

Incidence of Hypoglycemia in Pediatric Critical Care Patients Receiving Insulin for Hyperglycemia



Katie Farris, PharmD, MPH ♦ Taryn Scott, PharmD, BCPPS ♦ Lisa Infanti, PharmD, BCCCP ♦ Kelly Lyons, MD ♦ Hayley Hardin, MD ♦ Katherine Potter, MD
 Department of Pharmacy ♦ Norton Children's Hospital ♦ Louisville, KY

Background

- ◆ The Heart and Lung Failure-Pediatric Insulin Titration (HALF-PINT) trial investigated whether tight glycemic control, defined as a blood glucose level of 80-110 mg/dL, affected the number of ICU-free days in critically ill children with hyperglycemia.
- ◆ The HALF- PINT trial concluded that critically ill children with hyperglycemia did not benefit from tight glycemic control, and those patients had higher rates of severe hypoglycemia compared to patients with higher target blood glucose levels.
- ◆ The current protocol at our institution targets a blood glucose range of 80-150 mg/dL.

Objectives

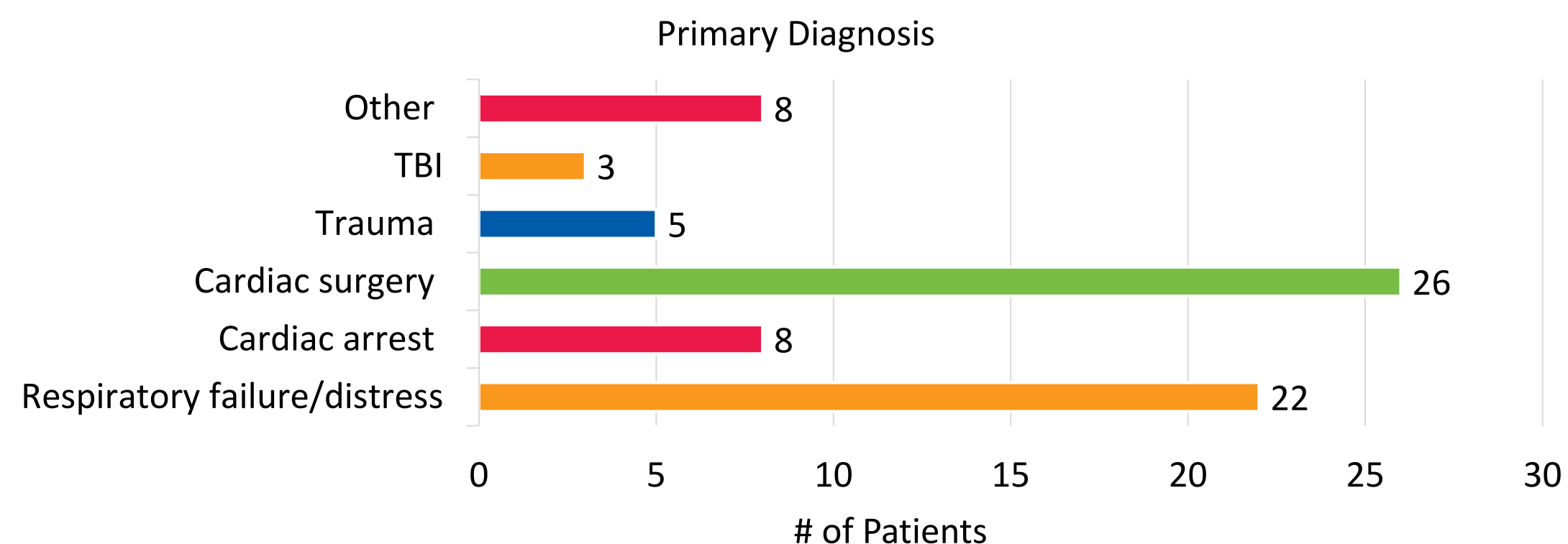
- ◆ The purpose of this study is to investigate the rate of hypoglycemia in critically ill children at our institution who are treated for hyperglycemia utilizing this protocol.

