Readiness for the Patient-Centered Medical Home: Structural Capabilities of Massachusetts Primary Care Practices

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BACKGROUND: The Patient-Centered Medical Home (PCMH), a popular model for primary care reorganization, includes several structural capabilities intended to enhance quality of care. The extent to which different types of primary care practices have adopted these capabilities has not been previously studied.

OBJECTIVE: To measure the prevalence of recommended structural capabilities among primary care practices and to determine whether prevalence varies among practices of different size (number of physicians) and administrative affiliation with networks of practices.

DESIGN: Cross-sectional analysis.

PARTICIPANTS: One physician chosen at random from each of 412 primary care practices in Massachusetts was surveyed about practice capabilities during 2007. Practice size and network affiliation were obtained from an existing database.

MEASUREMENTS: Presence of 13 structural capabilities representing 4 domains relevant to quality: patient assistance and reminders, culture of quality, enhanced access, and electronic health records (EHRs).

MAIN RESULTS: Three hundred eight (75%) physicians responded, representing practices with a median size of 4 physicians (range 2–74). Among these practices, 64% were affiliated with 1 of 9 networks. The prevalence of surveyed capabilities ranged from 24% to 88%. Larger practice size was associated with higher prevalence for 9 of the 13 capabilities spanning all 4 domains ($P<0.05$). Network affiliation was associated with higher prevalence

of 5 capabilities ($P<0.05$) in 3 domains. Associations were not substantively altered by statistical adjustment for other practice characteristics.

CONCLUSIONS: Larger and network-affiliated primary care practices are more likely than smaller, non-affiliated practices to have adopted several recommended capabilities. In order to achieve PCMH designation, smaller non-affiliated practices may require the greatest investments.

KEY WORDS: primary care; quality improvement; health policy; patient centered care.

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INTRODUCTION

Over the past decade, many commentators have called for innovations to improve the quality of outpatient care.^{1–6} Primary care practices have been encouraged to implement several structural capabilities felt likely to enhance quality. These include aiding patient self-management,⁷ using reminder systems for evidence-based care,¹ engaging in performance measurement and feedback,^{8,9} providing enhanced access to care,^{10,11} and implementing electronic health records (EHRs).^{1,12,13} This has occurred at a time when primary care is facing a number of challenges,¹⁴ and for practices that do not already possess these capabilities, their implementation may require substantial financial investment.

Recently, leading primary care professional societies have jointly issued a set of principles for a “Patient-Centered Medical Home” (PCMH).^{15,16} These principles include greater coordination of care, continuous improvement of quality and safety, and enhanced access.¹⁵ The National Committee for Quality Assurance (NCQA) has created standards for the PCMH that identify several structural capabilities linked to the principles, such as use of evidence-based guidelines and information technology.¹⁷ These and other proposals would include incrementally higher payments to practices that adopt capabilities consistent with the PCMH.^{15,16,18–21}

Despite this interest in restructuring care delivery, the readiness of primary care practices to implement these reforms may be uneven. Primary care practices can vary in their number of physicians (“practice size”) and degree of affiliation

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with networks of other practices ("network affiliation")^{22,23}, characteristics that may influence practices' readiness to adopt the structural capabilities of the PCMH. Larger practices and network-affiliated practices might already possess these capabilities due to economies of scale and highly-developed management.²⁴ Smaller practices may be less likely to engage in quality improvement activities.²⁵

To assess the current prevalence of recommended structural capabilities among primary care practices and evaluate their relationship to practice size and network affiliation, we conducted a statewide survey of over 400 primary care practice sites in Massachusetts. Based on previous research, we hypothesized that recommended capabilities would be more prevalent among larger practices than among smaller practices, and that network affiliation might enable adoption of these capabilities by smaller practices.²⁶

METHODS

Practices

Massachusetts Health Quality Partners (MHQP), a statewide quality improvement collaborative, maintains a comprehensive statewide physician directory that includes physicians' organizational affiliations.^{26,27} This directory identifies the physicians at each practice and, if applicable, each practice's affiliation with 1 of the 9 large physician networks present in the state. Because the MHQP directory is used to guide a statewide performance reporting system, physician group and network managers review these lists regularly, updating them as organizational relationships change. Each practice can affiliate with 1 network or remain non-affiliated.

For the purposes of our study, a practice was defined as a set of at least 2 physicians as well as nurses and other staff practicing at a single address. Practice size was represented by the number of physicians at each site who contributed Health Plan Employer Data and Information Set (HEDIS) measure observations on adult processes of care to the 2005 MHQP clinical performance database (an aggregation of HEDIS data on managed care enrollees in 5 participating health plans). The MHQP database did not distinguish physicians by specialty training. Each physician contributing HEDIS measure observations to the database was designated as a primary care physician by at least 1 of the 5 health plans, regardless of specialty training.

