

Glytec®

**TIME TO
TARGET**  *The Future of
Glycemic Management*

Mastering the Meal Triad

Best Practices & Implementation Strategies

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10.26.2022



Introduction



Kerri Doucette

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Senior Clinical Customer Success Manager
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20+ years advocating for persons living with diabetes

Author of

“Improving the Timing of Insulin Administration and Point-of-Care Blood Glucose Testing in the Acute Care Hospital Setting”

AUDIENCE POLL



At your hospital, when is mealtime (prandial) bolus insulin administered?

- A. Usually given to patients before the patient starts eating
- B. Usually given to patients after the meal is finished
- C. My hospital uses correction insulin only, mealtime bolus coverage is not administered
- D. Other

AUDIENCE POLL



If your hospital doses prandial insulin, do nurses at your hospital count carbohydrates to determine a mealtime insulin dose?

AUDIENCE POLL



When does your hospital deliver meals?

- A. At scheduled times for each unit
- B. When a patient requests a meal, “Room Service” style
- C. Both
- D. Other

QUIZ



The hospital meal triad:

- A. Impacts the breakfast, lunch, and dinner workflows
- B. Is the timely coordination of blood glucose monitoring, meal consumption, and mealtime insulin administration.
- C. Should be completed within 30-45 minutes.
- D. All the above

The Problem

SCENARIO



PCT checks BG at 7:30. Patient receives breakfast at 9:00-9:15 and finishes eating by 9:45.



Mealtime/Correction insulin is given at 10:00 (based on BG taken at 7:30!).



Lunch BG is taken at 11:30, patient eats at 12:00, insulin given at 12:15.

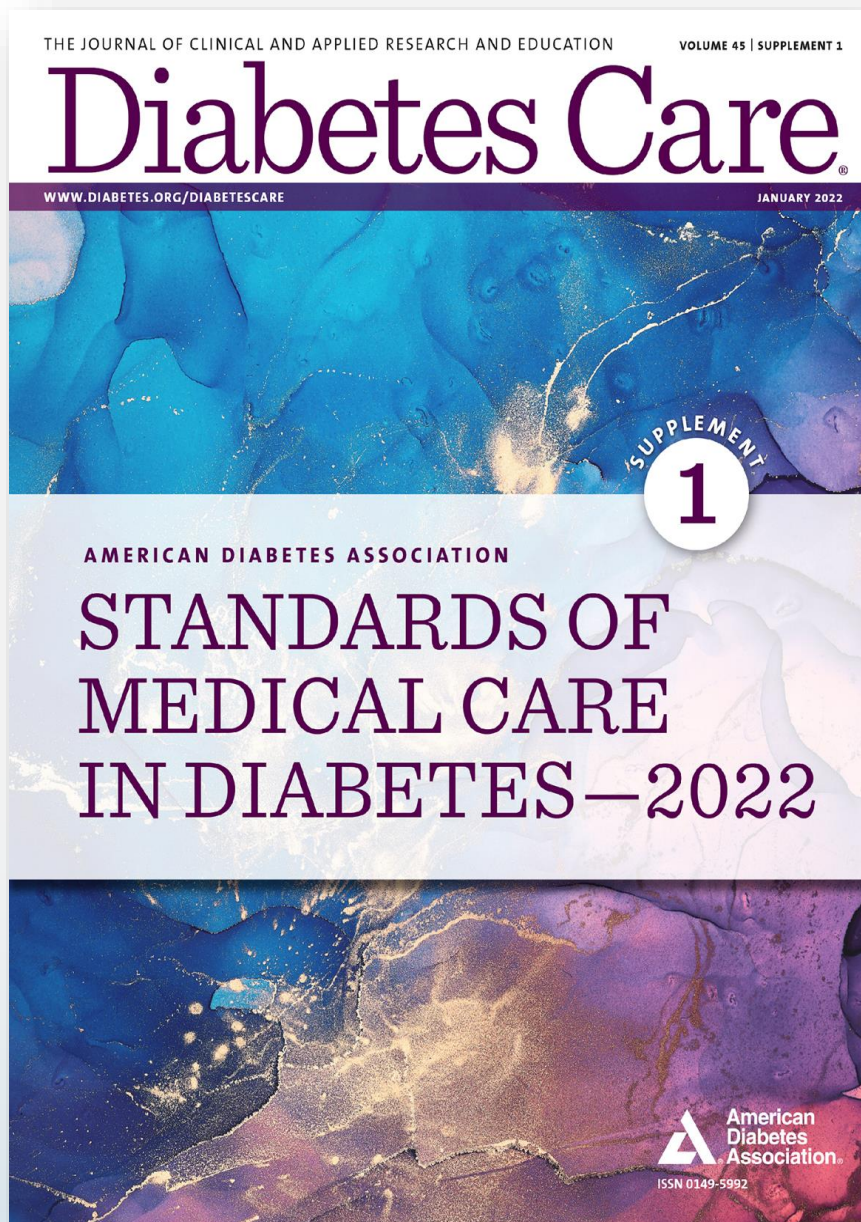
WHY?

