

## BACKGROUND

- Glycemic management in the emergency room is the gateway for inpatient management. Several studies have shown the benefit of insulin protocols initiated in the emergency department (ED) setting
- Munoz et al demonstrated that a protocol for the treatment of acute hyperglycemia in the ED can be safely initiated with improvement in mean blood glucose from admission to discharge and reduction in inpatient length of stay.
- Bernard et al demonstrated that a basal-bolus insulin protocol with aggressive bolus sliding scale initiated in the ED improves glycemic control without increasing hypoglycemia
- Benbrahim et al demonstrated that implementation of a standard hyperglycemia protocol in the ED reduced average admission blood glucose.
- An institutional quality improvement initiative to improve glycemic management was initiated in January 2020 at our institution.

## OBJECTIVES

- To gather baseline glycemic data on patient visits to the urgent care center from January 2019 through November 2022 to explore trends in monitoring and management prior to and after the implementation of the glycemic improvement initiative.

## METHODS

- An institutional quality improvement initiative to improve glycemic management was initiated in January 2020.
- Interventions include a diabetes related questionnaire at triage triggering a mandatory point of care (POC) glucose check if positive and the addition of quick access acute hyperglycemia orders in the emergency management electronic medical record (EMR) order set.
- In this study, we gathered baseline glycemic data on patient visits to the acute cancer care center (ACCC) from January 2019 through November 2022 to explore trends in monitoring and management prior to and after the implementation of initiative.
- We paid particular attention to the number of encounters in those patients with a recorded active diabetes diagnosis in the electronic medical record with a POC glucose order in the ACCC, with an POC glucose order at admission, insulin orders placed at admission and insulin sliding scale ordered at admission.
- The highest value of glucose documented per encounter was utilized for calculations.

