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BRIEF REPORT

Association Between Usual Clinician Presence and Emergency Department Revisitation

Doreen S. Agboh[1] | Arjun K. Venkatesh[1,2] | Yixuan Liang[3] | Wafa Salah[1] | Craig Rothenberg[1] | Joseph S. Ross[2,4,5] | Ishani Ganguli[6,7] | Cameron J. Gettel[1,2]

[1]Department of Emergency Medicine, Yale School of Medicine, New Haven, Connecticut, USA | [2]Center for Outcomes Research and Evaluation, Yale School of Medicine, New Haven, Connecticut, USA | [3]Alzheimer's Therapeutic Research Institute, Keck School of Medicine, University of Southern California, San Diego, California, USA | [4]Section of General Internal Medicine, Department of Medicine, Yale School of Medicine, New Haven, Connecticut, USA | [5]Department of Health Policy and Management, Yale School of Public Health, New Haven, Connecticut, USA | [6]Harvard Medical School, Boston, Massachusetts, USA | [7]Division of General Internal Medicine and Primary Care, Brigham and Women's Hospital, Boston, Massachusetts, USA

Correspondence: Doreen S. Agboh (doreen.agboh@yale.edu)

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ABSTRACT

Background: Emergency department (ED) visit rates among older adults are increasing, often due to ambulatory care sensitive conditions (ACSCs) that may have been managed through access to a usual clinician—a provider who offers regular outpatient care. We sought to characterize ACSC-related ED visits and all-cause 30-day ED revisits among ED visits of older adults with and without a usual clinician.

Methods: We conducted a pooled cross-sectional analysis of 2015–2020 Medicare Current Beneficiary Survey (MCBS) data linked to traditional Medicare claims of adults 65 and older. We compared ED visits that did and did not have a usual clinician with 3:1 propensity score matching on age, gender, race, chronic condition number (2+ vs. <2), and geographical area. Our primary outcome was the proportion of ACSC-related Medicare beneficiary ED visits that were and were not associated with a usual clinician. Our secondary outcome was the presence of an all-cause ED revisit in the 30 days following the initial ED visit.

Results: We examined 22,484 ED visits between 2015 and 2020, representing over 86 million ED visits nationally. Among ED visits by older adults, 20,849 (92.7%) were among those with a usual clinician. The proportion of ACSC-related ED visits by older adults with and without a usual clinician did not differ (14.8% vs. 14.7%, adjusted marginal difference [AMD] −0.20%, 95% CI: −2.17–1.78, $p = 0.97$). However, the proportion of all-cause 30-day ED revisits with a usual clinician among older adults was lower when compared with those without a usual clinician (25.6% vs. 35.9%, AMD 7.55%, 95% CI: 4.97–10.13, $p < 0.001$).

Conclusion: Emergency visits by older adults for ACSCs were similar regardless of the presence of a usual clinician; however, ED visits among older adults with a usual clinician were less likely to be followed by an ED revisit within 30 days.

This work has been presented at the 2024 Society for Academic Emergency Medicine (SAEM) Annual Meeting. This work has not been published as a pre-print.

Summary

- Key points
  - There was no difference in ED visits of older adults for ambulatory care sensitive conditions regardless of the presence of a usual clinician.
  - Emergency department visits of older adults with a usual clinician were less likely to have an all-cause 30-day ED revisit.
- Why does this paper matter?
  - This work emphasizes the need for timely access to a usual clinician in the 30-day discharge period for older adults following an emergency department visit for ambulatory care sensitive conditions.

1 | Introduction

Emergency Department (ED) visit rates by older adults are increasing [1–3], with many due to ambulatory care sensitive conditions (ACSCs), defined as health conditions in which hospitalization can potentially be avoided through timely primary care delivery [4]. Originally conceptualized by the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) in the 1990s, ACSCs include conditions such as diabetes mellitus, urinary tract infections, hypertension, and asthma [4, 5]. It is estimated that approximately 1 in 9 ED visits by Medicare beneficiaries are due to ACSCs [6–8]. Furthermore, frequent use of the ED for ACSCs has been suggested to reflect suboptimal access to and quality of care [5, 9, 10]. In older adults with complex medical conditions, the ED may be inadequate in providing comprehensive care for ACSCs compared to a usual clinician outpatient visit [11]. What's more, among older adults, ED visits have been associated with functional decline, increased delirium, higher admission rates, and mortality [2, 6, 12–15].

