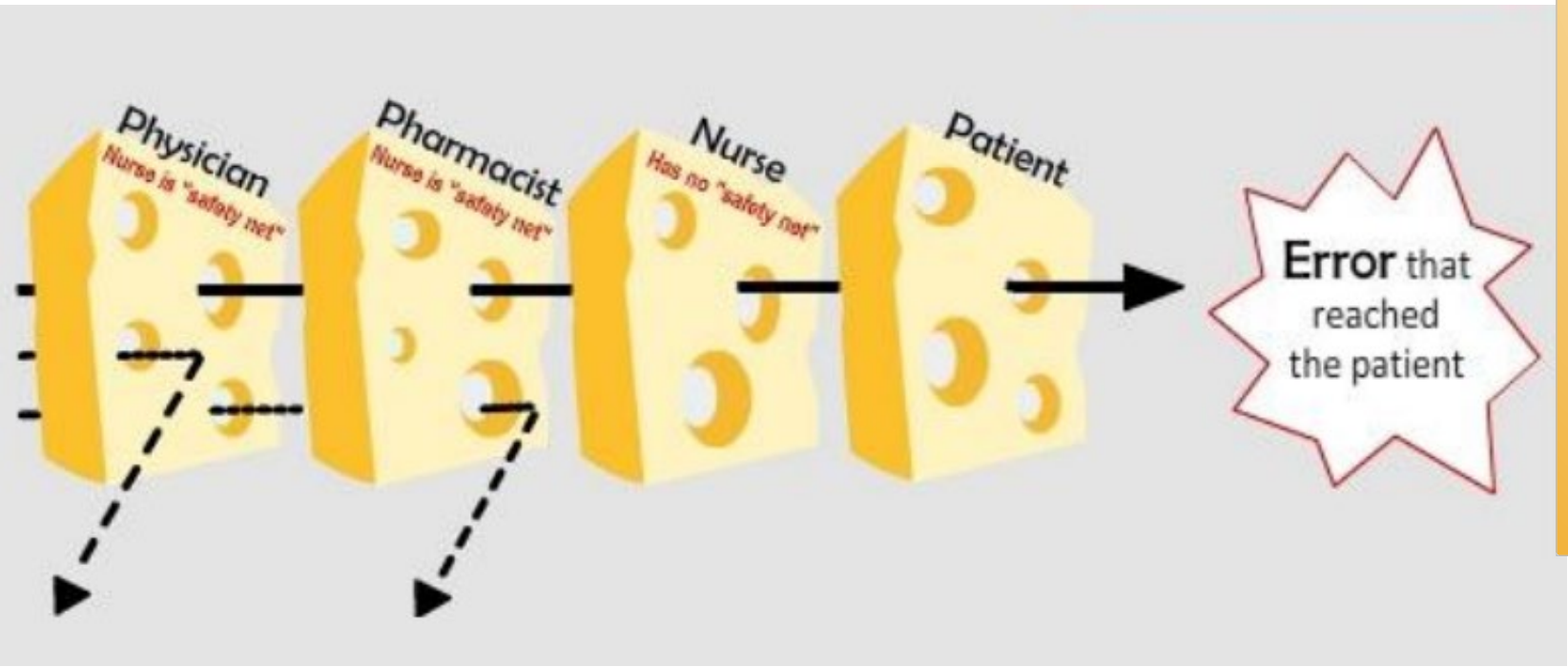
Severe hypoglycemia tied to excess costs up to **$21K per episode**

38.9% higher costs for each <40 mg/dL

LOS increase 1-3 days for hypoglycemia events

Reference:
Centre H., SCI . 2012. National Diabetes Inpatient Audit di UK.
Gómez-Huelgas R., Guijarro-Merino R., Zapatero A., Barba R., Guijarro-Contreras A., Tinahones F. The frequency and impact of hypoglycemia among hospitalized patients with diabetes: a population-based study. *J. Diabet. Complicat.* 2015;29(8):1050–1055
Turchin et al.Hypoglycemia and Clinical Outcomes in Patients With Diabetes Hospitalized in the General Ward
Diabetes Care Jul 2009, 32 (7) 1153-1157; **DOI:** 10.2337/dc08-2127
Curkendall et al(*2009*) Economic and Clinical Impact of Inpatient Diabetic Hypoglycemia. Endocrine Practice: May 2009, Vol. 15, No. 4, pp. 302-312.

The Swiss-Cheese Effect: Medication Errors



ISMP Fast Facts[1]:

A survey of pharmacists and nurses

- IV insulin was the #1 medication concern & SubQ insulin ranked 9th
- When asked about confidence in preventing serious errors related to high-alert medications, SubQ insulin was last

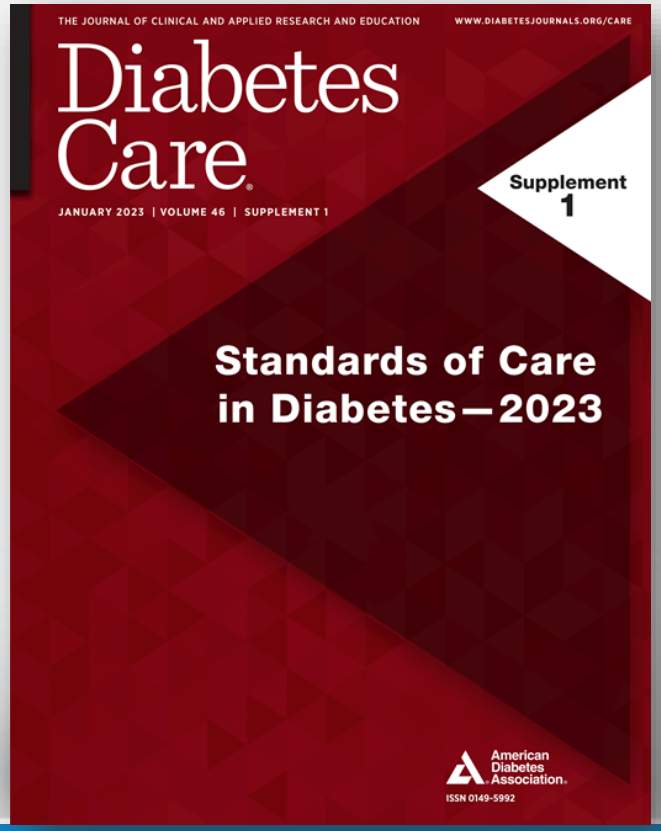
1. ISMP Guidelines for Optimizing Safe Subcutaneous Insulin Use in Adults. Accessed July 15, 2022. https://www.ismp.org/sites/default/files/attachments/2018-09/ISMP138D-Insulin%20Guideline-090718.pdf

Too much insulin leads to hypoglycemia
Inadequate insulin leads to hyperglycemia

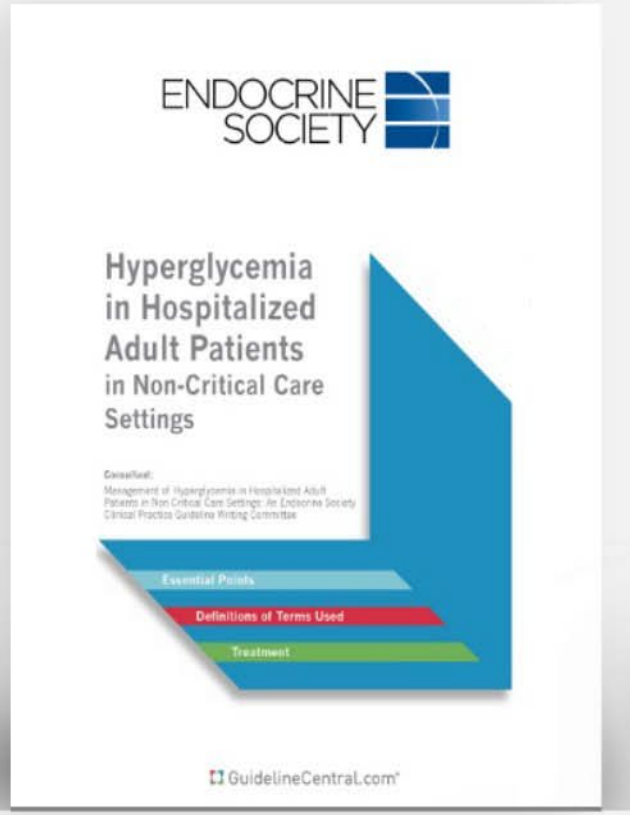
CMS: Poor glycemic control can be prevented with evidence-based guidelines

We Know How to Treat Glucose

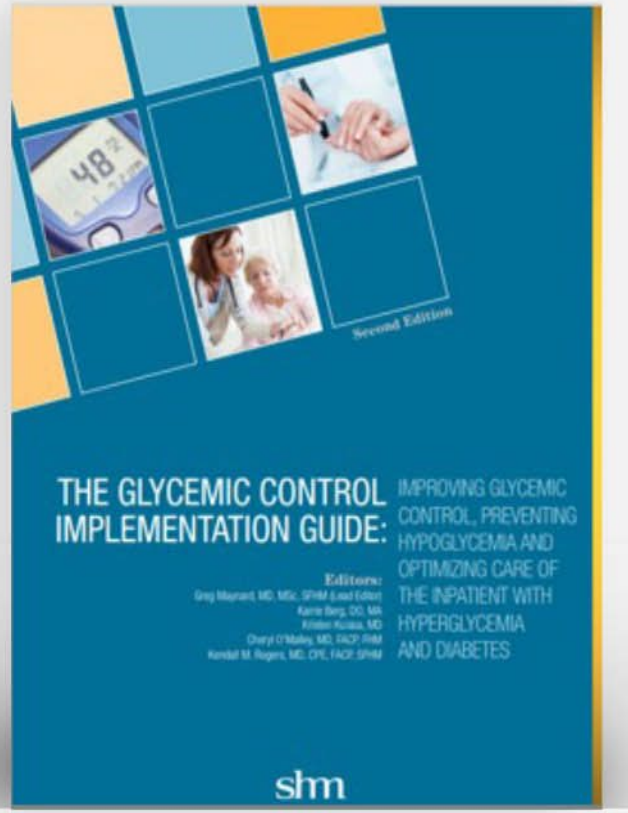
American Diabetes Association (ADA)



Endocrine Society

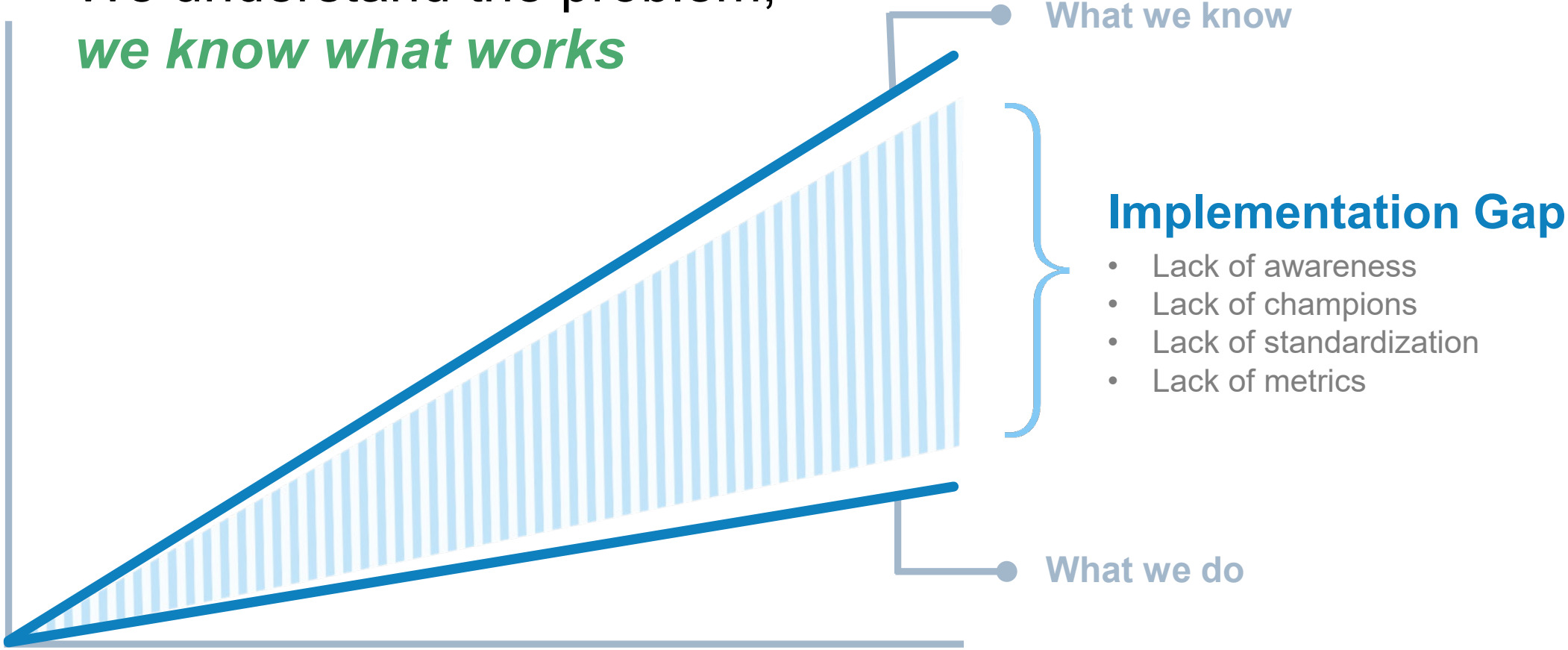


Implementation Guides (SHM)



