IDENTIFICATION AND TREATMENT FOR HYPO- AND HYPERGLYCEMIA AT AMBULATORY OFFICE VISITS

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Midwest Medication Safety Symposium 2023

BARNES-JEWISH Hospital
BJC HealthCare℠

DISCLOSURES

- No current or potential conflicts of interest

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OBJECTIVES

- Describe the challenges of managing patients who present with unsafe blood glucose readings in the ambulatory care setting
- Characterize the implementation process of hypoglycemia and hyperglycemia standing orders in a large, academic primary care clinic
- Identify barriers to implementation of standing orders and patient success

PRIMARY CARE MEDICINE CLINIC

- The Primary Care Medicine Clinic (PCMC) at Barnes-Jewish Hospital
  - Sees average of 2,700 patients monthly
- A multi-disciplinary team including medicine resident and attending physicians, nurses, dietician, diabetes educator, social worker, and pharmacists

EXAMPLES OF SEMS

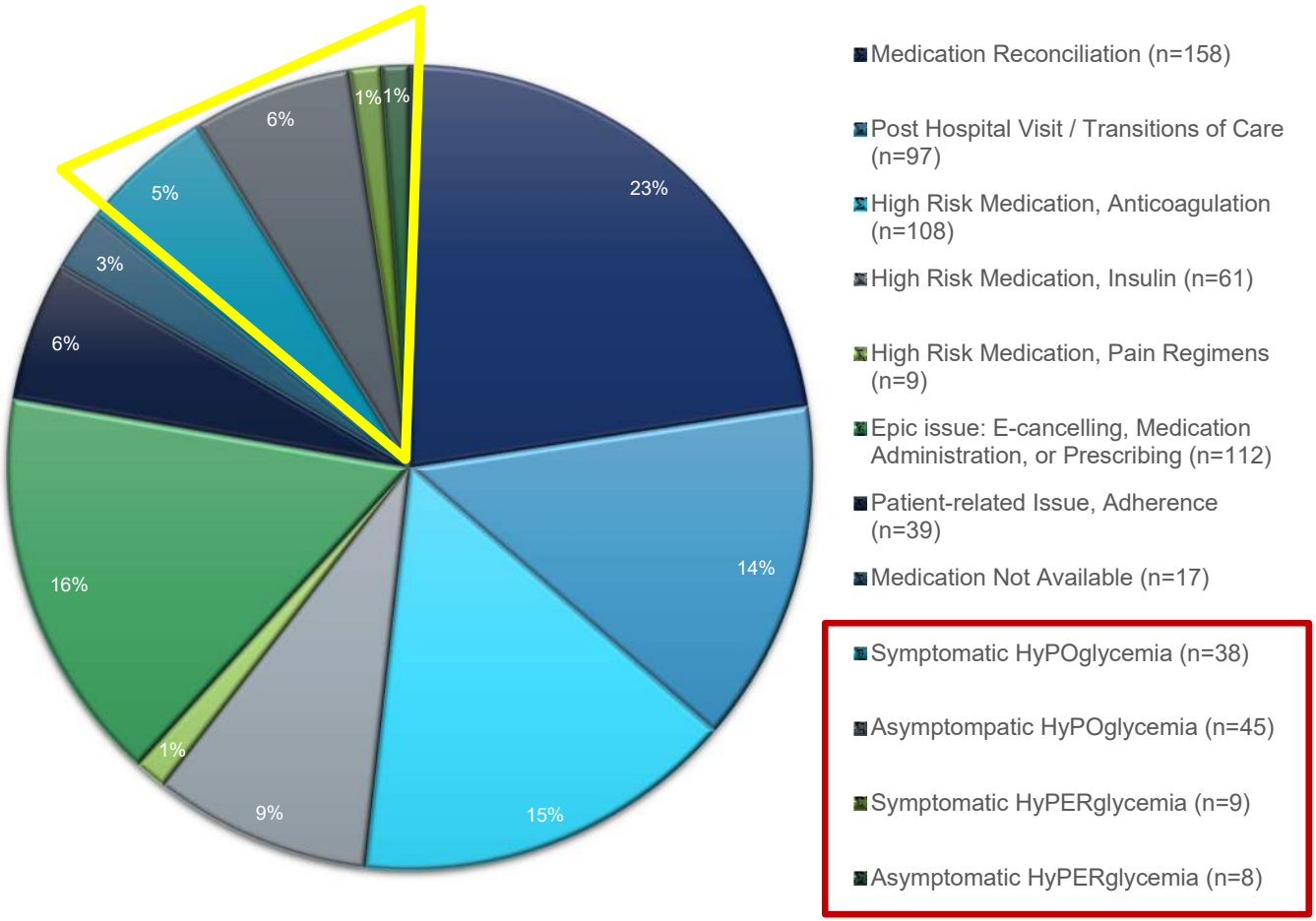
"POCT BG showed 60. Patient denied feeling dizzy or lightheaded. Patient given 1 bottle of Glucerna and 1 apple juice box. BG repeated 15 minutes after drinking and was 48. Patient given another apple juice box. Waited another 15 minutes and BG up to 87. Patient reported feeling good."

