

Measuring Patient-Centered Medical Home Access and Continuity in Clinics With Part-Time Clinicians

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As US healthcare systems transition to patient-centered medical home (PCMH) and accountable care organization (ACO) models of care, improving patients' access to and continuity with their primary care providers (PCPs) has positioned itself at the forefront of reform.^{1,2} Implementation of these initiatives requires measurement of access and continuity performance. There are several developed performance measures, based on administrative data or patient self-report, for access to a primary care (PC) clinic or a usual care provider.³⁻⁶ Health systems with electronic scheduling often choose administrative measures, as they are more comprehensive, collected continuously and easily, and less subject to bias.⁷ Because strategies to improve PC access are driven by these performance measures, administrative measures must be chosen carefully. They must be comprehensive and precise enough to capture differences in access that are important to clinical outcomes and patient experience, but should not be so restrictive that they unnecessarily single out clinics and providers for performance differences that are not relevant to patients or their care.

Carefully choosing PCMH access measures is particularly important as health systems also adapt to primary care workforce realities. One such reality is the increasing numbers of PCPs who care for patients for only part of each week. Many of these providers work full-time, but spend part of their week in other vital roles, such as working in other clinical areas (eg, inpatient wards), teaching trainees, conducting research, or performing administrative tasks that are increasingly important to running population management-focused PC clinics. Additionally, increasing numbers of PCPs are limiting their total hours to a part-time schedule. Nationally, 44% of female and 22% of male PCPs reported working part-time in 2011.⁸ Part-time physicians tend to have higher job satisfaction and less burnout than full-time physicians, with similar clinical productivity and process-related performance.⁹⁻¹³ Including PCPs with part-time availability in PC clinics is indispensable

ABSTRACT

Objectives: Common patient-centered medical home (PCMH) performance measures value access to a single primary care provider (PCP), which may have unintended consequences for clinics that rely on part-time PCPs and team-based care.

Study Design and Methods: Retrospective analysis of 110,454 primary care visits from 2 Veterans Health Administration clinics from 2010 to 2012. Multi-level models examined associations between PCP availability in clinic, and performance on access and continuity measures. Patient experiences with access and continuity were compared using 2012 patient survey data (N = 2881).

Results: Patients of PCPs with fewer half-day clinic sessions per week were significantly less likely to get a requested same-day appointment with their usual PCP (predicted probability 17% for PCPs with 2 sessions/week, 20% for 5 sessions/week, and 26% for 10 sessions/week). Among requests that did not result in a same-day appointment with the usual PCP, there were no significant differences in same-day access to a different PCP, or access within 2 to 7 days with patients' usual PCP. Overall, patients had >92% continuity with their usual PCP at the hospital-based site regardless of PCP sessions/week. Patients of full-time PCPs reported timely appointments for urgent needs more often than patients of part-time PCPs (82% vs 71%; $P < .01$), but reported similar experiences with routine access and continuity.

Conclusions: Part-time PCP performance appeared worse when using measures focused on same-day access to patients' usual PCP. However, clinic-level same-day access, same-week access to the usual PCP, and overall continuity were similar for patients of part-time and full-time PCPs. Measures of in-person access to a usual PCP do not capture alternate access approaches encouraged by PCMH, and often used by part-time providers, such as team-based or non-face-to-face care.

Am J Manag Care. 2015;21(5):e320-e328

to meeting the growing demand for PCPs in an age of expanded medical insurance coverage and rapidly expanding models of care in which PCPs are central, such as the PCMH and ACOs. The PCMH model, with its emphasis on team-based care and non-face-to-face care access, supports the strategies that part-time PCPs often use to provide access and coordinated care to their patients. However, PCMH performance measures may not always capture or reward these modes of improving access and continuity.

The Veterans Health Administration (VHA) uses comprehensive and detailed administrative measures of primary care access to drive PCMH implementation, while also employing many part-time PCPs. VHA PC clinics nationwide are in the midst of a 5-year plan to implement a comprehensive PCMH program called Patient Aligned Care Teams (PACT).¹⁴ PACT places emphasis on improving access, particularly same-day access, to a patient's usual PCP, to whom patients are "assigned" after their first PC visit. PACT also emphasizes increased team-based and non-face-to-face care. However, in efforts to inform clinics' performance improvement, PACT currently reports administrative access measures for in-person provider visits only, at the individual PCP and clinic levels. The VHA uses these access and continuity measures as 2 of the 4 parts of the main score used to evaluate and reward clinic performance in implementing PACT. Furthermore, many VHA facilities are using these measures at the individual PCP level as one of the determinants of PCP performance pay.

In this study, we examined the impact of part-time PCP availability on performance in current and alternate VHA measures of urgent access. Primarily, we sought to examine whether differences in performance between part-time and full-time PCPs were attenuated when moving from measures focusing on access to a patient's usual PCP, to access to any clinic PCP, and from measures focusing on access to the usual PCP on the same day versus within 7 days. As secondary analyses, we examined differences in overall administrative measures of continuity, and patient survey-reported experiences of access and continuity, between patients assigned to part-time versus full-time PCPs.