The Challenge

We understand the problem,
we know what works

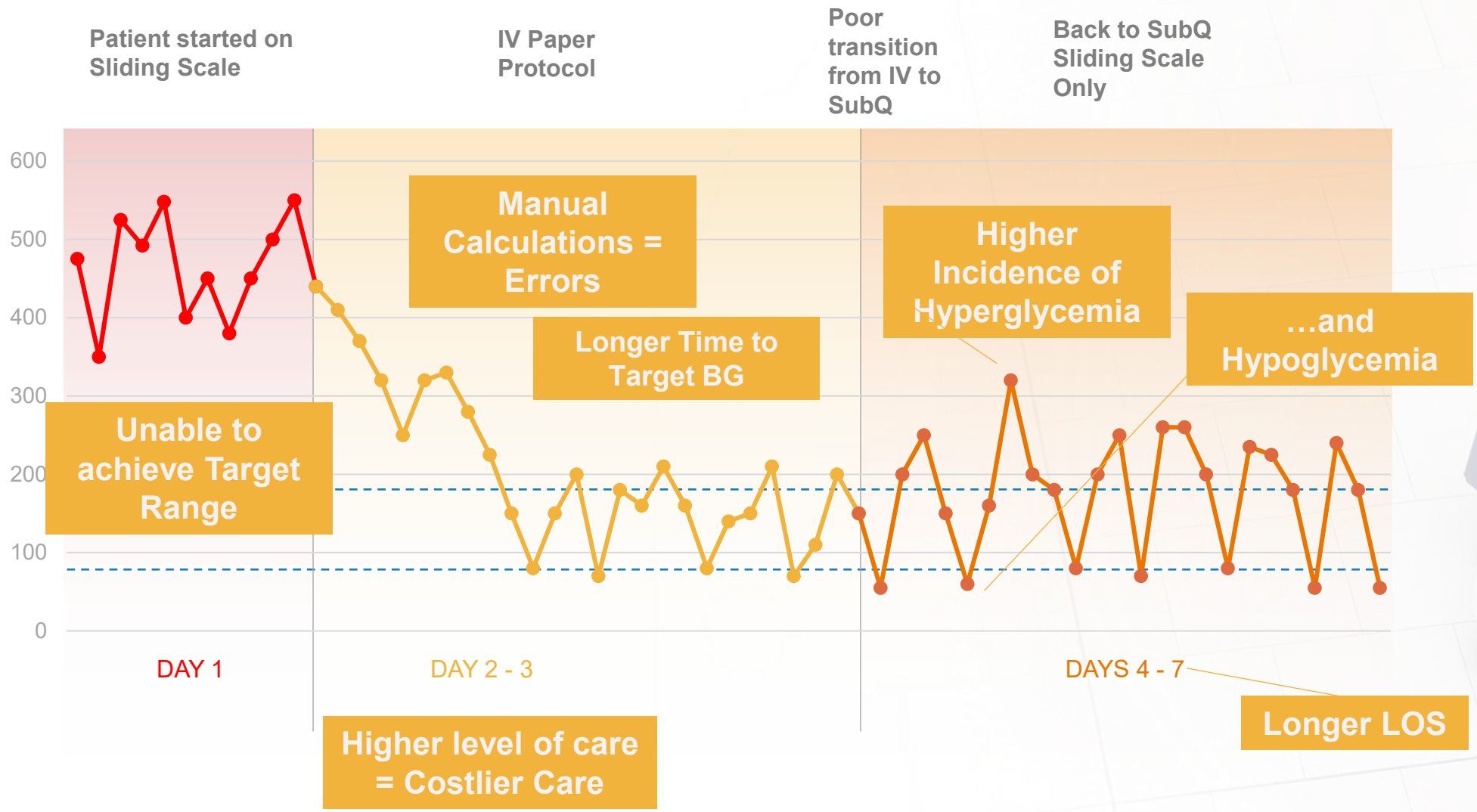


What are the contributors ?

- Inpatient prescribers with varied knowledge and comfort in prescribing insulin
- Staff fear of hypoglycemia leads to hyperglycemia
- Higher perceived knowledge vs. actual knowledge
- Patients throughout the hospital present with glycemic control needs
- Patients fear insulin
- Not usually the focus for hospitalization
- Lack of inpatient diabetes experts
- Lack of standardized care
- Challenges with timing care: glucose testing, meal delivery, and insulin administration timing
  - Meals on demand
  - Food from home
  - Variable intakes

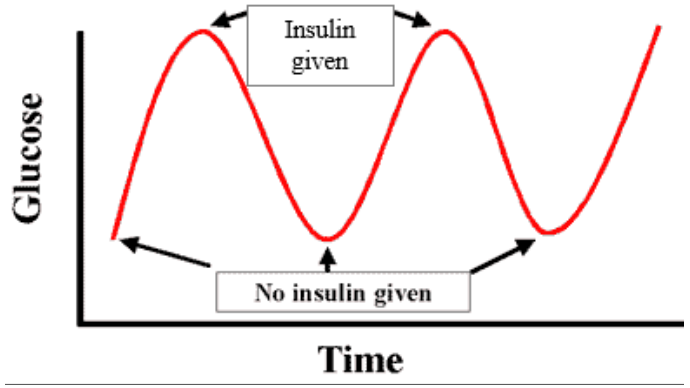
1. Smiley D, Umpierrez GE. Management of hyperglycemia in hospitalized patients. *Ann N Y Acad Sci*. 2010;1212:1-11. doi:10.1111/j.1749-6632.2010.05805.x
2. Duggan EW, Carlson K, Umpierrez GE. Perioperative Hyperglycemia Management: An Update [published correction appears in Anesthesiology. 2018 Nov;129(5):1053]. Anesthesiology. 2017;126(3):547-560. doi:10.1097/ALN.0000000000001515

Patient-Level Results



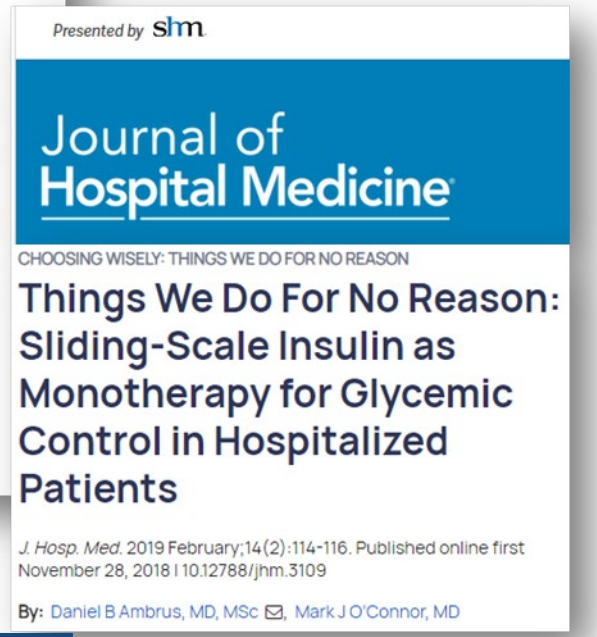
Sliding Scale Insulin

- REACTIVE approach:
  Insulin administered after hyperglycemia occurs



WHY SSI AS MONOTHERAPY IS NOT HELPFUL

SSI administration does not attempt to replicate normal pancreatic physiology, which involves basal insulin secretion to impair hepatic gluconeogenesis and meal-associated insulin spikes to promote uptake into glucose-avid tissues. SSI is a reactive strategy, not a proactive one, and perhaps unsurprisingly, to our knowledge, it has never been shown to prevent hyperglycemia in hospitalized patients, an impression corroborated by a systematic review of the topic between 1964 and 2003.[7] More recently, one multicenter trial analyzed the effect of adding SSI to oral antihyperglycemic medications in hospitalized diabetics and found no differences in rates of hyperglycemia.[8] Another study found that 84% of administered SSI doses failed to correct hyperglycemia.[9]

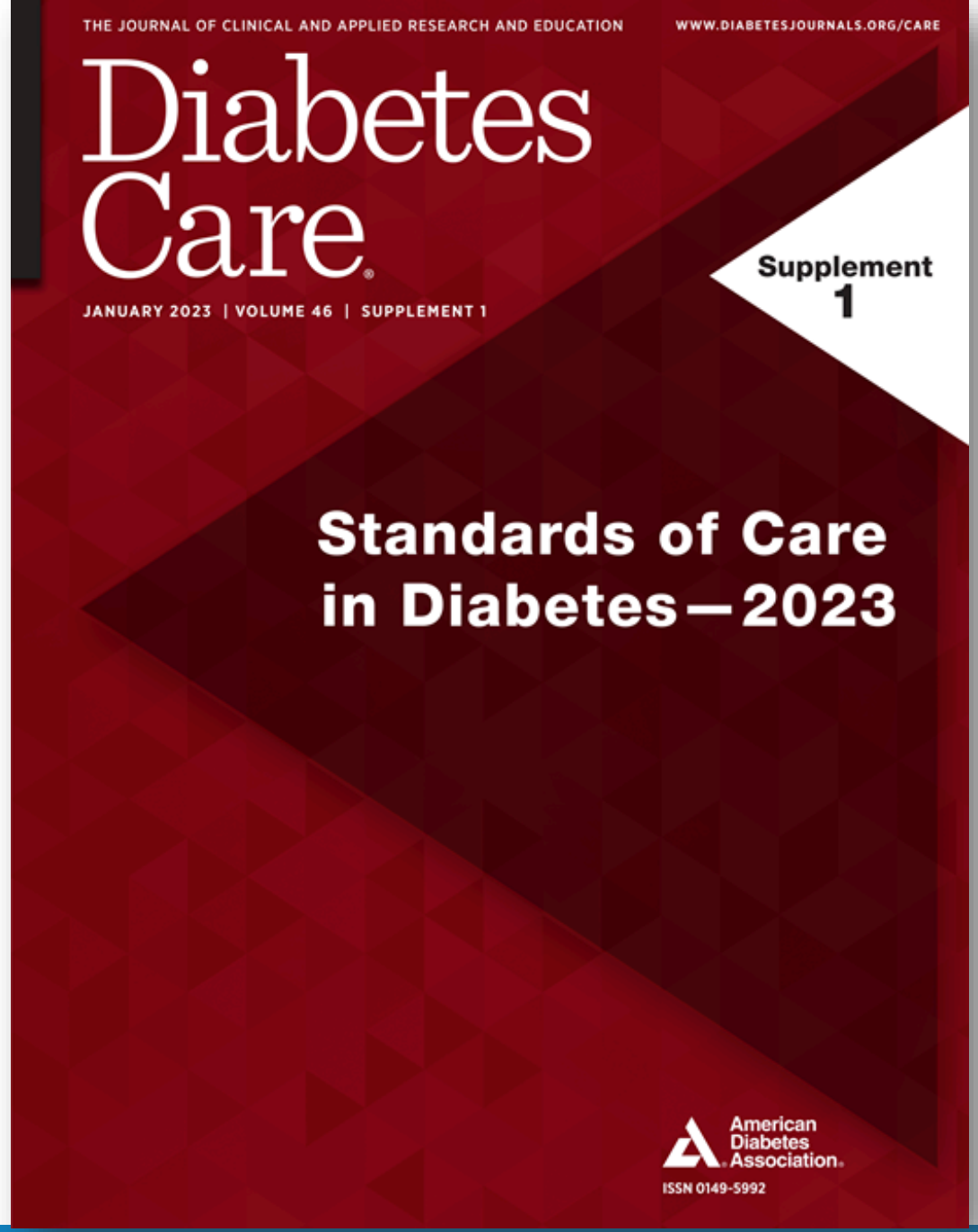


"Using SSI as monotherapy for hyperglycemia is a common practice, and although well-intentioned, it is an ineffective and possibly dangerous approach."

