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RESEARCH ARTICLE

# Use of Veterans Affairs and Medicaid Services for Dually Enrolled Veterans

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**Objectives.** To examine how dual coverage for nonelderly, low-income veterans by Veterans Affairs (VA) and Medicaid affects their demand for care.

**Data Sources.** Veterans Affairs utilization data and Medicaid Analytic Extract Files.

**Study Design.** A retrospective, longitudinal study of VA users prior to and following enrollment in Medicaid 2006–2010.

**Data Collection/Extraction Methods.** Veterans Affairs reliance, or proportion of care provided by VA, was estimated with beta-binomial models, adjusting for patient and state Medicaid program factors.

**Principal Findings.** In a cohort of 19,890 nonelderly veterans, VA utilization levels were similar before and after enrolling in Medicaid. VA outpatient reliance was 0.65, and VA inpatient reliance was 0.53 after Medicaid enrollment. Factors significantly associated with greater VA reliance included sociodemographic factors, having a service-connected disability, comorbidity, and higher state Medicaid reimbursement. Factors significantly associated with less VA reliance included months enrolled in Medicaid, managed care enrollment, Medicaid eligibility type, longer drive time to VA care, greater Medicaid eligibility generosity, and better Medicaid quality.

**Conclusion.** Veterans Affairs utilization following new Medicaid enrollment remained relatively unchanged, and the VA continued to provide the large majority of care for dually enrolled veterans. There was variation among patients as Medicaid eligibility and other program factors influenced their use of Medicaid services.

**Key Words.** Veterans, Medicaid, utilization

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The Veterans Affairs (VA) health care system has historically cared for many low-income veterans without employer-based coverage. While most elderly veterans are dually covered by Medicare and VA, many nonelderly veterans lacked other sources of health insurance coverage in the past due to factors such as unemployment and homelessness (Himmelstein et al. 2007), so they had fewer alternatives to VA care. Recent insurance expansions under the Affordable Care Act began in 2014 to provide new public and private options

for coverage to many previously ineligible adults. Almost half a million veterans without insurance could be eligible for Medicaid coverage if all states expanded Medicaid under the ACA (Haley and Kenney 2013). VA patients qualifying for VA health care benefits because of incomes below a means test may now be eligible for Medicaid and may switch providers or reduce their use of VA care. As few dual VA-Medicaid enrollees were nonelderly in the past (Hendricks et al. 2010), little is known about how dual coverage for nonelderly, low-income veterans by VA and Medicaid affects their demand for VA care.

A few studies have attempted to quantify the impact of Medicaid expansions on use of VA care. One study examined prior expansions of Medicaid to higher income populations and estimated a decline of 9 percent in VA enrollment, 6 percent in hospital days, and 12 percent in outpatient visits for states that implement Medicaid expansions (Frakt, Hanchate, and Pizer 2015). Health reform in Massachusetts was associated with similar declines in VA enrollment and utilization (Wong et al. 2014). These studies included veterans choosing not to enroll in VA health care since other insurance options may preclude veterans from obtaining VA health care benefits in the first place. Veterans already using VA health care may be less likely to switch providers or decrease VA utilization compared to those not previously using VA care. In addition, low reimbursement rates limit providers' willingness to accept Medicaid patients and beneficiaries have difficulties maintaining enrollment in Medicaid (Zuckerman et al. 2004; Sommers 2009). Therefore, acquiring Medicaid coverage may not lead to significant changes in the use of VA services. Also, veterans who have service-connected disabilities or who are

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racial/ethnic minorities may be less likely to switch care to Medicaid providers similar to patterns seen in VA-Medicare dual enrollees (Hynes et al. 2007; Carey et al. 2008; Zhu et al. 2009; Liu et al. 2011).

To address these gaps in the literature, we conducted a retrospective study to examine longitudinal changes in VA utilization and reliance among nonelderly veterans who acquired Medicaid coverage prior to the ACA between 2006 and 2010. We hypothesized that veterans who had a service-connected disability and paid lower copayments for VA care, lived closer to a VA facility, were male, had mental health conditions, and lived in states with less Medicaid generosity (in terms of benefits and reimbursements to physicians) and lower Medicaid quality would be less likely to switch to Medicaid providers and have greater reliance on VA care.

## METHODS

### *Study Design*

We conducted a retrospective, longitudinal study of a cohort of nonelderly VA users without Medicare coverage who newly enrolled in Medicaid for at least 1 month from calendar year (CY) 2006 to 2010. We limited our cohort to 31 states where VA enrollees were either (1) enrolled in fee-for-service (FFS) plans or (2) enrolled in capitated Medicaid managed care plans in states found to have reliable utilization data (Byrd and Dodd 2012): AL, AK, AR, CA, DE, FL, GA, IA, ID, IL, IN, KS, KY, LA, MI, MN, MT, NC, ND, NE, NH, NJ, NM, NY, OR, RI, SD, TX, UT, VA, and WY. We identified a 12-month index period when each patient was enrolled in VA but not in Medicaid and had any use of VA services. Patients without VA utilization were excluded. Excluded patients without any VA utilization in the year prior were slightly younger, had lower priority for VA care, and were less likely to be enrolled in Medicaid through Section 1115 Demonstration Waivers (all  $p < .001$ ).