Primary care physicians (PCPs)—the most salient example of usual clinicians—are pivotal in providing continuity of care and improving health outcomes; however, there has been a steady decline in primary care visit rates with a concurrent increase in ED utilization among older adults [16–18]. Various factors contribute to this, including trouble accessing a usual clinician due to financial or geographic constraints and limited PCP supply [18–21], often causing those without a usual clinician to resort to using the ED as a substitute for primary care [19]. Although prior studies have examined hospital utilization patterns for preventable hospital encounters among Medicare beneficiaries, few studies have assessed the effects of the presence of a usual clinician on ACSC-ED visits and revisits for older adults [6–8, 22].

We sought to compare ED visits by older adults with or without a usual clinician on the presence of an ACSC diagnosis and whether they were associated with an all-cause 30-day ED revisit. We hypothesized that the presence of a usual clinician for ED visits by Medicare beneficiaries would be associated with a lower likelihood of ACSC-related ED visits and all-cause 30-day ED revisits. A deeper understanding of the effects of having a usual clinician, defined as a physician who provides longitudinal, whole-person patient care [23], on ED usage among older adults is crucial for improving healthcare outcomes and enhancing the overall quality of care for older adults.

2 | Methods

2.1 | Study Design and Data Source

We conducted a pooled cross-sectional analysis of 2015–2020 Medicare Current Beneficiary Survey (MCBS) data linked to traditional Medicare claims [24, 25]. At the time of analysis, the 2020 survey was the most recently available. The study was deemed exempt by the primary author's Institutional Review Board and followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [26].

The MCBS survey is a continuous, nationally representative dataset of the Medicare population and collects self-reported data on social determinants of health, medical factors, health care utilization, and health outcomes [24, 25]. Prior analyses have utilized the MCBS survey to assess access to usual care [23]. This survey contains information on demographics, household characteristics, access to care, satisfaction with care, usual source of care, health insurance timeline, health status and functioning, medical conditions, health behaviors, preventative services, interview characteristics, beneficiary knowledge of the Medicare program, residence timeline, facility characteristics, beneficiary income, beneficiary assets, and fee-for-service utilization [24].

2.2 | Data Management and Outcomes

To derive our analytic sample, we identified all ED visits from the 2015–2020 time period for Medicare beneficiaries aged 65 years and older. We included demographic data on race, age, income, marital status, chronic conditions, education level, and geographic location. To delineate the presence of a usual clinician, we utilized the MCBS survey question, "Is there a particular doctor, medical person, or other health professional or clinic you usually go to when you are sick or for advice about your health?" (Supporting Information). We defined the presence of a usual clinician as a response of "yes" and the absence of a usual clinician as "no." Responses of "don't know" or "refused" were excluded from the study population. We identified the total visits to the ED within each year and during the study period, whether ED visits were treat-and-release or required hospitalization, and if there was an ED revisit within 30 days. We defined the index ED visit as an ED encounter without evidence of a preceding ED visit in the prior 30 days to avoid duplication of outcomes in the subsequent 30-day time period; we classified ED revisits as those that occurred within 30 days of an index ED visit. ACSC-related ED visits were identified using International Classification of Diseases (ICD) codes, a system used to classify symptoms, diagnoses, and procedures for claims purposes [27], for primary and admitting diagnoses. ICD-9 codes were identified for study years 2015–2016, and ICD-10 codes for study years 2017–2020. ACSCs included diabetes, perforated appendix, asthma/COPD, hypertension,

congestive heart failure, dehydration, bacterial pneumonia, urinary tract infections, and angina.

Our primary outcome was the proportion of index ACSC-related Medicare beneficiary ED visits with and without a usual clinician. Our secondary outcome was the presence of an all-cause 30-day ED revisit following the index ED visit by Medicare beneficiaries with and without a usual clinician.

2.3 | Statistical Analysis

Our unit of analysis was the Medicare beneficiary ED visit. We first derived descriptive statistics of the ED visits of Medicare beneficiaries and weighted them using cross-sectional weights for the year of the ED visit. We then compared patient-ED visits with or without a usual clinician on the proportion that were ACSC-related and the proportion that resulted in an all-cause 30-day ED revisit.