## RESULTS

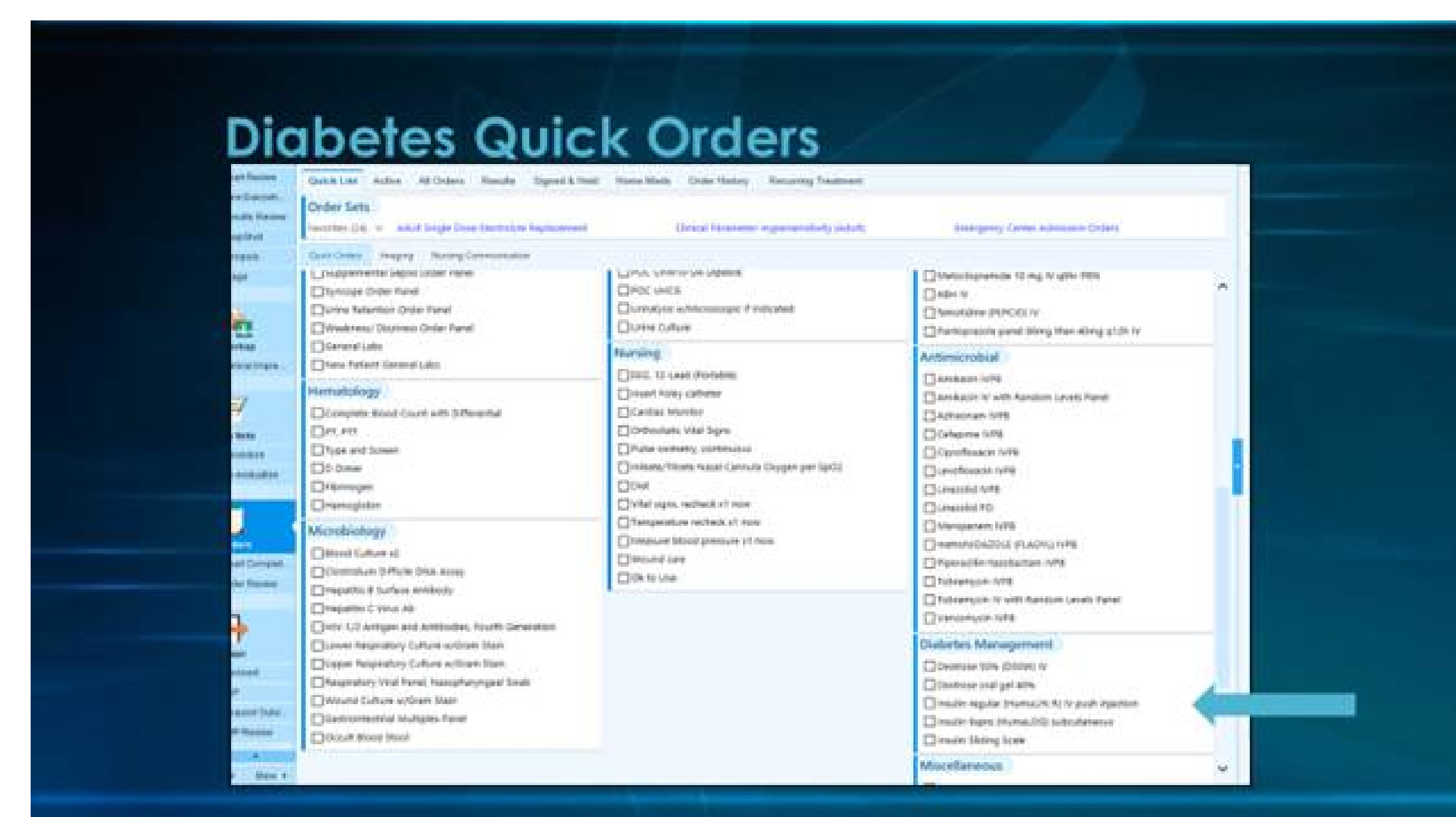
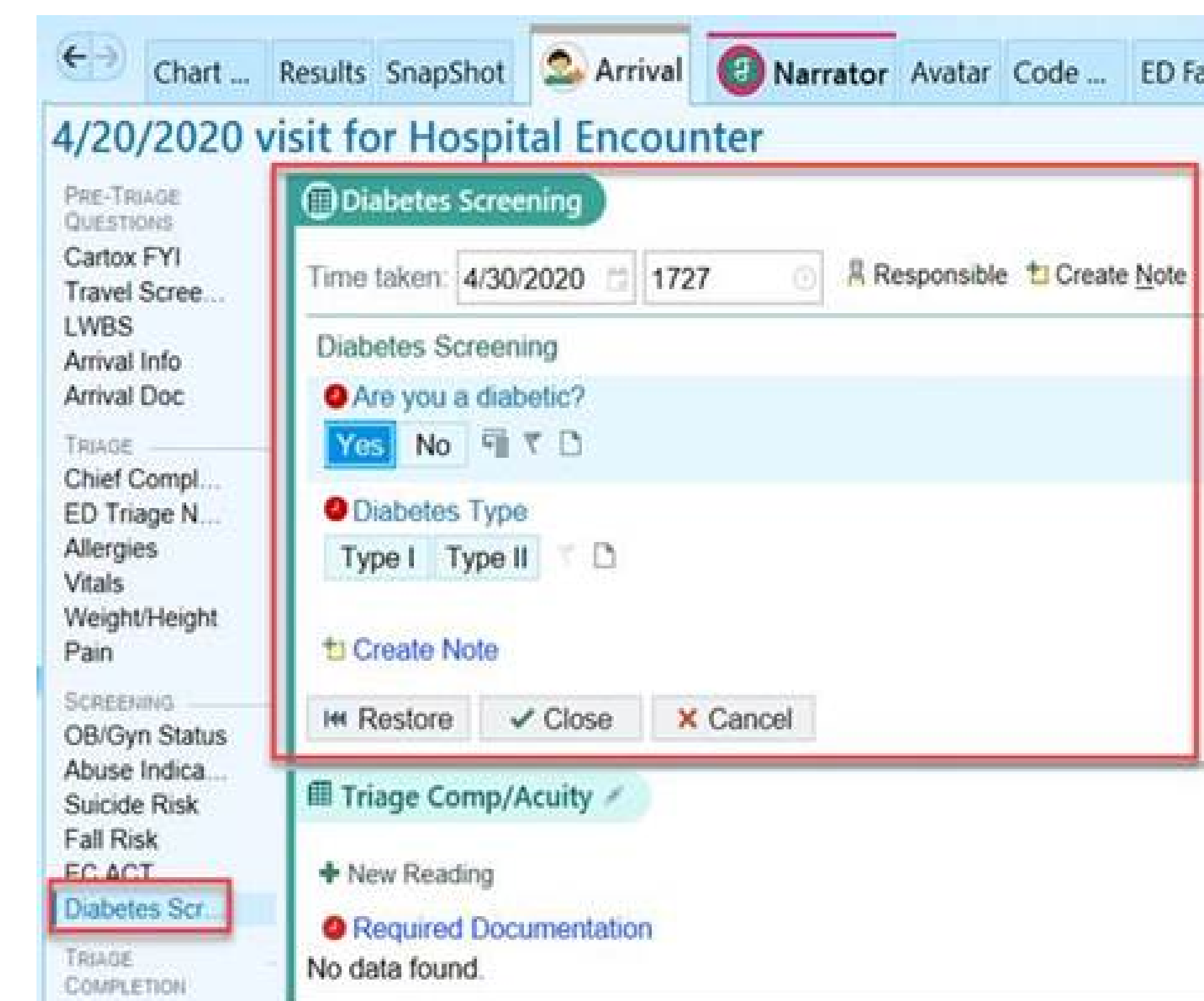
**Table 1.** Glycemic data for all ACCC encounters from 2019-2022

