Managing Diabetic Ketoacidosis in a Moderate Care Unit: A Quality Improvement Initiative

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Background

For improved care of our pediatric diabetic ketoacidosis (DKA) patients, our tertiary care pediatric hospital implemented an insulin drip and 2-bag system of dextrose and fluid delivery using quality improvement (QI) methodology. This acute and intensive care condition has previously been managed either in the emergency department (ED) or pediatric intensive care unit (PICU) at our institution. However, limitations of general pediatric beds have resulted in longer wait times in both the ED and PICU, delays in starting new-onset diabetes education for families, and thus, longer hospitalization times.

Objective

To establish a moderate care unit on the general pediatrics floor to care for patients with mild-moderate DKA on an insulin drip with 2-bag fluid delivery method. We hypothesized this shift in our care model would shorten overall hospital length-of-stay (LOS).

Methods

We characterized "mild-moderate DKA" as patients with a pH on a VBG of ≥7.2 and a serum bicarbonate ≥13. We included children ≥5 years old. Once patients met these criteria, they were transitioned from either the ED or PICU to moderate care, making them eligible for a general pediatrics bed.

Prior to implementation, we used QI methods to map the current state workflow and the proposed moderate care workflow. Interdisciplinary team members from pediatric endocrinology, hospital medicine, emergency department, and nursing reviewed and revised the proposed workflow. We created educational materials for pediatric hospitalists, residents, and nurses, and developed detailed protocols for residents and pediatric hospitalists who oversee overnight care of these moderate care DKA patients.

Results

From May 2022 – June 2023, 25% of DKA patients (n=28) were cared for under this new workflow. When compared to DKA patients treated the previous year, overall hospital LOS decreased by 30% from an average of 73.8 hours to an average of 51.3 hours (Figure 1). No untoward events occurred with need to reinstate an insulin drip.

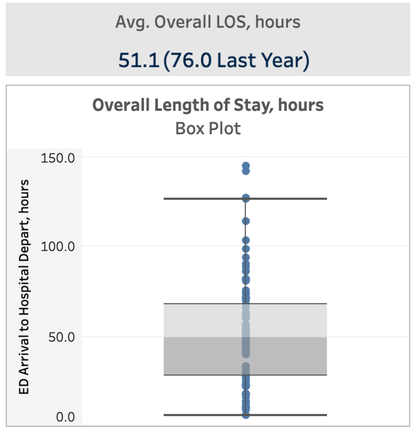

Figure 1. Average Length of Stay (LOS) in Hours After Implementing Moderate Care Workflow (May 1, 2022–June 30, 2023) Compared to Prior Year

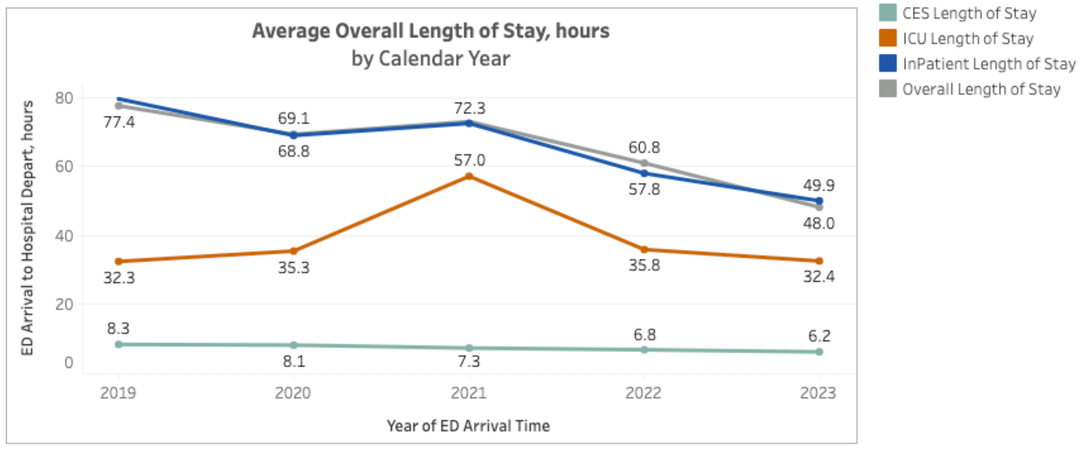

Figure 2. Year-to-Year Comparison of LOS in Hours by Location

Conclusions

We found that mild-moderate DKA can be successfully cared for in a moderate care setting and doing so shortens overall LOS for hospitalized patients who present in DKA. Shorter hospital LOS can overall help with inpatient hospital burden and have positive financial implications for hospital management.

Acknowledgements & Contact

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