We then assessed the difference in our outcomes with 3:1 propensity score matching of ED visits with and without a usual clinician, matching on age, gender, race, chronic condition number (2+ vs. <2), and core-based statistical area. We used the standardized mean difference to evaluate propensity score matching quality, with all covariates being well balanced (SMD < 0.1). Although matching achieved covariate balance, we performed multivariate logistic regression on the matched sample with the same covariates to account for any potential residual imbalance and to provide adjusted marginal differences as effect estimates. Data preparation and analyses were performed in R Statistical Software version 4.2.1 (R Foundation for Statistical Computing, Vienna, Austria). We used GraphPad Prism (San Diego, CA) for data visualization.

3 | Results

3.1 | Population Characteristics

Between the 2015 and 2020 study period, we identified 22,484 unique ED visits of Medicare beneficiaries. The mean (SD) age was 79.5 (7.9) years, and the majority were female (59.0%), white (83.8%), completed high school or above (77.9%), lived in a metropolitan area (69.8%), and primarily had Medicare fee-for-service insurance (87.5%) (Table 1).

3.2 | Main Results

Our study population consisted of 22,484 ED visits—including 3306 ACSC-related ED visits—between 2015 and 2020, representing over 86 million ED visits nationally during the study period. There were a total of 20,849 (92.7%) ED visits by older adults who had a usual clinician. Across all ED visits by older adults with a usual clinician, the most common ACSCs were urinary tract infections (3.2%), asthma/COPD (2.3%), and dehydration (2.2%) (Table 2). The most common ACSCs for ED visits that did not have a usual clinician were urinary tract infections (4.5%), asthma/COPD (2.4%), and hypertension (2.2%).

There was no difference in the proportion of index ED visits for ACSCs among those with and without a usual clinician (14.8% vs. 14.7%, $p = 0.968$) (Figure 1). When adjusting for covariates with a 3:1 propensity matched analysis, ACSC-related ED visits did not differ between those with and without a usual clinician (adjusted marginal difference [AMD] −0.20%, 95% CI: −2.17%–1.78%). However, older adults with a usual clinician had lower all-cause 30-day ED revisits as compared to those without a usual clinician (25.6% vs. 35.9%, $p < 0.001$). The proportional decrease of all-cause 30-day ED revisits with a usual clinician remained when adjusting for covariates (AMD 7.55%, 95% CI: 4.97%–10.13%).

4 | Discussion

Our study presents an analysis of the effects of a usual clinician on ACSC-ED visits and 30-day all-cause ED visits of Medicare beneficiaries. We have two main findings. First, ED visits by older adults with or without a usual clinician had a similar likelihood of addressing ACSCs. Second, Medicare beneficiary ED visits involving a usual clinician were less likely to be associated with a 30-day ED revisit. To our knowledge, our study is the first to characterize ACSC-related ED revisits for Medicare beneficiaries in a national sample. Our results emphasize the value of primary care access in reducing ED revisits among older adults and the importance of timely access to care in the immediate post-discharge period after an ED visit.

Implementing improvements in the quality of primary care, interventions for injury prevention, and access to preventive care may alleviate ED overutilization by Medicare beneficiaries [28]. Prior research studies have also underscored the benefits of primary preventive care in older adults. Timmins et al. assessed the effects of the Centers for Medicaid and Medicare Services' Comprehensive Primary Care Initiative on reducing preventable ED and urgent care visits for Medicare FFS beneficiaries. They identified that access to primary care reduced all-cause ED visits by 2%, primary care preventable ED visits by 3%, and primary care preventable urgent care visits by 9% for Medicare fee-for-service beneficiaries [29]. Our study extends these findings by highlighting that the presence of a usual clinician for ED visits by older adults is associated with a lower likelihood of all-cause 30-day ED revisits. This contributes to the growing body of literature that suggests the valuable role of timely care transitions in mitigating ED utilization for acute, unscheduled care in older adults [22, 30].

The clinical implications of our study are noteworthy for primary care physicians who manage the care of older adults in the ED post-discharge period. Given that ED visits of older adults with a usual clinician had fewer all-cause 30-day ED revisits, there is a potential opportunity to emphasize timely care after ED discharge. This may involve detailed discharge planning, ensuring timely follow-up appointments, and improving communication between ED and outpatient care providers. Enhanced care coordination can lead to better management of chronic conditions, potentially reducing the burden on emergency services and improving patient outcomes. Furthermore, Medicare policies could be tailored to promote

TABLE 1 | Characteristics of medicare beneficiary-ED visits with or without a usual clinician, 2015–2020.