In comparison with all nonelderly adult Medicaid recipients nationally, our study cohort had a smaller proportion of females (25 vs. 64 percent), Hispanics (10 vs. 20 percent), and adults <45 years of age (50 vs. 65 percent; Medicaid and CHIP Payment and Access Commission [MACPAC] 2014). In comparison with other nonelderly patients who used VA care during the study period, our cohort had higher proportions of female, younger, nonwhite, and disabled patients (Bernard and Selden 2016).

We measured patients' VA utilization in the 12 months prior to enrolling in Medicaid and both VA and Medicaid utilization 12 months after their

Medicaid enrollment began. We estimated their VA reliance (proportion of total care provided by the VA while dually enrolled) for inpatient and outpatient care separately. This study was approved by the Stanford University IRB.

### *Data Sources*

We obtained Medicaid Analytic Extract (MAX) files linked to VA enrollees for CY2006–2010 from the VA Information Resource Center. We used the VA Assistant Deputy under Secretary for Health (ADUSH) Enrollment file to limit our cohort to veterans using VA care in the year prior to enrolling in Medicaid. We excluded children, adults eligible for Medicaid through disability, and adults enrolled in Medicare. We obtained VA utilization from VA Medical SAS files for fiscal years 2005–2011 since the fiscal year begins on October 1st of the prior calendar year and ends on September 30th of the indicated year. We obtained information on VA-sponsored care, provided by non-VA providers and paid for by VA, from Purchased Care files and included this as part of VA care.

### *Utilization Measures*

Outcome measures were the number of outpatient visits and inpatient stays covered by VA and Medicaid in each year. A Medicaid outpatient visit was counted as a unique combination of patient, service day, and servicing provider. We limited visits to those with a location of clinic, physician's office, hospital outpatient department, and emergency department (ED). We excluded outpatient visits for laboratory, diagnostic, pharmacy, and home care services. A VA outpatient visit was counted as a unique combination of patient, service day, and clinic location with similar exclusions as the MAX data. We also counted ED visits separately.

A Medicaid inpatient stay was counted as a unique combination of patient, admission day, and servicing provider while a VA stay was counted as a unique combination of patient, discharge day, and VA facility. We excluded Medicaid and VA stays that were provided in long-term care facilities.

We calculated VA reliance in the first 12 months after Medicaid enrollment as:  $VA\ reliance = VA\ utilization / (VA\ utilization + Medicaid\ utilization)$  when veterans were dually enrolled. We calculated separate measures of VA reliance for all outpatient care, ED care, and inpatient care.

*Other Measures*

Patients' demographic and health characteristics have been found to influence veterans' choice of VA and non-VA care (Petersen et al. 2010; Liu et al. 2011), so we included several measures in addition to factors affecting access to either system. We measured number of months enrolled in Medicaid following the index date since longer enrollment would increase access to Medicaid providers. Measures of patient demographics, including age, sex, race/ethnicity, state of Medicaid enrollment, capitated managed care plan, and Medicaid eligibility category, were obtained from MAX data. Medicaid eligibility was hypothesized to affect VA reliance since Medicaid beneficiaries met certain criteria to enroll in Medicaid that can affect demand for care. For example, medically needy recipients qualify based on having significant medical expenses, so they may have higher demand for services; many states also used Section 1115 Demonstration Waivers to expand eligibility to higher income individuals in managed care plans, so they may have lower demands for care. Marital status and information on other insurance coverage was obtained from VA utilization data.

Priority group for VA care was categorized as (1) having a service-connected disability rating of  $\geq 30$  percent, (2) having a service-connected disability of 10–20 percent or aid and attendance or housebound status, (3) receiving VA pension benefits or having low incomes qualified for Medicaid, (4)  $\leq 5$  years postdischarge from service, and (5) having incomes below VA means test limits. Patient comorbidity was measured using the Charlson index as well as common conditions for diabetes, hypertension, COPD, heart disease, Hepatitis C, pregnancy, and mental health (depression, PTSD, serious mental illness, alcohol and drug use disorders) from diagnoses recorded in VA utilization records in the year prior to enrolling in Medicaid. We measured driving time to the nearest VA primary care and secondary care providers from the VA Planning and Support Services Group Enrollee file.

Medicaid program characteristics have been documented to affect Medicaid participation by eligible adults (Sommers et al. 2012), and more generous and accessible programs were hypothesized to increase use of Medicaid services, so they were measured using state scores on their (1) Medicaid reimbursement generosity to ambulatory care providers, (2) quality of care measures, and (3) generosity of eligibility based on maximum income limits for adults from a comprehensive report comparing state Medicaid program benefits (Arellano and Wolfe 2007). We also used the ratio of Medicaid to Medicare FFS payment rates for primary care (Zuckerman, Williams, and Stockley

2009) as a secondary measure of Medicaid reimbursement generosity and a separate measure of state Medicaid eligibility generosity (Kaiser Family Foundation 2013), but both were highly collinear with other Medicaid factors and were not used in the final analysis.

### *Analysis*

We estimated the mean number of outpatient visits and inpatient stays per patient provided or sponsored by VA and Medicaid in each 12-month period before and after Medicaid enrollment began. We looked separately at patients enrolled in Medicaid for a full 12-month period and patients who enrolled for fewer months. We examined results for ED reliance; however, our main results include ED care in all outpatient care since ED care is often used as a substitute for other ambulatory care and not limited to emergency care. We also compared VA reliance for the period when patients were dually enrolled in VA and Medicaid by all patient and state Medicaid program characteristics in bivariate analyses using one-way ANOVA. All ANOVAs were conducted in SAS9.2 (SAS Institute, Cary, NC, USA).

