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Anticipating VA/non-VA care coordination demand for Veterans at high risk for hospitalization

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Abstract

U.S. Veterans Affairs (VA) patients' multi-system use can create challenges for VA clinicians who are responsible for coordinating Veterans' use of non-VA care, including VA-purchased care ("Community Care") and Medicare.

To examine the relationship between drive distance and time—key eligibility criteria for Community Care—and VA reliance (proportion of care received in VA versus Medicare and Community Care) among Veterans at high risk for hospitalization. We used prepolicy data to anticipate the impact of the 2014 Choice Act and 2018 Maintaining Internal Systems and Strengthening Integrated Outside Networks Act (MISSION Act), which expanded access to Community Care.

Cross-sectional analysis using fractional logistic regressions to examine the relationship between a Veteran's reliance on VA for outpatient primary, mental health, and other specialty care and their drive distance/time to a VA facility.

Thirteen thousand seven hundred three Veterans over the age of 65 years enrolled in VA and fee-for-service Medicare in federal fiscal year 2014 who were in the top 10th percentile for hospitalization risk.

Key explanatory variables were patients' drive distance to VA > 40 miles (Choice Act criteria) and drive time to VA ≥ 30 minutes for primary and mental health care and ≥60 minutes for specialty care (MISSION Act criteria).

Veterans at high risk for hospitalization with drive distance eligibility had increased odds of an outpatient specialty care visit taking place in VA when compared to Veterans who did not meet Choice Act eligibility criteria (odds ratio = 1.10, 95% confidence interval 1.05–1.15). However, drive time eligibility (MISSION Act criteria) was associated with significantly lower odds of an outpatient specialty care visit taking place in VA (odds ratio = 0.69, 95% confidence interval 0.67, 0.71). Neither drive distance nor drive time were associated with reliance for outpatient primary care or mental health care.

VA patients who are at high risk for hospitalization may continue to rely on VA for outpatient primary care and mental health care despite access to outside services, but may increase use of outpatient specialty care in the community in the MISSION era, increasing demand for multi-system care coordination.

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Abbreviations: CAN = care assessment needs, CI = confidence interval, CY = calendar year, FY = fiscal year, HRSA = health resources & services administration, MISSION = maintaining internal systems and strengthening integrated outside networks, OR = odds ratio, VA = department of veterans affairs.

Keywords: access to care, coordinated care, health policy, veterans

1. Introduction

More than ever before, Veterans have choices for where they receive their health care. The 2014 Veterans Access, Choice and Accountability Act ("Choice Act") and 2018 Maintaining Internal Systems and Strengthening Integrated Outside Networks Act ("MISSION Act") expanded access to health care purchased by the Department of Veterans Affairs (VA) ("Community Care") for eligible enrollees. As Veterans seek an increasing amount of care from non-VA providers due to the Choice Act and MISSION Act, VA is coordinating a greater amount of care, especially for populations with difficulty accessing VA care.[1] VA is expected to coordinate care, even when the Veteran gets non-VA care. Drive distance and time to a VA facility have been used as eligibility criteria for Community Care, and distance has been shown to influence whether Veterans received care within or outside the VA.[2–12] Specifically, Veterans residing more than 40 miles from a VA health facility with a full-time primary care provider were eligible to receive Community Care under the Choice Act. Veterans who had been eligible by the drive distance criterion through the Choice Act continue to be eligible under the MISSION Act. The MISSION Act also expanded eligibility to Community Care for Veterans who have a drive time of 30 minutes or greater to primary or mental health care and 60 minutes or greater to other, non-mental health specialty care.

Our analysis sought to understand the relationship between drive distance/time and healthcare fragmentation for a Veteran population at high risk for hospitalization. The analysis was part of a larger study investigating patterns of care fragmentation (i.e., dispersion of a patient's care across clinicians and healthcare settings) for Veterans at high risk for hospitalization. This paper concentrates on one such measure, VA reliance, defined as the proportion of care delivered in VA health facilities versus outside VA. While distance to a VA health facility and risk scores have been included as covariates in other studies examining dual VA and Medicare enrollees,[2,3,5–7,11,12] prior research has not focused on Veterans with high risk for hospitalization or on Choice Act and MISSION Act travel standards.