Instrument Development

Our goal was to query practicing physicians about the presence of quality enhancing structural capabilities in their practices. We selected practicing physicians as survey respondents because they may be in the best position to report on the use (in addition to the presence) of structural capabilities. Prior research also suggests that this approach can be used to measure important aspects of physician practices.²⁸

Based on published literature and previously developed surveys on physician group characteristics,^{25,29-34} we defined 13 key capabilities that could be assessed by a survey of practicing physicians and classified them into 4 domains: patient assistance and reminders (assistance of patient self-management, system for contacting patients for preventive services, clinical reminder systems); culture of quality (feed-

back to physicians on quality and patient experience, new initiatives on quality and patient experience, frequent meetings on quality performance, presence of a leader for quality improvement); enhanced access (language interpreters, providers' spoken languages, regular appointment hours on weekends); and electronic health records (frequently-used, multi-functional EHR) [Box]. Since the sophistication of EHRs may vary, the instrument assessed 6 specific EHR functionalities in 4 of the core areas identified by the Institute of Medicine: results management (lab and radiology results), communication and connectivity (notes from consultants), health information and data (problem and medication lists), and decision support (electronic reminders).³² We also asked respondents to report on the presence of trainees (medical students, residents, or fellows) and specialist physicians (other than primary care) at their practices.

Box. Surveyed Quality Enhancing Capabilities of Primary Care Practices

Patient assistance and reminders

Specially trained staff assist patients in chronic disease self-management

System for contacting patients who are due for preventive services

Reminders to provide guideline-based preventive care*

Culture of quality

Performance feedback to physicians on measures of clinical quality

Performance feedback to physicians on patient experience

New initiatives to improve performance on clinical quality

New initiatives to improve performance on patient experience

Frequent meetings to discuss practice site performance on quality

Having a leader for clinical quality

Enhanced access

On-site language interpreters

Clinicians' spoken languages while delivering clinical care

Regular hours on weekends

Electronic health records

Use and functionality:

Frequent use

Results (radiology and laboratory)

Notes from non-primary care specialists

Medication and problem lists

Electronic reminders

*Reminder system classified as present if the respondent reported having a reminder system to prompt any of the following services, when clinically indicated: mammograms, Pap smears, Chlamydia screening, asthma controller medication prescription, diabetes services (hemoglobin A1c testing, cholesterol testing, eye examinations, nephropathy monitoring), and coronary artery disease services (cholesterol testing and beta blocker prescription).

To improve its validity, the survey instrument underwent iterative revision based on cognitive testing with a small number of local physician volunteers. We found that knowledge about some of the questions (*e.g.*, detailed practice staff composition) was limited unless the physician was also the practice manager. These questions were revised to be more appropriate to the sampled physicians or eliminated from the survey. Survey items contributing data to the current analysis are available in the [Appendix](#) (available online).

Survey Sample

We selected adult primary care practices from the 2004-2005 MHQP physician directory, which included 729 practices of ≥ 2 physicians contributing ≥ 1 HEDIS measure observation in the MHQP clinical performance database. We excluded 220 prac-

tices with too few HEDIS measure observations to be certain that they were predominantly primary care practices [Fig. 1]. We excluded 19 practices that had data on only the Chlamydia screening HEDIS measure because these practices delivered predominantly pediatric care (as confirmed by direct contact).

To ensure that the sampled respondent would report features pertaining only to the practice of interest, we excluded multiple-practice physicians (6.6% of those remaining) who delivered care at 2 or more practices. This resulted in exclusion of 13 practices containing only multiple-practice physicians. To identify part-time physicians, we first calculated the total number of HEDIS observations (across all measures) contributed by each physician in 2004 and 2005. Then, for a convenience subset of physicians known to be part-time or full-time practitioners, we identified the threshold number of HEDIS observations that adequately discriminated between part-time or full-time practitioners. We excluded 62 practices containing only physicians identified as part-time practitioners using this threshold.

To obtain the survey sample, we sampled one physician at random from each of the remaining 415 practices and confirmed each sampled physicians' practice address against data from the Massachusetts Board of Registration in Medicine. Discrepancies between the MHQP physician directory and Board of Registration addresses were resolved by telephoning physicians' offices. Thirteen sampled physicians were no longer at the practice of interest. Ten of these were replaced by an alternate physician selected at random from rosters of the same practice. There was

no eligible alternate physician at 3 practices, and these were excluded from the study. The final study sample consisted of 412 practices, each containing 1 randomly sampled physician whose ongoing clinical presence was confirmed via Board of Registration address match or telephone call.