METHODS

Context

In the PACT design, primary care is delivered by team-

Take-Away Points

- At 2 sites, established patients of part-time primary care providers (PCPs) had less same-day access with their usual PCP than patients of full-time PCPs.
- However, rates of clinic-level same-day access, same-week access to the usual PCP, and the overall rate of continuity were similar for patients of part-time and full-time PCPs.
- Currently feasible patient-centered medical home access measures that may be more appropriate for clinics with part-time physicians include: a) rates of urgent access at the clinic or PCP-team level; b) measures that include nurse or non-face-to-face visits as acceptable urgent access; and c) measures of patient satisfaction with, or clinical appropriateness of, access achieved.

lets,¹⁵ each consisting of 1 full-time equivalent PCP, 1 registered nurse (RN), and 1 medical assistant assigned to 1 panel of patients. In practice, since many PCPs do not have daily clinic hours, 1 teamlet may be shared among 2 or 3 part-time PCPs. The main strategies used by PACT to improve in-person access for established primary care patients have been: 1) limiting the PCP-assigned patient panel size to a number proportional to the PCP's clinic time (specifically, the examined sites assigned 120 patients per half day of weekly clinic time); 2) "open access" scheduling,¹⁶ in which patients call to schedule routine appointments at the time their appointment is due; 3) greatly increasing the number of primary care staff (PCPs, nurses, clinical pharmacists); and 4) increasing the percentage of encounters conducted via phone or secure electronic message.¹⁴ PACT implementation started in 2010, and the data examined here are from 2010 to 2012, so the data represent an initial phase of PACT implementation.

Data

We analyzed data from 2 sites within 1 VHA Health-care System, which were selected from among sites for which we were able to access regional data. We purposively sampled the 2 sites based on: 1) representation of 1 hospital-based and 1 community-based site, 2) presence of adequate representation of and variation in a full range of PCP clinical hours per week, 3) ability to obtain local knowledge to confirm whether we had correctly characterized PCPs as full-time versus part-time, and 4) ability to identify contextual factors that might influence site-specific performance. We obtained all PC in-person encounters completed with a PCP from July 2010 to December 2012, for patients assigned to a PCP. Encounters for patients assigned to a resident PCP were excluded (5.5% of eligible encounters) because there is variability within and across VHA facilities in how resident encounters are coded, and in whether resident PCPs are assigned a panel of patients

or see one another's patients.

For each encounter, available data included the date the patient called to schedule the appointment, the patient's desired appointment date, the date the appointment was completed, and the provider that was actually seen. Data did not include the patient's preferred physician for that appointment; also, data were not available for all calls related to urgent issues, only for appointment requests that resulted in an in-person, completed PCP encounter. We excluded encounters for patients assigned to PCPs during months the PCP had ≤ 10 patients assigned or ≤ 10 appointments completed.

We obtained patient survey data from the Consumer Assessment of Healthcare Providers and Systems (CAHPS)-PCMH, an instrument used in many health-care systems, including the VHA, to assess patient experiences with PCMH.¹⁷ The survey was mailed in October 2012 to 5476 patients who had completed 2 or more PC appointments in the past year at the 2 sites.

Measures

Definition of part-time PCP status. At the examined sites, PCPs are assigned 120 patients for each half-day session they cover in PC clinic each week. Therefore, we used PCP panel size each month divided by 120 as a proxy for the PCP's number of weekly clinic sessions scheduled that month. A cutoff of 480 or fewer patients (corresponding to 4 half-day sessions/week) distinguished "part-time" from "full-time" PCPs in dichotomous analyses. This cutoff was chosen based on the distribution of panel sizes among PCPs (see [eAppendix Data A](#), available at www.ajmc.com), and because PCPs with 5 or more half-day sessions per week likely had clinic hours during most, if not all, week days.

Urgent access. Among patient requests for same-day PC appointments (the desired date for the appointment equals the date the patient called for the appointment), we created 3 conditional measures:

- *Measure 1, Same-Day Usual PCP:* Percent of all same-day requests that were completed by an encounter the same day (day 0) or the next day (day 1) with the patient's usual (assigned) PCP.
- *Measure 2, Same-Day Other PCP:* Among requests not resulting in a same-day or next-day encounter with the patient's usual PCP, the percent of requests resulting in an encounter the same day or the next day with a non-assigned PCP.
- *Measure 3, 2 to 7 Days Usual PCP:* Among requests not resulting in a same-day or next-day encounter, the percent of requests resulting in an encounter within 2 to 7 days with the patient's assigned

PCP.

Measure 1 parallels the VHA's current performance measure for urgent access. In the year of the study, the VHA's goal for percent of same-day appointment requests accommodated with a same-day appointment with the patient's usual PCP was 45% or more. Measures 2 and 3 are measures devised for the purposes of this study.

Continuity. Overall continuity was calculated as the percent of all completed in-person PC encounters in which the provider was the patient's assigned PCP.

Patient experiences. We used 3 CAHPS-PCMH questions to assess patient experiences with access (see [eAppendix Data B](#) for survey items). Patients' experiences with urgent and routine access were collapsed into "always" or "usually" getting appointments in a PC clinic as soon as they needed to, versus "sometimes" or "never." Responses to days "usually" waited for urgent appointments were collapsed into 3 groups: same-day/1 day, 2-7 days, and >7 days. We assessed patient experience with continuity using 2 questions: whether the PCP "usually" or "always" seemed to have knowledge of the patient's medical history or prior specialist care, versus "sometimes" or "never." These items are used by the VHA to assess patients' overall satisfaction with care, but are not currently used by PACT to evaluate clinic or PCP performance in access or continuity.

Covariates. The patient's gender and age on the encounter date were obtained from VHA records. Patients were identified as having certain chronic conditions (eg, diabetes, heart failure) based on *International Classification of Diseases, Ninth Revision, Clinical Modification* codes in encounters or hospitalizations during the year prior to the encounter. These diagnoses were not based solely on data from the performance measure encounters and do not necessarily reflect the reason for appointment requests. Patients were identified as chronic opioid users if they had at least 3 opioid pain medication fills (30 days each) in the year prior to the encounter.