We hypothesized that Veterans at high risk for hospitalization with greater drive distance or time would experience more care fragmentation—evidenced by lower VA reliance for outpatient primary, mental health, and specialty care—than Veterans with lesser drive distance or time. Lower reliance, or a smaller portion of care delivered by VA versus non-VA providers, is considered a marker for care fragmentation given its association with negative outcomes for Veterans, including higher risk of ambulatory care sensitive condition hospitalization[13] and mortality.[14,15]

2. Methods

Our study focused on Veterans with high risk for hospitalization, specifically in the top 10th percentile for hospitalization risk in federal fiscal year (FY) 2014, in order to shed light on care coordination demand for this group. The study population included Veterans enrolled in VA and fee-for-service Medicare. We used FY2014 data, which was pre-Choice and pre-MISSION, to forecast the impact of expanded access to Community Care on utilization for those dually enrolled in VA and Medicare. We conducted a cross-sectional analysis of Veterans at high risk for hospitalization to examine the relationship between drive distance/time and VA reliance in order to anticipate changes in care coordination demand for Veterans eligible for Community Care through the Choice Act and MISSION Act. Study activities were approved by Stanford University's and the University of Utah's institutional review boards, and the corresponding VA Research and Development Committees at the VA Palo Alto Health Care System and VA Salt Lake City Health Care System. The institutional review boards granted waivers of informed consent. We analyzed data using *Stata Statistical Software: Release 15* (StataCorp Limited Liability Company).

2.1. Study cohort

Our cohort included 130,703 Veterans age 65 or older enrolled in VA and fee-for-service Medicare parts A and B in FY2014 who were in the top 10th percentile for hospitalization risk within the next year, as measured by VA's Care Assessment Need (CAN) score,[16] with 4 or more outpatient visits in VA, Community Care, or Medicare in FY2014.[17] The CAN score includes risk factors related to age, emergency department and hospitalization use, diagnoses, and laboratory results. The VA's Office of Community Care, charged with helping to coordinate VA and non-VA care, uses the CAN score to assign Veterans into levels of care coordination when Veterans receive Community Care.[18]

2.2. Data sources

This study merged VA, Community Care, and Medicare enrollment, utilization, and demographic information at the patient-level, using scrambled Social Security Number to link the data. VA-delivered and Community Care Fee Basis data came from VA's Corporate Data Warehouse[19] and Medicare data were acquired through the VA Information Research Center.[20] Provider supply and economic data at the county level came from the Health Resources & Services Administration's (HRSA) Area Health Resources File from the calendar year (CY) closest to our study year. We used primary care shortage area and mental health shortage area from CY2010; specialty care shortage area and median household income from CY2013; and unemployment rate from CY2014.

2.3. Outcome variables—reliance on outpatient primary care, mental health care, and specialty care

We calculated FY2014 VA reliance as the Number of VA visits/Number of total (VA + Community Care + Medicare) visits. Each visit represents an outpatient encounter for a given Veteran on a specific day. Encounters with a Current Procedural Terminology

for evaluation and management were classified as primary, mental health, or specialty care using provider taxonomy (specialty) information.[21] Additional, nonevaluation and management, Current Procedural Terminologies were identified for specialty mental health.

2.4. Key explanatory variables—drive distance and time

Our primary independent variables for travel aligned with the Choice Act and MISSION Act eligibility criteria. Our key explanatory variable, reflecting Choice Act criteria, was drive distance >40 miles from VA primary care, compared to ≤40 miles. We applied these criteria to all types of outpatient care—primary, mental health, and specialty. Drive distance and time were calculated in the 4th quarter of FY2014. Our key variables for drive time, reflecting MISSION Act criteria, were drive time ≥30 minutes from VA primary care and mental health, compared to <30 minutes for primary or mental health care – and drive time ≥60 minutes from VA specialty care, compared to <60 minutes for specialty care.

2.5. Health and demographic characteristics

We accounted for each individual's age, gender, race, ethnicity, rurality, marital status, number of chronic conditions, VA enrollment priority status (a scale based on disability level and income where a lower number indicates higher priority for VA enrollment), and homeless status (presence or absence of the International Classification of Diseases, Ninth Revision V60.0 code, indicating lack of housing). All of the aforementioned characteristics came from VA's Corporate Data Warehouse except for number of chronic conditions and homeless status, which also incorporated Community Care and Medicare inpatient and outpatient data. Chronic conditions were identified using International Classification of Diseases, Ninth Revision diagnosis codes from a list of 47 conditions.[22] Conditions were counted if they were present in any outpatient or inpatient record in FY2014.

Demographic characteristics at the county level included variables of non-federal provider supply, unemployment rate, and median income, all of which are related to access to and availability of services in and outside VA. We accounted for whether all, part, or none of a county was considered a HRSA-designated primary care shortage area or mental health care shortage area. Because HRSA does not include specialty care shortage area data, we used the absence of non-federal cardiovascular disease specialist physicians in a county as a proxy for specialty care shortage. Previous work demonstrates cardiovascular disease specialist variability at the county-level and its importance to the Veteran population.[23]

2.6. Analysis

We calculated descriptive statistics, including *t*-tests, Chi-Squared tests, and standardized differences,[24,25] for health and demographic characteristics by drive distance and time groups. Additionally, we used *t*-tests to compare unadjusted reliance rates by drive distance or time (above or below the Choice Act or MISSION Act travel criteria). We used fractional logistic regression[26] to understand the association between drive distance/time and reliance, controlling for health and demographic characteristics and with a fixed effect for VA facility to account for facility-level differences (e.g., staffing) that might contribute to reliance levels. We chose fractional logistic regression as our outcome variable, reliance, is a rate that ranges from 0 to 1.