Methods

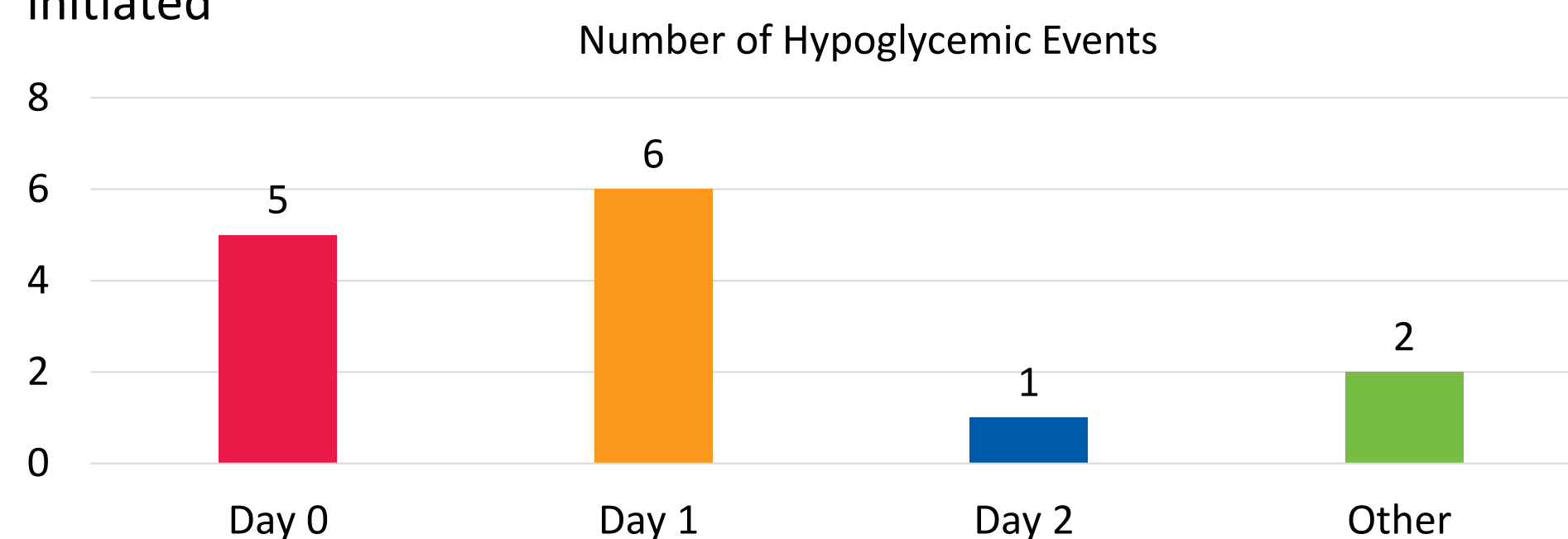
- ◆ Retrospective chart review exempt from institutional review board approval
- ◆ Inclusion Criteria
 - ◆ Patients on the glucose control protocol in the Pediatric Critical Care Units from January 1, 2019 through December 30, 2019
 - ◆ Aged 18 years or less
- ◆ Information collected
 - ◆ Glucose value at the time of initiation of the protocol
 - ◆ Number of total dextrose boluses administered
 - ◆ Day of hypoglycemic event after the initiation of the protocol
 - ◆ Glucose value preceding hypoglycemic event

Results

- ◆ 99 orders were initiated on the glucose control protocol during the study period
- ◆ A total of 72 patients were included
 - ◆ Mean age = 9 years