"Patient reported feeling unwell, blood glucose was checked and was 48. Patient given 2 juice boxes and one Glucerna. Recheck blood sugar was 96. "

"Patient complained of polydipsia, polyuria, and increase pain tingling bilateral feet. Blood glucose check was >400. Provider notified and blood ketone was obtained. Ketone was 0.2."

SEMS: SAFETY EVENT MANAGEMENT SYSTEM, POCT: POINT OF CARE TESTING, BG: BLOOD GLUCOSE

August 2019 - December 2022 SEMS Summary (N=701)



SAFETY EVENTS RELATED TO BLOOD GLUCOSE READINGS

CHALLENGES

Impact

- In 2018, 17 million ED visits related to DM
- 248,000 for hyperglycemic crisis (9.9 per 1,000 adults with DM)
- 242,000 for hypoglycemia (9.6 per 1,000 adults with DM)

Mortality

Recurrent hypo and hyperglycemia reduce health-related quality of life

Resources

Limited supportive literature on glycemic management in the ambulatory clinic setting

Workflow

Providers may not be readily available to provide guidance to nursing staff

CENTERS FOR DISEASE CONTROL AND PREVENTION. NATIONAL DIABETES STATISTICS REPORT WEBSITE . HTTPS://WWW.CDC.GOV/DIABETES/DATA/STATISTICS-REPORT/INDEX.HTML. ACCESSED OCTOBER 3,2023.

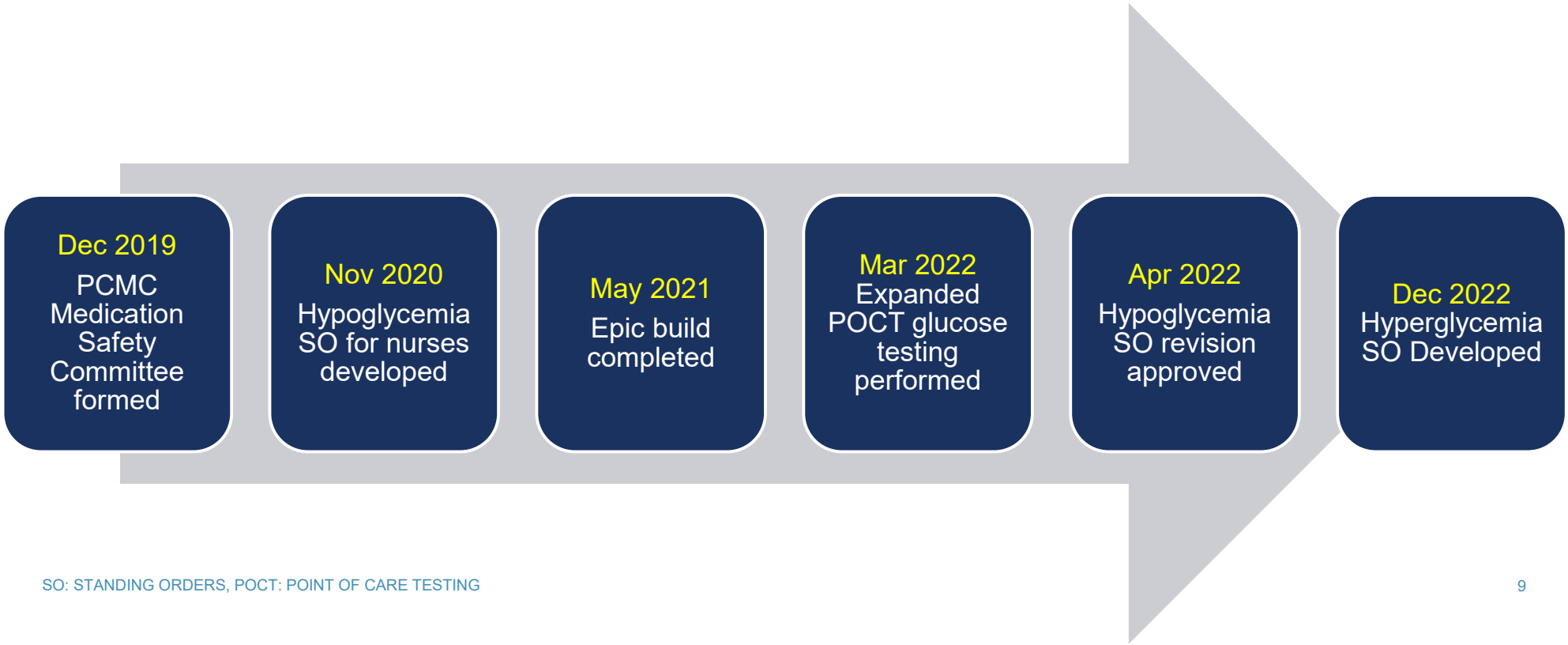
DM: DIABETES MELLITUS, ED: EMERGENCY DEPARTMENT