3. Results

Of our study's 130,703 Veterans at high risk for hospitalization, 8% would have been eligible for Community Care under Choice Act criteria, while approximately 26% would have been eligible for Community Care under MISSION Act criteria (Table 1). Because our sample size was large, we used standardized differences to detect imbalance (effect sizes with an absolute value >.20). Using this criterion, we detected imbalance between groups by race, rurality, marital status, mental health professional shortage area, cardiovascular disease specialist, unemployment rate, and median household income. Veterans eligible for Community Care through Choice Act criteria and MISSION Act criteria for primary and secondary care were more likely to be White and living in areas that were rural/highly rural, with mental health professional shortages, without any cardiovascular disease specialists, and with lower median household incomes. Veterans eligible for Community Care through MISSION Act criteria for primary care were also more likely to be married. Additionally, Veterans eligible for Community Care through MISSION Act criteria for specialty care were also more likely to live in areas with higher unemployment rates.

In our cohort, 100% had any VA outpatient visits, 10% had any Community Care outpatient visits, and 33% had Medicare outpatient visits in FY2014. Almost all study Veterans in our cohort used primary care (97%) and specialty care (96%), while only 38% used mental health care in the VA, Community Care, and/or Medicare (Figs. 1 and 2). Our unadjusted t-test analyses showed that Veterans were more reliant on VA for primary care and mental health care than for specialty care. Using Choice Act criteria, Veterans farther away from VA relied less on VA for primary care ($P < .01$), but we found no statistically significant difference for mental health or specialty care reliance by distance. However, when we applied MISSION Act drive time criteria, reliance was statistically significantly lower for all types of care (primary, mental health, and specialty) for Veterans with greater drive times to VA.

Our adjusted analyses using fractional logistic regression showed that Veterans eligible due to drive distance (Choice Act criteria) had increased odds of an outpatient specialty care visit taking place in VA when compared to Veterans who did not meet Choice Act eligibility criteria (odds ratio (OR) = 1.10, 95% confidence interval [CI] 1.05–1.15); Table 2). However, drive distance eligibility (Choice Act criteria) and drive time eligibility (MISSION Act criteria) were not associated with reliance for outpatient primary or mental health care (Table 2). Quite differently, drive time eligibility was associated with a lower odds of an outpatient specialty care visit taking place in VA when compared to Veterans who did not meet MISSION Act eligibility criteria (OR = 0.69, 95% CI 0.67–0.71]; Table 3). Details on health and demographic control variables included in regressions are available in (Supplemental Digital Content Table S1, http://links.lww.com/MD2/A893 for primary, Supplemental Digital Content Table S2, http://links.lww.com/MD2/A894 for mental health, and Supplemental Digital Content Table S3, http://links.lww.com/MD2/A895 for other specialty care outpatient VA reliance).

Table 1

Characteristics of veterans at high risk for hospitalization by drive distance/time to primary and secondary care.

