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Characteristics of Medicaid-Covered Emergency Department Visits Made by Non-Elderly Adults: A National Study

Roberta Capp, MD, MHS¹, David R. West, PhD², Kelly Doran, MD, MHS³, Angela Sauaia, MD, PhD^{1,2}, Jennifer Wiler, MD, MBA, Tyler Coolman, MPH¹, and Adit A. Ginde, MD, MPH¹

¹Department of Emergency Medicine, University of Colorado School of Medicine, Aurora, Colorado

²Department of Family Medicine, University of Colorado School of Medicine, Aurora, Colorado

³Department of Emergency Medicine and the Department of Population Health, New York University School of Medicine and Bellevue Hospital Center

⁴Department of Surgery, Denver Health Medical Center, Denver, Colorado. University of Colorado Schools of Public Health and Medicine, Aurora, Colorado

Abstract

Background—The Affordable Care Act has added millions of new Medicaid enrollees to the health care system. These patients account for large proportion of Emergency Department (ED) utilization.

Objective—To characterize this population and their ED use at a national level.

Methods—We used the 2010 National Hospital Ambulatory Medical Care Survey (NHAMCS) to describe demographics and clinical characteristics of non-elderly adults (18 and 64 years old) with Medicaid covered ED visits. We defined frequent ED users as individuals who make 4 ED visits/year and business hours as (8AM to 5 PM). We used descriptive statistics to describe the epidemiology of Medicaid covered ED visits.

Results—NHAMCS contained 21,800 ED visits by non-elderly adults in 2010, of which 5,659 (24.09%) were covered by Medicaid insurance. Most ED visits covered by Medicaid were made

Corresponding author: Roberta Capp, MD, University of Colorado, School of Medicine, Department of Emergency Medicine, 12404 E. 17th Ave, room 755, Mail stop B215, Aurora, CO 80045, **Phone:** (617) 894-8326 **Fax:** 720-848-7374 **Roberta.capp@ucdenver.edu, Roberta.capp@gmail.com.**

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Author contributions: Dr. Capp had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Drs. Capp, West, Ginde, Sauaia, and Doran were responsible for the conception and design of this work. Drs. Capps, Ginde and West drafted the manuscript. Dr. Capp conducted the statistical analysis and was responsible for acquisition of data. Drs. West and Ginde provided supervision. All authors participated in the analysis and interpretation of the data and critically revised the manuscript for important intellectual content.

by patients who are young (25 and 44 years old) and females (67.95%; 95% CI 66.00–69.89). A large proportion of the ED visits covered by Medicaid were revisits within 72 hours (14.66%; 95% CI 9.13–20.19), and from frequent ED users (32.32%; 95% CI 24.29–40.35). Almost half of all ED visits covered by Medicaid occurred during business hours (45.44%; 95% CI 43.45–47.43).

Conclusions—The vast majority of Medicaid enrollees who used the ED were females, young, with a large proportion of visits occurring during business hours. Furthermore, almost one third of all visits are from frequent ED users.

Keywords

Medicaid; Emergency Visits; Frequent Use

INTRODUCTION

Adult non-elderly Medicaid enrollees account for the largest proportion of the increasing number of annual emergency department (ED) visits.¹ These patients are at high risk for being frequent ED users (i.e., ≥4 ED visits/year); in a single center study, 1 in 12 Medicaid enrollees, was identified as a frequent ED user.^{2–4} Previous studies describing the adult Medicaid population have found that they are more likely than those with private insurance to face barriers in accessing outpatient care on an urgent basis.^{1,3,5,6} Medicaid enrollees who are frequent ED users also have high burden of chronic conditions.

Interest in curtailing the rate of ED utilization in the Medicaid population exists on a national level. A recent Center for Medicare and Medicaid Services (CMS) bulletin urged states to reduce non-urgent use of the ED and to focus on providing the appropriate care in the appropriate setting.⁷ This bulletin highlighted three strategies to deliver appropriate care in the most appropriate settings: broaden access to primary care settings, focus on frequent ED users, and target needs of people with behavioral health problems.⁷ In addition, 7 U.S. states are currently receiving funding from The National Governor's Association to develop and implement programs aimed at decreasing ED utilization by individuals with Medicaid insurance.⁸

Finally, the implementation of the Affordable Care Act (ACA) added millions of new individuals to the Medicaid system. Accordingly, an understanding of the characteristics of the Medicaid population, especially in the context of ED use, would prove invaluable in providing policy makers and clinicians the insight necessary to address these patients' unique health care needs.⁹ In this study, we evaluate national ED visits made by Medicaid enrollees and their sociodemographic characteristics and clinical characteristics.