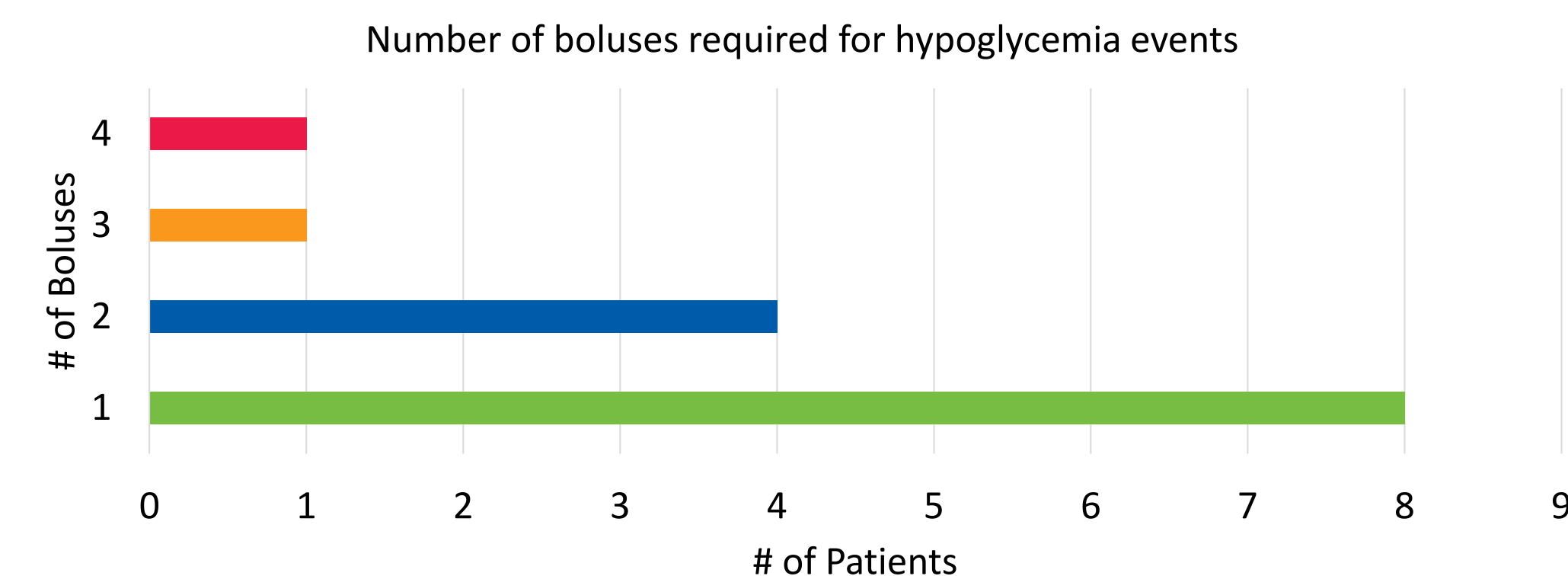


- ◆ 10/14 (71.4%) patients who received dextrose boluses had a primary diagnosis of respiratory failure or distress, only 4 of these patients were on steroids at the time of initiation of the protocol
- ◆ Average blood glucose was 245 mg/dL (range 58-376 mg/dL) at the time of initiation of the protocol
- ◆ There were a total of 14 dextrose boluses administered and hypoglycemia events most commonly occurred on day 0 or 1 after the protocol was initiated



Results

- ◆ Average blood glucose preceding hypoglycemia events was 77 mg/dL (range 39-160 mg/dL)
- ◆ 6/14 hypoglycemia events required more than 1 dextrose bolus



Conclusion

- ◆ At our institution, an insulin protocol with a target blood glucose of 80-150 mg/dL resulted in 19.4% of patients requiring dextrose boluses for hypoglycemia events.
- ◆ Revision of the glucose control protocol should be considered to reduce the number of hypoglycemia events.

References

Agus, Michael S.d., et al. "Tight Glycemic Control in Critically Ill Children." *New England Journal of Medicine*, vol. 376, no. 8, 2017, pp. 729-741.

Biagas, Katherine V., et al. "Long-Term Neurobehavioral and Quality of Life Outcomes of Critically Ill Children after Glycemic Control." *The Journal of Pediatrics*, vol. 218, 2020.

Faustino, Edward Vincent S., et al. "Short-Term Adverse Outcomes Associated With Hypoglycemia in Critically Ill Children." *Critical Care Medicine*, vol. 47, no. 5, 2019, pp. 706-714.

Disclosure

None of the authors of this presentation have anything to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation