

|  |  |                          |                   |                          |                     |                          |                              |
|--|--|--------------------------|-------------------|--------------------------|---------------------|--------------------------|------------------------------|
| <b>Program Affiliation:</b>                  | Olive View-UCLA Internal Medicine  |                          |                   |                          |                     |                          |                              |
| <b>Presenter Name (Last, First):</b>         | Monishi, Jessica   |                          |                   |                          |                     |                          |                              |
| <b>Co-Authors:</b>                           | Ryan Tiu, Jessica Monishi MD, Gina Hana MD, Parinaz Abiri MD, Vahid Mahabadi MD  |                          |                   |                          |                     |                          |                              |
| <b>Project Title:</b>                        | A retrospective study of patients admitted with diabetic ketoacidosis to determine functional versus clinical predictors for readmission |                          |                   |                          |                     |                          |                              |
| <b>Research Category (please check one):</b> |  |                          |                   |                          |                     |                          |                              |
| <input checked="" type="checkbox"/>          | Original Research  | <input type="checkbox"/> | Clinical Vignette | <input type="checkbox"/> | Quality Improvement | <input type="checkbox"/> | Medical Education Innovation |

## Abstract

### Introduction

Diabetic ketoacidosis (DKA) is an acute life-threatening complication of diabetes that carries significant morbidity, mortality, and economic burden. Immediate treatment of DKA is critical as it can quickly lead to end-organ damage and life-threatening events. Due to the dangers of DKA as well as high-maintenance treatment methodologies, patients are often treated for DKA in the Intensive Care Unit (ICU). Unfortunately, despite efforts to mitigate DKA presentations, the incidence of DKA nearly doubled between 2003 to 2017, with an estimated annual cost of nearly \$7 billion in 2017, averaging to about \$31,000 per admission. Notably, recurrent DKA occurs in 21.6% of diabetic adults and comprises a high number of DKA admissions. This study thus aimed to identify predictors of DKA hospital admissions and readmissions to provide insight on methods to mitigate these risk factors, thus improving patient care while reducing health care costs.

### Methods

We performed a retrospective analysis of all patients admitted to Los Angeles County hospitals with DKA in 2022 using discharge diagnosis ICD-10 codes 10.10, 10.11, 11.10, and 11.11. We conducted a manual chart review to identify patient co-morbid conditions as well as their DKA readmission counts within the year 2022. We then performed a regression analysis between the patient's readmission count and Functional Comorbidity Index (Table 1) as well as their Charlson Comorbidity Index (Table 2).

### Results

We identified 719 individual patients admitted for DKA in 2022. This is a work-in-progress project; at this time, we have reviewed data for 125 patients (75 male, 50 female) with a mean age of 51 ( $\pm 14$ ) years. Of these, only 9 patients experienced >1 DKA admission in 2022. The mean Functional Comorbidity Index was  $2.83 \pm 1.42$ . The mean Charlson Comorbidity Index was  $1.45 \pm 2.05$ . No correlation was found between the number of DKA admissions and either the Functional Comorbidity Index ( $R^2 = 0.25$ ) or the Charlson Comorbidity Index ( $R^2 = 0.05$ ).

### Conclusion

In summary, our analysis did not show any correlation between the number of DKA readmissions and patient's functional or clinical comorbidities. However, this analysis is based on a small sample size and lacks sufficient power for conclusive results due to the low incidence of readmissions. Notably, the limited sample may also not account for seasonal variations, which can play a major role in DKA hospital presentations. Furthermore, we plan to expand our parameters to include the impact of patients' ages, the presence of substance use disorder, and having a primary care physician as additional factors that may affect outcomes.

Table 1: Functional Comorbidity Index

| Points | Disease                   |
|--------|---------------------------|
| 1      | Arthritis (RA and OA)     |
| 1      | Osteoporosis              |
| 1      | Asthma                    |
| 1      | COPD, ARDS                |
| 1      | Angina                    |
| 1      | CHF                       |
| 1      | MI                        |
| 1      | Neurological disease      |
| 1      | Stroke or TIA             |
| 1      | DM                        |
| 1      | PAD                       |
| 1      | Upper GI disease          |
| 1      | Depression                |
| 1      | Anxiety                   |
| 1      | Visual impairment         |
| 1      | Hearing impairment        |
| 1      | Degenerative disk disease |
| 1      | BMI > 30                  |

Table 2: Charlson Comorbidity Index

| Points | Disease                          |
|--------|----------------------------------|
| 1      | MI                               |
| 1      | CHF                              |
| 1      | PAD                              |
| 1      | CVA                              |
| 1      | Dementia                         |
| 1      | Chronic pulmonary disease        |
| 1      | Connective tissue disease        |
| 1      | Ulcer disease                    |
| 1      | Stroke or TIA                    |
| 1      | DM                               |
| 2      | Hemiplegia                       |
| 2      | Moderate or severe renal disease |
| 2      | DM with end-organ damage         |
| 2      | Any tumor                        |
| 2      | Leukemia                         |
| 2      | Lymphoma                         |
| 3      | Moderate or severe liver disease |
| 6      | Metastatic solid tumor           |
| 6      | AIDS                             |