Year	Total ACCC ED Visits	Glucose 200-249 mg/dL	Glucose 200-249 mg/dL %	Glucose 250-299 mg/dL	Glucose 250-299 mg/dL %	Glucose 300 mg/dL and above	Glucose 300 mg/dL and above %
2019	28387	2080	7.3	1100	3.9	663	2.3
2020	22039	1407	6.4	753	3.4	446	2
2021	27391	1693	6.2	892	3.3	520	1.9
2022	27415	1810	6.6	909	3.3	515	1.9

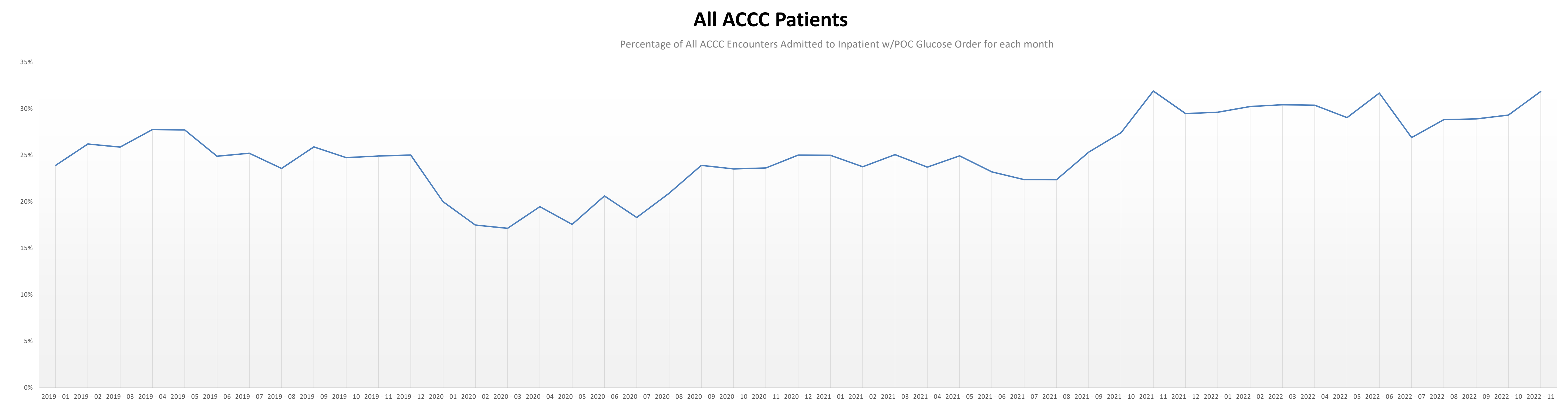
**Table 2.** Glycemic data for patients with active diabetes diagnosis ACCC encounters from 2019-2022

Year	Total ACCC ED Visits	Glucose 200-249 mg/dL	Glucose 200-249 mg/dL %	Glucose 250-299 mg/dL	Glucose 250-299 mg/dL %	Glucose 300 mg/dL and Above	Glucose 300 mg/dL and Above %
2019	4722	1284	27.2	689	14.6	415	8.8
2020	3836	938	24.5	536	14	314	8.2
2021	5175	1141	22	631	12.2	362	7
2022	5204	1235	23.7	658	12.6	366	7