Analysis

We described the PCP and patient characteristics associated with included encounters, comparing those for patients assigned to part-time versus full-time PCPs. We calculated unadjusted average access rates, separately for encounters of patients assigned to part-time versus full-time PCPs, based on 3-level nested logistic regression models, with patients and physicians as random intercepts. To evaluate the effects of PCP availability on patients' urgent access and continuity, after adjusting for encounter characteristics, we fit 3-level nested logistic regression models,

■ **Table 1.** PCP and Patient Characteristics of Included Primary Care Encounters

Patient Characteristics	Encounters Resulting From Patient Requests for Same-Day Appointments			All Primary Care (PC) Clinic Encounters		
	Encounters From Patients Assigned to Part-time PCP ^a	Encounters From Patients Assigned to Full-time PCP	<i>P</i> ^b	Encounters From Patients Assigned to Part-time PCP ^a	Encounters From Patients Assigned to Full-time PCP	<i>P</i>
	(N = 3250)	(N = 19,828)		(N = 20,008)	(N = 90,446)	
	% or mean (SD)	% or mean (SD)		% or mean (SD)	% or mean (SD)	
Panel size of PCP to which assigned ^c	259 (98)	950 (205)	<.001	247 (96)	924 (204)	<.0001
Age, years	62 (15)	62 (14)	<.001	63 (15)	63 (14)	<.0001
Male	94%	93%	.09	94%	94%	.38
Heart failure	11%	9%	<.001	12%	8%	<.0001
Diabetes	31%	33%	.13	31%	30%	.21
Depression	24%	24%	.91	23%	19%	<.0001
Serious mental illness	9%	10%	.15	8%	7%	<.0001
Substance use disorder	26%	28%	.01	24%	23%	.12
Chronic pain	47%	44%	.002	47%	38%	<.0001
Chronic opioid user	23%	20%	.001	23%	18%	<.0001
PTSD	13%	12%	.07	13%	11%	<.0001
OEF/OIF veteran	6%	5%	.001	7%	5%	<.0001
Patient's assigned PCP at hospital-based site	88%	37%	<.001	93%	50%	<.0001
Same-day requests by patient in the same month	1.1 (0.4)	1.2 (0.6)	<.001	—	—	

OEF/OIF indicates Operation Enduring Freedom/Operation Iraqi Freedom; PCP, primary care provider; PTSD, posttraumatic stress disorder.
^aPart-time = ≤480 assigned patients (corresponding to ≤4 half-day primary care clinic sessions/week); full-time = >480 assigned patients (>4 half-day primary care clinic sessions/week).
^b*P* values calculated using *t* tests for continuous variables and χ^2 tests for categorical variables.
^cAssigned panel size is 120 patients for every half-day session per week in primary care clinic.

with assigned PCP panel size (as a continuous variable) as the main independent variable. Patient level covariates included sociodemographics and clinical conditions as above, and Operation Enduring Freedom/Operation Iraqi Freedom Veteran status.

We also included the patient's assigned PCP site, the month the encounter was completed, and an interaction term for time by site. In same-day access models we included the number of same-day requests made by the patient in the month of the request. Because of potential site differences in scheduling algorithms for urgent patient requests, we tested for interactions between our main predictor, PCP panel size, and site. When this interaction term was statistically significant, we ran models separately by site. To better illustrate the relationships between PCP availability and access or continuity performance, we computed model-based predicted probabilities of access for patients assigned to hypothetical PCPs who have 2, 5, and 10 sessions/week.

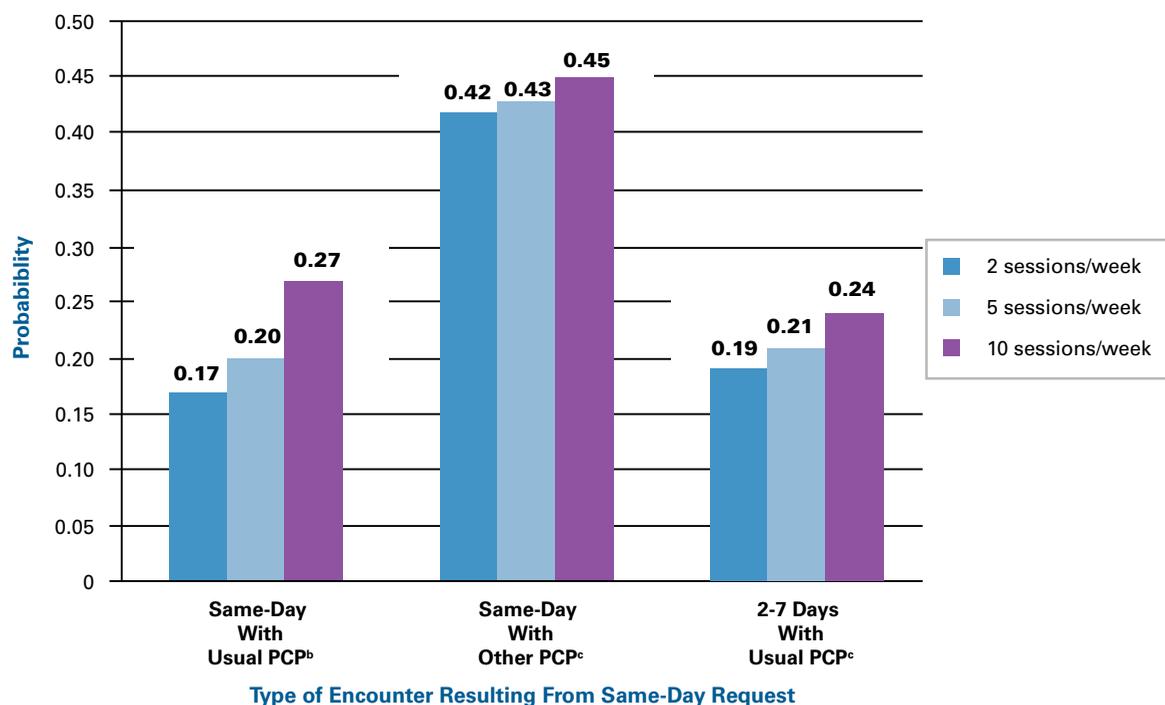
For survey data, respondents were designated as pa-

tients of part-time or full-time PCPs based on their PCP assignment at their last PC encounter. We evaluated bivariate differences in experiences between part-time and full-time PCP patients using χ^2 tests. An alternate analysis, with adjustment of survey responses for patient variables included in access and continuity models, yielded very similar results and is not reported.

