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The Effect of Primary Care Provider Turnover on Patient Experience of Care and Ambulatory Quality of Care

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Abstract

IMPORTANCE—Primary care provider (PCP) turnover is common and can disrupt patient continuity of care. Little is known about the effect of PCP turnover on patient care experience and quality of care.

OBJECTIVE—To measure the effect of PCP turnover on patient experiences of care and ambulatory care quality.

DESIGN, SETTING, AND PARTICIPANTS—Observational, retrospective cohort study of a nationwide sample of primary care patients in the Veterans Health Administration (VHA). We included all patients enrolled in primary care at the VHA between 2010 and 2012 included in 1 of 2 national data sets used to measure our outcome variables: 326 374 patients in the Survey of Healthcare Experiences of Patients (SHEP; used to measure patient experience of care) associated with 8441 PCPs and 184 501 patients in the External Peer Review Program (EPRP; used to measure ambulatory care quality) associated with 6973 PCPs.

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EXPOSURES—Whether a patient experienced PCP turnover, defined as a patient whose provider (physician, nurse practitioner, or physician assistant) had left the VHA (ie, had no patient encounters for 12 months).

MAIN OUTCOMES AND MEASURES—Five patient care experience measures (from SHEP) and 11 measures of quality of ambulatory care (from EPRP).

RESULTS—Nine percent of patients experienced a PCP turnover in our study sample. Primary care provider turnover was associated with a worse rating in each domain of patient care experience. Turnover was associated with a reduced likelihood of having a positive rating of their personal physician of 68.2% vs 74.6% (adjusted percentage point difference, -5.3 ; 95% CI, -6.0 to -4.7) and a reduced likelihood of getting care quickly of 36.5% vs 38.5% (adjusted percentage point difference, -1.1 ; 95% CI, -2.1 to -0.1). In contrast, PCP turnover was not associated with lower quality of ambulatory care except for a lower likelihood of controlling blood pressure of 78.7% vs 80.4% (adjusted percentage point difference, -1.44 ; 95% CI, -2.2 to -0.7). In 9 measures of ambulatory care quality, the difference between patients who experienced no PCP turnover and those who had a PCP turnover was less than 1 percentage point. These effects were moderated by the patients' continuity with their PCP prior to turnover, with a larger detrimental effect of PCP turnover among those with higher continuity prior to the turnover.

CONCLUSIONS AND RELEVANCE—Primary care provider turnover was associated with worse patient experiences of care but did not have a major effect on ambulatory care quality.

Although continuity of care is a core tenet of primary care, most patients experience highly fragmented care. The typical Medicare beneficiary sees 2 primary care physicians and 5 specialists per year.¹ Care received from multiple providers can lead to conflicting therapeutic recommendations, unnecessary and repeated testing, and poorly coordinated care. The benefit of having an ongoing, stable primary care provider (PCP) relationship is well documented. Several studies link greater physician-patient continuity with higher patient satisfaction, improved ambulatory care quality, reduction in costs of care, and lower mortality.²⁻⁴

Yet a key challenge to maintaining continuity of care for patients is the high rate of turn over among PCPs, which occurs when a physician, nurse practitioner, or physician assistant leaves a clinical practice or retires. Nationally, 6.8% of physicians are estimated to turn over per year.⁵ Among PCPs, 30% aged 35 to 49 years and 50% of PCPs 50 years and older stated that they planned to leave their practices within 5 years.⁶ As more and more PCPs leave or retire from their practices, little is known about the effect of their departure on patient outcomes.

Primary care provider turnover may reduce quality of care for 2 reasons. First, once a PCP leaves a clinical practice, critical information needed to coordinate patient care may not be communicated to the incoming provider. In a study of malpractice claims in ambulatory settings, hand offs between providers were a contributing factor in 20% of medical errors.⁷ Second, PCP turn-over may represent a loss of established, trusted relationships between patients and their PCPs. If those trust relationships promote more effective care and self-management, outcomes might decline until those relationships are reestablished.⁸

Previous research on PCP turnover has demonstrated mixed effects on patient satisfaction and ambulatory care quality.^{9–12} But most of these studies had limited patient samples, were isolated to specific geographic regions, or used aggregate health plan data to measure patient outcomes. To overcome these limitations, we used patient-level data from the Veterans Health Administration (VHA), one of the largest health care systems in the country. Annually, 6 million veterans are seen in the VHA across the country at more than 900 clinical sites.¹³ Furthermore, while previous research on PCP turnover has not addressed how continuity of care affects turnover-related outcomes, we tested the effect of higher continuity with one's PCP prior to a turnover on patient experience of care and ambulatory care quality.