METHODS

Study Setting and Data Source

We analyzed data from the 2010 National Hospital Ambulatory Medical Care Survey (NHAMCS).¹⁰ The NHAMCS is an annual, national probability sample of ambulatory visits made to non-federal, general, and short stay hospitals conducted by the Centers for Disease Control and Prevention and National Center for Health Statistics (NCHS). The multi-stage

sample design consists of 3 stages for the ED component: (1) 112 geographic primary sampling units (PSUs) that comprised a randomly selected subsample of PSUs from the 1985–94 National Health Interview Surveys; (2) approximately 480 hospitals within PSUs; and (3) patient visits within emergency service areas. It excludes federal, military, and Veteran Affairs facilities in the United States.¹⁰

The 2010 NHAMCS data sources included 373 participating hospitals (un-weighted sampling response rate of 90%) and a total of 34,936 patient visits to the ED.¹⁰ As a publicly available dataset without patient identifying information, this study was exempt from review by the Colorado Multiple Institutional Review Board. Among all patient visits to the ED included within NHAMCS, we excluded patients who were younger than 18 years of age (n=8,015; 22.94%) or older than 64 years of age (n= 5,121; 14.66%), to focus on adult non-elderly Medicaid enrollees. We also excluded patients who did not have Medicaid, the NCHS insurance hierarchy (n=16,141). Those with both Medicare and Medicaid (dual eligible) are grouped under Medicare, and therefore were not included in analysis. The final study cohort included 5,659 visits, representing an estimated 19,413,665 national, non-elderly adult ED visits.

Socio-Demographic Variables—Socio-demographic variables included: age, gender, race/ethnicity, insurance status, homelessness, percent poverty in patient's zip code, and percent of adults with a Bachelor's degree in the patient's zip code. Age was classified into 3 groups: 18–24, 25–44, and 45–64 years old. The NHAMCS distinguishes race/ethnicity as White Non-Hispanic, Black Non-Hispanic, Hispanic, and Other Non-Hispanic. Insurance type was classified as either private insurance or Medicaid. Zip code and U.S. Census Bureau definitions were used to categorize percent of poverty in the patient's area of residence.

Health Care Utilization—The following ED health care utilization variables were obtained from NHAMCS: seen in the ED in the last 72 hours, discharged from any hospital within the last 7 days, frequency of ED use within the past 12 months, reason for ED visit (new condition or follow up visit), arrival to the ED via ambulance, arrival to the ED during business hours, and ED visit on week day versus weekend. Business hours were defined as Monday through Friday between 8 AM and 5 PM. All other times were considered non-business.

Clinical Variables—Clinical characteristics included: triage acuity level, defined by the estimated severity index (ESI) system, and chronic medical conditions (defined per NHAMCS as cerebrovascular disease, congestive heart failure (CHF), conditions requiring dialysis, and diabetes). In brief, ESI is a standardized way to categorize the acuity level of the ED visit. We re-coded ESI into four categories: emergent (ESI 1 and 2), urgent (ESI 3), non-urgent (ESI 4 and 5), or missing. We used clinical classification software (CCS) to classify the first, second and third ED diagnosis IC9-codes into a broad CCS category. Any of the following were considered an ED mental health diagnosis: adjustment disorders (650), anxiety disorders (651), attention-deficit, conduct, and disruptive behavior disorders (652), mood disorders (657), personality disorders (658), schizophrenia and other psychotic disorders (659), alcohol related disorders (660), substance related disorders (661), suicide

and intentional self-inflicted injury (662), or screening and history of mental health and substance abuse (663).¹⁴

ED care variables—ED care variables included: consultant utilization, mental health provider utilization, and admission to the hospital from the ED.

Statistical Analyses

We present weighted characteristics of ED visits in descriptive terms. Ninety-five percent confidence intervals (95% CI) were calculated using standard methods for the complex survey design and sampling weights. Missing data were categorized as unknown if 2% of the visits did not contain information for the variable of interest. If the variable of interest had < 2% of data missing, then the unknown category was dropped from analysis. To account for complex survey design and sampling weights we used the SURVEY commands in SAS.