	No usual clinician ($N=1635$)	Usual clinician ($N=20,849$)	Overall ($N=22,484$)
Sex			
Male	598 (36.6%)	8618 (41.3%)	9216 (41.0%)
Female	1037 (63.4%)	12,231 (58.7%)	13,268 (59.0%)
Age			
Mean (SD)	78.1 (7.50)	79.7 (7.89)	79.5 (7.88)
Median [min, max]	77.0 [65.0, 99.0]	80.0 [65.0, 108]	80.0 [65.0, 108]
Race			
White	1378 (84.3%)	17,459 (83.7%)	18,837 (83.8%)
Not White	257 (15.7%)	3390 (16.3%)	3647 (16.2%)
Income ($)			
<15,000	607 (37.1%)	4547 (21.8%)	5154 (22.9%)
15,000–29,999	412 (25.2%)	5810 (27.9%)	6222 (27.7%)
30,000–49,999	261 (16.0%)	4048 (19.4%)	4309 (19.2%)
>=50,000	355 (21.7%)	6444 (30.9%)	6799 (30.2%)
Education			
Did not complete high school	331 (20.2%)	4646 (22.3%)	4977 (22.1%)
High school or above	1304 (79.8%)	16,203 (77.7%)	17,507 (77.9%)
Marital status			
Married	645 (39.4%)	9341 (44.8%)	9986 (44.4%)
Not married	990 (60.6%)	11,508 (55.2%)	12,498 (55.6%)
Primary insurance			
Fee-for-service	1483 (90.7%)	18,194 (87.3%)	19,677 (87.5%)
Medicare advantage	152 (9.3%)	2655 (12.7%)	2807 (12.5%)
Rural–urban status			
Metropolitan	919 (56.2%)	14,774 (70.9%)	15,693 (69.8%)
Micropolitan	495 (30.3%)	3941 (18.9%)	4436 (19.7%)
Rural	221 (13.5%)	2134 (10.2%)	2355 (10.5%)
Chronic conditions[a]			
<2	275 (16.8%)	3312 (15.9%)	3587 (16.0%)
2+	1360 (83.2%)	17,537 (84.1%)	18,897 (84.0%)
Self-reported health			
Excellent, very good, or good	1229 (75.2%)	14,053 (67.4%)	15,282 (68.0%)
Fair or poor	406 (24.8%)	6796 (32.6%)	7202 (32.0%)

[a]Chronic conditions include hypertension, hyperlipidemia, congestive heart failure, heart disease, stroke, cancer, arthritis, Alzheimer's/dementia, depression, osteoporosis, emphysema/asthma/COPD, and diabetes.

follow-up care after ED visits, particularly for ACSCs, to decrease the likelihood of 30-day revisits and improve overall healthcare efficiency.

Future research could explore the elements that may contribute to ED revisits in older adults. Investigating factors such as patient health literacy, accessibility to primary care, and the role of social determinants of health could provide a deeper understanding. Additionally, studies could examine the impact of different models of care coordination on reducing both initial and recurrent ED visits. Longitudinal research focusing on the long-term outcomes of patients with regular primary care compared

TABLE 2 | Frequency of ambulatory care sensitive condition-related ED visits by older adults with and without a usual clinician.

Ambulatory care sensitive condition	Usual clinician ($n = 20,849$)	No usual clinician ($n = 1635$)
Urinary tract	663 (3.2%)	73 (4.5%)
Asthma/COPD	478 (2.3%)	40 (2.4%)
Hypertension	422 (2.0%)	36 (2.2%)
Dehydration	464 (2.2%)	29 (1.8%)
Congestive heart failure	443 (2.1%)	26 (1.6%)
Bacterial pneumonia	398 (1.9%)	25 (1.5%)
Angina	148 (0.7%)	9 (0.6%)
Diabetes	142 (0.7%)	8 (0.5%)
Perforated appendix	2 (0.0%)	0 (0%)