Methods

Overview and Study Cohort

We conducted a retrospective cohort study of patients enrolled in primary care at the VHA between 2010 and 2012, examining the relationship between experiencing PCP turnover and patient experiences of care and ambulatory care quality. The Philadelphia VA Medical Center institutional review board determined that the study involved quality improvement and therefore was exempt from institutional review board review and approval.

We constructed 2 separate cohorts of veterans drawn from 2 national data sets used to measure our outcome variables: the Survey of Healthcare Experiences of Patients (SHEP; used to measure patient experience of care) and the External Peer Review Program (EPRP; used to measure ambulatory quality of care). For each cohort, we derived a turnover group and a comparison group (of patients who did not experience PCP turnover). Patients were included in the turnover group if they had a visit with their PCP in the 12 months prior to his or her PCP leaving the VHA. (In the VHA, a PCP can be a physician, nurse practitioner, or physician assistant.) To make the comparison group equivalent, we included patients who had a PCP visit in the 12 months before the average turnover date in the turnover group. This allowed us to identify patients who had not experienced a turnover but had a PCP visit in a similar time frame as the turnover group.

Patient Experience-of-Care Measures

The VHA's SHEP measures patients' experiences of care. It is mailed monthly to a random sample of those veterans with a recent outpatient visit, stratified by clinic site and physician type (primary care vs specialist). The national response rate for the outpatient SHEP in 2010 was 53.2%.¹⁴ We included 5 measures of patient care experience from SHEP: how well doctors/nurses communicate, rating of personal doctor/nurse, getting needed care, overall rating of Veterans Affairs (VA) health care, and getting care quickly. Four of 5 had a 1-year look-back period. For example, 1 question asked, "Using any number from 0 to 10, where 0 is the worst health care possible and 10 is the best health care possible, what number would you use to rate all your VA health care in the last 12 months?" The fifth question asked about ratings of the respondent's personal physician/nurse, but not over a specified period of time. We used a standardized method to aggregate and dichotomize SHEP responses (eTable 1 in the Supplement), as signing a value of 1 if the respondent gave a score of 9 or 10

and 0 otherwise. These measures and their scoring are similar to patient experience-of-care measures used in the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey of ambulatory care.

Ambulatory Quality-of-Care Measures

The VHA's EPRP measures quality of ambulatory care. This program abstracts data on both process and outcome ambulatory performance measures annually from a random sample of veterans enrolled for at least 2 years in VHA. We used 4 process measures and 7 intermediate outcomes. Again a majority of the questions had a 1-year look-back period with the exception of 2 screening questions: breast cancer (2-year) and colon cancer (up to 10 years). For each of these measures, there is strong scientific evidence or broad consensus that the process or outcome reflects better health care delivery. These measures are similar in format and content to the ambulatory quality measures in the Healthcare Effectiveness Data and Information Set, commonly used by private health plans and Medicare Advantage plans.

If a veteran had more than 1 SHEP survey (6%) or EPRP data abstraction (14%) during the 3-year period of analysis, we included only information from the first visit.