BG, meal consumption, & insulin timing are mismatched



POSSIBLE RESULT

Hospital-acquired hyper and hypoglycemia



Insulin Therapy *Hospital Setting*

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

16.7 An insulin regimen with **basal, prandial, and correction** components is the **preferred treatment** for noncritically 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**

INPATIENT GLYCEMIC MANAGEMENT:

What We Know

1

Rapid-acting insulin is designed to closely mimic normal insulin action.

2

Rapid-acting insulin typically starts to be effective within 15 minutes and should be administered *within 15 minutes prior to the start of the meal* or up to 30 minutes after the start of the meal, depending on the insulin analogue used and patient status.

3

A POC BG should be obtained at the start of the meal/prior to the patient eating and not more than 30 minutes prior to insulin administration.

4



A poorly timed meal triad has been associated with hospital-acquired hypo and hyperglycemia.

5



Studies have demonstrated improved glycemic control with coordination of BG monitoring, insulin administration, and nutrition consumption.

The Goal

Obtain Blood Glucose



Meal Tray Delivery



Insulin Administration

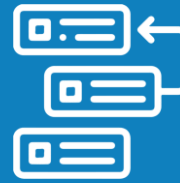


INPATIENT GLYCEMIC MANAGEMENT:

Challenges Related to Mealtime Insulin Dosing



Staffing shortages/high patient ratio



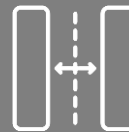
Conflicting nursing priorities



Inconsistent meal delivery schedule



Lack of communication between dietary and nursing staff



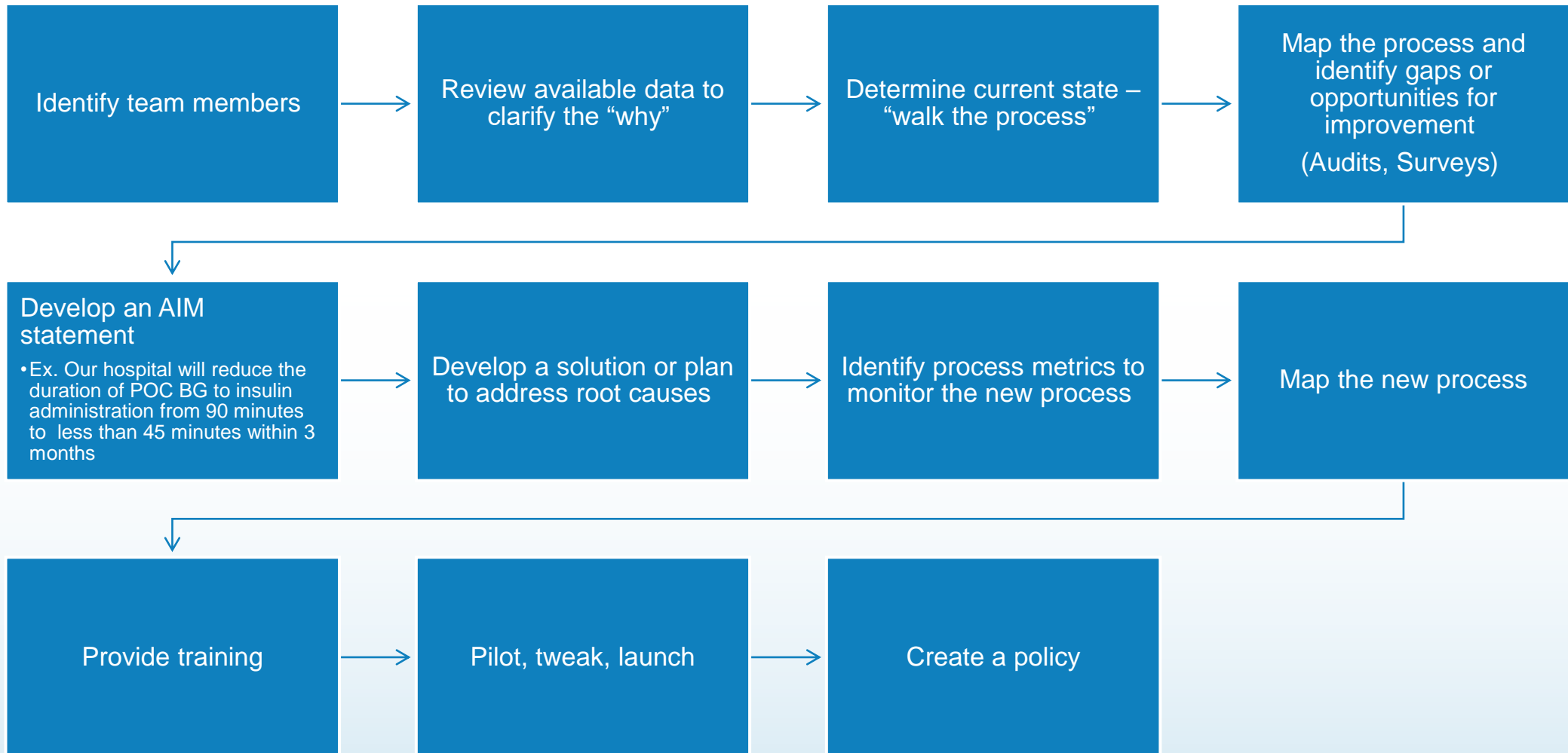
Knowledge gap regarding the meal triad and associated risks with poor timing



Patient starts eating before the BG is obtained

THE SOLUTION:

Where to Start- A Meal Triad Quality Improvement Initiative