RESULTS

Characteristics of non-elderly adults with Medicaid insurance as compared to those with private insurance

In the 2010 NHAMCS there were 21,800 ED visits made by non-elderly adults. Of these, 5,659 (24.09%), were covered by Medicaid; making Medicaid the second largest payer source for ED visits. Most ED visits covered by Medicaid were made by individuals aged 25–44 years (46.33%; 95% CI 44.53–48.13), females (67.95%; 95% CI 66.00–69.89), and Whites (53.06%; 95% CI 47.47–58.64) (Table 1).

A total of 14.66% (95% CI 9.13–20.19) of all ED visits covered by Medicaid were 72 hour returns; and 32.32% (95% CI 24.29–40.35) were from frequent ED users (Table 2). Almost half of all Medicaid covered ED visits occurred during business hours (45.44%; 95% CI 43.45–47.43) (Table 2), but only 11.42% (95% 9.75–13.09) of all visits resulted in a hospital admission (Table 3). The most common medical chronic conditions present in Medicaid covered ED visits were diabetes (9.52%; 95% CI 8.24–10.80) and heart failure (2.10%; 95% CI 1.61–2.59). Only 2.3% (95% CI 4.99–8.12) of all Medicaid covered ED visits had a mental health consultation.

DISCUSSION

In this study we found that, in 2010, Medicaid was the second largest payer for ED visits made by non-elderly adults in the United States. A high proportion of ED visits covered by Medicaid were a result of frequent ED users, with almost half of all ED visits occurring during business hours. Only 1 in 9 Medicaid covered ED visits results in a hospital admission, a number lower than the national ED hospital admission average.¹ These findings have important implications in relation to the aforementioned three strategies proposed by CMS to decrease avoidable ED use.⁷

The large proportion of frequent ED user Medicaid covered ED visits could be attributed to previous findings indicating patients with Medicaid experience barriers in accessing primary

care services.^{3,15} Our study shows that almost half of all Medicaid covered ED visits occur during business hours when primary care clinics and/or urgent care centers are open. Although CMS's first strategy—broadening access to primary care settings—is important in potentially leading to a reduction in the number of ED visits for these patients, we believe other approaches, such as integrative programs that provide primary care provider home visits, intensive case management, or patient navigation services, are critical in achieving reduction of potentially avoidable ED visits.^{17–20} Previous studies show that certain patient populations exhibit poor compliance in following up with their primary care providers after an ED visit. This may also be the case for Medicaid enrollees, who are known to have high primary care no show rates.¹⁶

Our study also shows high rates of ED ambulance arrivals, despite low rates of hospital admissions, indicating that Medicaid enrollees may use ambulances for non-emergent transport. Transportation is a significant social barrier for patients with Medicaid insurance. An option called non-emergent medical transportation is a fully funded cab service available for use by Medicaid beneficiaries, but an individual must call 48 hours ahead of time to schedule one.²¹ When unable to obtain transportation to see a primary care provider for an urgent appointment, patients with Medicaid may be more likely to use an ambulance and go to the ED for care.^{22,23} Policy makers should consider the use of Medicaid cab vouchers for urgent primary care (i.e., same day or next day appointments) in reducing overall ambulance use and ED visits.

This study has several implications for state officials, primary care centers, and hospital systems. We have described in detail adult non-elderly ED visits covered by Medicaid insurance, and identified areas that can be further explored in order to design and implement programs aimed at reducing potentially avoidable ED utilization. We have highlighted the medical and social complexity of Medicaid frequent ED users at a national level and offered suggestions on how to approach care for this population beyond expanding primary care provider access. Multidisciplinary programs that are community driven and patient centered in nature will be most successful.¹⁹

LIMITATIONS

This study should be interpreted in the context of some limitations. The 2010 survey contains variables that previous versions do not, meaning we could not combine the results to achieve a greater number of observations. Third, we are aware that identification of ED visits by those who are homeless through retrospective chart review is limited and we believe our numbers are an underestimate of the true proportion. Finally, we used primary ICD-9 codes to evaluate diagnosis and this approach likely omits the underlying mental health illness and how it contributes to the patient's physical illness. For example, a patient who has depression and diabetes, may present with hyperglycemia because the depression keeps the patient from taking daily medications.

