Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

EMF 7 Racial Residential Segregation and Long-term Outcomes Among Medicare Beneficiaries After Out-of-Hospital Cardiac Arrest

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Introduction: Racial and ethnic disparities in incidence and survival to hospital discharge following out-of-hospital cardiac arrest (OHCA) exist in the US, but impact on long-term outcomes are less well understood. Racial residential segregation, a product of long-standing systemic and institutional racism, has been associated with worse outcomes for several health conditions, but has not been evaluated in OHCA. Our objective was to examine the association of the index of concentration at the extremes (ICE), a set of measures of residential segregation, with differences in long-term survival after OHCA.

Methods: Utilizing age-eligible Medicare fee-for-service claims data from 2013-2015, we identified OHCA claims with survival to discharge, using ICD-CM diagnosis codes. The primary predictors, ICE quintiles for race, income, and racialized income, were calculated at the beneficiary residential zip code level. Outcomes were survival at 1 and 3 years after discharge from index OHCA. All participants contributed a minimum of 3 years of follow-up before censoring. Random-effects Cox proportional hazard models were fitted with shared frailty to account for hospital level clustering and to examine the association of OHCA mortality and zip code level ICE measures.

Results: Of the 29,847 included claims, mean beneficiary age was 75 years (SD 8), 40.1% were female, 79% White, and 15.2% Black. The median follow-up time was 533 days (IQR 11.00, 1439.00). Overall survival for the cohort was 54% (n=16,129) at 1 year and 40.8% (n= 12,189) at 3 years. In fully adjusted models, we found a decreased hazard of death in beneficiaries residing in the most racially and economically privileged zip codes (Q5) compared to the least privileged areas (Q1) across all three ICE measures (race: HR:0.84; CI 0.79-0.88, income: HR 0.76; CI 0.73-0.81, racialized income: HR 0.78; CI 0.74-0.83). Among individual covariates, not receiving cardiac catheterization and ICD placement at the first treating hospital was strongly associated with increased hazard of death (HR 2.25; CI 2.16-2.35) and (HR 1.95; CI 1.8-2.1), respectively.

Conclusions: Among Medicare beneficiaries with OHCA, ICE measures of residential segregation are independently associated with increased hazard of death for those residing in the least privileged zip codes. More work is needed to identify methods to decrease disparities in OHCA outcomes in the context of racial and economic segregation.

No, authors do not have interests to disclose

8 Comparison of One-year Outcomes by Management Type in Patients Presenting to the Emergency Department With Uncomplicated Acute Appendicitis

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Objective: There are approximately 300,000 cases of acute appendicitis in the US annually. Laparoscopic appendectomy is currently the most widely preferred method for acute appendicitis. However, non-operative management for appendicitis has been cited as a viable alternative to appendectomy. Our objective was to compare ED patients with uncomplicated acute appendicitis who received appendectomy versus no surgery for one-year outcomes including surgery rates, ED revisits, repeat hospitalizations, and cost.

Methods: Using three linked state-wide databases from the Maryland Healthcare Cost and Utilization Project (HCUP), we identified patients with a primary diagnosis of uncomplicated acute appendicitis treated in a Maryland ED between 2016 and 2018. We measured the health care utilization for each patient in the Ambulatory Surgery, Inpatient, and ED settings for one year following the initial ED visit. We used Medicare Relative Value Units (RVUs) and HCUP Cost-Charge Ratio files to estimate direct costs. Finally, we performed a multivariate logistic regression analysis comparing patients who obtained appendectomy vs non-surgical management on initial visit.

Results: Of the 7744 patients analyzed in this study, 87% (N=6729) obtained an appendectomy on initial visit, while 13% (N=1015) received non-surgical management. There was no association between appendicitis management type and payer, race, ethnicity, or zip code stratified by income. Of those that obtained non-surgical management on initial visit, 27% (N=275) were admitted on initial visit and 14% (N=145) obtained an appendectomy within one year. One-year occurrences of new appendicitis complicated by perforation or abscess occurred at rates of less than one 1% for both groups. However, patients who obtained surgical management had lower ED revisits (11 vs 162 per 1000 patients), lower repeat hospitalizations (<1 vs 184 per 1000 patients), lower total hospital length of stay (1.92 vs 2.35 average days per year), and lower costs ($3789 vs $4996) at one year ($p < 0.0001$). Initial management with appendectomy was associated with increased age ($p < 0.0001$) and Charleson comorbidity index ($p < 0.05$), while non-surgical management was associated with appendicolith / bowel obstruction ($p < 0.0001$) as well as ischemic heart disease, hypertension, alcohol-related disorders, and diabetes mellitus.

