

# Utilization of a Computerized Dosing Algorithm to Improve Management in Diabetic Ketoacidosis

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## Introduction

- Cost across the US in the treatment of DKA has increased substantially of the past several years with noted increases in hospitalizations across North America
- EndoTool IV, is a computerized insulin dosing algorithm was implemented across our 7-hospital system in Central Pennsylvania
- An analysis sought to determine its efficacy in reducing costs and improving care in patients with DKA

## Objectives

- Primary endpoint: Cost in management of patients with DKA in utilized computerized dosing algorithm, EndoToo IV (ETIV), in comparison to prior order set utilized approach
- Secondary endpoints: Time on insulin infusion, blood glucose checks, # of hypoglycemic events, average hospital length of stay

## Methods

- Retrospective data collected from 115 patients from September-December pre and post ETIV implementation (47 and 68 patients respectively) at UPMC Harrisburg
- Comparative analysis of both groups noted no significant differences in baseline characteristics such as age, sex, BMI and renal function
- Covid patients excluded from this study
- Statistical analyses sought to compare the prior metrics between the two groups

## Results

|  | September- December 2021 | September-December 2022 |         |
|--|--------------------------|-------------------------|---------|
| Metrics  | Pre-ETIV                 | Post-ETIV               | p-value |
| <b>DKA Patients</b>  | 47                       | 68                      |         |
| <b>Time on Infusion (Hours)</b>                              | 37.2                     | 35.4                    | 0.0003  |
| <b>Average #BG checks while on drip (started in DKA MOT)</b> | 48                       | 21.4                    | <0.0001 |
| <b>Average ICU Charges DKA</b>                               | \$28,416                 | \$24,009.00             | 0.4898  |
| <b>% of values &lt; 70 mg/dl</b>                             | 2.26%                    | 0.35%                   | <0.0001 |
| <b>% of values &lt; 40 mg/dl</b>                             | 0.03%                    | 0.00%                   | 0.4351  |
| <b>Average Hospital Length of Stay (Days)</b>                | 5.1                      | 4.5                     | 0.4993  |

## Conclusions

- Findings noted a reduction in hypoglycemic events, fewer glucose checks and shorter infusion time
- Although not significant, slight decrease in length of stay
- No significant decrease in charges of patients managed in the ICU
- ETIV computerized algorithm offers a promising approach to improvements in the clinical outcomes of DKA patients
- Further subgroup analysis currently being undergone

## References

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