PCP Turnover

Our main independent variable was whether a patient experienced PCP turnover. To measure this, we first identified all PCPs who stopped having patient encounters for at least 12 months between 2008 and 2012, assuming those PCPs had left the VHA. We identified the turnover date as the last date the PCP had patient encounters. Next, using patient-level administrative data, we identified the PCP assigned to each patient in the 2 years prior to the SHEP survey or EPRP data abstraction date, identifying all patients whose PCP had stopped practicing at the VHA in the 12 to 24 months prior to the measurement of the patient-level outcomes (the SHEP survey or EPRP data abstraction date). The mean (SD) number of days between the SHEP survey date and the date the PCP left the VA was 538 (102) days. In the EPRP data, it was a mean (SD) of 532 (102) days. We excluded patients who experienced PCP turnover in the 12 months prior to the SHEP survey or EPRP data abstraction date, because most of the outcome measures have a 12-month look-back period, ensuring that patients were most likely rating the new PCP. We excluded patients assigned to trainee PCPs because their cases were co-managed by the trainee and the attending physician, making it difficult to attribute a patient outcome to either the attending PCP or a trainee. In our cohort, the proportion of PCPs who were trainees over the 3-year time period for SHEP was 28.7% and EPRP, 32.2%. Trainees were linked to only 2.4% of the SHEP surveys and 3.9% of the EPRP files (because trainees have outpatient clinic relatively infrequently compared with full-time PCPs).

Continuity of Care

Based on previous literature on the importance of continuity of care on patient outcomes, we postulated that continuity of care would modify the effect of turnover: that is, patients with higher continuity prior to experiencing a turnover would have worse ratings of their experience of care and ambulatory care quality. To measure continuity, we used the Usual Provider Continuity (UPC) score, which provides a measure of the proportion of a patient's

visits that are with the assigned provider of care, calculated by dividing the number of visits with the assigned provider by the total number of primary care visits over a set period of time.¹⁵ The score ranges from 0 to 1, with a higher score indicating higher continuity with the assigned provider. We calculated the UPC for each veteran in the 12 to 24 months prior to the SHEP/EPRP date. Because UPC cannot be calculated based on only 1 visit, we restricted our sample to patients who had at least 2 visits, reducing the sample size by approximately 20%.

Covariates

For each SHEP survey respondent, we obtained age, sex, and race/ethnicity from the self-reported survey data. For each EPRP record, we obtained age, sex, and race/ethnicity from medical record review. For both cohorts, we linked the veteran's zip code with 2012 Census American Community Survey to obtain the zip code's median household income. In addition, to obtain baseline illness severity, we linked each respondent with the RiskSmart diagnostic cost group files at VA Austin Information Technology Center. Diagnostic cost group is a common population-based classification and risk adjustment methodology.

Statistical Analysis

We conducted patient-level analyses, using a generalized linear model to test whether veterans who experienced PCP turnover reported worse experiences of care or lower ambulatory quality metrics after PCP turnover compared with veterans who did not experience turnover. We controlled for age, sex, income, race/ethnicity, and baseline illness severity (ie, diagnostic cost group risk score). We also included clinic-level fixed effects, which allows us to control for all time-invariant and unobserved differences across clinics. All standard errors were adjusted for clustering of observations within clinic using Huber-White estimators of variance.

Next, we tested whether continuity of care before a turnover affected care after the turnover occurred. To test whether continuity modified the effect of turnover, we reran our models to include the UPC score and the interaction between PCP turnover and UPC.

Results

The characteristics of patients who experienced a turnover and those who experienced no turnover are shown in Table 1, including 326 374 patients who were included in the patient experience surveys and 184 501 patients who were included in the ambulatory quality data from 2010 to 2012. Nearly 9% of patients experienced a PCP turnover. The study population was predominately white (81% SHEP and 73% EPRP) and male (96% SHEP and 85% EPRP). Within each cohort, those who did and did not experience PCP turnover were similar in age, median household income, and baseline illness severity.

We found that PCP turnover was associated with lower ratings in each domain of patient care experience (Table 2). For example, 74.6% of patients who experienced no PCP turnover had a positive rating of their personal doctor compared with 68.2% of patients who experienced a PCP turnover, which in adjusted analyses corresponded to a -5.3 percentage point difference (95% CI, -6.0 to -4.7). Similarly, 38.5% of patients with no PCP turnover

had a positive rating of getting care quickly compared with 36.5% of patients with a turnover (adjusted percentage point difference, -1.1 ; 95% CI, -2.1 to -0.1).