We conducted multivariable regressions of VA reliance with beta-binomial models, used in previous research to model veterans' reliance on VA care among VA-Medicare dual enrollees (Liu et al. 2011, 2013). These models account for a bimodal distribution of reliance since many patients are either fully reliant on VA or Medicaid providers with relatively fewer patients using both systems. Regression models adjusted for all patient and state Medicaid program factors. We conducted separate models using fixed effects for state in sensitivity analyses. We also excluded the largest state (NY) in sensitivity analyses but did not find any major differences. We report incident rate ratios (IRRs) from beta-binomial models, which represent the difference in the proportion of total visits and stays that occurred in the VA (VA reliance) associated with each unit change for a continuous variable or category for a dummy variable. All regression analyses were conducted in STATA 13.0 (StataCorp, College Station, TX, USA).

## RESULTS

### *Cohort Characteristics*

We identified 19,890 nonelderly veterans who acquired Medicaid for at least 1 month between 2006 and 2010 and used VA care in the year prior (Table 1).

Table 1: Patient and State Characteristics

<i>Patient Characteristics</i>	<i>Mean (SD)/Percent of Cohort, N = 19,890</i>
<i>Age</i>	43 (11)
<i>Gender</i>	
Female	25
Male	75
<i>Race</i>	
White	51
Black	36
Hispanic	10
Other	2
<i>Marital Status</i>	
Married	36
Separated/divorced/widowed	29
Single	34
<i>Rurality</i>	
Urban	68
Rural	31
Highly rural	1
<i>Driving Time to Nearest VA Primary Care Site (in minutes)</i>	18 (19)
<i>VA Priority Group</i>	
1: SC Disabled 50%+	7
2: SC Disabled 30–40%	9
3: SC Disabled 10–20%, PO W, Purple Heart	18
4–6: Aid & Attendance/Housebound/VA Pension Benefits/Eligible for Medicaid	56
7–8: Income > NMT or GMT	11
<i>Charlson Index</i>	
0	72
1	18
2	10
<i>Medicaid Eligibility</i>	
Section 1115 Demo Expansion	47
Eligible under section 1931	19
Medically needy	13
Other	9
Poverty	7
Unemployed	5
Months enrolled in Medicaid	9 (4)
<i>Insurance Coverage</i>	
None reported	88
Private or other public (not Medicaid)	9
Other	2
<i>Medicaid Plan</i>	
FFS	87
MC	13

*Continued*



Table 1. *Continued*

<i>Patient Characteristics</i>	<i>Mean (SD)/Percent of Cohort, N = 19,890</i>
<i>State</i>	
NY	33
FL	13
IL	8
MI	7
NC	5
TX	5
All other states	28
<i>State Medicaid Program Characteristics</i>	<i>Mean (SD)/N = 31</i>
Eligibility Score (91 to 297)	177 (53)
Quality of Care Score (-4 to 109)	62 (31)
Reimbursement Score (12 to 250)	114 (46)

The mean age of the cohort was 43 years (SD = 11), and patients were predominantly male (75 percent). A little more than half (51 percent) of patients were white, 36 percent were black, and 10 percent were Hispanic. A minority of the cohort was married. Two-thirds of the patients lived in urban areas, and the mean drive time to the nearest VA primary care site was 18 minutes. The largest portion of patients qualified for VA care in VA priority group 5 because they were below the means test with low incomes or qualified for VA pension benefits. Most of the study cohort had a Charlson index of 0, indicating that they had no eligible comorbid conditions.

The largest portion of patients (47 percent) enrolled in Medicaid through Section 1115 Demonstration Waivers, and the mean number of months enrolled in Medicaid enrollment was 9 (SD = 4). Few patients (11 percent) had reported insurance coverage outside of the VA in the year prior to enrolling in Medicaid, and only 13 percent were enrolled in Medicaid capitated managed care plans. Most of the study patients (72 percent) were enrolled in Medicaid in six states: NY, FL, IL, MI, NC, and TX.

### *VA and Medicaid Utilization*

Patients who enrolled in Medicaid for a full 12 months had a mean number of 16 outpatient visits provided by VA in the year prior (Figure 1). After enrolling in Medicaid, they increased their number of VA outpatient visits to 17.9 and also had a mean of 7.8 outpatient visits to a Medicaid provider. For ED

visits alone, patients' use of VA ED care decreased slightly after gaining Medicaid coverage (0.55 and 0.51 visits, respectively; Figure S1 in Appendix SA2). Patients who enrolled in Medicaid for <12 months had similar outpatient utilization as those enrolled for 12 months. For inpatient stays, patients enrolled in Medicaid for 12 months had a small decrease in mean number of VA inpatient stays from 0.33 to 0.29 after Medicaid enrollment and 0.21 mean inpatient stays to a Medicaid provider (Figure 2). Patients enrolled in Medicaid for <12 months had fewer inpatient stays from Medicaid providers than those enrolled for 12 months.