Sliding-scale insulin protocols were first used in 1934

Medicine has changed:

it's time for a new way to think about glycemic management

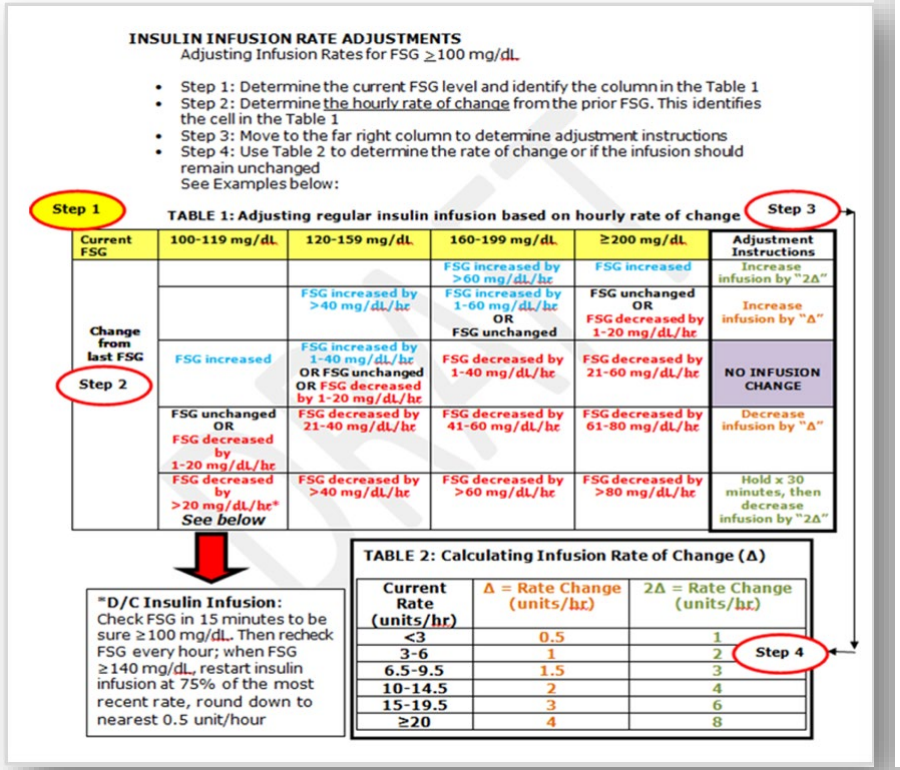


Insulin Therapy
Critical Care Setting

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.

- ADA Guidelines
  - Start insulin for persistent BG >180 mg/dl
  - 140-180 mg/dl for most critically ill
  - 110-140 mg/dl for selected ICU patients
- Society of Critical Care Medicine
  - Start insulin >150 mg/dl, with goal <180 mg/dl

Paper Protocols for IV Insulin Management



INSULIN INFUSION RATE ADJUSTMENTS

Adjusting Infusion Rates for FSG ≥100 mg/dL

- Step 1: Determine the current FSG level and identify the column in the Table 1
- Step 2: Determine the hourly rate of change from the prior FSG. This identifies the cell in the Table 1
- Step 3: Move to the far right column to determine adjustment instructions
- Step 4: Use Table 2 to determine the rate of change or if the infusion should remain unchanged

See Examples below:

Step 1

TABLE 1: Adjusting regular insulin infusion based on hourly rate of change — Step 3

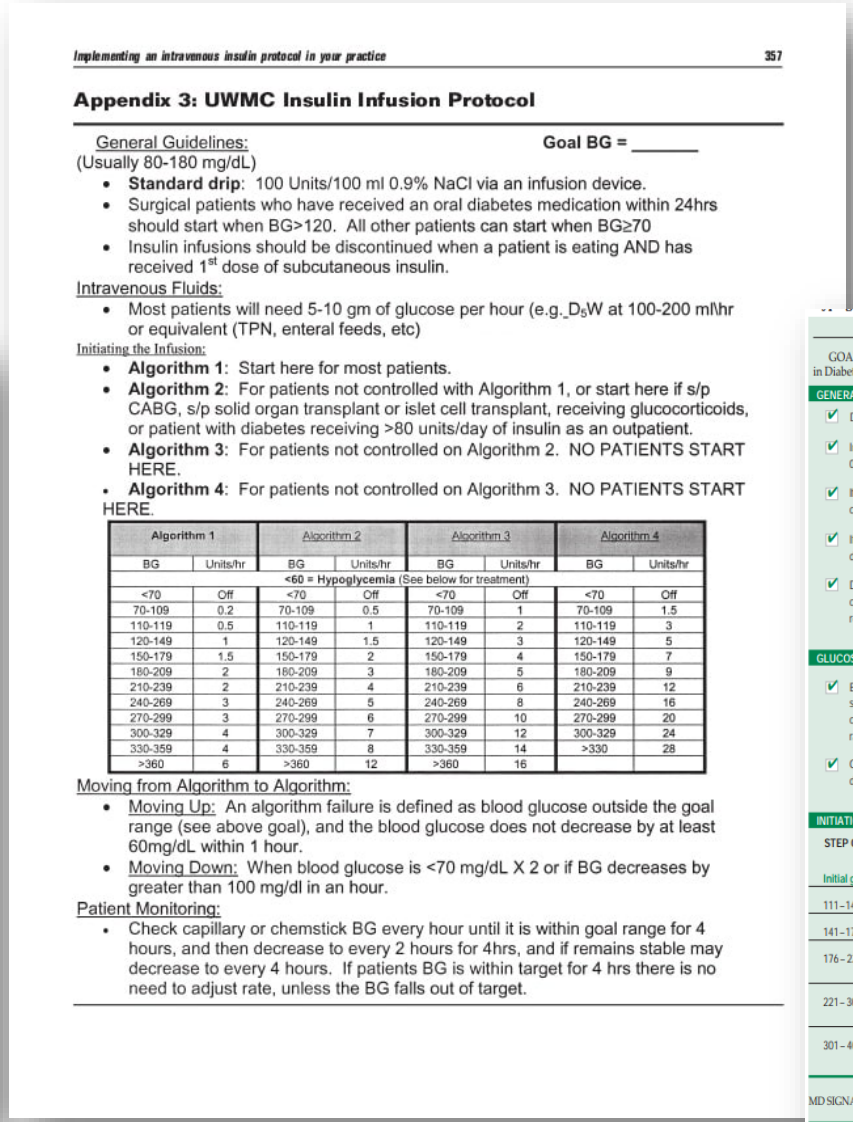
Current FSG	100-119 mg/dL	120-159 mg/dL	160-199 mg/dL	≥200 mg/dL	Adjustment Instructions
Change from last FSG (Step 2)			FSG increased by >60 mg/dL/hr	FSG increased	Increase infusion by "2Δ"
		FSG increased by >40 mg/dL/hr	FSG increased by 1-60 mg/dL/hr OR FSG unchanged	FSG unchanged OR FSG decreased by 1-20 mg/dL/hr	Increase infusion by "Δ"
	FSG increased	FSG increased by 1-40 mg/dL/hr OR FSG unchanged OR FSG decreased by 1-20 mg/dL/hr	FSG decreased by 1-40 mg/dL/hr	FSG decreased by 21-60 mg/dL/hr	NO INFUSION CHANGE
	FSG unchanged OR FSG decreased by 1-20 mg/dL/hr	FSG decreased by 21-40 mg/dL/hr	FSG decreased by 41-60 mg/dL/hr	FSG decreased by 61-80 mg/dL/hr	Decrease infusion by "Δ"
	FSG decreased by >20 mg/dL/hr* See below	FSG decreased by >40 mg/dL/hr	FSG decreased by >60 mg/dL/hr	FSG decreased by >80 mg/dL/hr	Hold x 30 minutes, then decrease infusion by "2Δ"

TABLE 2: Calculating Infusion Rate of Change (Δ)

Current Rate (units/hr)	Δ = Rate Change (units/hr)	2Δ = Rate Change (units/hr)
<3	0.5	1
3-6	1	2
6.5-9.5	1.5	3
10-14.5	2	4
15-19.5	3	6
≥20	4	8

Step 4

***D/C Insulin Infusion:** Check FSG in 15 minutes to be sure ≥100 mg/dL. Then recheck FSG every hour; when FSG ≥140 mg/dL, restart insulin infusion at 75% of the most recent rate, round down to nearest 0.5 unit/hour



Implementing an intravenous insulin protocol in your practice 357

Appendix 3: UWMC Insulin Infusion Protocol

General Guidelines: Goal BG = _____

(Usually 80-180 mg/dL)

- **Standard drip**: 100 Units/100 ml 0.9% NaCl via an infusion device.
- Surgical patients who have received an oral diabetes medication within 24hrs should start when BG>120. All other patients can start when BG≥70
- Insulin infusions should be discontinued when a patient is eating AND has received 1st dose of subcutaneous insulin.

Intravenous Fluids:

- Most patients will need 5-10 gm of glucose per hour (e.g. D_5W at 100-200 ml\hr or equivalent (TPN, enteral feeds, etc)

Initiating the Infusion:

- **Algorithm 1**: Start here for most patients.
- **Algorithm 2**: For patients not controlled with Algorithm 1, or start here if s/p CABG, s/p solid organ transplant or islet cell transplant, receiving glucocorticoids, or patient with diabetes receiving >80 units/day of insulin as an outpatient.
- **Algorithm 3**: For patients not controlled on Algorithm 2. NO PATIENTS START HERE.
- **Algorithm 4**: For patients not controlled on Algorithm 3. NO PATIENTS START HERE.

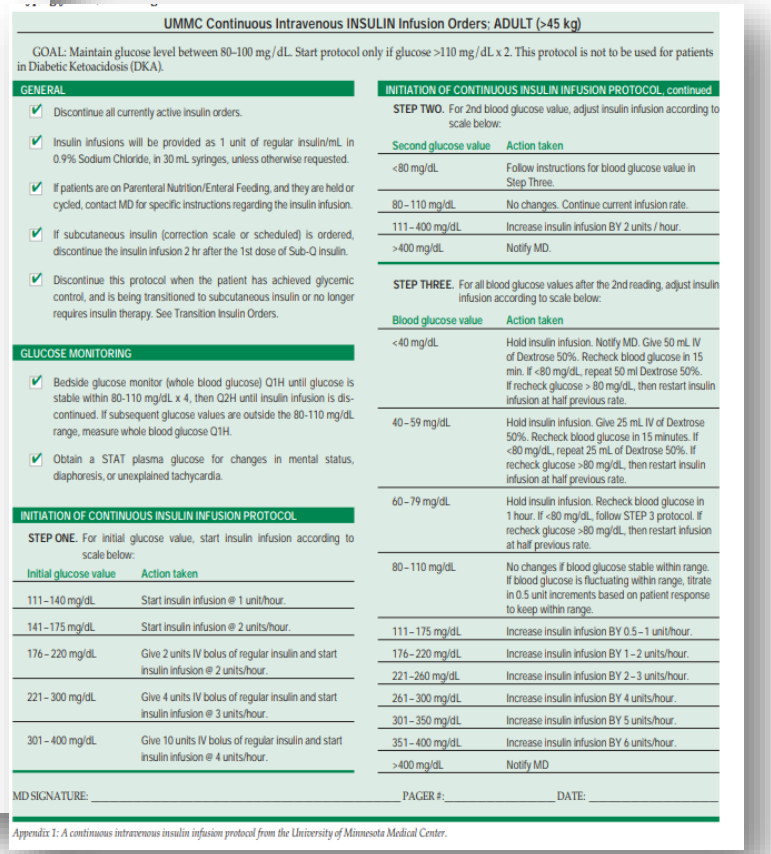
Algorithm 1		Algorithm 2		Algorithm 3		Algorithm 4	
BG	Units/hr	BG	Units/hr	BG	Units/hr	BG	Units/hr
<60 = Hypoglycemia (See below for treatment)							
<70	Off	<70	Off	<70	Off	<70	Off
70-109	0.2	70-109	0.5	70-109	1	70-109	1.5
110-119	0.5	110-119	1	110-119	2	110-119	3
120-149	1	120-149	1.5	120-149	3	120-149	5
150-179	1.5	150-179	2	150-179	4	150-179	7
180-209	2	180-209	3	180-209	5	180-209	9
210-239	2	210-239	4	210-239	6	210-239	12
240-269	3	240-269	5	240-269	8	240-269	16
270-299	3	270-299	6	270-299	10	270-299	20
300-329	4	300-329	7	300-329	12	300-329	24
330-359	4	330-359	8	330-359	14	>330	28
>360	6	>360	12	>360	16		

Moving from Algorithm to Algorithm:

- Moving Up: An algorithm failure is defined as blood glucose outside the goal range (see above goal), and the blood glucose does not decrease by at least 60mg/dL within 1 hour.
- Moving Down: When blood glucose is <70 mg/dL X 2 or if BG decreases by greater than 100 mg/dl in an hour.