	Choice act criteria drive distance to primary care N (%)			MISSION act criteria drive time to primary care N (%)			MISSION act criteria drive time to secondary care N (%)		
	≤40 miles	>40 miles*	Standardized difference†	<30 min	≥30 min‡	Standardized difference†	<60 min	≥60 min§	Standardized difference†
N = 130,703	120,265 (92.0)	10,438 (8.0)		97,270 (74.4)	33,433 (25.6)		96,109 (73.5)	34,594 (26.5)	
Age									
65–74	73,367 (61.0)	6,605 (63.3)	0.10	58,758 (60.4)	21,214 (63.5)	0.10	57,218 (59.5)	22,754 (65.8)	0.16
75–84	29,121 (24.2)	2649 (25.4)		23,571 (24.2)	8199 (24.5)		23,700 (24.7)	8,070 (23.3)	
85+	17,777 (14.8)	1184 (11.3)		14,941 (15.4)	4020 (12.0)		15,191 (15.8)	3770 (10.9)	
Gender									
Female	2874 (2.4)	161 (1.5)	0.06	2455 (2.5)	580 (1.7)	0.05	2423 (2.5)	612 (1.8)	0.05
Male	117,391 (97.6)	10,277 (98.5)		94,815 (97.5)	32,853 (98.3)		93,686 (97.5)	33,982 (98.2)	
Race									
White	93,877 (78.1)	9077 (87.0)	**0.28**	73,701 (75.8)	29,253 (87.5)	**0.34**	73,359 (76.3)	29,595 (85.6)	**0.28**
Black or African American	19,723 (16.4)	770 (7.4)		17,979 (18.5)	2514 (7.5)		17,510 (18.2)	2983 (8.6)	
Other	2157 (1.8)	227 (2.2)		830 (1.9)	554 (1.7)		1751 (1.8)	633 (1.8)	
Unknown	4508 (3.8)	364 (3.5)		3760 (3.9)	1112 (3.3)		3489 (3.6)	1383 (4.0)	
Ethnicity									
Hispanic/Latino	4553 (3.8)	240 (2.3)	0.09	4123 (4.2)	670 (2.0)	0.13	3901 (4.1)	892 (2.6)	0.08
Not Hispanic/Latino	112,022 (93.2)	9920 (95.0)		90,157 (92.7)	31,785 (95.1)		89,354 (93.0)	32,588 (94.2)	
Unknown	3690 (3.1)	278 (2.7)		2,990 (3.1)	978 (2.9)		2,854 (3.0)	1114 (3.2)	
Rurality									
Urban	81,534 (67.8)	250 (2.4)	**1.88**	77,287 (79.5)	4497 (13.5)	**1.77**	73,982 (77.0)	7802 (22.6)	**1.30**
Rural/highly rural	38,731 (32.2)	10,188 (97.6)		19,983 (20.5)	28,936 (86.6)		22,127 (23.0)	26,792 (77.4)	
Marital status									
Married	55,218 (45.9)	5627 (53.9)	0.18	43,048 (44.3)	17,797 (53.2)	**0.21**	43,481 (45.2)	17,364 (50.2)	0.13
Separated/divorced/widowed	51,642 (42.9)	4053 (38.8)		42,574 (43.8)	13,121 (39.2)		41,346 (43.0)	14,349 (41.5)	
Single/never married	12,913 (10.7)	726 (7.0)		11,216 (11.5)	2423 (7.3)		10,889 (11.3)	2750 (8.0)	
Unknown	492 (0.4)	32 (0.3)		432 (0.4)	92 (0.3)		393 (0.4)	131 (0.4)	
Number of chronic conditions									
<= 5	22,871 (19.0)	1996 (19.1)	0.04	18,636 (19.2)	6231 (18.6)	0.04	18,747 (19.5)	6120 (17.7)	0.07
6–7	23,774 (19.8)	2124 (20.4)		19,186 (19.7)	6712 (20.1)		19,288 (20.1)	6610 (19.1)	
8–9	24,528 (20.4)	2176 (20.9)		19,629 (20.2)	7075 (21.2)		19,564 (20.4)	7140 (20.6)	
10–12	26,586 (22.1)	2333 (22.4)		21,445 (22.1)	7474 (22.4)		21,121 (22.0)	7798 (22.5)	
13+	22,506 (18.7)	1809 (17.3)		18,374 (18.9)	5941 (17.8)		17,389 (18.1)	6926 (20.0)	
VA priority status (lower number is higher priority)									
1: >50% service-connected disability	52,811 (43.9)	4893 (46.9)	0.07	42,066 (43.3)	15,638 (46.8)	0.08	40,855 (42.5)	16,849 (48.7)	0.14
2: 30%–40% service-connected disability	5694 (4.7)	467 (4.5)		4622 (4.8)	1539 (4.6)		4594 (4.8)	1567 (4.5)	
3: 10%–20% service-connected disability, prisoner of war, receipt of the Purple Heart	8283 (6.9)	733 (7.0)		6742 (6.9)	2274 (6.8)		6811 (7.1)	2205 (6.4)	
4–6: aid and attendance, housebound, VA pension benefits, low income qualified for Medicaid	42,843 (35.6)	3543 (33.9)		35,024 (36.0)	11,362 (34.0)		34,806 (36.2)	11,580 (33.5)	
7–8: incomes above VA means test limits	10,634 (8.8)	802 (7.7)		8816 (9.1)	2620 (7.8)		9043 (9.4)	2393 (6.9)	
Homelessness									
Yes	4,201 (3.5)	155 (1.5)	0.13	3798 (3.9)	558 (1.7)	0.14	3582 (3.7)	774 (2.2)	0.09
No	116,064 (96.5)	10,283 (98.5)		93,472 (96.1)	32,875 (98.3)		92,527 (96.3)	33,820 (97.8)	
Mental health professional shortage area									
No	15,199 (12.6)	827 (7.9)	**0.86**	11,267 (11.6)	4759 (14.2)	**0.61**	12,395 (12.9)	3631 (10.5)	**0.66**
Whole	50,113 (41.7)	8277 (79.3)		37,182 (38.2)	21,208 (63.4)		35,238 (36.7)	23,152 (66.9)	
Partial	54,953 (45.7)	1334 (12.8)		48,821 (50.2)	7466 (22.3)		48,476 (50.4)	7811 (22.6)	
Primary care professional shortage area									
No	15,040 (12.5)	1369 (13.1)	0.02	10,697 (11.0)	5712 (17.1)	0.19	11,418 (11.9)	4991 (14.4)	0.09
Whole	51,764 (43.0)	4501 (43.1)		43,303 (44.5)	12,962 (38.8)		42,241 (44.0)	14,024 (40.5)	
Partial	53,461 (44.5)	4568 (43.8)		43,270 (44.5)	14,759 (44.2)		42,450 (44.2)	15,579 (45.0)	
Cardiovascular disease specialist[5]									
No	16,707 (13.9)	7424 (71.1)	**1.42**	6,138 (6.3)	17,993 (53.8)	**1.21**	8916 (9.3)	15,215 (44.0)	**0.85**
Yes	103,558 (86.1)	3013 (28.9)		91,132 (93.7)	15,439 (46.2)		87,193 (90.7)	19,378 (56.0)	
Unemployment rate, ‖ Mean (standard deviation)	6.4 (1.8)	6.7 (2.2)	−0.14	6.3 (1.7)	6.6 (2.1)	−0.17	6.2 (1.6)	6.9 (2.3)	**−0.35**
Median household income, ‖ Mean (standard deviation)	51,373.2 (12,601.6)	41,993.1 (8,668.4)	**0.87**	52,440.3 (12,568.7)	45,342.0 (11,085.3)	**0.60**	53,178.7 (12,806.1)	43,534.2 (8674.5)	**0.88**