Overall, the proportion of patients receiving care in one or both systems varied by the type of service (Tables S1–S3 in Appendix SA2). When dually enrolled in VA and Medicaid, 35 percent received all outpatient care, 14 percent received ED care, and 11 percent received inpatient care only in the VA. Those using both systems accounted for 41 percent for outpatient care, 4 percent for ED care, and 3 percent for inpatient care among all dually enrolled patients.

Figure 1: Outpatient Care the Year before and after Enrolling in Medicaid by Months Enrolled in Medicaid [Color figure can be viewed at wileyonline library.com]

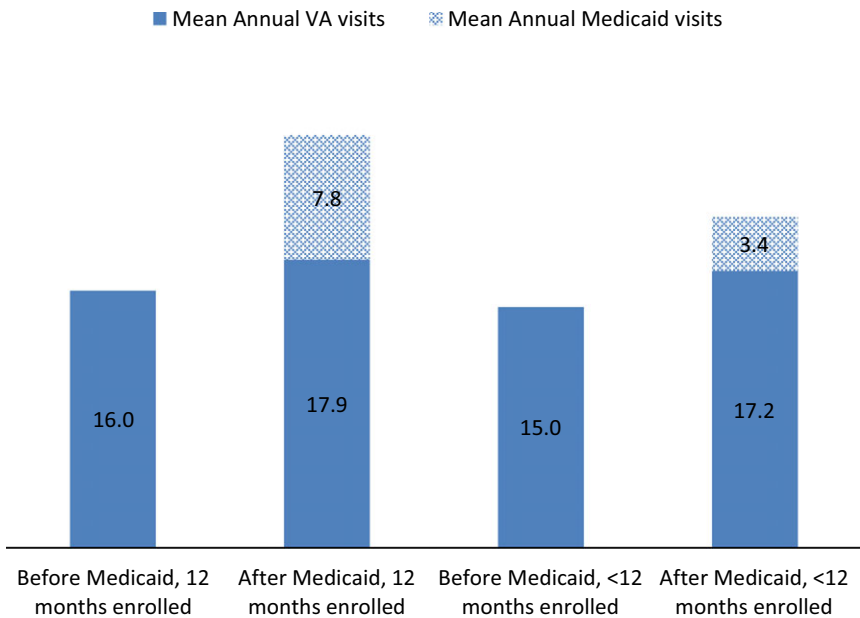
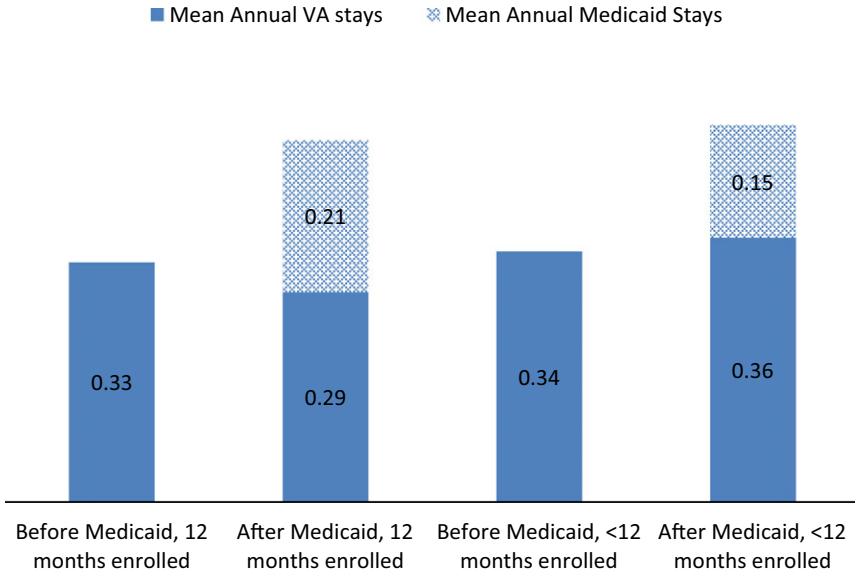


Figure 2: Inpatient Care the Year before and after Enrolling in Medicaid by Months Enrolled in Medicaid [Color figure can be viewed at wileyonlinelibrary.com]



*Reliance on VA Care*

Veterans Affairs reliance for both inpatient and outpatient care had a bimodal distribution (Figures S2 and S3 in Appendix SA2). Although more patients were fully reliant on VA outpatient care, there was a sizable minority that was fully reliant on Medicaid outpatient care, and many patients used both systems for outpatient care. The proportion of patients fully reliant on VA or Medicaid for inpatient care was roughly equivalent, and few patients used both systems for inpatient care. ED reliance followed a similar pattern as inpatient care (Figure S4 in Appendix SA2).

In bivariate analyses, mean VA reliance for both inpatient and outpatient care was highest for patients who were older, male, black, in a higher VA priority group, not currently married, lived in urban areas, were enrolled through Section 1115 Medicaid waiver expansions, had a shorter drive time to a VA site, were enrolled in Medicaid for fewer months, and were sicker (Table 2; all  $p < .001$ ). Reliance was also higher among patients who lived in states with higher Medicaid eligibility and lower Medicaid reimbursement (all  $p < .001$ ).