Survey Administration

We conducted the survey during May–October of 2007. The first wave was followed by up to four waves of reminders, including letters and telephone calls, to prompt non-respondents to return the survey.

Analysis

In general, survey items identified the presence or absence of a quality enhancing capability. Item non-response rates were < 5% for each survey question included in the analysis. For the purposes of the current analysis, we considered “no” and “don't know” responses to be equivalent. For each item that featured more than 2 possible responses (e.g., 5-point Likert scales), we created a dichotomous variable by establishing a threshold near the midpoint of the item response distribution. For EHRs we created a composite of the 6 functionalities assessed by the survey, classifying a practice's EHR as a “frequently-used, multi-functional EHR” only if it contained all 6 functionalities and was reported as being used “usually” or “always” during a typical day in clinic. We designated practices affiliating with any of the 9 networks as network-affiliated and all practices not affiliating with a network as non-affiliated. For ease of presentation, we grouped practice sizes into 4 categories that approximated quartiles: 2, 3–4, 5–8, and ≥9 physicians.

To assess the impact of survey non-response, we compared the size and network affiliation of practices with and without a response. We assessed the bivariate relationships between surveyed capabilities and our major predictors—size category and network affiliation status—using linear probability regression models predicting presence of each capability as a function of each major predictor. We then constructed multivariable regression models predicting the presence of each capability as a function of practice size category and network affiliation as well as the following potential confounders: presence of trainees, and presence of multiple specialties. Analyses based on alternative groupings of practice size (quintiles, deciles, and continuous physician count) produced similar results in all models. We also introduced interaction terms between network affiliation and size category, but these terms were not statistically significant and were therefore not retained. For capabilities with significant relationships to network affiliation, we introduced fixed effects representing each of the 9 networks and tested for differences between the networks.

All statistical analyses were performed with SAS software, version 9.1.3 (SAS Institute, Inc., Cary, North Carolina) using generalized estimating equations with exchangeable working correlation structures and empirical standard errors to adjust estimated variances for clustering of observations within networks.^{35,36} *P* values <0.05 were considered statistically significant for all comparisons. Linear probability models were chosen for ease of generating adjusted capability prevalences (by holding covariates at their mean values), with observed probabilities being within a reasonable range for this type of modeling. To confirm the stability of statistical inferences, we

Figure 1. Derivation of study sample.

re-ran all analyses using logit-linked generalized models with substantively similar results.

This study was approved by the Human Subjects Committee of the Harvard School of Public Health.

Role of the Funding Source

The study was supported by the Commonwealth Fund. No funding source had a role in the study design, analyses, or decision to submit the manuscript for publication.

RESULTS

We received 308 completed surveys (response rate 75%). There were no significant differences in the distribution of size or rates of network affiliation between responding and non-responding practices. Among respondents, practices varied in size from 2 to 74, and 64% of practices were network-affiliated [Table 1]. Overall, 47% of practices were teaching practices and 45% were multi-specialty (*i.e.*, specialists other than primary care physicians were present). Larger practices were significantly more likely than smaller practices to be network-affiliated (76% in the largest quartile vs. 47% in the smallest, $P=0.03$), teaching (54% vs. 35%, $P<0.001$), and multi-specialty (67% vs. 20%, $P<0.001$).

The prevalence of individual structural capabilities among practices ranged from 24% (practices regularly open to provide care on weekends) to 88% (respondent aware of results on measures of clinical quality) [Table 2]. In addition to awareness of clinical quality results, the most common capabilities included reminders for guideline-based preventive care (87%) and initiatives to improve results on measures of clinical quality (73%). In addition to providing care on weekends, the least common individual quality enhancing capabilities included on-site interpreter services (32%), and frequent meetings to discuss quality (43%). Thirty-three percent of practice respondents reported frequent use of a multi-functional EHR. The prevalence of specific EHR functionalities varied widely: 88% of respondents reported availability of radiology and laboratory via computer, but only 44% reported receiving electronic reminders to provide guideline-based preventive care for eligible patients.

Compared to smaller practices, respondents in larger practices were more likely to report presence of 9 capabilities spanning all 4 domains ($P<0.05$ for each capability). Network-affiliated practices were more likely than non-affiliated practices to have 5 capabilities in 3 domains ($P<0.05$ for each capability). The only exception to this trend was that network-affiliated practices were less likely than non-affiliated practices to regularly provide care on weekends (29% vs. 22%, $P=0.04$).