In contrast, PCP turnover was not associated with lower ambulatory care quality (Table 3). There was a high level of performance on several disease-specific process measures, including completion of retinal eye examination, testing hemoglobin A_{1c} level, and measuring low-density lipoprotein (LDL) cholesterol among veterans who did and did not experience a PCP turnover. The rate of performance on outcomes measures such as LDL cholesterol control (<100 mg/dL) among patients with diabetes or ischemic heart disease and general screening or preventive services was lower. In 9 measures of ambulatory care quality, the difference between patients who experienced no PCP turnover and those who had a PCP turnover was less than 1 percentage point. The only ambulatory quality measure in which patient who experienced a PCP turnover had a worse outcome was blood pressure control: 80.4% of patients with no PCP turnover achieved control of blood pressure ($<140/90$ mm Hg) compared with 78.7% achieving control of blood pressure among patients (adjusted percentage point difference, -1.4 ; 95% CI -2.24 to 0.65).

Finally, we tested whether continuity of care modified the effect of PCP turnover on patient experiences of care or ambulatory care quality. The mean (SD) UPC was 0.90 (0.20) and 0.87 (0.23) in the SHEP and EPRP cohorts, respectively. As shown in eTable 2 in the Supplement, veterans who had higher continuity of care with a PCP prior to experiencing a turnover, compared with veterans with lower continuity prior to a PCP turnover, had worse rating in 2 patient experience-of-care measures. For every 1-SD increase in continuity before turnover, we observed nearly a 1–percentage point lower rating in patients' experience of communication and rating of their new PCP. However, in the 3 other measures of patient care experiences, the changes were not statistically significant. In eTable 3 in the Supplement, veterans who had higher continuity of care with a PCP before experiencing a turnover had lower ambulatory care quality after turnover occurred on 2 measures: control of LDL cholesterol levels among patients with ischemic heart disease and blood pressure control. In these 2 measures, a standard deviation increase in continuity with the PCP before PCP turnover was associated with approximately 1–percentage point fewer veterans achieving high-quality ambulatory care. We did not observe statistically significant differences in other measures of ambulatory quality. The effect size of higher continuity before turnover was small on all outcomes.

Discussion

Our study has important implications for patients and PCPs working in integrated health care systems. Turnover of PCPs is inevitable: physicians, nurse practitioners, and physician assistants may retire; change locations for personal or professional reasons; or leave practice for other reasons. Patients who experience a PCP turnover experience a major care transition in the outpatient setting. Because continuity is perceived to be essential to good primary care, we examined the effect of PCP turnover on patient outcomes.

On one hand, we find our results surprising. Although PCP turnover did have a modest effect on patient care experiences, it did not have a similar effect on several ambulatory quality

measures. We may be able to more clearly understand these contradictory findings in the context of a more precise definition of continuity. Previous research has defined 3 essential elements of continuity: interpersonal (having a continuous personal physician-patient relationship), longitudinal (having a medical home in which patients receive the majority of their care), and informational (having a patient's medical records available at the time a physician sees the patient).^{16,17} Although prior studies have demonstrated the importance of continuity, it has been difficult to separate the effects of these 3 types of continuity, which is important in designing interventions to improve patient care.

Our findings may differ from prior research on continuity of care because of unique aspects of the VA that enhance aspects of continuity even in the setting of PCP turnover. In the VHA, PCP turnover represents a loss of interpersonal continuity in the setting of stable longitudinal and informational continuity. Over the previous decades, the VHA has made one of the largest investments in health information technology in the nation.¹⁸ Health information technology provides informational continuity, making it easier for PCPs to access information about a patient's chronic conditions, current medications, and previous treatments and hospitalizations. Thus, turnover of PCPs may have limited effects on ambulatory process measures in the setting of stable informational continuity because a newly assigned PCP can easily identify information on these measures. For example, a PCP can easily identify whether a patient with diabetes has received a retinal examination through the integrated electronic health record. In addition, the VHA electronic health record provides reminders and delivers feedback to PCPs about adherence with several of the ambulatory quality-of-care measures.