Table 2: Unadjusted Mean VA Reliance by Patient and State Medicaid Program Characteristics

<i>Baseline Patient Characteristics</i>	<i>Mean VA Reliance (SD)</i>		<i>ANOVA Stats</i>	
	<i>Outpatient Visits, N = 17,772</i>	<i>Inpatient Stays, N = 4,595</i>	<i>Outpatient p-Value</i>	<i>Inpatient p-Value</i>
<i>Age</i>				
18–34	0.56 (0.41)	0.37 (0.47)	<.0001	<.0001
35–49	0.65 (0.39)	0.59 (0.46)		
50–64	0.72 (0.36)	0.61 (0.46)		
<i>Gender</i>				
Female	0.57 (0.40)	0.38 (0.47)	<.0001	<.0001
Male	0.68 (0.38)	0.61 (0.46)		
<i>Race</i>				
Black	0.68 (0.38)	0.54 (0.47)	<.0001	.0021
Hispanic	0.63 (0.40)	0.46 (0.48)		
White	0.63 (0.39)	0.53 (0.48)		
Other	0.60 (0.41)	0.47 (0.48)		
<i>Marital Status</i>				
Married	0.63 (0.39)	0.49 (0.48)	<.0001	.0002
Separated/divorced/ widowed	0.67 (0.38)	0.56 (0.47)		
Single	0.65 (0.39)	0.53 (0.47)		
<i>Driving Time to Nearest VA Primary Care Site (in minutes)</i>				
0–10 min	0.68 (0.37)	0.56 (0.47)	<.0001	<.0001
10–20 min	0.66 (0.39)	0.52 (0.48)		
≥20 min	0.59 (0.40)	0.47 (0.48)		
<i>VA Priority Group</i>				
1: SC Disabled 50%+	0.72 (0.35)	0.56 (0.47)	<.0001	<.0001
2: SC Disabled 30–40%	0.65 (0.38)	0.42 (0.48)		
3: SC Disabled 10–20%, PO W, Purple Heart	0.63 (0.39)	0.47 (0.48)		
4–6: Aid & Attendance/ Housebound/ VA Pension Benefits/ Eligible for Medicaid	0.65 (0.39)	0.56 (0.47)		
7–8: Income > NMT or GMT	0.63 (0.39)	0.53 (0.47)		
<i>Charlson Index</i>				
0	0.62 (0.40)	0.48 (0.48)	<.0001	<.0001
1	0.70 (0.36)	0.57 (0.47)		
2	0.78 (0.31)	0.67 (0.43)		
<i>Medicaid Eligibility</i>				
Eligible under section 1931	0.60 (0.40)	0.54 (0.48)	<.0001	<.0001
Unemployed	0.71 (0.38)	0.66 (0.44)		

Continued

Table 2. *Continued*

<i>Baseline Patient Characteristics</i>	<i>Mean VA Reliance (SD)</i>		<i>ANOVA Stats</i>	
	<i>Outpatient Visits, N = 17,772</i>	<i>Inpatient Stays, N = 4,595</i>	<i>Outpatient p-Value</i>	<i>Inpatient p-Value</i>
Medically needy	0.62 (0.39)	0.41 (0.47)		
Poverty	0.47 (0.40)	0.30 (0.44)		
Section 1115 Demo	0.71 (0.36)	0.64 (0.45)		
Expansion				
Other	0.60 (0.39)	0.59 (0.48)		
<i>Months Enrolled in Medicaid</i>				
1–6 months	0.73 (0.38)	0.59 (0.47)	<.0001	<.0001
7–11 months	0.63 (0.39)	0.48 (0.48)		
12 months	0.63 (0.38)	0.53 (0.47)		
<i>Medicaid Plan</i>				
FFS	0.66 (0.39)	0.52 (0.48)	<.0001	.0027
MC	0.61 (0.39)	0.60 (0.47)		
<i>State Characteristics</i>				
<i>Medicaid Program Score</i>				
<i>Eligibility Score (91 to 297)</i>				
91 to 168	0.60 (0.40)	0.45 (0.48)	<.0001	<.0001
169 to 259	0.68 (0.39)	0.54 (0.48)		
260 to 297	0.67 (0.37)	0.57 (0.46)		
<i>Quality of Care Score (–4 to 109)</i>				
–4 to 64	0.64 (0.40)	0.54 (0.48)	<.0001	.0081
65 to 81	0.62 (0.40)	0.48 (0.48)		
82 to 109	0.67 (0.38)	0.53 (0.47)		
<i>Reimbursement Score (12 to 250)</i>				
12 to 45	0.66 (0.38)	0.57 (0.46)	<.0001	<.0001
46 to 80	0.68 (0.39)	0.49 (0.48)		
81 to 250	0.60 (0.40)	0.51 (0.49)		

In adjusted models accounting for bimodal distributions, several patient and state factors significantly predicted reliance on VA care (Table 3). For outpatient care, each additional month enrolled in Medicaid (IRR = 0.948) was significantly associated with a 5 percent lower proportion of visits occurring in VA. Older age (IRR = 1.014), higher VA priority for care due to service-connected disability (IRR = 1.789), and black race (IRR = 1.144) were associated with greater VA outpatient reliance (all  $p < .01$ ). Patients in managed care plans (IRR = 0.673) had lower VA outpatient reliance while sicker patients with higher Charlson scores (IRR = 1.146) had higher VA reliance (all  $p < .01$ ). Patients in all Medicaid eligibility categories, except for unemployed adults, had significantly lower outpatient reliance compared to those who enrolled through state 1115