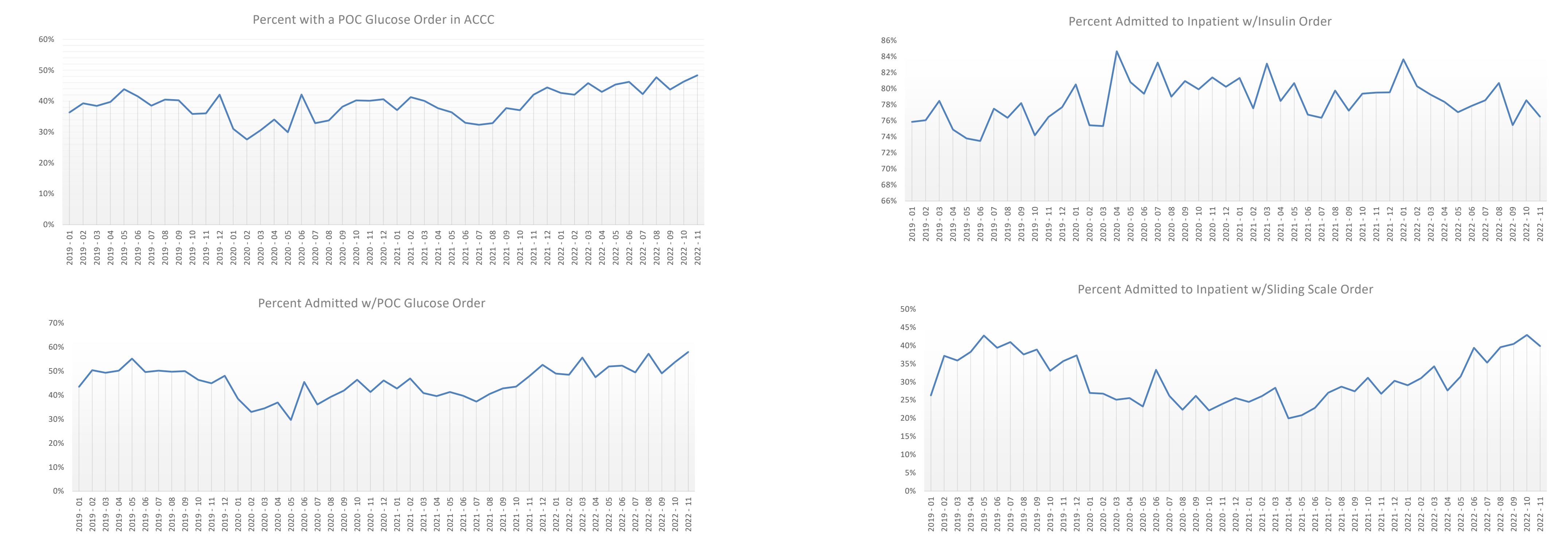
**Image 1.** Images of Diabetes questionnaire at triage and EMR Diabetes quickset order



## RESULTS



**ACCC Patients with Active Diabetes Diagnosis**



## SUMMARY, CONCLUSIONS AND FUTURE DIRECTIONS

- An average of 1,912 individual patients were evaluated and accounted for 2,239 visits per month. For the entire patient population, 7% of visits were characterized by glucose values between 200-249mg/dL, 3% of visits with glucose values between 250-299 mg/dL, and 2% with glucose values  $\geq 300$ mg/dL. 59% of visits resulted in inpatient admission and 25% of admitted patients had point of care glucose monitoring orders.
- 17.8% of patients had known diabetes and on average, 24%, 13% and 8% of these patient visits were characterized by glucose between 200-249 mg/dL, 250-299 mg/dL and  $\geq 300$ mg/dL respectively. 64% of visits culminated with inpatient admission with 46% of admitted patients having POC glucose monitoring orders and 79% of patients with insulin orders on admission.
- In 2019, a mean of 25% of total admitted patient encounters had a POC glucose order on admission compared to 21% in 2020, 25% in 2021, and 30% in 2022. Of those patient encounters with known diabetes, 49%, 39%, 43%, 52% had a POC glucose order on admission in the years 2019, 2020, 2021, and 2022 respectively. Of the encounters with patients with known diabetes, 37% were admitted with an insulin sliding scale order in 2019, 26% in 2020, 26% in 2021, and 36% in 2022. In 2019, 76% of encounters with diabetes patients had an insulin order on admission, 80% in 2020, 79% in 2021, and 79% in 2022.
- Endocrinology worked closely with the ACCC in 2020 to implement targeted interventions and multiple targeted education sessions were provided. Education sessions diminished in 2021 and no targeted interventions were done in 2022. The data suggests that a lack of continued education could have contributed to a decrease in placement of insulin orders or the structure of order placement may have changed.
- Over the four years, the mean distribution of POC blood glucose values remained stable across both the general and diabetes specific populations. The admission rate for both these populations also had little variability. Of the patients with diabetes, the rate of POC glucose order at admission increased from 49% to 52%. Those with an insulin order remained stable from 76% to 79%. Additionally, only 26% to 37% of patients with diabetes were admitted with an insulin sliding scale order. These trends provide valuable insight into areas that may be targeted for early intervention in glycemic management which has the potential to improve hospital outcomes in patients with diabetes mellitus.

## REFERENCES

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