We also hypothesized that patients with higher continuity with a PCP before experiencing turnover would be more adversely affected by the turnover—having worse ratings of their experience of care and worse ambulatory care quality compared with veterans who experienced turnover but had lower continuity of care before the turnover. This was demonstrated to be the case for the 2 patient experience measures that may be most sensitive to the patient-provider relationship—how well you communicate with your PCP and how you rate your PCP. In contrast, there was no effect of continuity on the experience of PCP turnover for the other 3 measures of patient experience (getting needed care, getting care quickly, and overall rating of VA care). These measures might not be as sensitive to PCP continuity because they are more related to the overall institution and health system than to the individual PCP. But it may also suggest that despite the importance of PCP communication and ratings, system improvements in getting needed care and getting care quickly could have a greater effect on the experience of care delivered. We also found patients who experienced higher continuity with their PCP before a turnover experienced lower quality on 2 of 11 measures compared with those with lower continuity before turnover (and compared with those without turnover). Taken together, these results suggest that patients with high continuity before their PCP turnover may need some additional assistance in navigating the transition to a new PCP.

We acknowledge several limitations in our study. First, the care and outcomes among veterans may not be generalizable to other populations, but measuring them offers several advantages. The VHA is one of the largest integrated health systems in the United States.

Studying this population not only is important in its own right but also enables us to control for unobserved variations in information that exist in other care settings. Second, we did not measure health care utilization patterns. The effect of the loss of a PCP relationship may be seen in patterns of emergency department usage, hospitalizations, and total cost of care. Another concern is that PCP turnover and continuity may have a bigger effect on certain subpopulations, such as sick populations. Because the SHEP response rate was only 53%, our results may not generalize to all veterans who receive outpatient VA care due to response bias. However, this rate is similar to national response rates for the CAHPS survey.¹⁹

Another limitation was our measurement of continuity of care using the UPC score. First, the UPC score is highly dependent on the number of visits. Because we chose to include patients in our sample with at least 2 (rather than 4) visits, our sample was biased toward experiencing more continuity with their VA PCP. Similarly, even though veterans are able to see PCPs outside the VHA, we were unable to capture these visits in our analysis. Furthermore, this is an observational study, which limits our ability to examine causality. One potential threat to the validity of our study is if other system-level changes could explain both PCP turnover and our outcomes of interest. For example, during our study, the VHA began implementation of a system-wide medical home model called Patient Aligned Care Team (PACT), devoting more than a billion dollars to improve primary care delivery. However, because PCP turnover is distributed across our entire study period, we identify the effect of turnover across 3 years, making it unlikely that other system-level factors explain our results.

Conclusions

Despite these limitations, our study provides important insights on the effect of PCP turnover on patient outcomes. With increasing PCP turnover, the loss of a PCP relationship can diminish a patient's experience of care. Although the effects are modest, they are consistent across all 5 different domains of patient care experience. In addition, interventions focused on improving patient experience of care, such as patient-centered medical homes and accountable care organizations, have had equally modest effects on patients' experience of care.^{19,20}

Our findings also suggest that health care systems with robust informational and longitudinal continuity could mitigate the effect of a loss of any 1 PCP on a person's health care. In fact, several primary care delivery system innovations focus on the use of a shared electronic medical record to provide the critical medical information needed to care for a patient.²¹ Equally important to many primary care delivery interventions is the emphasis on the transition to more team-based care. But questions remain whether strong team-based care can create the interpersonal continuity needed to develop a trusted relationship with a patient and improve the experience of care. It will be important to reevaluate the effect of PCP turnover on patient outcomes as these new models develop.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Description of Patient Characteristics