After adjustment for potential confounders, the direction of each significant bivariate relationship between practice size, network affiliation, and structural capabilities was unchanged [Table 3]. However, statistical significance was lost for relationships between size, network affiliation, and presence of a clinician speaking a language other than English. There were no statistically significant interactions between the larger size and network affiliation for any of the capabilities. Neither the presence of trainees nor the presence of physicians of multiple specialties were consistently associated with capabilities [data not shown].

There was significant heterogeneity among the nine networks in the adjusted prevalence of 3 of the 5 capabilities shown to be associated with network affiliation (awareness of patient experience ratings, initiatives to improve patient experience ratings, and frequently-used, multi-functional EHRs) [Fig. 2]. For awareness and initiatives to improve patient experience ratings, the adjusted prevalence was higher in ≥ 7 of the 9 networks than among non-affiliated practices. However, only 5 networks had higher adjusted prevalence of multi-functional EHRs (range 0–73%) than the average prevalence among non-affiliated practices (18%).

DISCUSSION

Recent efforts to improve the quality of primary care have encouraged a new practice model: the Patient-Centered Medical Home (PCMH).^{1,15} Formal standards defining the structural capabilities of the PCMH are still evolving, but they include capabilities in the 4 investigated domains: patient assistance and reminders, culture of quality, enhanced access, and electronic health records (EHRs).^{16,17,21} Where these capabilities are not already in place, their adoption may require substantial investment.

In a statewide cohort of primary care practices ranging in size from 2 to 74 physicians, we found wide variation in the presence of 13 pre-defined quality enhancing capabilities that we studied. Larger practices were significantly more likely than smaller practices to have 9 of 13 possible capabilities. Network-affiliated practices were more likely than non-affiliated practices to have 5 of the 13 capabilities. Larger practice size and network affiliation were both associated with higher prevalence of capabilities in 3 domains of improvement: feedback and improvement infrastructure, linguistic capabilities, and EHRs. However, the provision of weekend care was significantly lower among network-affiliated practices compared to non-affiliated practices, possibly reflecting the consolidation of these services to a limited number of locations. None of the findings were substantially altered by adjustment for other practice characteristics.

Primary care practices vary in many ways. Practice size and network affiliation, among other organizational characteristics, may affect practices' ability to make PCMH investments. Prior studies of groups containing at least 20 physicians have found higher prevalence of structural capabilities among larger physician organizations and integrated groups than among smaller organizations and independent practice associations.^{29,37,38} However, smaller practices like those that we studied constitute the dominant organizational model for primary care in the United States.³⁹ Our findings are consistent with other studies showing that even among these smaller practices, larger size is associated with higher rates of EHR adoption and physician participation in quality improvement.^{25,28,40,41} The lack of a consistent relationship between teaching status and structural capabilities may reflect competing organizational priorities within teaching practices.

The association between network affiliation and EHR adoption was more complex than for other capabilities. Overall, network affiliation was associated with frequently-used, high-functional EHRs. However, their prevalence varied significantly between the 9 networks, and 4 networks had lower adjusted prevalence than the average among non-affiliated

Table 1. Characteristics of Surveyed Practices

	All practices (N=308)	Practice size (number of physicians)*				P value for trend†
		2	3-4	5-8	≥9	
Number of sites	308	n (%)				
		76 (25)	99 (32)	71 (23)	62 (20)	
% of sites in each category that are...	%	%				
...affiliated with any network	64	47	60	77	76	0.03
...teaching (students, residents, or fellows present)	47	35	44	56	54	<0.001
...multi-specialty (specialists other than primary care physicians present)	45	20	45	53	67	<0.001

*Mean number of physicians per practice is 6.4, with range 2-74.

†P value from linear regression model predicting each row variable as a function of practice site size. Models are fit with generalized estimating equations to account for network-level clustering.