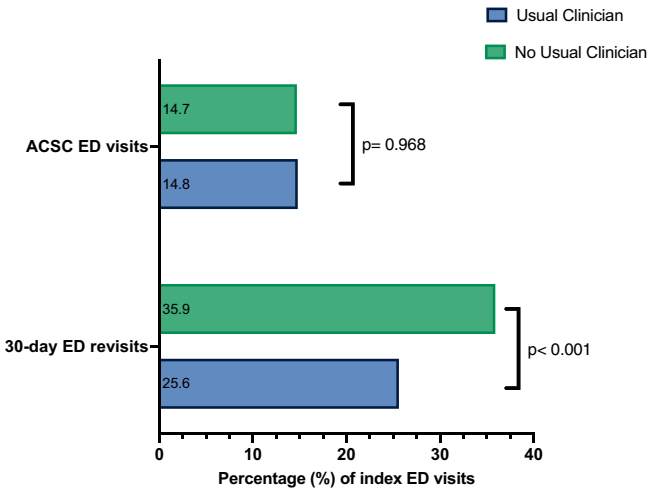

FIGURE 1 | Proportion of medicare beneficiary ED visits among those with and without a usual clinician. Blue represents ED visits with a usual clinician and green represents those without a usual clinician. We conducted 3:1 propensity score matching on age, gender, race, chronic condition, and core-based statistical area. Unadjusted.

to those without could offer further insights into the benefits of continuous care.

5 | Limitations

There are limitations to our study. The Medicare Current Beneficiary Survey is self-reported; therefore, it is subject to recall bias and errors in self-reporting. Additionally, we did not examine the differences in primary care and specialty care as a usual clinician on ED utilization in Medicare beneficiaries. We also did not assess access to usual care and ED utilization among Medicare Advantage beneficiaries since MCBS contains linked claims data for Traditional Medicare alone. Furthermore, our study design precludes causal inference, and many unobservable factors may confound the relationship between the presence of a usual clinician and ED visit patterns, such as health literacy and financial resources.

6 | Conclusion

In conclusion, our study contributes to a deeper understanding of how usual clinician access may relate to ED overutilization by the older adult population. ED visits of Medicare beneficiaries with a usual clinician had significantly fewer all-cause 30-day ED revisits. The consequences of improving access to care from a usual clinician may have broader implications for enhancing the quality of care, decreasing healthcare costs, and improving health outcomes for our aging population. Overall, our findings suggest that while access to a usual clinician may not mitigate ED visits in older adults, they may benefit from fewer ED revisits by having timely access to outpatient primary care.

Author Contributions

Study design and concepts: Doreen S. Agboh, Arjun K. Venkatesh, and Cameron J. Gettel. Acquisition of the data: Doreen S. Agboh, Cameron J. Gettel, Craig Rothenberg, Wafa Salah, Arjun K. Venkatesh, and Yixuan Liang. Analysis and interpretation of the data: Doreen S. Agboh, Arjun K. Venkatesh, Yixuan Liang, Wafa Salah, Craig Rothenberg, Joseph S. Ross, Ishani Ganguli, Cameron J. Gettel. Preparation of the manuscript: Doreen S. Agboh, Arjun K. Venkatesh, Yixuan Liang, Joseph S. Ross, Ishani Ganguli, Cameron J. Gettel.

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The authors have nothing to report.

Disclosure

The sponsors had no role in the design and conduct of the study, collection, management, analysis, and interpretation of the data, and preparation or approval of the manuscript.

Conflicts of Interest

Dr. Doreen S. Agboh is a Postdoctoral Fellow in the National Clinician Scholars Program, which receives support from the Clinical and Translational Science Awards Program (TL1 TR001864) at the National Center for Advancing Translational Science (NCATS), a component of the National Institutes of Health (NIH). Dr. Joseph S. Ross currently receives research support through Yale University from Johnson and Johnson to develop methods of clinical trial data sharing, from the Food and Drug Administration for the Yale-Mayo Clinic Center for Excellence in Regulatory Science and Innovation (CERSI) program (U01FD005938), from the Agency for Healthcare Research and Quality (R01HS022882), and from Arnold Ventures; formerly received research support from the Medical Device Innovation Consortium as part of the National Evaluation System for Health Technology (NEST) and from the National Heart, Lung and Blood Institute of the National Institutes of Health (NIH) (R01HS025164, R01HL144644); and in addition, Dr. Joseph S. Ross was an expert witness at the request of Relator's attorneys, the Greene Law Firm, in a qui tam suit alleging violations of the False Claims Act and Anti-Kickback Statute against Biogen Inc. that was settled in September 2022. Dr. Ishani Ganguli work was supported in part by the National Institute on Aging (K23AG068240). She also receives grant support from the Commonwealth Fund, Arnold Ventures, the Agency for Healthcare Research and Quality (R18 HS029348), and the National Institute on Minority Health and Health Disparities

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Data S1:** jgs70085-sup-0001-DataS1.pdf.