RESULTS

The included encounters, which occurred among 68 PCPs, represent 1375 PCP-months of care. Forty-nine percent of PCP-months examined were from part-time PCPs. Data included 23,078 encounters linked to same-day requests (14% from patients assigned to part-time PCPs) and 110,454 total PC encounters (18% from patients assigned to part-time PCPs). **Table 1** provides the patient and provider characteristics of included primary care encounters. The average age of patients was 63 years, and 94% were male. Patients associated with encounters from part-time

Figure 1. Predicted Probability^a of Accommodating a Same-Day Appointment Request, by PCP Availability



PCP indicates primary care provider.

^aBased on multilevel logistic regression models adjusted for the patient sociodemographic and clinical characteristics, assigned PCP site, month of encounter, and number of same-day requests from the requesting patient in the request month.

^bStatistically significant; PCP availability (hours in clinic per week based on panel size) was a statistically significant predictor of outcome in this multilevel model (adjusted odds ratio per 120-patient increment in panel size = 1.07 [95% CI, 1.04-1.11]).

^cNot statistically significant; PCP availability was not a statistically significant predictor of outcome in these models.

PCPs had a higher prevalence (compared with those from full-time PCPs) of heart failure (12% vs 8%; $P < .001$), depression (23% vs 19%; $P < .001$), and chronic pain (47% vs 38%; $P < .001$).

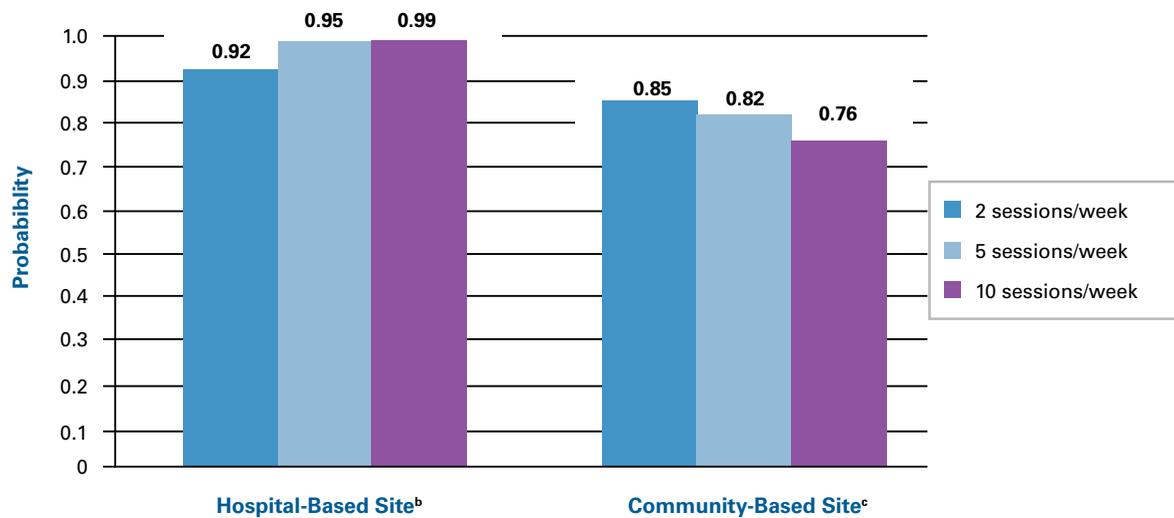
Urgent access performance. Without covariate adjustment, urgent access was better for patients of full-time PCPs than part-time PCPs: same-day appointment requests were accommodated with Same-Day Usual PCP 22% of the time for full-time, versus 12% for part-time PCP patients ($P < .0001$). In requests not resulting in a same-day encounter with the patient’s usual PCP, same-day appointment requests were accommodated with Same-Day Other PCP 33% for full-time PCP versus 15% for part-time PCP ($P = .006$), and with 2-7 Days Usual PCP 24% for full-time PCP versus 16% for part-time PCP ($P = .006$). The interaction term of PCP panel size by site was not significant in any of the access models, so access models are reported on data for the 2 sites combined. In the covariate-adjusted model, each 1 clinic-session-per-week increase (120-patient increase in PCP panel size) was associated with a 7% increase in odds of Same-Day Usual PCP access (adjusted

odds ratio [AOR], 1.07; 95% CI, 1.04-1.11). However, PCP panel size was not associated with odds of Same-Day Other PCP (AOR, 1.02; 95% CI, 0.98-1.06) or 2-7 Day Usual PCP access (AOR, 1.04; 95% CI, 0.99-1.08). Full results for same-day access models are in **eAppendix Data C**.

Figure 1 shows covariate-adjusted model-based predicted performance for urgent access. Predicted probabilities of Same-Day Usual PCP access were 17%, 20%, and 26% for patients of PCPs with 2, 5, and 10 clinic sessions/week, respectively. Predicted probability ranges were narrower for Same-Day Other PCP (42%-45%) and 2-7 Day Usual PCP (19%-24%) access. For all access measures, unadjusted average part-time PCP rates, which were mostly based on encounters of hospital-based PCPs whose access rates were generally lower than community-based PCPs, tend to be lower than predicted probabilities among PCPs with 2 clinic sessions/week, which were based on the adjusted model using all encounters.