Tips to Achieve Meal Triad Best Practice



MEAL DELIVERY

- Standard delivery times
- Notification of tray delivery
- Process if BG has not been taken
- Patient education



POC BG CHECK

- Standard process for BG checks
- Communication plan
- Recheck BGs > 30 minutes old



CARB COUNTING

- Grams of carbs on meal tray ticket
- Carb counting education
- Documenting in EMR
- Consider supplements



INSULIN DOSING

- Insulin type
- Timing: Start of meal vs. within 30 minutes after the start of the meal
- Correction and meal bolus together



MEAL TRAY PICK-UP

- Process for ensuring carb consumption has been documented before tray pickup

THE SOLUTION:

Do Your Own Audit

Collect your own data to assess your current performance

The screenshot shows a Google Sheets spreadsheet titled "Self Audit" with the following data:

	A	B	C	D	E	F	G	H	I	J	K	L
	Diet Order (B)	POC Glu (B) Value	POC Glu (B) Time	Meal Occurance (B)	Meal Time (B)	Insulin Occurance (B)	Insulin Time (B)	POC BG to Meal Time Duration (B)	POC Glu to Insulin Time Duration (B)	Insulin Time (B) to POC Glu (L) Duration		
3	Eating	114	7:59	Y	8:30	N	0:00	0:31				
4	Eating	142	7:25	Y	8:00	Y	10:08	0:35	2:43	1:21		
5	Eating	87	7:37	Y	8:00	N		0:23				
6		113	7:33	N		N						
7	Eating	259	7:45	Y	8:20	Y	8:54	0:35	1:09	2:53		
8		244	8:26	N		Y	8:22			3:41		
9	Eating	164	8:05	Y	7:53	Y	8:23		0:18	3:23		
10	Eating	76	8:22	Y	8:48	N	10:25	0:26				
11	Eating	70	8:05	Y	8:10	N		0:05				
12												
13												
14	Eating	304	8:23	Y	9:12	Y	9:24	0:49	1:01	2:24		
15												
16	Eating	196	7:51	Y	8:41	Y	10:19	0:50	2:28			
17	Eating	212	8:19	Y	8:44	Y	8:51	0:25	0:32			
18	Eating	314	8:12	Y	8:12	Y	9:25	0:00	1:13	2:27		
19	Eating	283	7:52	Y	8:23	Y	8:27	0:31	0:35			
20	Eating	147	7:56	Y	8:08	Y	9:06	0:12	1:10	2:58		
21												
22												

