Trends in Emergency Department Utilization for Sickle Cell Crises in the United States: A Nationwide Analysis from 2016–2022

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Background: Sickle Cell disease (SCD) is a chronic hemoglobinopathy associated with emergency department (ED) use due to vaso-occlusive crises. Despite therapeutic advances, the ED remains central to acute SCD care, and its financial burden is not well understood. This study examines national trends in ED utilization for sickle cell crises.

Methods: A descriptive retrospective analysis of ED visit-level data from 2016 to 2022 was conducted using the National Emergency Department Sample (NEDS). NEDS is a publicly available database maintained by the Healthcare Cost and Utilization Project. Adult patients (≥18) with sickle cell crisis were identified using ICD-10 code D57.00. Weighted estimates were generated for visit volume, demographics, payer status, hospital characteristics, disposition, inflation-adjusted ED charges, and temporal trends.

Results: A total of 1,315,803 weighted ED visits for sickle cell crisis were identified between 2016 and 2022. Mean patient age was 32.3 ± 9.7 years, and 55.0% of patients were female. Most visits (78.9%) occurred at metropolitan teaching hospitals, increasing from 72.3% in 2016 to 82.2% in 2022. Overall, 34.1% resulted in inpatient admission and 61.7% were routinely discharged. After CPI-U adjustment to 2022 USD, mean charges per ED visit rose from $4,556 in 2016 to $6,086 in 2022, a 33.6% real increase ($p<0.001$). Quarterly visit volume showed a 12% decline below the predicted trend in Q2 2020 (40,891 visits), coinciding with the onset of the COVID-19 pandemic.

Conclusion: Young adults and female patients accounted for a substantial share of ED visits for sickle cell crisis. Care was increasingly concentrated at metropolitan teaching hospitals. Notably, inflation-adjusted ED charges rose substantially over the study period. The transient decline in ED visits during early COVID-19 likely reflects disruptions in acute care-seeking behavior. Together, these findings support continued investment in outpatient and preventive SCD care to reduce ED reliance. Future research should investigate the drivers of escalating ED charges.