Patient Monitoring:

- Check capillary or chemstick BG every hour until it is within goal range for 4 hours, and then decrease to every 2 hours for 4hrs, and if remains stable may decrease to every 4 hours. If patients BG is within target for 4 hrs there is no need to adjust rate, unless the BG falls out of target.



UMMC Continuous Intravenous INSULIN Infusion Orders; ADULT (>45 kg)

GOAL: Maintain glucose level between 80–100 mg/dL. Start protocol only if glucose >110 mg/dL x 2. This protocol is not to be used for patients in Diabetic Ketoacidosis (DKA).

GENERAL

- ☑ Discontinue all currently active insulin orders.
- ☑ Insulin infusions will be provided as 1 unit of regular insulin/mL in 0.9% Sodium Chloride, in 30 mL syringes, unless otherwise requested.
- ☑ If patients are on Parenteral Nutrition/Enteral Feeding, and they are held or cycled, contact MD for specific instructions regarding the insulin infusion.
- ☑ If subcutaneous insulin (correction scale or scheduled) is ordered, discontinue the insulin infusion 2 hr after the 1st dose of Sub-Q insulin.
- ☑ Discontinue this protocol when the patient has achieved glycemic control, and is being transitioned to subcutaneous insulin or no longer requires insulin therapy. See Transition Insulin Orders.

GLUCOSE MONITORING

- ☑ Bedside glucose monitor (whole blood glucose) Q1H until glucose is stable within 80-110 mg/dL x 4, then Q2H until insulin infusion is discontinued. If subsequent glucose values are outside the 80-110 mg/dL range, measure whole blood glucose Q1H.
- ☑ Obtain a STAT plasma glucose for changes in mental status, diaphoresis, or unexplained tachycardia.

INITIATION OF CONTINUOUS INSULIN INFUSION PROTOCOL

STEP ONE. For initial glucose value, start insulin infusion according to scale below:

Initial glucose value	Action taken
111–140 mg/dL	Start insulin infusion @ 1 unit/hour.
141–175 mg/dL	Start insulin infusion @ 2 units/hour.
176–220 mg/dL	Give 2 units IV bolus of regular insulin and start insulin infusion @ 2 units/hour.
221–300 mg/dL	Give 4 units IV bolus of regular insulin and start insulin infusion @ 3 units/hour.
301–400 mg/dL	Give 10 units IV bolus of regular insulin and start insulin infusion @ 4 units/hour.

INITIATION OF CONTINUOUS INSULIN INFUSION PROTOCOL, continued

STEP TWO. For 2nd blood glucose value, adjust insulin infusion according to scale below:

Second glucose value	Action taken
<80 mg/dL	Follow instructions for blood glucose value in Step Three.
80–110 mg/dL	No changes. Continue current infusion rate.
111–400 mg/dL	Increase insulin infusion BY 2 units / hour.
>400 mg/dL	Notify MD.

STEP THREE. For all blood glucose values after the 2nd reading, adjust insulin infusion according to scale below:

Blood glucose value	Action taken
<40 mg/dL	Hold insulin infusion. Notify MD. Give 50 mL IV of Dextrose 50%. Recheck blood glucose in 15 min. If <80 mg/dL, repeat 50 ml Dextrose 50%. If recheck glucose > 80 mg/dL, then restart insulin infusion at half previous rate.
40–59 mg/dL	Hold insulin infusion. Give 25 mL IV of Dextrose 50%. Recheck blood glucose in 15 minutes. If <80 mg/dL, repeat 25 mL of Dextrose 50%. If recheck glucose >80 mg/dL, then restart insulin infusion at half previous rate.
60–79 mg/dL	Hold insulin infusion. Recheck blood glucose in 1 hour. If <80 mg/dL, follow STEP 3 protocol. If recheck glucose >80 mg/dL, then restart infusion at half previous rate.
80–110 mg/dL	No changes if blood glucose stable within range. If blood glucose is fluctuating within range, titrate in 0.5 unit increments based on patient response to keep within range.
111–175 mg/dL	Increase insulin infusion BY 0.5–1 unit/hour.
176–220 mg/dL	Increase insulin infusion BY 1–2 units/hour.
221–260 mg/dL	Increase insulin infusion BY 2–3 units/hour.
261–300 mg/dL	Increase insulin infusion BY 4 units/hour.
301–350 mg/dL	Increase insulin infusion BY 5 units/hour.
351–400 mg/dL	Increase insulin infusion BY 6 units/hour.
>400 mg/dL	Notify MD

MD SIGNATURE: _____ PAGER #: _____ DATE: _____

Appendix 1: A continuous intravenous insulin infusion protocol from the University of Minnesota Medical Center.

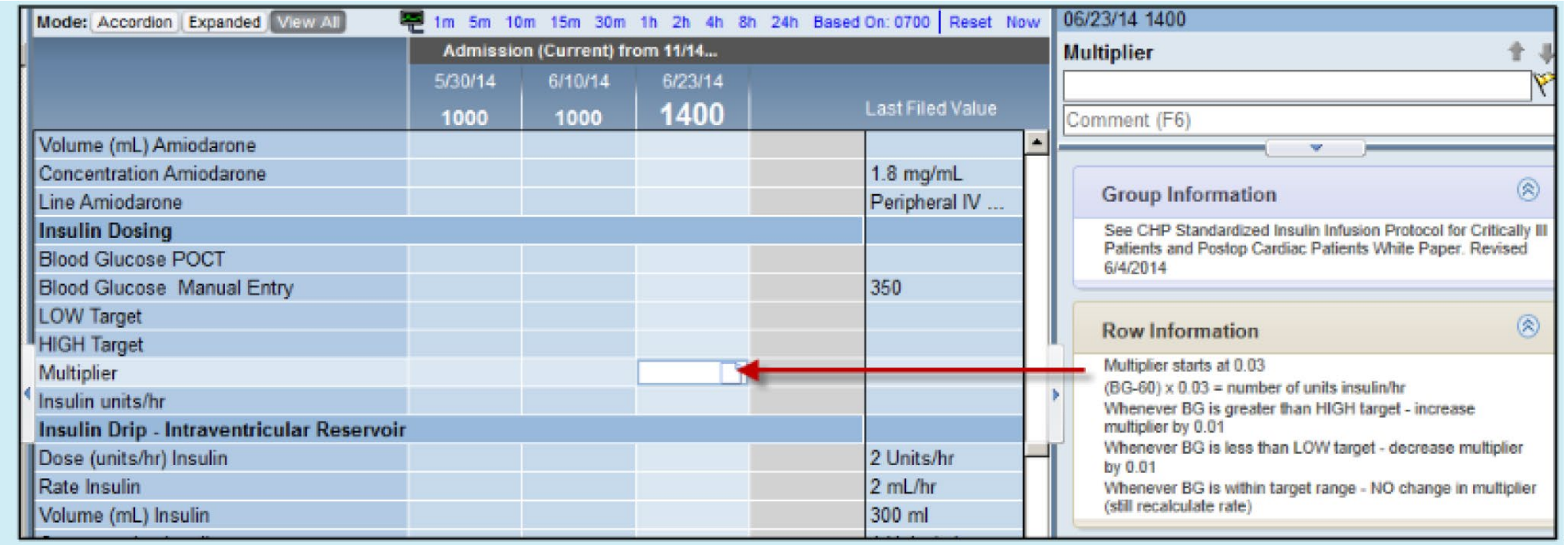
https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.669.3945&rep=rep1&type=pdf
https://www.apsf.org/wp-content/uploads/newsletters/2006/summer/pdf/Insulin-Infustion-Orders.pdf

Top Challenges Nurses Share

- Various and often confusing protocols
  - Manual calculations
  - Multiple steps
  - Time-consuming process
- Unable to complete all tasks in a timely manner
- Fear of dropping glucose too fast
- Lack of expert support

Current challenges of travel and new graduate nurses, staffing and retention. How can we reduce the burden and cognitive load of our staff?