Continuity performance. For continuity, analysis was done separately by site after finding a significant interaction of PCP panel size by site (full model results in **eAp-**

■ **Figure 2.** Predicted Probability^a of In-Person Continuity With Usual PCP, by PCP Availability



PCP indicates primary care provider.

^aBased on multilevel logistic regression models adjusted for the encounter patient's sociodemographic and clinical characteristics, site of patient's assigned PCP, month of encounter.

^bStatistically significant; PCP availability (hours in clinic per week based on panel size) was a statistically significant predictor of outcome in this multi-level model (adjusted odds ratio per 120-patient increment in panel size = 2.18 [95% CI, 1.98-2.40]).

^cNot statistically significant; PCP availability was not a statistically significant predictor of outcome in this model.

pendix Data D). With covariate adjustment, we found a statistically significant association between increasing PCP panel size and continuity at the hospital-based site (AOR, 2.18; 95% CI, 1.98-2.40). However, predicted levels of continuity (Figure 2) based on this model were high at all levels of PCP availability (92%-99%). PCP panel size was not significantly associated with continuity at the community-based site (AOR, 0.93; 95% CI, 0.84-1.02).

Patient experiences with access and continuity. The survey response rate was 53% (N = 2881), which is a typical response rate compared with prior VHA fieldings of this survey, and exceeds the Agency of Healthcare Research and Quality response rate goal of 40% for the CAHPS survey.¹⁸ Among all respondents, 41 could not be matched with an assigned PCP, 211 were assigned to resident PCPs, and 127 did not respond to the examined items. The percentage of patients reporting they received an urgent appointment as soon as needed (Table 2) was higher for patients of full-time versus part-time PCPs (82% vs 71%; $P < .01$). A lower percentage of patients of full-time PCPs reported waiting more than 7 days for an urgent appointment (23% vs 36%; $P < .01$). However, the percentage of patients who reported receiving appointments for routine care as soon as needed was similar for full-time and part-time PCPs (90% vs 87%; $P = .08$). Related to continuity, full-time and part-time PCP patients reported similar rates of

PCP knowledge of their medical history (93% vs 95%; $P = .07$) and specialist care (89% vs 91%; $P = .41$).

DISCUSSION

Results Summary

We found that at 2 VHA primary care sites during early implementation of PCMH, patients had high continuity in general, and same-day access that met VHA standards when examined among all clinic PCPs. However, patients of part-time PCPs had less same-day access with their *usual PCP* than patients of full-time PCPs. Patients with same-day appointment requests were equally likely to obtain appointments with their usual PCP within 2 to 7 days, regardless of the number of PCP sessions per week. The differences observed between sites in the relationship between PCP panel size and continuity (positive and significant for the hospital-based site and not significant for the community-based site) might be explained by differences in distribution of PCP panel size among the examined encounters, as shown in eAppendix Data A. Specifically, the hospital-based site had many more encounters attributed to part-time PCPs and the community-based site had more encounters attributed to full-time PCPs. In both cases, levels of continuity were very high, even for patients of PCPs with very few sessions per week. Patient experiences mirrored performance measure

METHODS

Table 2. Patient Experiences With Access and Continuity Among Those Assigned to Part-Time vs Full-Time PCPs

	Patients of Part-Time PCPs ^a N = 436	Patients of Full-Time PCPs N = 2066	P
Access			
For urgent need, appointment as soon as needed (n = 848) ^b	71% usually or always	82% usually or always	.007 ^c
For urgent need, days waited for appointment (n = 813)			
Same day or 1 day	34%	43%	.004 ^c
2-7 days	31%	35%	
>7 days	36%	23%	
For routine need, appointment as soon as needed (n = 2057)	87% usually or always	90% usually or always	.08
Continuity			
How often PCP knew important medical history (n = 2478)	95% usually or always	93% usually or always	.07
How often PCP seemed informed about specialist care patient received (n = 1564)	91% usually or always	89% usually or always	.41
PCP indicates primary care provider.			
^a Part-time = ≤480 assigned patients (corresponding to ≤4 half-day primary care clinic sessions/week); full-time = >480 assigned patients (>4 half-day primary care clinic sessions/week).			
^b N = total number of patient respondents who answered at least 1 of the items included in the table; n = total number of patient respondents to the individual item.			
^c P < .05.			
Survey items are from Consumer Assessment of Healthcare Providers and Systems—Patient-Centered Medical Home. For details on item wording and related survey skip patterns, see eAppendix Data B .			

results, as fewer patients of part-time PCPs reported receiving an appointment for an urgent issue as soon as needed, but experiences with routine access and overall continuity were similar to those of patients of full-time PCPs.

Implications

This study highlights the fact that careful performance measure specification is critical when evaluating a systems-level change in PC clinics. If part-time PCPs have worse performance on emphasized PCMH performance measures, it may discourage part-time PCPs from participation in a PCMH, which could ultimately result in decreased access for patients. On the other hand, differences in performance could spur clinics to try innovative methods to increase access to part-time PCPs. To avoid unintended negative consequences for part-time PCPs, organizations that measure PCMH performance need to ask 2 fundamental questions: 1) Do our performance measures reflect aspects of access and continuity that are important to patient satisfaction and clinical outcomes? and 2) How can performance measures reflect and promote PCMH strategies to improve access and continuity that both part-time and full-time PCPs use with their patients?