VA = Department of Veterans Affairs.

* Differences between the ≤ 40 miles to primary care and >40 miles to primary care groups statistically significantly different at $P < .0001$, except for Number of Chronic Conditions where $P < .05$ and Primary Care Professional Shortage Area where $P = .14$.

† Standardized differences are calculated as the difference in means or proportions divided by the standard error. Standardized differences compare Veterans above and below the Choice and MISSION Act drive time/distance criteria. To indicate imbalance, effect sizes with an absolute value larger than .20 are bolded in the text above.

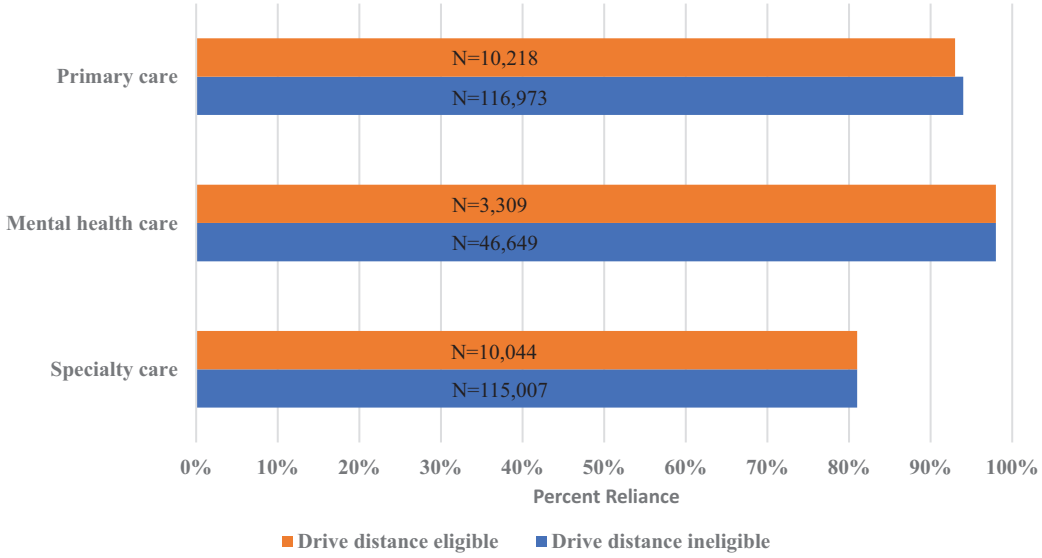
‡ All differences between the <30 minutes to primary care and ≥30 minutes to primary care groups statistically significantly different at $P < .0001$.

§ All differences between the <60 minutes to secondary care and 60 minutes to secondary care groups statistically significantly different at $P < .0001$.

‖ Missing values exist in cardiovascular disease (1), unemployment rate (16), and median household income (769). Observations with missing values were dropped from regression analyses.