Conclusions: ED patients with uncomplicated appendicitis who are treated with surgical management show fewer ED revisits, fewer repeat hospitalizations and decreased one-year cost but no change in risk of perforation or death compared to non-surgical management.

No, authors do not have interests to disclose

9 Nationwide Reimbursement Impact of COVID-19 to Emergency Physicians: $6.6 Billion Loss in 2020

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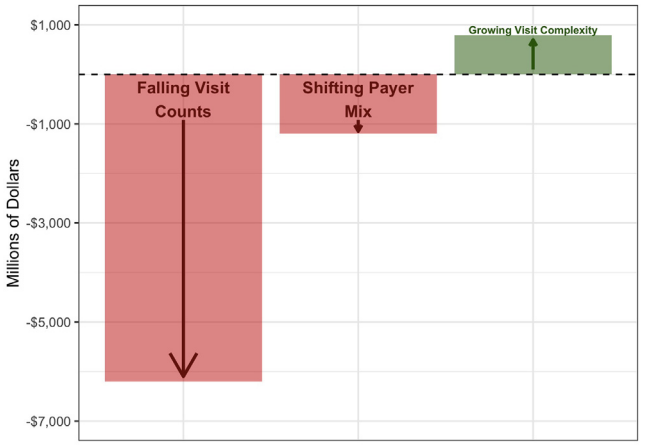
Study Objective: To estimate the nationwide impact of the COVID-19 pandemic on emergency physician reimbursement in 2020 as compared to 2019.

Methods: We conducted an observational analysis utilizing the American College of Emergency Physicians Clinical Emergency Data Registry (CEDR) and Nationwide Emergency Department Sample (NEDS). We calculated reimbursement for evaluation and management services in the CEDR between January 2019 and December 2020 based on level of service and insurance payer. To obtain reimbursement amounts, we combine manually-abstracted publicly reported fee schedules for Medicare and Medicaid with median in-network rates for private insurance available from FAIR Health. To derive national estimates, we matched emergency departments (EDs) in the 2019 NEDS to EDs in the CEDR. We characterize changes in visitation rates, level of service, and insurance payer, and estimate nationwide reimbursement in 2020 and 2019 to provide an estimate of reimbursement change associated with COVID-19.

Results: A total of 213 EDs and 12,591,513 ED visits were included from the CEDR. ED visit counts nadired to 60% of 2019 baseline in April 2020. Compared to 2019, visits in 2020 had a higher proportion of high complexity visits and Medicaid or Medicare visits. Total emergency physician reimbursement in 2020 was estimated to be $6.6 billion less than in 2019. Falling visit counts were most important in driving reimbursement losses, worsened by shifting payer mix and minimally attenuated by increasing visit complexity. If emergency physicians nationally had received the maximum relief allocated via the Coronavirus Aid, Relief, and Economic Security Act, this would only compensate 10.3% of the total reimbursement losses.

Conclusion: The COVID-19 pandemic led to a marked reduction in emergency physician reimbursement, driven primarily by lower volume and to a lesser degree by shifting payer mix. Despite the recognized need for emergency physicians to ensure front-line response to COVID-19 and ongoing disaster preparedness, policy efforts have not mitigated sharp reimbursement decreases, threatening the fragile economics of emergency care.

Figure: Drivers of Nationwide Emergency Physician Reimbursement Change 2020 as Compared to 2019



Source: Authors' analysis of data from the Clinical Emergency Department Registry (2019, 2020) and Nationwide Emergency Department Sample (2020).