First, PCMH performance measures would ideally reflect processes linked to better patient outcomes. Prior studies have shown that clinic-level, retrospective ac-

cess measures (eg, days patients actually waited for an appointment from the date they called to schedule the appointment) are associated with patient glycated hemoglobin levels, while prospective measures of appointment capacity (eg, measures that look ahead to determine time to next available appointment for a hypothetical patient calling that day) are not.^{19,20} To our knowledge, there are no studies specifically examining links between measures of urgent access and clinical outcomes. Use of “open access” scheduling in PC clinics has been associated with increased utilization efficiency, but inconsistently linked with patient satisfaction.^{16,17,21} Moreover, while a recent study linked overall continuity of care with fewer preventable hospitalizations,²² there is also insufficient evidence to determine when it is clinically important for a patient to see their usual PCP, versus any clinic PCP or other PCMH team members, for an urgent clinical matter.²³ Further investigation needs to be conducted regarding whether patients of part-time and full-time providers have similar outcomes after seeking urgent access to care, and if they do not, what can be done about it. Ideally, the timing and mode of urgent access (eg, 1 vs 3 days, phone vs face-to-face, PCP vs RN) should be driven by patient clinical needs. Future measures of appropriate urgent access that take into account the patients’ clinical situation are possible using data available in electronic medical records.

In addition, the VHA is working toward implementing a system for patients to enter appointment requests, including desired date and desired PCP, which would make measures based on patient preferences for access possible.

Second, there are several existing access performance measures that may be more appropriate to part-time physician practice patterns, including: measuring urgent access at the clinic or PCP-team level rather than the individual PCP level; “time-to-appointment” measures (such as time to third-next available appointment) whose time-to-appointment goals can be adjusted for part-time PCP status; and noting (along with the patient’s desired date) the patient’s physician preference for that appointment (usual PCP vs any PCP).³

PCMH access and continuity measures can also evolve to better capture and encourage PCMH-emphasized modes of care, such as teamlet-based care (care by a cross-disciplinary team including PCPs, nurses, and pharmacists), and non-face-to-face care through telephone or electronic messaging.²⁴ Part-time PCPs may need to preferentially enlist these methods to ensure urgent access for their patients. At the time of this analysis, reliable data reflecting these alternate access modes were not available; however, the VHA is aiming for eventual routine capture of these modes of care.

It is important to note that requests for same-day appointments that did not result in a completed PCP appointment (including those requests that resulted in an urgent care visit) were not available in the VHA’s current scheduling system, and so were not in our examined encounter data. Therefore, if part-time physicians’ patients were referred to UC more often, a higher proportion of their patients’ urgent care requests would not be included in this study’s data. Health systems designing new systems to capture administrative access data could get a more complete picture of patients’ experience with urgent care needs by prospectively capturing outcomes of all requests for urgent care, including those in which staff appropriately triage patients to telephone care, an urgent care clinic, or the first available PCP (over their usual PCP). Furthermore, designations in VHA databases of patients’ PCP assignments, PCP coverage and leave, and encounters representing co-managed care by resident trainees are not standardized across VHA clinics. This limited our ability to use data from outside the studied region. In order to efficiently and accurately compare clinics in multiple regions, more standardized indicators for these PCP factors are needed.

We also noted that, in the models of continuity, covariates reflecting patient clinical complexity tended to predict less PCP continuity at the community-based site and more continuity at the hospital-based sites (as seen in eAppendix

Data D). We did not find this pattern when examining any of the access models separately by site (data not shown). After talking to staff at both clinic sites, we discovered that scheduling of urgent (and presumably sicker) patients who could not be seen by their usual PCP differed between the 2 sites. At the hospital-based site, such patients would be advised to go to the contiguous urgent care clinic; encounters from that clinic were not designated as “primary care” encounters. At the community-based site, such patients would be scheduled with a physician in the primary care clinic other than their usual PCP, as there is no urgent care clinic at that site. In general, this observation highlights the difficulties inherent in comparing these metrics across different types of primary care clinics in a large system. There is wide variation among primary care clinics in many external and internal factors that affect the best possible performance on these metrics, including the types and complexity of patients seen, scheduling algorithms (including how urgent patients are scheduled), total number of PCPs available at the clinic (as the possibility for noncontinuity is limited in clinics with few PCPs), the proportion of clinic PCPs who are part-time PCPs, and the proportion of patients who are co-managed by a system clinic and nonsystem providers. At the current time, much of this context is not available in administrative data. Therefore, our findings urge caution when comparing these types of metrics across clinics—particularly across community-based versus hospital-based clinics. In the future, standard scheduling algorithms and adjustments for known contextual influences may allow performance to be more accurately compared among clinics of the same general type.

Limitations

This study is strengthened by the volume of scheduling, encounter, and clinical data available; however, the data were from 2 sites, so our results may not be generalizable to all VHA or non-VHA clinics. Our data did not include information on urgent requests that did not result in a completed PCP appointment, or on patient encounters with other healthcare systems. We also note that our survey response rate was 58%, so not all veteran opinions were represented, though this still exceeds typical response rates for the CAHPS survey, and patients of both part-time and full-time PCPs were well represented in our survey sample.

CONCLUSIONS

While the data examined suggest that part-time PCPs had lower performance in same-day access during early

stages of PCMH implementation, these measures may not capture many alternate approaches for ensuring access now made possible by the PCMH. New measures are needed to recognize and encourage the full use of PCMH approaches designed to improve access and continuity, while measuring at a specificity that does not surpass what is clinically relevant and patient-centered. As the demand for PCP services and the number of part-time PCPs rises, the need for clinic structures that allow patients of part-time PCPs to obtain equal levels of appropriate access will become increasingly important. As a result of this research, we are working with our partners in the VHA Office of Primary Care to inform future derivations of nationally specified access measures for established VHA primary care patients that capture patient needs, preferences, and important dimensions of PCMH. In this way, we can ensure the best care for all patients and minimize unintended consequences for part-time physicians and clinics that employ them.