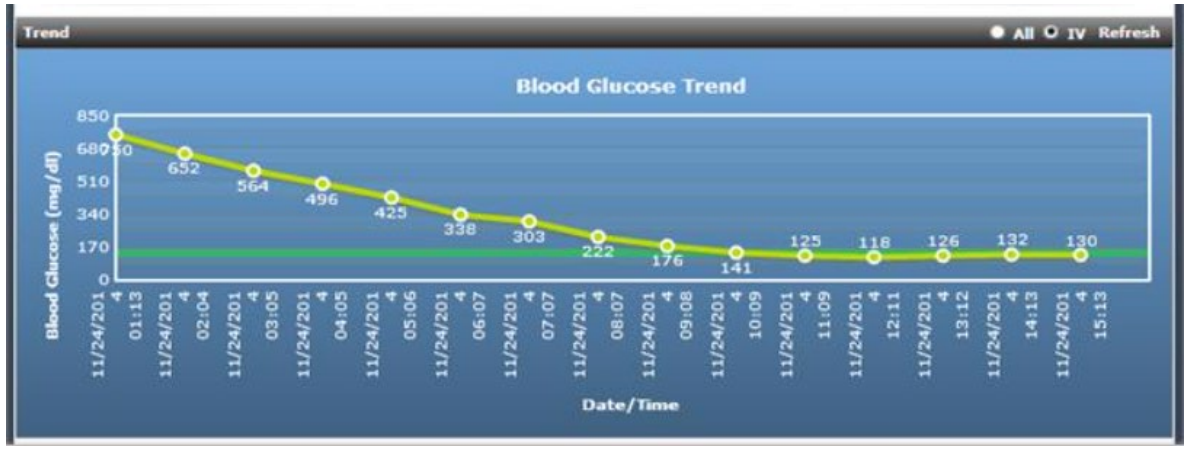
UTILIZING TECHNOLOGY



Calculators built into EMRs

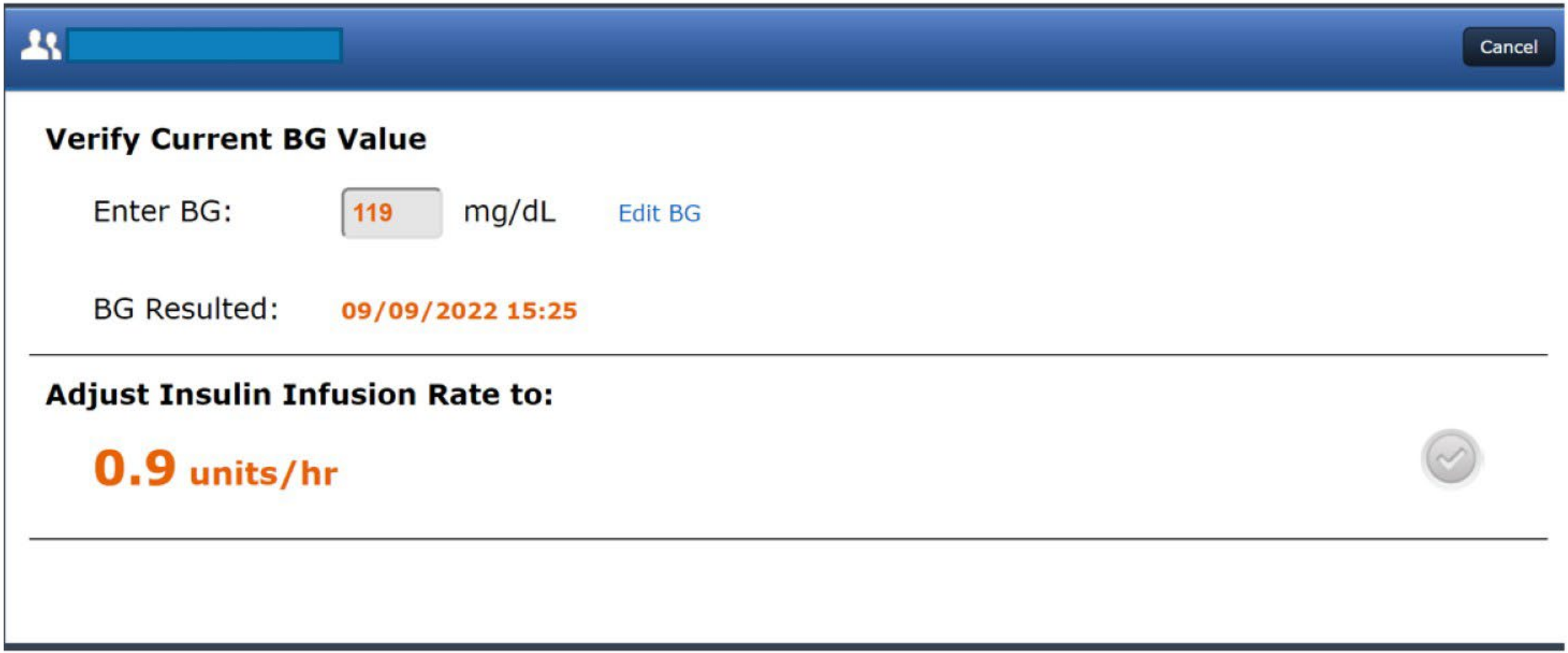
Lack FDA oversight and regulation

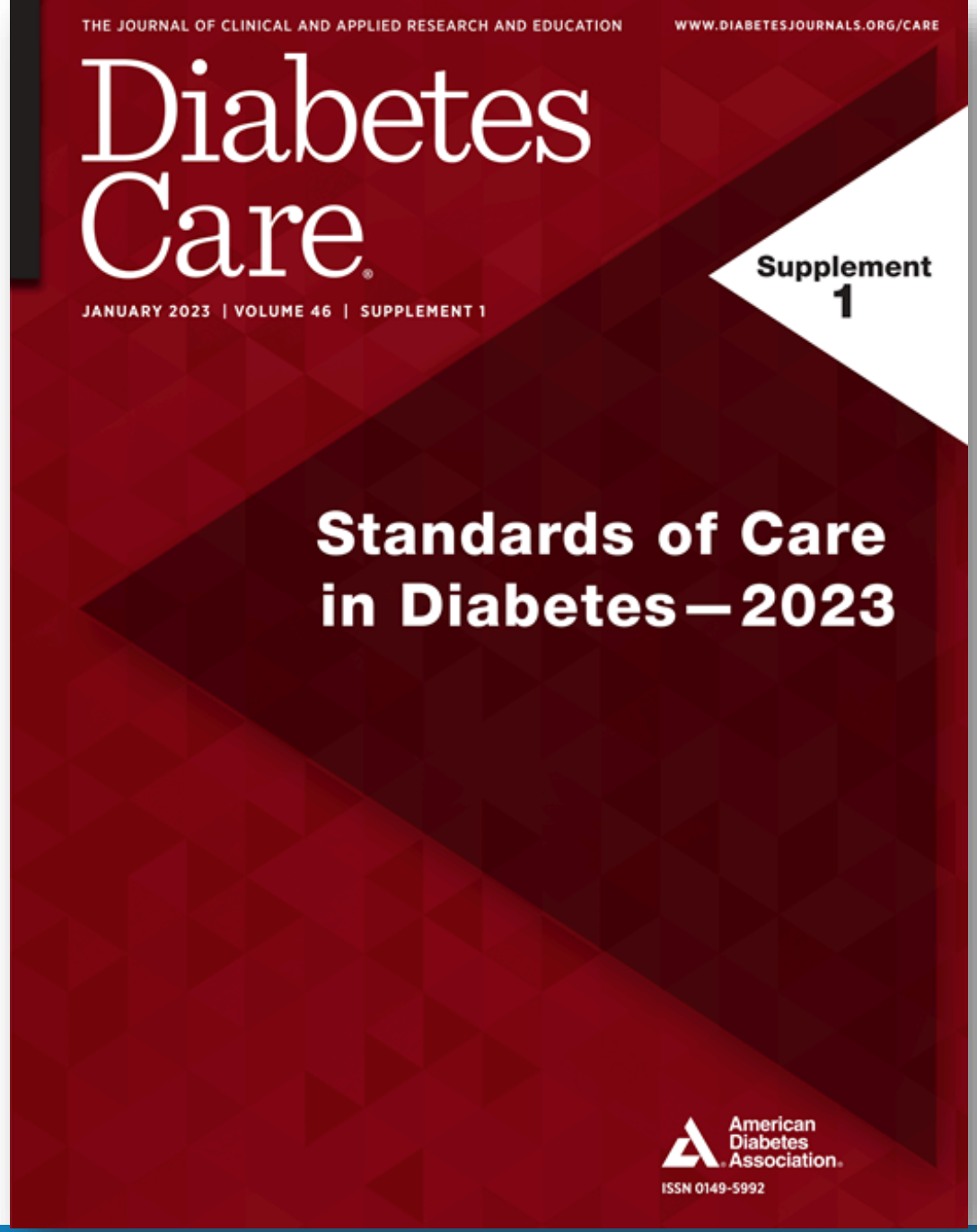
Computerized Algorithms eGMS



Benefits of eGMS:

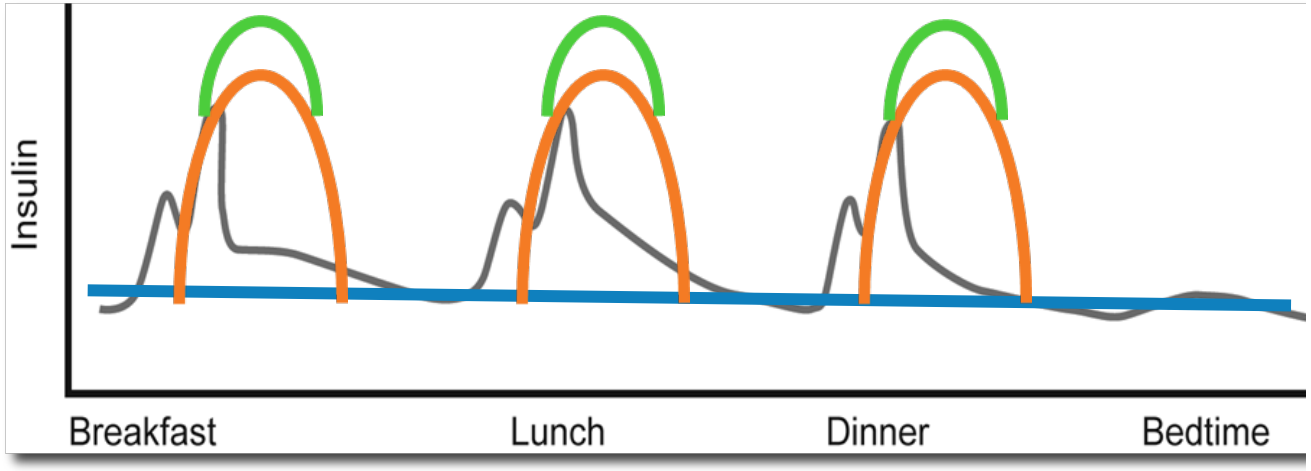
- Quicker time to target range
- Longer maintenance of glucose in tighter target ranges
- Lower glycemic variability
- Lower risk for hypoglycemia
- Fewer calculation errors
- Built-in alert systems
- Data analysis
- FDA-cleared
- And more





- **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**
- **16.6 Basal insulin or a basal plus 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**

Mimicking Physiologic Insulin Delivery



- **Basal Insulin**: long-acting; meets patient's baseline fasting insulin needs
- **Prandial (Bolus) Insulin**: rapid-acting; given with each meal to cover glucose spike from carbohydrate consumption
- **Correction Insulin**: rapid-acting (or short-acting); given to correct hyperglycemia and bring blood glucose back into target range

Subcutaneous Insulin : Dosing

Steps in starting Subcutaneous insulin

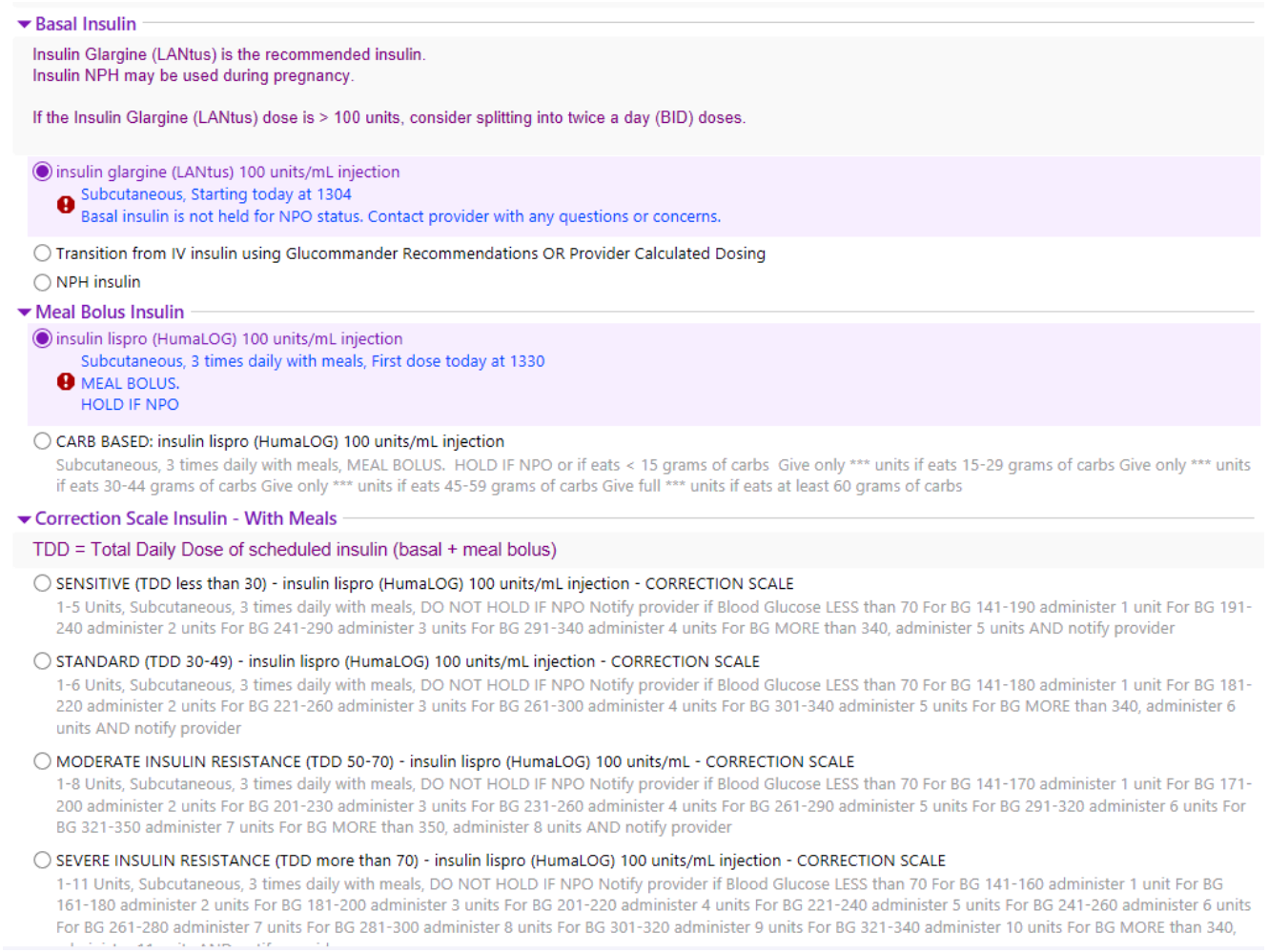
1. Calculate a total daily insulin dose.