**Data collected from two separate facilities*

THE SOLUTION:

Identify Gaps & Opportunities

OPPORTUNITY #1

Develop strategies to improve insulin administration timing during morning shift change and med pass.

POC BG to Insulin Time Duration							
	High	Low	High/Low Range	Average	Hospital Goal	Evidence Based Goal	
Breakfast	2:43	0:18	2:25	1:14	0:45	0:30	
Lunch	1:33	0:00	1:33	0:38	0:45	0:30	
Supper	1:33	0:12	1:21	0:53	0:45	0:30	

**Data shown was compiled from two separate facilities*

POC BG to Insulin Time Duration



THE REAL WORLD OUTCOME EXAMPLES

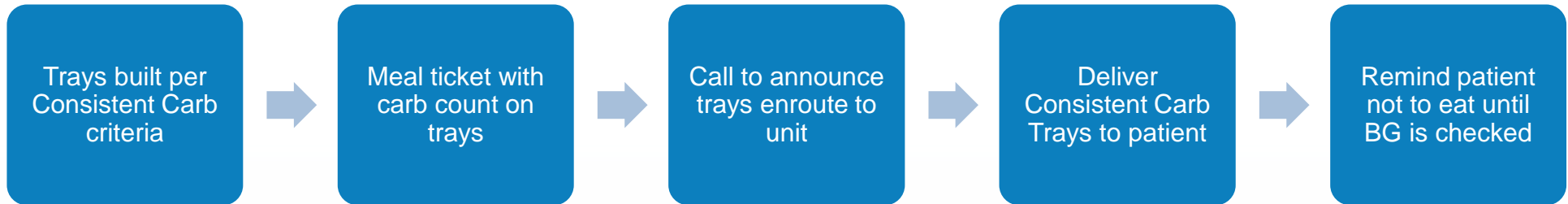
Using Process Metrics to Drive Improvement

OUTCOME METRIC: Hypoglycemia Rates

PROCESS IMPACTING HYPOGLYCEMIA RATES: Meal Triad

PROCESS MAPPING:

DIETARY TECHNICIAN WORKFLOW



NURSING WORKFLOW



**TIME FROM BG
CHECK TO INSULIN
ADMINISTRATION**



When to Consider Administering Mealtime Insulin Based on the Patient

**AFTER THE
START OF THE
MEAL (WITHIN
30 MINUTES)**

- Altered mental status
- History of poor PO intake
- Nausea/vomiting/gastroparesis
- Anticipated procedures that may disrupt PO intake
- Drowsiness
- Unable to feed self
- Advancing NPO or liquid diet
- Taking medications that may alter patient judgement
- Any additional factors that would prevent a patient from anticipating their meal intake

**WITH THE
START OF
THE MEAL**

- Alert and oriented
- Able to verbalize what they plan to consume
- Have consistent PO intake
- Able to feed self

**Special consideration should be given to renal patients and those with a recent hypoglycemic event. However, this does not necessarily exclude these patients from receiving their insulin at the start of the meal.*

Key Takeaways

A safe and effective “meal triad” process includes:

1. Communicating tray delivery, BG checks, and carbs amounts consumed
2. Checking the patient’s blood glucose immediately before a meal, and no more than 30 minutes prior to insulin administration.
3. Administering mealtime/correction insulin with the meal or no later than 30 minutes after the first bite of food.
4. Counting carbohydrates accurately, including supplements.

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Thank You!

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