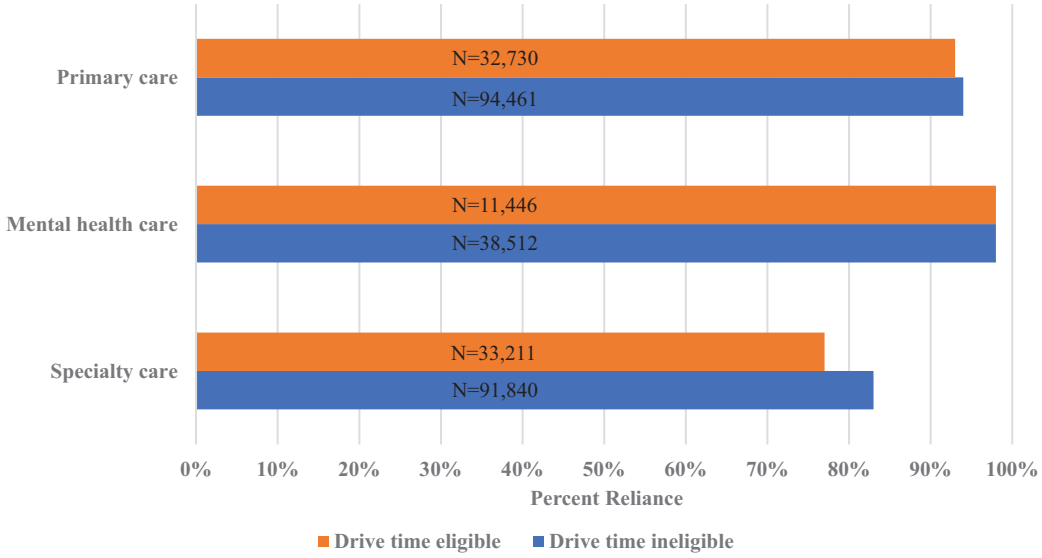
4. Discussion

In this study, we used pre-Choice Act and pre-MISSION Act data to anticipate the impact of expanded Community Care for 2 reasons. First, we observe utilization behavior without any bias due to policy change; in this case, Veterans could conceivably move to meet travel eligibility criteria under the Choice Act or MISSION Act. Our analysis avoids this bias by using data preceding these policies. Second, the vast majority of non-VA care in this study was Medicare, which was an alternative to VA care prior to the expansion of Community Care. Providers paid through Choice Act or MISSION Act funds are generally paid at the Medicare rate. Additionally, VA enrollees generally face lower copayments through Community Care than through Medicare. Thus, it is



Note: Statistically significant difference (P < .01) between eligible and ineligible for primary care reliance, but no statistically significant difference between eligible and ineligible for mental health care or specialty care reliance.

Figure 1. Unadjusted Reliance by Type of Care and Drive Distance Eligibility (Choice Act).



Note: All reliance differences between eligible and ineligible P < .001.

Figure 2. Unadjusted Reliance by Type of Care and Drive Time Eligibility (MISSION Act).

Table 2

Adjusted reliance by type of care and drive distance eligibility (Choice Act).

Outcome	Drive distance eligible odds ratio (95% confidence interval)
Primary care outpatient reliance (N = 126,422)	0.96 (0.89, 1.03)
Mental health care outpatient reliance (N = 49,617)	0.88 (0.65, 1.20)
Specialty care outpatient reliance (N = 124,324)	1.09 (1.04, 1.15)

Fractional logistic regressions controlling for age, gender, race, ethnicity, rurality, marital status, number of chronic conditions, Department of Veterans Affairs (VA) priority status, homelessness, professional shortage areas (for primary care, mental health, or cardiovascular disease for specialty care), unemployment rate, median household income, and VA facility fixed effects. The reference group are those who are drive time ineligible. For all care, eligibility is drive distance to primary care.

Table 3

Adjusted reliance by type of care and drive time eligibility (MISSION Act).

Outcome	Drive Time Eligible Odds Ratio (95% Confidence Interval)
Primary care outpatient reliance (N = 126,422)	0.97 (0.92, 1.02)
Mental health care outpatient reliance (N = 49,617)	1.18 (0.96, 1.46)
Specialty care outpatient reliance (N = 124,324)	0.69 (0.67, 0.71)

MISSION = Maintaining Internal Systems and Strengthening Integrated Outside Networks.

Notes: Fractional logistic regressions controlling for age, gender, race, ethnicity, rurality, marital status, number of chronic conditions, VA priority status, homelessness, professional shortage areas (for primary care, mental health, or cardiovascular disease for specialty care), unemployment rate, median household income, and VA facility fixed effects. Eligibility for primary care and mental health care is drive time to primary care. Eligibility for specialty care is drive time to specialty care. The reference group are those who are drive time ineligible.

conceivable that Community Care is used as a substitute for Medicare.

As the MISSION Act continues to expand VA's provision of Community Care, VA should prepare for significantly more VA/Non-VA multi-system care coordination for Veterans with complex needs. We found that many more Veterans at high risk for hospitalization would be eligible for Community Care under the new MISSION Act program (26%) based on drive time versus the original Choice Act program (8%) based on drive distance. Because Veterans continue to rely on VA for primary care and mental health care (≥93% reliance regardless of eligibility type; Figs. 1 and 2), care coordination demand will likely not surge for those types of care. However, the shift from narrower Choice Act drive distance eligibility to broader MISSION Act drive time eligibility may dramatically increase VA's care coordination responsibilities for specialty care. This is evidenced by our findings, where the odds of an outpatient specialty care visit taking place in VA were higher under Choice Act criteria (OR = 1.09, 95% CI 1.04–1.15) and lower under MISSION Act criteria (OR = 0.69, 95% CI 0.67–0.71).