STANDING ORDERS

- **Standing orders** are written documents that direct nonphysician health care personnel to provide safe and efficacious medical care within predefined parameters without the physician being immediately present and available
  - Initiated by RN --> Responsible provider must sign at time of or as soon as possible after execution of nurse-initiated order(s)
- The Joint Commission recognizes the value of nurse-driven standing orders in promoting patient outcomes

MOSBY ELSEVIER. MOSBY'S MEDICAL DICTIONARY. 10TH ED. ST. LOUIS, MO: MOSBY; 2009.
J CONTIN EDUC NURS. 2018;49(8):372-377

DEVELOPMENT OF HYPO- AND HYPERGLYCEMIA TREATMENT STANDING ORDERS



SO: STANDING ORDERS, POCT: POINT OF CARE TESTING

PCMC HYPOGLYCEMIA STANDING ORDERS

<u>If screening POCT glucose is less than or equal to 70 mg/dL or patient presents with signs/symptoms of hypoglycemia</u>:

1. Obtain POCT glucose (if not already obtained per screening process).

a. If greater than or equal to 91 mg/dL, no treatment to increase blood glucose is indicated, but provider should be notified if patient is experiencing symptoms of hypoglycemia.

b. If 71 - 90 mg/dL, notify provider, as treatment may be indicated based on patient's clinical status.

c. If less than or equal to 70mg/dL, treat as outlined below, and notify provider:

PCMC HYPOGLYCEMIA STANDING ORDERS

Blood glucose 51-70 mg/dL AND patient is alert AND able to eat/drink:

One fruit juice (4-6 ounces/at least 15 grams of sugar; non-orange juice preferred) every 15 minutes PRN**.**

–OR–

Dextrose (Glutose) 40% gel 15 grams (1 tube) PO every 15 minutes PRN.

After treatment of hypoglycemia, check blood glucose every 15 minutes, and repeat treatment until blood glucose is greater than 90 mg/dL and symptoms resolve. Then, recheck blood glucose every 1 hour until patient discharged from clinic.

Blood glucose 50 mg/dL or less AND patient is alert AND able to eat/drink:

Two fruit juices (8-12 ounces/at least 30 grams of sugar; non-orange juice preferred) every 15 minutes PRN**.**

–OR–

Dextrose (Glutose) 40% gel 30 grams (2 tubes) PO every 15 minutes PRN.

After treatment of hypoglycemia, check blood glucose every 15 minutes, and repeat treatment until blood glucose is greater than 50 mg/dL, then continue to treat per recommendations for blood glucose 51-90 mg/dL.

PCMC HYPOGLYCEMIA STANDING ORDERS

Blood glucose 70 mg/dL or less AND no IV access AND unable to take PO glucose:

Glucagon 1 mg Intramuscularly. After Glucagon is administered, position patient on side, if possible, to avoid aspiration.

After treatment of hypoglycemia, check blood glucose every 15 minutes, and repeat treatment (every 30 minutes) until blood glucose is greater than 90 mg/dL. If patient becomes alert or able to take PO glucose, transition to appropriate PO treatment (above) for patient's level of hypoglycemia.

2. Once blood glucose is greater than 90 mg/dL AND patient is alert, able to eat/drink, and asymptomatic, provide patient with and encourage consumption of available protein/carbohydrate/fat source (e.g., 1 protein shake or 2 tbsp peanut butter and 4 graham crackers) to sustain corrected blood glucose level.

PCMC HYPERGLYCEMIA STANDING ORDERS

<u>If screening POCT glucose is greater than or equal to 400 mg/dL</u>:

1. Obtain POCT ketone level and notify provider.

a. If greater than or equal to 1.1 mmol/L, patient will be sent to the Emergency Room for evaluation.

b. If less than 1.1 mmol/L, treatment may be indicated based on the patient's clinical status.

KEY TAKEAWAYS

Timely identification and treatment of hypo- and hyperglycemia is important

Reporting of SEMS was key to development of these standing orders

Uniqueness of hypoglycemia treatment range for standing orders to support safety of our patients

Similar proactive measures can be implemented in any outpatient settings to improve patient outcomes

ASSESSMENT QUESTION

Which of the following best describes standing orders?

a. Used in urgent or emergent situations in which immediate actions must be taken to support patient

b. Initiated by RN

c. Responsible provider must sign standing orders at time of or as soon as possible after completion of nurse-initiated order(s)

d. All of the above

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