   Use home insulin doses or calculate based on weight:

   - 0.3 Insulin Naive, older, renal
   - 0.5 Most Type 2
   - 0.7 Insulin resistance, steroids

2. Split between basal and nutritional bolus
   - Basal once or twice daily
   - Meal bolus 3 times daily or with tube feeding bolus
     - Continuous feeding may give q 4 or 6-hour doses
3. Correctional Insulin based on patient's insulin sensitivity
4. Adjust doses as needed based on response.

Order sets help drive prescribing practice



Basal Insulin

Insulin Glargine (LANtus) is the recommended insulin.
Insulin NPH may be used during pregnancy.

If the Insulin Glargine (LANtus) dose is > 100 units, consider splitting into twice a day (BID) doses.

- (●) insulin glargine (LANtus) 100 units/mL injection
  - Subcutaneous, Starting today at 1304
  - Basal insulin is not held for NPO status. Contact provider with any questions or concerns.
- ( ) Transition from IV insulin using Glucommander Recommendations OR Provider Calculated Dosing
- ( ) NPH insulin

Meal Bolus Insulin

- (●) insulin lispro (HumaLOG) 100 units/mL injection
  - Subcutaneous, 3 times daily with meals, First dose today at 1330
  - MEAL BOLUS.
  - HOLD IF NPO
- ( ) CARB BASED: insulin lispro (HumaLOG) 100 units/mL injection
  Subcutaneous, 3 times daily with meals, MEAL BOLUS. HOLD IF NPO or if eats < 15 grams of carbs Give only *** units if eats 15-29 grams of carbs Give only *** units if eats 30-44 grams of carbs Give only *** units if eats 45-59 grams of carbs Give full *** units if eats at least 60 grams of carbs

Correction Scale Insulin - With Meals

TDD = Total Daily Dose of scheduled insulin (basal + meal bolus)

- ( ) SENSITIVE (TDD less than 30) - insulin lispro (HumaLOG) 100 units/mL injection - CORRECTION SCALE
  1-5 Units, Subcutaneous, 3 times daily with meals, DO NOT HOLD IF NPO Notify provider if Blood Glucose LESS than 70 For BG 141-190 administer 1 unit For BG 191-240 administer 2 units For BG 241-290 administer 3 units For BG 291-340 administer 4 units For BG MORE than 340, administer 5 units AND notify provider
- ( ) STANDARD (TDD 30-49) - insulin lispro (HumaLOG) 100 units/mL injection - CORRECTION SCALE
  1-6 Units, Subcutaneous, 3 times daily with meals, DO NOT HOLD IF NPO Notify provider if Blood Glucose LESS than 70 For BG 141-180 administer 1 unit For BG 181-220 administer 2 units For BG 221-260 administer 3 units For BG 261-300 administer 4 units For BG 301-340 administer 5 units For BG MORE than 340, administer 6 units AND notify provider
- ( ) MODERATE INSULIN RESISTANCE (TDD 50-70) - insulin lispro (HumaLOG) 100 units/mL - CORRECTION SCALE
  1-8 Units, Subcutaneous, 3 times daily with meals, DO NOT HOLD IF NPO Notify provider if Blood Glucose LESS than 70 For BG 141-170 administer 1 unit For BG 171-200 administer 2 units For BG 201-230 administer 3 units For BG 231-260 administer 4 units For BG 261-290 administer 5 units For BG 291-320 administer 6 units For BG 321-350 administer 7 units For BG MORE than 350, administer 8 units AND notify provider
- ( ) SEVERE INSULIN RESISTANCE (TDD more than 70) - insulin lispro (HumaLOG) 100 units/mL injection - CORRECTION SCALE
  1-11 Units, Subcutaneous, 3 times daily with meals, DO NOT HOLD IF NPO Notify provider if Blood Glucose LESS than 70 For BG 141-160 administer 1 unit For BG 161-180 administer 2 units For BG 181-200 administer 3 units For BG 201-220 administer 4 units For BG 221-240 administer 5 units For BG 241-260 administer 6 units For BG 261-280 administer 7 units For BG 281-300 administer 8 units For BG 301-320 administer 9 units For BG 321-340 administer 10 units For BG MORE than 340,

Include Basal, Meal Bolus, and Correction orders

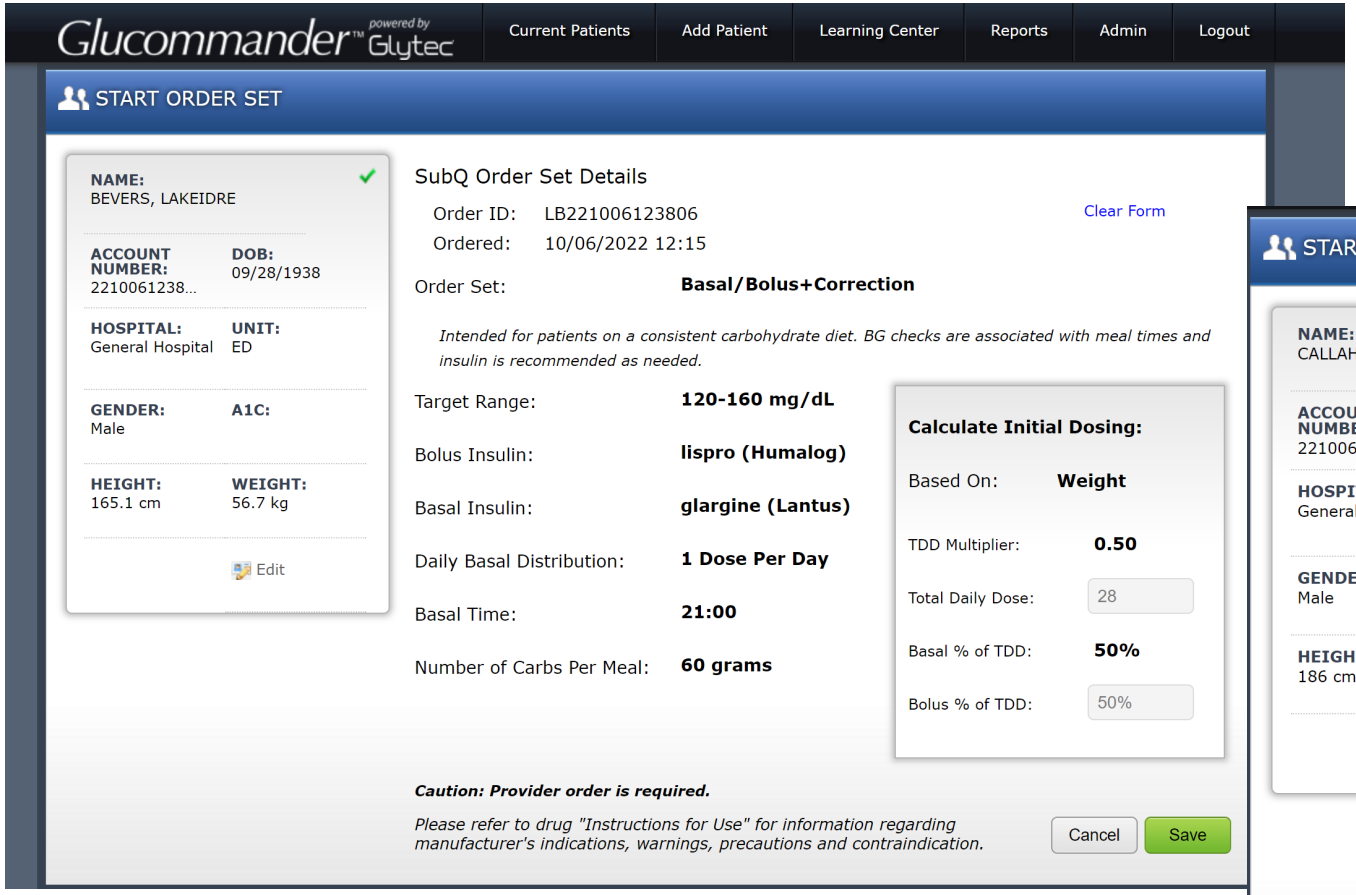
Include Hypoglycemia Protocol

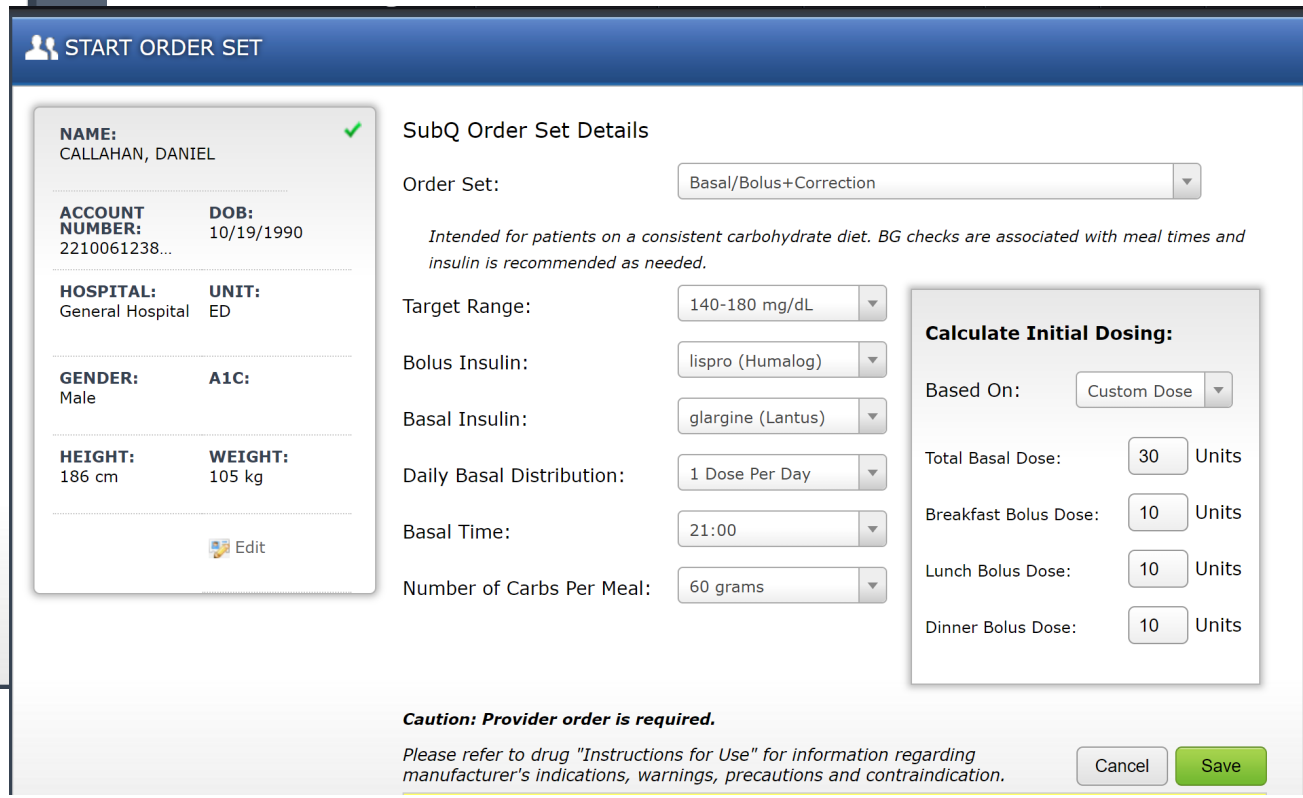
Include nursing notifications.