CONCLUSION

In this national retrospective cross-sectional study, we found that Medicaid insurance is the second largest payer for all adult non-elderly ED visits in the United States. Medicaid enrollees have special needs such as, housing and transportation needs. Our study shows that Medicaid enrollee subpopulations, such as women and high utilizers with chronic medical conditions may benefit from care coordination programs that are able to address medical and social problems.

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ARTICLE SUMMARY**1. Why is this topic important?**

Adult non-elderly Medicaid enrollees account for the largest proportion of the increasing number of annual emergency department (ED) visits. However, no studies to date have evaluated this population at the national level.

2. What does this study attempt to show?

This study characterizes the Medicaid population that utilizes the emergency department.

3. What are the key findings?

In this national retrospective cross-sectional study, we found that Medicaid insurance is the second largest payer for all adult non-elderly ED visits in the United States. The vast majority of Medicaid enrollees who used the ED were females, young, with a large proportion of visits occurring during business hours. Furthermore, almost one third of all visits are from frequent ED users.

4. How is patient care impacted?

Several care coordination programs are being developed and implemented to help Medicaid enrollees avoid using the ED. Our study results inform these programs about the patient's characteristics and the types of services that may be of benefit.

TABLE 1

Socio-Demographic Characteristics of Non-Elderly Adults with Medicaid and Private Insurance

Characteristics	Medicaid Insurance (N=5659) Weighted %	Medicaid Insurance Weighted 95% CI
Age		
15–24 years old	26.20	24.56–27.83
25–44 years old	46.33	44.53–48.13
45–64 years old	27.47	25.65–29.28
Sex		
Female	67.95	66.00–69.89
Race/Ethnicity		
White, Non-Hispanic	53.06	47.47–58.65
Black, Non-Hispanic	29.43	23.96–34.90
Hispanic	14.79	11.74–17.83
Other, Non-Hispanic	2.72	1.66–3.78
Economic Status		
% Poverty in Patient's Zip Code		
< 5.0%	7.16	5.45–8.85
5–9.99%	21.00	17.31–24.69
10–19.99%	37.17	33.15–41.18
20.00%	31.24	26.45–36.02
Unknown	3.44	2.20–4.67
Homeless	0.73	0.43–1.04

**
percentages may not add up to 100 due to rounding.

Table 2

ED Utilization Patterns Non-Elderly Adults with Medicaid and Private Insurance and ED use

	Medicaid Insurance (N=5659) Weighted %	Medicaid Insurance Weighted 95% CI
Seen in the ED in the last 72 hours?		
Yes	14.66	9.13–20.19
No	5.54	4.63–6.45
Unknown	79.80	74.21–85.38
Discharged from any hospital within the last 7 days?		
Yes	3.88	2.87–4.89
No	58.06	50.82–65.29
Unknown	38.06	31.03–45.09
Frequency of ED use in the past 12 months		
0–3 ED visits	50.06	43.71–56.41
4 ED visits	32.32	24.29–40.35
Unknown	17.62	13.68–21.55
Episode of Care		
Initial visit for this problem	85.48	83.31–87.65
Follow up visit for this problem	9.67	8.08–11.26
Unknown	4.84	3.42–6.27
EMS arrival		
Yes	16.99	14.66–19.34
No	79.69	76.96–82.43
Unknown	3.31	1.02–5.59
Hour and Day of Arrival		
Business hours	45.44	43.45–47.43
After hours and weekends	54.56	52.67–56.55

* EMS (Emergency Medical Services).

** percentages may not add up to 100 due to rounding.

Table 3

Clinical Characteristics of Non-Elderly Adults with Medicaid and Private Insurance and ED use

	Medicaid Insurance (N=5659) Weighted %	Medicaid Insurance Weighted 95% CI
Triage Acuity Level		
Emergent	10.80	8.35–13.24
Urgent	44.66	41.65–47.67
Non-urgent	39.66	36.08–43.24
None or missing	4.88	1.82–7.94
Chronic Medical Conditions		
Cerebrovascular disease	1.75	1.07–2.43
Congestive heart failure	2.10	1.61–2.59
Condition requiring dialysis	0.71	0.45–0.97
Diabetes	9.52	8.24–10.80
Consultants Used in the ED		
Consulting physician	6.56	4.99–8.12
Mental health care provider	2.36	1.52–3.19
Disposition		
Mental Health ED Diagnosis		
Yes	4.59	1.62–2.53
Admission status		
Inpatient status	11.42	9.75–13.09

percentages may not add up to 100 due to rounding.