Table 3: Patient and State Medicaid Program Predictors of VA Outpatient and Inpatient Care Reliance

	<i>Outpatient Visits</i> <i>N = 17,772</i>	<i>Inpatient Stays</i> <i>N = 4,595</i>
	<i>Incidence Rate Ratio (Standard Error)</i>	
<i>Patient Characteristics</i>		
Months enrolled in Medicaid	0.948** (0.00375)	0.968** (0.00989)
Age in years	1.014** (0.00142)	1.007 (0.00397)
Male	1.054 (0.0366)	1.788** (0.187)
VA priority group 1	1.789** (0.105)	1.486** (0.214)
VA priority group 2	1.429** (0.0765)	1.001 (0.145)
VA priority group 3	1.285** (0.0585)	1.079 (0.134)
VA priority group 4–6	1.046 (0.0404)	1.092 (0.103)
VA priority group 7–8	Ref	Ref
Separated/divorced/widowed	0.990 (0.0300)	1.103 (0.0907)
Single, never married	1.064 (0.0322)	1.146 (0.0914)
Married	Ref	Ref
Black	1.144** (0.0310)	1.025 (0.0702)
Hispanic	0.984 (0.0394)	0.855 (0.0886)
Other	0.931 (0.0712)	1.006 (0.210)
White	Ref	Ref
Managed care plan	0.673** (0.0254)	0.808 (0.0944)
Fee-for-service	Ref	Ref
Charlson index (0–2)	1.146** (0.0266)	1.131* (0.0597)
Section 1931	0.643** (0.0248)	0.601** (0.0690)
Unemployed adult	0.960 (0.0666)	1.244 (0.287)
Medically needy	0.618** (0.0287)	0.331** (0.0405)
Poverty/pregnant women	0.374** (0.0221)	0.179** (0.0257)
Other Medicaid eligibility	0.615** (0.0313)	0.578** (0.0811)
1115 Demonstration waiver	Ref	Ref
Mental health condition	1.684** (0.0416)	1.759** (0.110)
Heart disease	1.097 (0.0789)	1.068 (0.158)
Diabetes	1.063 (0.0508)	0.934 (0.100)
Hepatitis C	1.030 (0.0585)	1.010 (0.117)
Hypertension	1.260** (0.0413)	1.179* (0.0938)
Pregnancy	2.678** (0.180)	5.424** (0.645)
COPD	1.117 (0.0865)	1.005 (0.153)
Drive time to primary care/tertiary care	0.996** (0.000689)	0.996** (0.000741)
<i>State Medicaid Program Scores</i>		
Reimbursement	1.010 (0.0247)	1.182* (0.0774)
Quality	0.986 (0.0188)	0.756** (0.0375)
Eligibility	0.863** (0.0231)	0.895 (0.0638)

*Notes.* Beta-binomial regression models were conducted including study patients who had at least one outpatient visit for the model predicting VA reliance of outpatient visits and at least one inpatient stay for the model predicting VA reliance of inpatient stays and adjusted for all factors in the table. Model for VA outpatient reliance included distance to VA primary care as a covariate, while model for VA inpatient reliance included distance to VA tertiary care as a covariate.

\*\* $p < .01$ , \* $p < .05$ .

Demonstration Waivers (all  $p < .01$ ). Patients who had mental health conditions (IRR = 1.684) and hypertension (IRR = 1.260) and were pregnant (IRR = 2.678) in the year prior to enrolling in Medicaid had significantly higher VA outpatient reliance than patients without these conditions (all  $p < .01$ ). Longer drive time (IRR = 0.996) and living in states with generous Medicaid eligibility (IRR = 0.863) were associated with significantly lower VA outpatient reliance (all  $p < .01$ ).

Some of the same patient and state factors related to VA outpatient reliance also significantly predicted VA inpatient reliance. Longer enrollment in Medicaid (IRR = 0.968) was associated with less VA inpatient reliance, while males (IRR = 1.788), those with higher Charlson scores (IRR = 1.131), and all Medicaid enrollment categories except unemployed adult compared to 1115 Demonstration Waivers had significantly higher VA inpatient reliance (all  $p < .01$ ). The only conditions associated with higher VA inpatient reliance were mental health (IRR = 1.759), hypertension (IRR = 1.179), and pregnancy (IRR = 5.424) in the prior year (all  $p < .01$ ). Longer drive time to tertiary care (IRR = 0.996) and living in states with better Medicaid quality (IRR = 0.756) were associated with less VA inpatient reliance, while living in states with more generous Medicaid reimbursement (IRR = 1.182) was associated with more VA inpatient reliance (all  $p < .01$ ).

## DISCUSSION

Our study is the first to examine utilization of nonelderly veterans who have dual coverage from VA and Medicaid. We found that in the year after enrolling in Medicaid, the overall mean numbers of VA-provided outpatient visits, including ED care, and inpatient stays remained relatively unchanged. While Medicaid utilization rates were lower than VA utilization, the net results of veterans gaining Medicaid eligibility was an increase in total utilization. Some patients remained fully reliant on VA care, some used providers from both systems, and others used only Medicaid services.