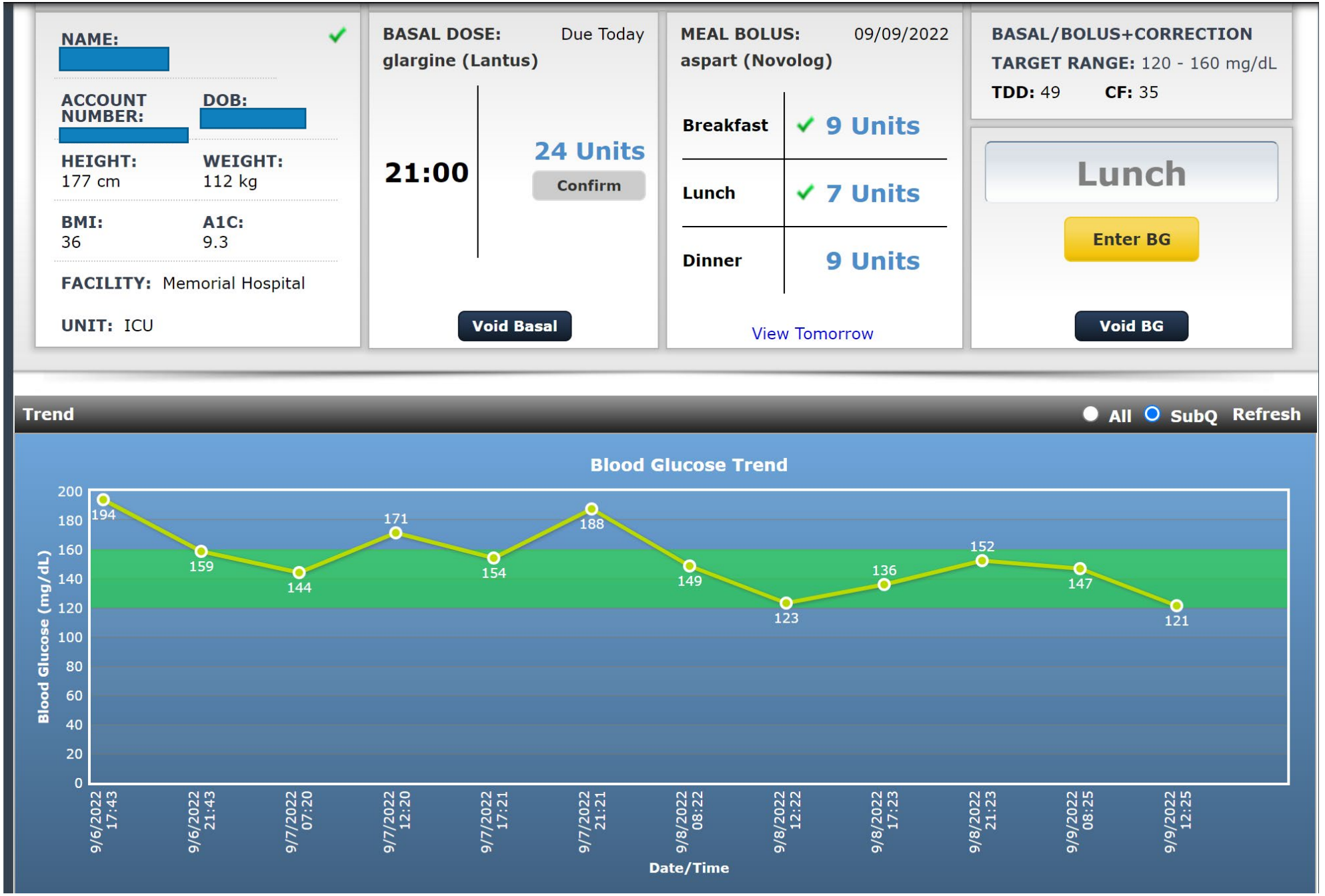
Include BG checks

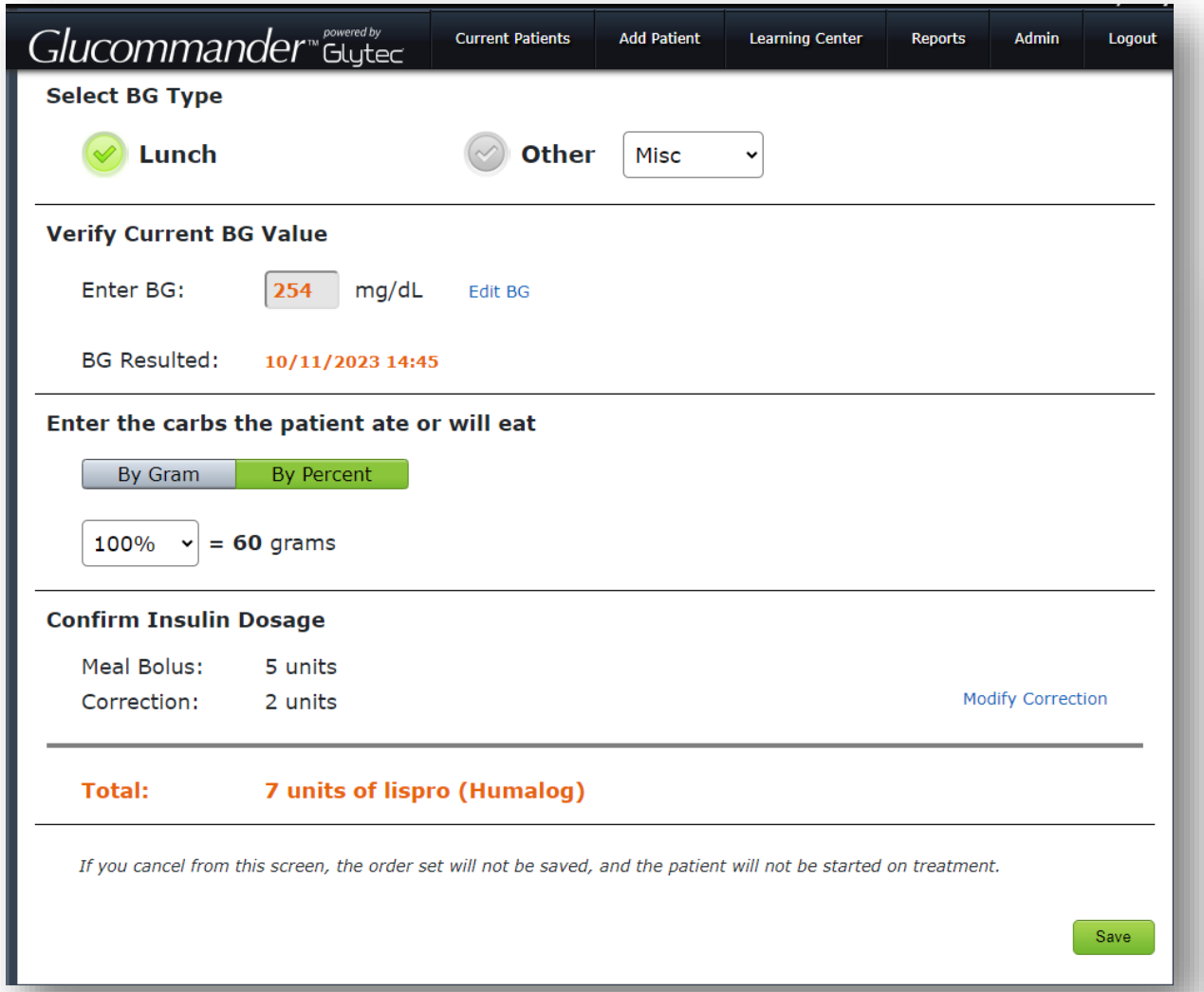
Glucommander Initiation

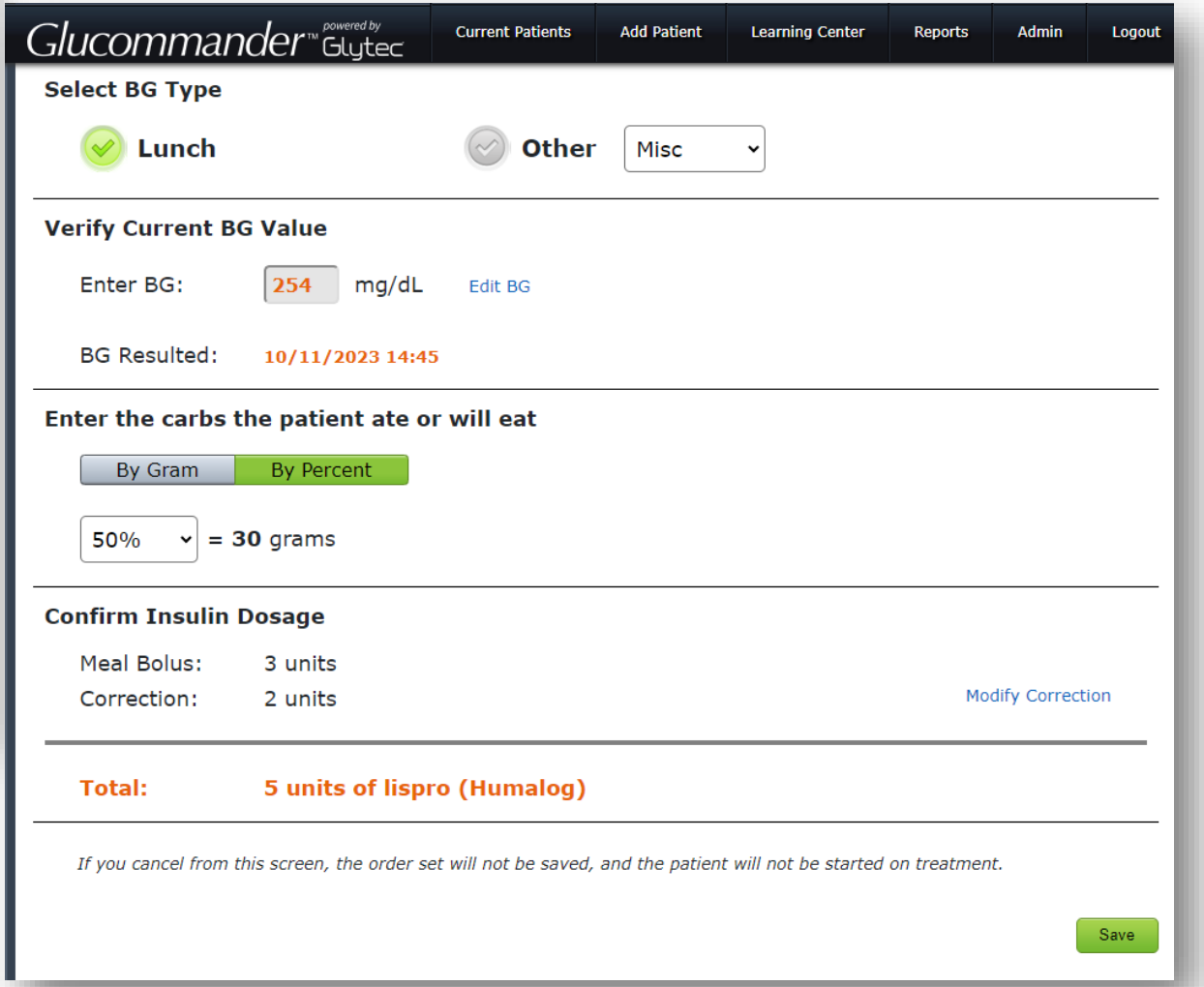
Can be started as a weight-based multiplier or as a custom start



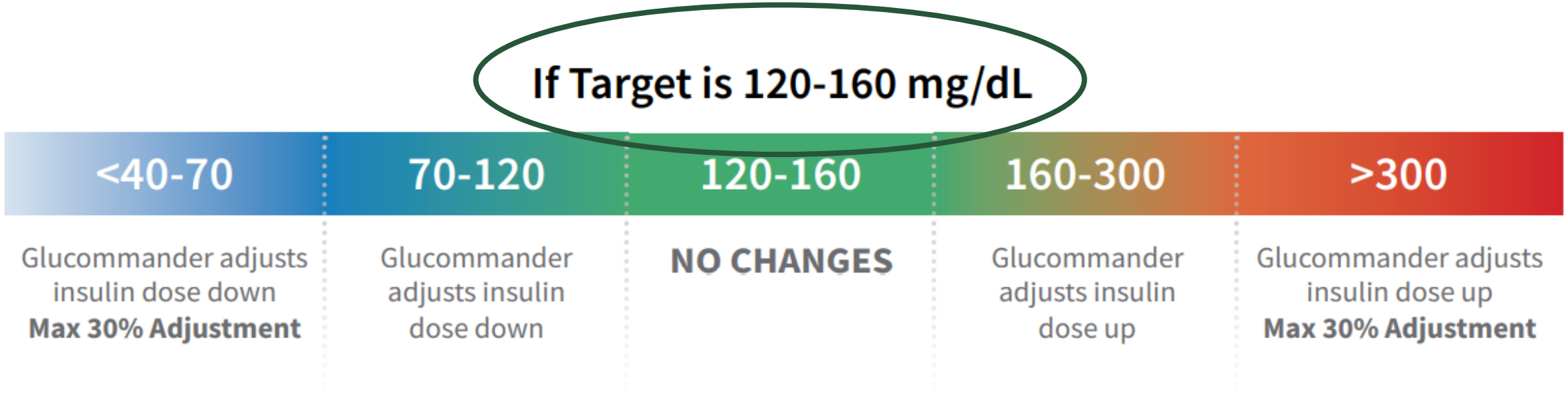








Glucommander SubQ Insulin Adjustments



Glucommander will adjust the dose of basal and/or prandial insulin based on glycemic response