Acknowledgments

The authors thank Jennifer Davis for help with analysis and data management, Mandi Klamerus for editing assistance, and Richard Stark, Joanne Shear, and Gordon Schectman for comments on previous versions of this manuscript.

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Source of Funding: This work was undertaken as part of the Veterans Health Administration's PACT Demonstration Laboratory initiative, which is funded by the VHA Office of Patient Care Services. Dr Rosland is a VA HSR&D Career Development Awardee.

Author Disclosures: This research was presented in abstract form at the 2013 annual meeting of the Society of General Internal Medicine (SGIM) and the 2013 Academy Health annual research meeting. All authors of this manuscript are employed by the Veterans Health Administration. The views expressed in this manuscript are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs or the University of Michigan. The authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (AR, AT, CLG, EAK, SLK); acquisition of data (AR, DR); analysis and interpretation of data (AR, CLG, DR, HMK, EAK, SLK); drafting of the manuscript (AR, AT, DS, DR); critical revision of the manuscript for important intellectual content (AT, EAK, HMK, SLK); statistical analysis (AR, HMK, DR); obtaining funding (EAK, HMK); administrative, technical, or logistic support (DS); and supervision (EAK).

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eAppendix Data A. Distribution of Assigned Patient Panel Size Among PCP-Months Examined

Patient Panel Size	<u>Hospital-Based Site</u>		<u>Community-Based Site</u>		<u>Total From Both Sites</u>		
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Cumulative %</i>
0-120	136	13.2%	0	0.0%	136	9.9%	9.9%
121-240	310	30.1%	19	5.5%	329	23.9%	33.8%
241-360	123	12.0%	14	4.0%	137	10.0%	43.8%
361-480	49	4.8%	16	4.6%	65	4.7%	48.5%
481-600	39	3.8%	21	6.1%	60	4.4%	52.9%
601-720	95	9.2%	9	2.6%	104	7.6%	60.4%
721-840	130	12.6%	28	8.1%	158	11.5%	71.9%
841-960	77	7.5%	27	7.8%	104	7.6%	79.5%
961-1080	58	5.6%	99	28.6%	157	11.4%	90.9%
1081-1200	5	0.5%	64	18.5%	69	5.0%	95.9%
1200+	7	0.7%	49	14.2%	56	4.1%	100.0%

PCP indicates primary care provider.

eAppendix Data B. Full Wording of VHA CAHPS PCMH Items and Corresponding Skip Patterns

Survey Introduction

“The questions in this survey will refer to your regular VA provider—the one you usually see when you come to the VA. Please think of that person as you answer the survey.” The specific provider’s name was inserted at the beginning of the survey.

Urgent Care Access

(Excluded those who said “no” to: “In the last 12 months, did you phone this provider’s office to get an appointment for an illness, injury, or condition that needed care right away?” [N, no = 1753])

“In the last 12 months, when you phoned this provider's office to get an appointment for care you needed right away, how often did you get an appointment as soon as you needed?”

Never/Sometimes/Usually/Always

“In the last 12 months, how many days did you usually have to wait for an appointment when you needed care right away?”

Same Day / 1 day / 2-3 days / 4-7 days / More than 7 days

Routine Care Access

(Excluded those who said “no” to: “In the last 12 months, did you make any appointments for a check-up or routine care with this provider?” [N, no = 437])

“In the last 12 months, when you made an appointment for a check-up or routine care with this provider, how often did you get an appointment as soon as you needed?”

Never/Sometimes/Usually/Always

Continuity

Asked of all survey respondents:

“In the last 12 months, how often did this provider seem to know the important information about your medical history?”

Never/Sometimes/Usually/Always

(Excluded those who said “no” to: “Specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors, and other doctors who specialize in 1 area of healthcare. In the last 12 months, did you see a specialist for a particular health problem?” [N, no = 874])

“In the last 12 months, how often did the provider named in Question 1 seem informed and up-to-date about the care you got from specialists?”

Never/Sometimes/Usually/Always

CAHPS indicates Consumer Assessment of Healthcare Providers and Systems; PCMH, patient-centered medical home; VA, Veterans Affairs; VHA, Veterans Health Administration.

eAppendix Data C. Full Results of Nested Logistic Regression Models of Accommodation of Same-Day Requests (3 models)^a

	Model 1 Same-Day Usual PCP	Model 2 Same-Day Other PCP	Model 3 2-7 Days Usual PCP
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
PCP Patient Panel			
Size/120 ^b	1.07 (1.04 -1.11)	1.02 (0.98-1.06)	1.04 (0.99-1.08)
Age in years divided by 10	0.95 (0.92-0.98)	0.91 (0.88-0.95)	1.01 (0.97-1.06)
Heart failure	0.99 (0.87-1.14)	1.07 (0.90-1.26)	1.18 (0.99-1.41)
Diabetes	0.81 (0.75-0.88)	1.19 (1.07-1.32)	0.86 (0.77-0.97)
Chronic opioid user	1.07 (0.98-1.18)	0.92 (0.81-1.04)	0.90 (0.79-1.04)
Male	0.89 (0.77-1.03)	0.94 (0.77-1.15)	1.09 (0.87-1.36)
OEF/OIF veteran	0.94 (0.78-1.12)	0.74 (0.59-0.94)	1.12 (0.86-1.46)
Chronic pain	1.25 (1.16-1.35)	1.31 (1.19-1.45)	1.29 (1.15-1.44)
PTSD	0.98 (0.87-1.10)	1.02 (0.88-1.19)	0.84 (0.71-1.00)
Serious mental illness	0.99 (0.87-1.12)	1.07 (0.91-1.26)	0.99 (0.82-1.19)
Substance use disorder	1.01 (0.92-1.10)	1.24 (1.11-1.39)	1.18 (1.03-1.34)
Depression	1.03 (0.94-1.13)	1.31 (1.17-1.48)	1.27 (1.11-1.47)
Time ^c	1.05 (1.05-1.06)	1.05 (1.04-1.05)	1.07 (1.06-1.08)
Assigned (usual) PCP at community-based site	3.78 (2.86-5.01)	20.80 (14.95-28.94)	2.48 (1.66-3.71)
Time × site interaction term	0.95 (0.94-0.96)	0.96 (0.95-0.97)	0.98 (0.97-0.99)
Encounter patient's monthly same-day requests	0.84 (0.78-0.90)	2.19 (1.97-2.42)	1.02 (0.87-1.20)