The expected specialty care shift from VA to the community observed in this study has several implications for current VA care coordination efforts. To ensure appropriate support for Veterans and/or their caregivers, the VA has adopted an active role in managing care delivered in the VA and in the community. The VA Office of Community Care has introduced a Care Coordination Model.[18] Through this Model, the VA Office of Community Care can use a Screening/Triage tool to determine the level of care coordination needed—basic, moderate, complex/chronic, or urgent. The level of care is based initially on CAN scores and then updated by clinicians if other factors (such as social support) should be incorporated. A care coordinator in a VA facility's Office of Community Care creates a personalized care plan for every Veteran receiving Community Care. Additionally, the Office of Community Care partners with VA's Offices of Nursing Services and Care Management and Social Work for the Care Coordination and Integrated Case Management Initiative, which has a Care Coordination Review Team and identifies a lead coordinator for care a Veteran receives in both VA and in the community. Results from this study should help inform practice and policy by making VA aware of additional staffing needs for this high-risk group of Veterans, particularly for increased care coordination for specialty care.

This study also has implications for programs addressing Veterans' choice between VA and Community Care. The VA's Access Office and Office of Community Care have implemented a Referral Coordination Initiative, where Referral Coordination Teams work locally throughout VA's network to aid Veterans in their decisions about where to receive care. If the Veteran's preference is to stay in VA, Referral Coordination Teams could focus efforts on making referrals and coordinating care within the VA system. Our data suggest that otherwise, Veterans may be more likely to move their specialty care to the community. In this same vein, the VA could also harness telehealth to support Veterans' access to specialty care.[27] Telehealth could allow Veterans to receive specialty care from a distance, thereby maintaining VA reliance even with long drive distances or times. If telemedicine expands within VA, VA reliance for specialty care may increase for the population studied here.

There are several limitations of this study. First, we focused on a particular group of Veterans at high risk for hospitalization who are enrolled in VA and Medicare and using outpatient care. Thus, these results may not generalize to lower risk or younger populations of Veterans, or to Veterans using other forms of health coverage including private health insurance or Medicaid. Study results also may not apply to inpatient care. Second, our study focuses on the impact of drive distance and drive time on VA reliance. This study did not investigate other eligibility criteria for Community Care—namely wait times, hardship, and best medical interest. Thus, our results do not apply to Veterans eligible for Community Care through other criteria. Third, our study uses pre-MISSION Act data to understand one potential impact of this policy change. Two years have passed since the implementation of the MISSION Act (June 6, 2019). Our study is a projection of what may happen long term in the VA; thus, using 2 years of post-MISSION Act data would likely not suffice—especially given the impact that the COVID-19 pandemic has had on all patients and healthcare systems. However, it should still be noted that our study is only an estimate of and not an actual observation of change in utilization behavior. Fourth, we calculated drive distance and time at one point in time (4th quarter of FY2014); thus, we do not measure changes in drive distance and time if a Veteran moved in FY2014. Fifth, mental health or primary care shortage areas as well as presence or absence of a cardiovascular disease specialist is measured by county, and it is always possible that providers are available across county lines. Additionally, there may not always be a correlation between presence/absence of a cardiovascular disease specialist and other specialty services sought by Veterans in our analysis.

Since VA enrollees have more options for where they can receive care, it is increasingly important to consider implications for care coordination. In the current study, we found that while Veterans at high risk for hospitalization utilize a small portion of their primary and mental health care in the community, they seek a significant amount of specialty care outside VA. Additionally, those who meet drive time eligibility criteria for the MISSION Act are considerably less likely to seek specialty care at the VA than those who do not meet that eligibility criterion. Subsequently, the VA may be facing an increased demand for the care coordination services it offers. Tools and teamwork to organize care delivery will continue to evolve, and different strategies may be developed to support Veterans' healthcare needs. Where and how Veterans receive their care over time will inform management of intra-VA versus VA-community coordination resources for Veterans at high risk for hospitalization.

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References

[1] U.S. Government Accountability Office. VA HEALTH CARE: Estimating Resources Needed to Provide Community Care. Washington, D.C.; 2019. https://www.gao.gov/products/gao-19-478

[2] Petersen LA, Byrne MM, Daw CN, Hasche J, Reis B, Pietz K. Relationship between clinical conditions and use of Veterans Affairs health care among Medicare-enrolled veterans. Health Serv Res 2010; 45:762–91.

[3] Hynes DM, Koelling K, Stroupe K, et al. Veterans' access to and use of Medicare and Veterans Affairs health care. Med Care 2007;45:214–23.