New eCQM Quality Measures

CMS Quality Reporting Measures

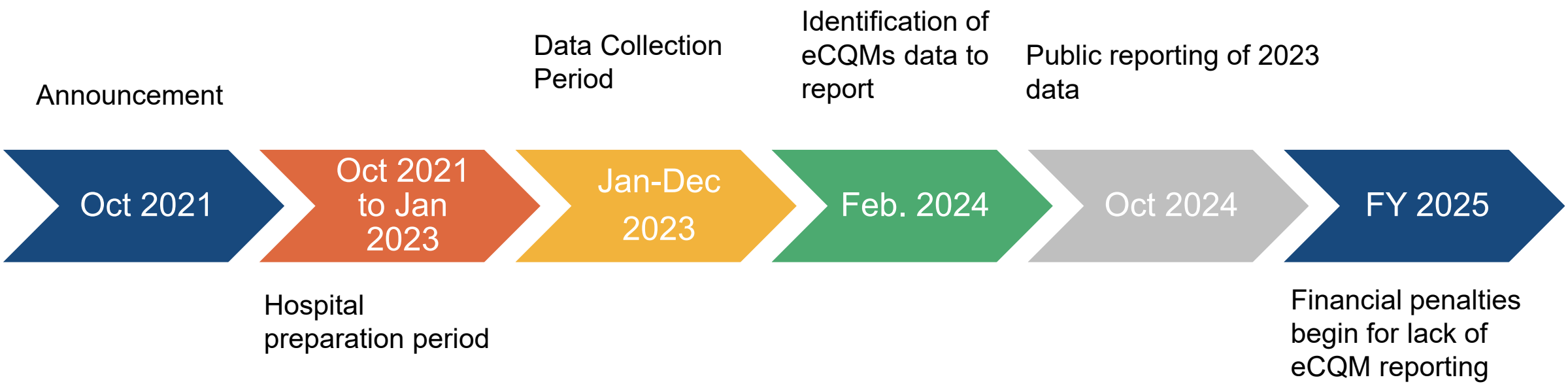
2 NEW eCQM Metrics:

Severe hypoglycemia:
% patient stays BG < 40mg/dL within 24 hours of administration of insulin/anti-hyperglycemic agent

Severe hyperglycemia:
% hospital days with one or more BG > 300mg/dL, excluding the first 24-hour period after admission

The Status Quo is NOT an Option

CMS eCQM Metrics Timeline: FY22 Rules



11 eCQMs in 2023, Pick 4

Removed CY 2024

ED-2	Admit Decision Time to ED Departure Time for Admitted Patients
PC-05	Exclusive Breast Milk Feeding
Safe Use of Opioids*****	Safe Use of Opioids – Concurrent Prescribing
STK-02	Discharged on Antithrombotic Therapy
STK-03	Anticoagulation Therapy for Atrial Fibrillation/Flutter
STK-05	Antithrombotic Therapy by the End of Hospital Day Two
STK-06	Discharged on Statin Medication
VTE-1	Venous Thromboembolism Prophylaxis
VTE-2	Intensive Care Unit Venous Thromboembolism Prophylaxis
HH-01******	Hospital Harm—Severe Hypoglycemia Measure
HH-02******	Hospital Harm—Severe Hyperglycemia Measure

Added FY23 eCQMs

CMS Quality Reporting Measures: Why Glycemia?

- ~38% of patients in the hospital require glycemic intervention/insulin[1]
  - *Not just those with diabetes*
- Allows consumers to make informed decisions

Past success indicates these two new measures will be game-changers

- Heart failure
- Sepsis
- CAUTI/CLABSI

Hypo and Hyperglycemia are:

- Quality of care indicators
- Common and preventable
- Lead to poor patient outcomes and increased costs
  - **Including: In-hospital mortality, increased infection rates, LOS**

1. Guillermo E. Umpierrez, Scott D. Isaacs, Niloofar Bazargan, Xiangdong You, Leonard M. Thaler, Abbas E. Kitabchi, Hyperglycemia: An Independent Marker of In-Hospital Mortality in Patients with Underdiagnosed Diabetes, The Journal of Endocrinology & Metabolism, Volume 87, Issue 3, 1 March 2002, Pages 978-982, https://doi.org/10.1210.jcem.87.3.8341

Five Tips: Preparing for CMS Changes

Tip #1

Begin data collection

Tip #2

Analyze hypo and hyperglycemic events: root cause analysis

Tip #3

Assess organizational processes for glycemic management

Review of policies, protocols and order sets

Tip #4

Implement changes to improve your glycemic management program

Ensure standards of care

Tip #5

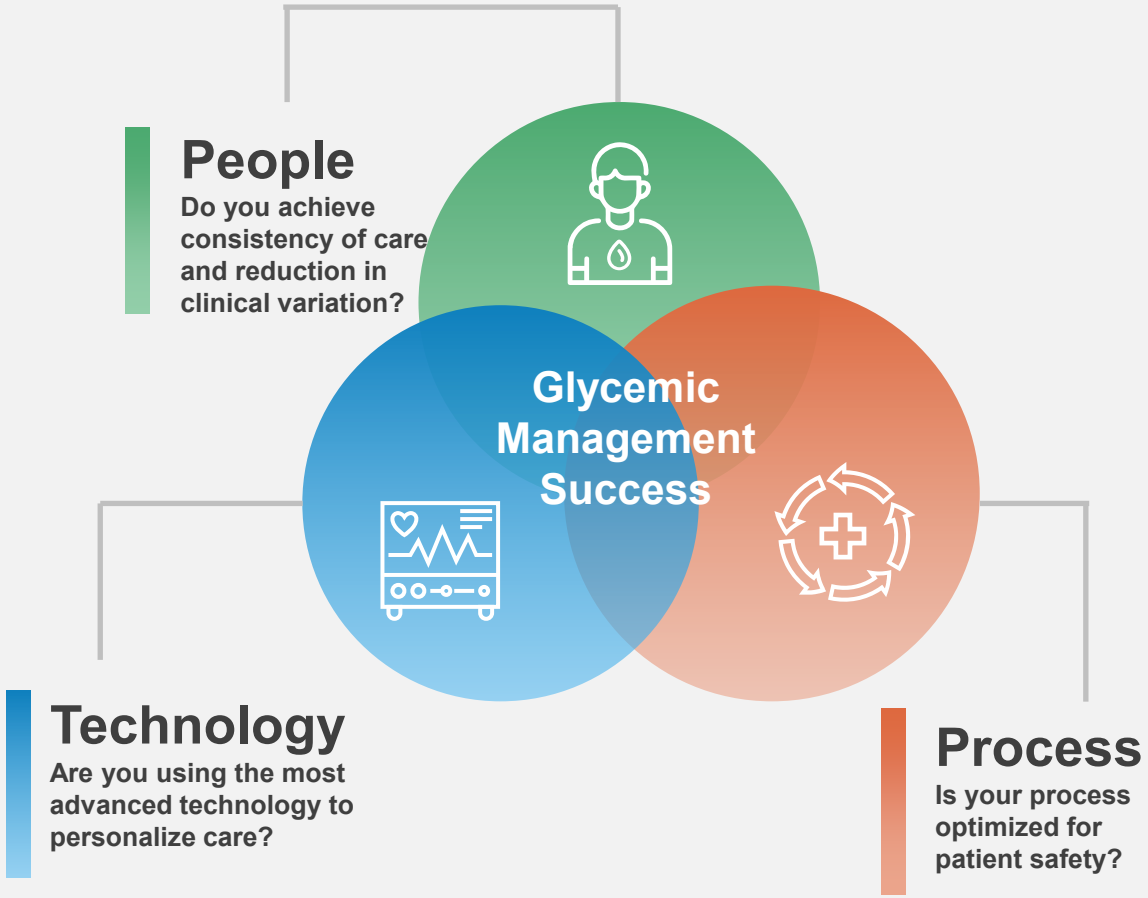
Build, strengthen, and support your glycemic team

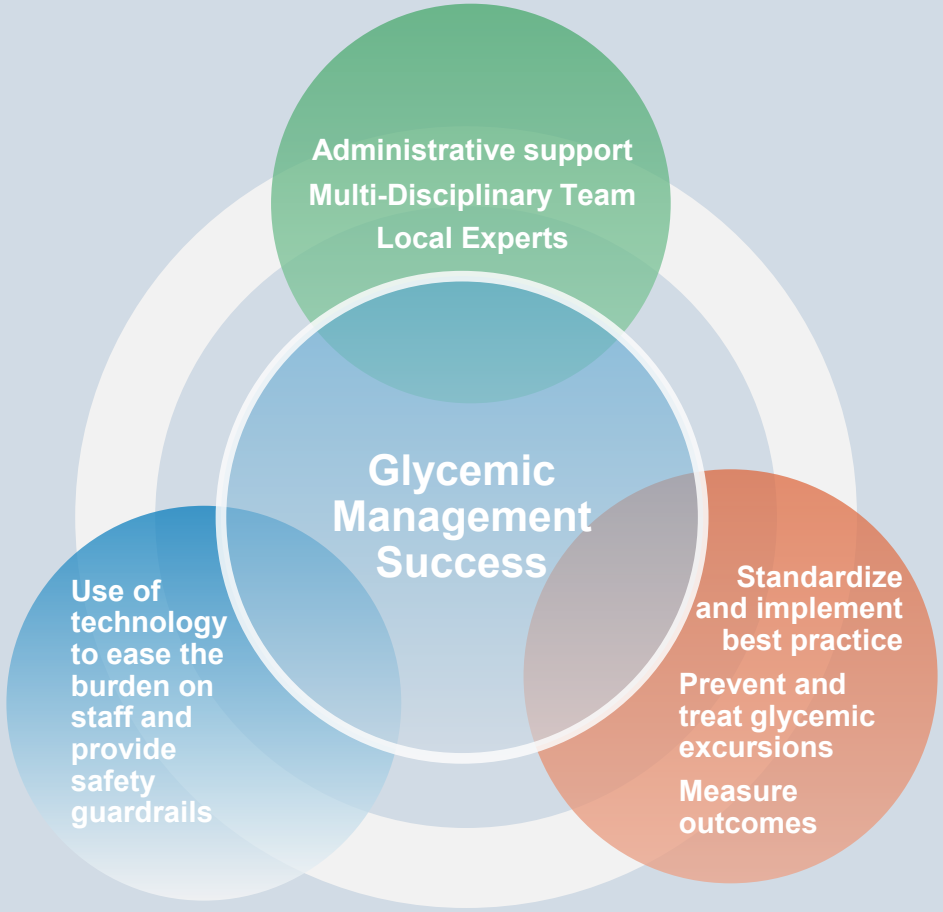
Build a multidisciplinary team representing nurses, pharmacists, diabetes educators, and physicians/advanced practice providers.

A well-balanced team of experts will increase your chances of success.

Inpatient Certifications & Designations:

Putting it Together: Roadmap to Glycemic Management Success





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

TIME TO TARGET
The Glycemic Management Journey

Guillermo E. Umpierrez
MD
Emory University School of Medicine

Andjela Drincic
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University of Nebraska Medical Center

Gregory Maynard
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Preetham Talari
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Ballad Health

Aimee Fahey
MSN, RN, CCRN-K, NE-BC
Kettering Health

Angela Hodges
PharmD, LSSBB, BC-ADM
Texas Health Huguley Hospital

Topics Include

- Inpatient Glycemic Management Pearls
- Overcoming Clinical Inertia
- Quality Improvement & CMS Measures
- Glycemic Management Committees
- Customer Case Studies
- Data, Analytics and Measuring Success

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