Our results contrast with past research on VA-Medicare dual enrollees since they obtain substantially more outpatient care from Medicare providers than VA providers, especially for specialty care (Liu et al. 2010, 2011). We did not find more use of Medicaid outpatient care than VA care; challenges with maintaining Medicaid eligibility, difficulty with access to Medicaid providers, or patient factors such as better health status and less need for specialty care among nonelderly veterans may have led to less switching to Medicaid

providers. Outside the VA, dual coverage in Medicare and Medicaid is common, and these dual eligibles have high rates of hospitalizations and spending (Jiang et al. 2010) with little care provided in integrated plans (Gold, Jacobson, and Garfield 2012); research shows that states have incentives to shift costs onto Medicare (Grabowski 2007; Bubolz, Emerson, and Skinner 2012). Unlike Medicare-Medicaid dual eligibles, VA and Medicaid cover similar services, and there is little cross-system integration.

Our results demonstrating increased ED visits among veterans after gaining Medicaid are consistent with work on other Medicaid enrollees (Finkelstein et al. 2016). Access to both VA and Medicaid health coverage did not appear to reduce avoidable emergency care. Our study population had much higher total ED use than other Medicaid populations (Mortensen and Song 2008), suggesting it was a much sicker population than the broader adult Medicaid population.

Several patient and state Medicaid program factors explained differences in VA reliance. Shorter enrollment periods in Medicaid were associated with more VA reliance. It is unknown whether experiences with both systems or preferences for one system led patients to drop their coverage in favor of VA care, or whether certain veterans did not intend to enroll in Medicaid for a full year. However, disenrollment in Medicaid is common among beneficiaries (Ramsey et al. 2008; Sommers 2009) and often due to difficulties maintaining eligibility or administrative hassles (Sommers 2005). Older age of study patients was also significantly associated with more VA reliance. Older veterans' experience and familiarity with VA care or worse health status may influence them to choose VA providers more than younger adults.

Veterans with higher priority for VA care also had greater VA reliance, which is consistent with research on other dually enrolled veterans (Petersen et al. 2010; West, Charlton, and Vaughan-Sarrazin 2015). Veterans with service-connected disabilities often need specialized care to treat disabilities and face no or low copayments for VA services, so demand for specific VA services along with better affordability likely led them to continue using VA services. Veterans with lower priority for VA care have copayments for VA care comparable to copayments for Medicaid services, so nonfinancial factors may have influenced their use of VA care. Sicker patients, as measured by the Charlson index, and diagnoses for mental health and hypertension in the baseline year had greater VA outpatient reliance; having a mental health condition has been previously associated with higher VA reliance in VA-Medicare enrollees (Petersen et al. 2010), as mental health care may be less accessible outside of the VA. Women who had a pregnancy indicated in the baseline year also had



much higher VA reliance than other patients; these women likely obtained some prenatal care through VA or VA-sponsored care and may be less likely to switch to Medicaid providers.

Type of Medicaid enrollment and program factors also influenced use of VA and Medicaid services. We found that Medicaid managed care patients had lower VA reliance than patients in FFS plans. It is unknown whether these patients had less need for outside services compared to FFS patients. Patients enrolled in Medicaid through state 1115 Demonstration Waivers had higher VA reliance than other eligibility groups. These veterans may be similar to those veterans who enroll under the ACA's Medicaid expansions since they have higher incomes than under traditional income limits for Medicaid. Patients living in states with more generous Medicaid eligibility had less VA outpatient reliance as better ability to maintain eligibility may have contributed to less use of VA care compared to patients living in less generous states. Patients living in states with higher Medicaid quality scores had lower VA inpatient reliance but not outpatient reliance. Patients may have preferred to get care from Medicaid providers when they perceived better quality of care, although it is not clear why there was not a similar relationship for outpatient care. Patients living in states with higher Medicaid reimbursement had higher VA inpatient reliance, which was the opposite of what was hypothesized since higher Medicaid payments to physicians could increase access to Medicaid providers. However, other unmeasured factors may be more important in predicting where a patient was hospitalized such as hospital admission criteria or hospital bed occupancy rates. More work is needed to understand whether provider supply or other state factors may have been related to reimbursement rates and access to care.

Our results also documented higher VA reliance for outpatient care than for inpatient care and ED care alone. Since there are relatively fewer VA inpatient providers than outpatient providers, patients often have to travel further for VA inpatient care. VA EDs may be much further from patients' residences than non-VA EDs, which could explain the lower reliance, although ED use did not decrease much after patients gained Medicaid coverage, suggesting some patients prefer VA ED care. Certain access problems to Medicaid providers have been previously documented, such as few providers being willing to accept low Medicaid reimbursement rates (Berman et al. 2002; Shen and Zuckerman 2005); therefore, access issues related to Medicaid providers may partly explain why so many dually enrolled patients used only VA outpatient care when enrolled in Medicaid. It is also possible that these patients had a preference for using VA for ambulatory care, including specialized services to

treat service-connected disabilities such as posttraumatic stress disorder (PTSD).