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U.S. Acute Care Solutions

10 Emergency Department Boarding Is Associated With Lower Profit Margins in Higher Performing Hospitals

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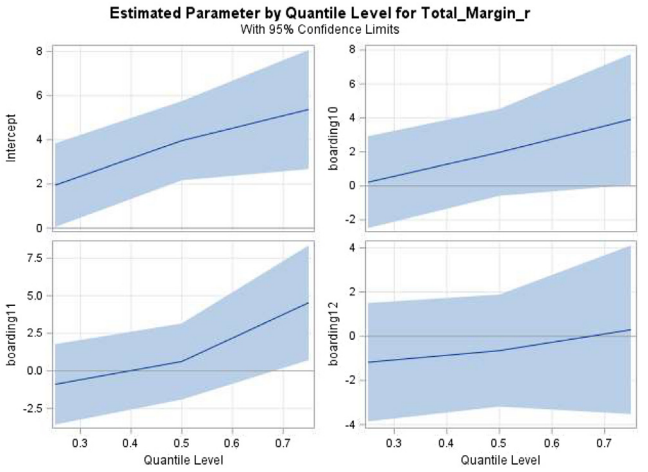
Background: Boarding of emergency department patients is associated with reductions in quality, safety, patient experience, and ED operational efficiency. However, ED boarding is ultimately reflective of inefficiencies in hospital capacity management. The most effective hospitals likely adapt and plan for variability in patient flow. Ultimately, the ability of a hospital to do so will impact its financial performance. While inefficient management of the inflow of patients may affect the financial performance of an institution, the relationship between boarding and hospital-wide financial performance remains ill-defined.

Objectives: We investigated the relationship between ED boarding and hospital financial measures of performance.

Methods: Cross-sectional ED operational data were collected from the ED Department Benchmarking Alliance (EDBA), a voluntarily self-reporting operational database including 54% of EDs nationwide. Free- standing and pediatric EDs and those with missing boarding data were excluded. The key operational outcome variable was quantile of median boarding time. Of these available non-profit institutions, we studied financial information by accessing their self-reported 990 forms. Specifically, we studied common measures of financial performance: Return on Equity (ROE), Total Margin (TM), Total Asset Turnover (TAT.), and Financial Leverage (FL). Associations were investigated using quantile regressions adding ED volume, ED admission percentage, urban versus non-urban ED site, trauma status, and percentage of population receiving Medicare and Medicaid as covariates in the regression models.

Results: Operational data and corresponding 990 forms were available for 127 EDs from 31 states for 2018. Median boarding time across EDs was 148 minutes (IQR: 100,216). When comparing financial measures relative to the effect on a national median boarding quartile, after adjusting for the covariates in the regression model, we found that for the top quantile of TM, for each quantile increase in boarding there was a significant negative effect of TM, specifically the mean TM for the top 25% decreases by 1.9% for every quantile increase in boarding ($p = 0.0003$). When boarding increases from a median of 67 minutes (bottom quantile) to 288 minutes (top quantile) there is a corresponding 5.7% decrease in TM from a mean of 15.2% for the top quartile of TM sites.

Conclusions: Using the largest available national registry of ED operational data, we found that a stepped increase in median boarding quartiles is negatively associated with the profitability of hospitals in the top quartile of financial performance.



Top left: Adjusted effect of bottom 25% median boarding across quartiles of TM

Bottom left: Adjusted effect of second quartile median boarding across quartiles of TM

Top right: Adjusted effect of third quantile median boarding across quartiles of TM

Bottom right: Adjusted effect of top quantile quartile median boarding across quartiles of TM

No, authors do not have interests to disclose

11 Implementation of a Hospice Transition Protocol in an Emergency Department to Facilitate End-of-Life Care

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Objectives: The ED serves as a frequent interface for patients approaching end-of-life (EoL), with up to 75% of patients experiencing an emergency department (ED) visit in the last 6 months of life. Hospice care in the last 6 months is associated with improved patient experience, care satisfaction, and pain control. Earlier hospice enrollment also improves resource utilization by reducing hospital length of stay and readmissions. During the COVID-19 pandemic, our ED experienced an increased number of EoL patients receiving care in hallway beds while awaiting hospital admission or transfer to hospice care. Lack of patient privacy and limited prior training on caring for EoL patients contributed to the moral distress experienced by nurses, physicians, patients and families. To address this, we implemented and evaluated a hospice ED observation pathway (HEDOP) for EoL patients transitioning to comfort-focused care in the ED setting.

Design/Methods: A HEDOP was developed to guide treatment for EoL patients transitioning to comfort-focused care during the ED course. The pathway identified the appropriate patient population with inclusion/exclusion criteria (Table 1). A 'comfort measures' order set provided quick access to medication orders for common EoL symptoms such as dyspnea and pain, spiritual care and social work consultation. The ED observation unit is staffed by ED registered nurses and Advanced Practice Providers, with emergency physician support. To provide EoL education, we offered didactic lectures, bedside teaching from a palliative medicine fellow, and the opportunity to shadow providers at a local hospice facility.