AOR indicates adjusted odds ratio; OEF/OIF, Operation Enduring Freedom/Operation Iraqi Freedom; PCP, primary care provider; PTSD, posttraumatic stress disorder.

^aModels based on data from 23,078 same-day requests, 66 providers, 12,380 patients.

^bEstimate of PCP half-day clinic sessions per week based on the facility practice of assigning the PCP 120 patients for each half-day clinic session of PCP availability per week.

^cTime indicates the month the included encounter was completed (range 0-x)

The 3-level nested logistic regression model for accommodating a same-day appointment request for patient j of the provider k was fit as:

$$\text{Logit}(\pi_{ijk}) = \beta_0 + \beta_1 \text{Sessions}_{ijk} + \beta_2 \text{Month}_{ijk} + \beta_3 \text{Hosp}_{pk} + \beta_4 \text{Month} * \text{Hosp}_{ijk} + \beta_5 \text{Age}_{jk} + v_{0k} + u_{0jk}$$

where π_{ijk} is the expected probability of accommodating a same-day appointment request for month i for the individual j of the provider k conditional on the predictor variables and the random effects, and $\beta_0jk = \beta_0 + v_{0k} + u_{0jk}$. Sessions is the primary independent variable of provider k's hours proxy number of weekly clinic sessions in month i of patient j, and Hosp is an indicator for hospital-based site relative to community-based site. The model above is written with only age as an example of patient sociodemographic and clinical characteristics, but the model fit included other patient-level covariates and provider-level covariate of the number of same-day requests from the requesting patient in the request month.

Bolding indicates statistical significance.

eAppendix Data D. Full Results of Multilevel Logistic Regression Model of In-Person Continuity With Assigned PCP

Hospital-Based Site

	AOR (95% CI)
PCP patient panel size/120 patients ^a	2.18 (1.98-2.40)
Age in years divided by 10	1.24 (1.17-1.30)
Heart failure	1.29 (0.99-1.68)
Diabetes	1.28 (1.09-1.51)
Chronic opioid user	1.27 (1.07-1.50)
Male	2.49 (1.95-3.19)
OEF/OIF Veteran	0.92 (0.71-1.21)
Chronic pain	1.39 (1.25-1.56)
PTSD	1.29 (1.07-1.56)
Serious mental illness	1.00 (0.80-1.25)
Substance use disorder	1.38 (1.20-1.58)
Depression	0.90 (0.78-1.04)
Time	1.21 (1.20-1.22)

AOR indicates adjusted odds ratio; OEF/OIF, Operation Enduring Freedom/Operation Iraqi Freedom; PCP, primary care provider; PTSD, posttraumatic stress disorder.

^aEstimate of PCP half-day clinic sessions per week based on the facility practice of assigning the PCP 120 patients for each half-day clinic session of PCP availability per week.

Model based on data from 64,143 encounters with 50 providers and 17,581 patients.

Community-Based Site

	AOR (95% CI)
PCP patient panel size/120 patients	0.93 (0.84-1.02)
Age in years divided by 10	1.21 (1.17-1.25)
Heart failure	0.76 (0.65-0.89)
Diabetes	1.13 (1.03-1.24)
Chronic opioid user	0.96 (0.87-1.07)
Male	2.09 (1.77-2.46)
OEF/OIF veteran	1.22 (1.01-1.48)
Chronic pain	0.80 (0.74-0.86)
PTSD	0.85 (0.74-0.97)
Serious mental illness	0.77 (0.66-0.89)
Substance use disorder	1.03 (0.94-1.13)
Depression	0.86 (0.77-0.95)
Time	1.02 (1.01-1.03)

AOR indicates adjusted odds ratio; OEF/OIF, Operation Enduring Freedom/Operation Iraqi Freedom; PCP, primary care provider; PTSD, posttraumatic stress disorder.

Model based on data from 46,311 encounters with 18 providers and 11,844 patients.

The 3-level nested logistic regression model for seeing the assigned PCP for an encounter for patient j of the provider k was fit as: $\text{Logit}(\pi_{ijk}) = \beta_0 + \beta_1 \text{Sessions}_{ijk} + \beta_2 \text{Month}_{ijk} + \beta_3 \text{Hosp}_{jk} + \beta_4 \text{Age}_{jk} + v_{0k} + u_{0jk}$ where π_{ijk} is the expected probability of seeing the assigned PCP in the month i for the individual j of the provider k conditional on the predictor variables and the random effects, and $\beta_0_{jk} = \beta_0 + v_{0k} + u_{0jk}$. Sessions is the primary independent variable of provider k 's hours proxy number of weekly clinic sessions in month i of patient j , and Hosp is an indicator for hospital-based site relative to community-based site. The model above is written with only age as an example of patient sociodemographic and clinical characteristics, but the model fit included other patient-level covariates.

Bolding indicates statistical significance.