Our findings have several implications for policy. Since we found that reliance on VA care was high while veterans were dually enrolled in VA and Medicaid, there may be limited impacts on VA demand and spending for VA users enrolling in Medicaid under the ACA. However, insurance expansions which provided veterans with alternative coverage likely increased dual system use and total use of health care. In our cohort, some veterans may have been using Medicaid to supplement VA services with complementary care, and some care may have been duplicative. Overall, dual coverage can improve access but at likely higher total costs. Use of multiple systems of care has been found to decrease quality and worsen health outcomes (Axon et al. 2016; Thorpe et al. 2016), and lower provider continuity more generally has been associated with higher costs (Hussey et al. 2014) and poorer health outcomes (Jia et al. 2007; Helmer et al. 2008), so the need for care coordination becomes paramount for dual health system users.

These results also have implications regarding the expansion of private providers reimbursed by VA to increase access to care for veterans through recent legislation (2014). Given our findings, options to provide veterans with access to providers outside the VA system may not lead to large shifts in use of non-VA providers, especially when provider networks are narrow as commonly found in state Medicaid programs and non-VA providers have little experience treating service-connected disabilities. Strict criteria to access non-VA care (similar to maintaining Medicaid eligibility to access Medicaid) may also limit its use. Ultimately, improving timely access to care by increasing the number of systems and providers involved in patients' care may exacerbate care fragmentation problems.

While there were a large number of patients in our cohort who continued using VA care once they gained Medicaid coverage, current law does not allow for VA medical centers to bill Medicaid (or Medicare) for services unlike private insurance plans despite the potential revenues to VA medical centers. Additionally, some nonelderly Medicaid beneficiaries are enrolled in capitated managed care plans, so these plans receive unintended subsidies when their patients obtain care outside of their managed care networks from VA providers (Trivedi et al. 2012). Since many veterans have likely enrolled in Medicaid under recent Medicaid expansions, consideration of new reimbursement rules may be needed to address these issues.

Overall, our findings on limited use of Medicaid are consistent with challenges in the U.S. healthcare system more generally. Patchwork financing of

health insurance commonly leads to patients churning between health insurance plans (Sommers et al. 2016) and fragmented care underscored by the lack of routine care coordination between providers (Schoen et al. 2005), the low rate of interoperability of electronic medical records (Furukawa et al. 2014), and limited information sharing between providers (Kripalani et al. 2007). The difficulties and patient costs of accessing providers from multiple systems may be high enough that patients ultimately prefer one system with its inherent constraints.

### *Limitations*

Information on patients' other insurance coverage prior to enrolling in Medicaid may have been incomplete, so we may have underestimated patients who were dually enrolled in private coverage and VA. Other (non-Medicaid) insurance coverage might explain the lack of change in patients' VA utilization after gaining Medicaid coverage. Another limitation is that we were not able to ascertain veterans' reasons for enrolling in Medicaid when they were already enrolled and using some VA care in the year prior. Some patients may have had a non-VA emergency department visit or emergency inpatient stay that was retroactively covered by enrolling patients in Medicaid; thus, those patients may not have intended to continue using Medicaid services. However, in sensitivity analyses we looked at patients who had an ED visit or inpatient stay in the first month of their Medicaid enrollment. They represented about 10 percent of the study cohort and actually had significantly lower mean VA reliance for inpatient and outpatient care after Medicaid enrollment compared to other patients. Need for acute services at the beginning of Medicaid coverage appeared to be related to less demand for VA care.

While we included measures that affect access to VA care such as distance to provider and category of eligibility that has varied cost-sharing requirements, we were not able to include other measures of VA system access such as waiting times for appointments that could also affect VA reliance. While waiting times for VA care have been documented, this evidence found that longer waiting times occurred mostly in health care professional shortage areas (Farmer, Hosek, and Adamson 2016); therefore, in these areas veterans would likely have lower access to all providers and not only VA providers. We used Medicaid reimbursement as a proxy for access, but we were unable to include waiting times and other access measures for Medicaid providers.

While we included some capitated managed care patients with usable encounter data in our study, not all capitated managed care patients were

included due to incomplete information. Plans that enroll patients in capitated plans do not have the same MAX data reporting requirements. Therefore, we could not measure the services provided to all Medicaid managed care patients, and our findings may not be generalizable to all Medicaid managed care patients.

Our findings are also not generalizable to veterans who enrolled in VA but did not use VA care or were eligible for VA care but did not enroll. Veterans enrolled in VA and using some VA care have been shown to have greater satisfaction with VA care than other veterans (Stroupe et al. 2005).

## CONCLUSION

In light of many states recently expanding Medicaid coverage to previously ineligible adults, our findings show that prior VA users continued using VA services at similar levels after gaining Medicaid coverage. Ability to maintain Medicaid eligibility, access to providers, and need for service-connected care will drive relative use of VA and Medicaid services, even as Medicaid programs remain in flux.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the supporting information tab for this article:

Appendix SA1: Author Matrix.

Appendix SA2:

Figure S1. Emergency Department Care the Year before and after Enrolling in Medicaid by Months Enrolled in Medicaid.

Figure S2. Reliance† on VA Inpatient Care in the Year after Enrolling in Medicaid.

Figure S3. Reliance† on VA Outpatient Care in the Year after Enrolling in Medicaid.

Figure S4. Reliance† on VA Emergency Department Care in the Year after Enrolling in Medicaid.

Table S1. Inpatient Care Utilization by System during Dual-Enrollment Period.

Table S2. Outpatient Care Utilization by System during Dual-Enrollment Period.

Table S3. Emergency Department Utilization by System during Dual-Enrollment Period.