[4] Liu CF, Chapko M, Bryson CL, et al. Use of outpatient care in Veterans Health Administration and Medicare among veterans receiving primary care in community-based and hospital outpatient clinics. Health Serv Res 2010;45(5 Pt 1):1268–86.

[5] Liu CF, Manning WG, Burgess JF, et al. Reliance on Veterans Affairs outpatient care by Medicare-eligible veterans. Med Care 2011;49:911–7.

[6] Weeks WB, Bott DM, Lamkin RP, Wright SM. Veterans Health Administration and Medicare outpatient health care utilization by older rural and urban New England veterans. J Rural Health 2005;21:167–71.

[7] Wong ES, Rinne ST, Hebert PL, Cook MA, Liu CF. Hospital distance and readmissions among VA-medicare dual-enrolled veterans. J Rural Health 2016;32:377–86.

[8] Yoon J, Vanneman ME, Dally SK, Trivedi AN, Phibbs CS. Use of veterans affairs and medicaid services for dually enrolled veterans. Health Serv Res 2018;53:1539–61.

[9] Vanneman ME, Phibbs CS, Dally SK, Trivedi AN, Yoon J. The impact of medicaid enrollment on veterans health administration enrollees' behavioral health services use. Health Serv Res 2018;53:5238–59.

[10] Yoon J, Vanneman ME, Dally SK, Trivedi AN, Phibbs CS. Veterans' reliance on VA care by type of service and distance to VA for nonelderly VA-medicaid dual enrollees. Med Care 2019;57:225–9.

[11] Humensky J, Carretta H, de Groot K, Brown MM, Tarlov E, Hynes DM. Service utilization of veterans dually eligible for VA and Medicare fee-for-service: 1999–2004. Medicare Medicaid Res Rev 2012;2:E1–E22.

[12] Liu CF, Batten A, Wong ES, Fihn SD, Hebert PL. Fee-for-service medicare-enrolled elderly veterans are increasingly voting with their feet to use more VA and less medicare, 2003–2014. Health Serv Res 2018; 53:5140–58.

[13] Pizer SD, Gardner JA. Is fragmented financing bad for your health? Inquiry 2011;48:109–22.

[14] Wolinsky FD, An H, Liu L, Miller TR, Rosenthal GE. Exploring the association of dual use of the VHA and Medicare with mortality: separating the contributions of inpatient and outpatient services. BMC Health Serv Res 2007;7:70.

[15] Wolinsky FD, Miller TR, An H, Brezinski PR, Vaughn TE, Rosenthal GE. Dual use of Medicare and the Veterans Health Administration: are there adverse health outcomes? BMC Health Serv Res 2006;6:131.

[16] Wang L, Porter B, Maynard C, et al. Predicting risk of hospitalization or death among patients receiving primary care in the Veterans Health Administration. Med Care 2013;51:368–73.

[17] Greenstone CL, Peppiatt J, Cunningham K, et al. Standardizing care coordination within the Department of Veterans Affairs. J Gen Intern Med 2019;34:4–6.

[18] Rosenberg NA, Zulman DM. Measures of care fragmentation: mathematical insights from population genetics. Health Serv Res 2020;55:318–27.

[19] U.S. Department of Veterans Affairs. 172VA10P2: VHA Corporate Data Warehouse – VA. 79 FR 4377.

[20] U.S. Department of Veterans Affairs. VHA Directive 1153: Access to Centers for Medicare and Medicaid Services (CMS) and United States Renal Data System (USRDS) Data for Veterans Health Administration (VHA) users within the Department of Veterans Affairs (VA) Information Technology (IT) Systems.

[21] Burgess JFJ, Maciejewski ML, Bryson CL, et al. Importance of health system context for evaluating utilization patterns across systems. Health Econ 2011;20:239–51.

[22] Yoon J, Chee CP, Su P, Almenoff P, Zulman DM, Wagner TH. Persistence of high health care costs among VA patients. Health Serv Res 2018;53:3898–916.

[23] Ohl ME, Carrell M, Thurman A, et al. "Availability of healthcare providers for rural veterans eligible for purchased care under the veterans choice act". BMC Health Serv Res 2018;18:315.

[24] Austin PC, Stuart EA. Moving towards best practice when using inverse probability of treatment weighting (IPTW) using the propensity score to estimate causal treatment effects in observational studies. Stat Med 2015;34:3661–79.

[25] Cohen J. Statistical Power Analysis for the Behavioral Sciences. Cambridge, Massachusetts: Academic Press; 2013.

[26] Papke LE, Wooldridge JM. Econometric methods for fractional response variables with an application to 401 (K) plan participation rates. J Appl Econ 1996;11:619–32.

[27] Heyworth L, Kirsch S, Zulman DM, Ferguson J, Kizer KW. Expanding access through virtual care: the VA's early experience with Covid-19. NEJM Catalyst 2020.