Characteristic	SHEP (2010–2012)		EPRP (2010–2012)	
	No PCP Turnover	PCP Turnover	No PCP Turnover	PCP Turnover
No. of patients	298 238	28 136	167 267	17 234
Age, median (IQR), y	67 (62–78)	67 (61–77)	63 (58–69)	63 (58–68)
Male sex, %	95.9	95.9	85.7	84.8
Race/ethnicity, %				
Non-Hispanic white	80.8	82.3	73.1	75.1
Non-Hispanic black	9.7	8.9	16.3	14.5
Hispanic	5.4	4.6	1.5	1.1
Other	4.2	4.2	9.2	9.3
Median household income by zip code, %				
\$34 999	13.5	14.5	15.8	16.8
\$35 000–\$49 999	42.0	46.5	40.9	45.5
\$50 000–\$74 999	32.5	30.0	31.1	28.4
\$75 000	12.1	9.0	12.1	9.4
DCG risk score, median (IQR)	0.4 (0.1–1.0)	0.4 (0.1–1.0)	0.5 (0.2–1.3)	0.6 (0.2–1.3)

Abbreviations: DCG, diagnostic cost group; EPRP, External Peer Review Program; IQR, interquartile range; PCP, primary care provider; SHEP, Survey of Healthcare Experiences of Patients.

Table 2

The Effect of PCP Turnover on Patient Experience of Care

Experience of Care	Overall % of Patients Reporting a Positive Response		Adjusted Percentage Point Difference Associated With PCP Turnover (95% CI) ^a	P Value
	No PCP Turnover	PCP Turnover		
How well physician/nurse communicates (n = 291 649)	55.6	50.0	-4.7 (-5.5 to -3.9)	<.001
Rating of personal physician/nurse (n = 298 829)	74.6	68.2	-5.3 (-6.0 to -4.7)	<.001
Getting needed care (n = 164 421)	39.7	37.1	-1.7 (-2.5 to -0.9)	<.001
Getting care quickly (n = 110 816)	38.5	36.5	-1.1 (-2.1 to -0.1)	.04
Overall rating of VA health care (n = 323 440)	61.2	57.1	-3.3 (-3.9 to -2.6)	<.001

Abbreviations: PCP, primary care provider; VA, Veterans Affairs.

^aAnalysis was adjusted for age, sex, race/ethnicity, income, and baseline illness severity and included clinic-level fixed effects.

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Table 3

Effect of PCP Turnover on Ambulatory Care Quality

Quality Care Measure	% of Patients Achieving Success on Each Performance Measure		Adjusted Percentage Point Difference Associated With PCP Turnover (95% CI) ^a	P Value
	No PCP Turnover	PCP Turnover		
Patients with diabetes				
Retinal eye examination (n = 63 962)	90.2	90.1	-0.18 (-1.09 to 0.73)	.69
Testing HbA _{1c} (n = 63 990)	98.8	98.5	-0.29 (-0.61 to -0.03)	.08
HbA _{1c} 9% of total hemoglobin (n = 63 990)	84.3	84.9	0.71 (-0.23 to 1.64)	.14
Testing LDL cholesterol level (n = 63 959)	97.7	97.7	0.07 (-0.41 to 0.54)	.75
Controlling LDL cholesterol level (<100 mg/dL) (n = 63 949)	72.4	70.1	-0.96 (-2.33 to 0.41)	.16
Patients with coronary artery disease				
Testing LDL cholesterol level (n = 41 851)	96.8	96.7	-0.06 (-0.68 to 0.56)	.85
Controlling LDL cholesterol level (<100 mg/dL) (n = 41 844)	72.6	69.9	-1.53 (-3.14 to -0.07)	.06
Hypertension				
Controlling blood pressure (<140/90 mm Hg) (n = 138 548)	80.4	78.7	-1.44 (-2.24 to -0.65)	<.001
Screening or prevention				
Breast cancer screening (n = 19 231)	88.3	88.9	0.33 (-1.27 to 1.92)	.69
Colon cancer screening (n = 149 478)	83.5	83.6	0.34 (-0.39 to 1.08)	.36
Influenza vaccine (n = 42 977)	69.6	70.2	0.57 (-0.95 to 2.08)	.46

Abbreviations: HbA_{1c}, hemoglobin A_{1c}; LDL, low-density lipoprotein; PCP, primary care provider.

SI conversion factor: To convert LDL cholesterol to millimoles per liter, multiply by 0.0259.

^a Analysis was adjusted for age, sex, race/ethnicity, income, and baseline illness severity and included clinic-level fixed effects.