Table 2. Unadjusted Associations Between the Prevalence of Quality Enhancing Capabilities, Practice Size, and Network Affiliation Status

	All practices	Practice size (number of physicians)					Non-affiliated	Network-affiliated	
		2	3-4	5-8	≥9				
	Prevalence of each quality enhancing capability (% of practices)					P value for trend*	Prevalence		P value for difference†
Patient assistance and reminders									
Specially trained staff assist patient self-management	57	35	49	69	85	<0.001	51	61	0.06
Doctors share a communication system to contact patients who are due for clinical preventive services	53	56	51	57	46	0.31	56	51	0.07
Practice uses reminder systems to provide guideline-based preventive care	87	77	87	91	94	0.002	86	88	0.77
Culture of quality									
Respondent aware of individual results or practice-level results on:									
Measures of clinical quality	88	84	88	93	89	0.27	88	89	0.78
Patient experience ratings	66	49	59	83	80	<0.001	50	75	0.001
Practice had new initiatives during past year to improve results on:									
Measures of clinical quality	73	67	71	83	72	0.07	70	74	0.21
Patient experience ratings	47	37	33	61	66	<0.001	34	55	0.003
Practice meets to discuss quality more frequently than every quarter	43	34	34	60	48	<0.001	42	44	0.85
Practice has a leader for clinical quality	58	59	53	61	60	0.62	59	57	0.63
Enhanced access									
On-site language interpreters present	32	25	22	37	52	<0.001	25	36	<0.001
At least one clinician speaks a language other than English during patient care	57	49	44	73	68	0.002	50	61	0.005
Practice regularly open to provide care on weekends	24	16	15	34	40	<0.001	29	22	0.04
Electronic health records									
Frequent computer use during patient visits (usually or always)	75	56	77	87	82	0.02	68	79	0.17
Specific EHR functionalities									
Radiology results	88	80	90	86	98	0.005	88	88	0.94
Lab results	88	77	89	89	98	<0.001	84	90	0.10
Specialist notes	63	49	58	75	77	0.03	50	71	0.03
Medication list	63	44	58	73	79	<0.001	44	73	0.01
Problem list	53	35	45	68	69	<0.001	34	63	0.02
Electronic reminders	44	25	33	65	61	<0.001	28	53	0.06
Frequently-used, multi-functional EHR‡	33	14	24	48	52	<0.001	16	42	0.03

Abbreviations: EHR, Electronic Health Record.

*P values from linear probability models predicting presence of each strategy as a function of practice size. Models were fit with GEE to account for network-level clustering, using empirical estimates of standard error.

†P values from linear probability models predicting presence of each strategy as a function of network affiliation. Models were fit with GEE to account for network-level clustering, using empirical estimates of standard error.

‡Practices with "frequently-used, multi-functional EHR" have an EHR that is frequently used and has all listed functionalities.

Table 3. Adjusted Associations Between the Prevalence of Quality Enhancing Capabilities, Practice Size, and Network Affiliation Status

	Practice size (number of physicians)					Non-affiliated	Network-affiliated	
	2	3-4	5-8	≥9				
	Adjusted prevalences (% of practices)*				P value for trend	Adjusted prevalences		P value for difference
Patient assistance and reminders								
Specially trained staff assist patient self-management	39	48	69	83	<0.001	57	58	0.83
Doctors share a communication system to contact patients who are due for clinical preventive services	55	50	59	48	0.54	56	51	0.22
Practice uses reminder systems to provide guideline-based preventive care	78	86	91	93	0.01	88	86	0.75
Culture of quality								
Respondent aware of individual results or practice-level results on:								
Measures of clinical quality	85	88	92	89	0.45	90	88	0.56
Patient experience ratings	54	59	79	78	0.004	56	72	0.01
Practice had new initiatives during past year to improve results on:								
Measures of clinical quality	69	69	83	71	0.36	74	72	0.90
Patient experience ratings	44	33	57	61	0.04	39	52	0.02
Practice meets to discuss quality more frequently than every quarter	32	35	61	51	<0.001	45	42	0.64
Practice has a leader for clinical quality	61	51	62	58	0.95	60	56	0.37
Enhanced access								
On-site language interpreters present	29	23	34	50	<0.001	29	34	0.04
At least one clinician speaks a language other than English during patient care	53	43	71	67	0.06	52	59	0.08
Practice regularly open to provide care on weekends	14	15	36	40	0.001	33	20	0.005
Electronic health records								
Frequent computer use during patient visits (usually or always)	57	78	85	80	0.06	70	77	0.40
Specific EHR functionalities								
Radiology results	80	90	85	99	0.02	90	87	0.59
Lab results	80	89	87	97	0.01	85	89	0.25
Specialist notes	54	61	69	72	0.22	53	69	0.06
Medication list	47	61	70	76	0.001	48	71	0.005
Problem list	38	46	64	67	<0.001	38	61	0.02
Electronic reminders	29	37	62	58	<0.001	33	52	0.13
Frequently-used, multi-functional EHR†	19	27	44	48	0.01	18	40	0.01

Abbreviations: EHR, Electronic Health Record.

*Adjusted prevalences derived from multivariable linear probability models predicting the presence of each structural component as a function of practice size category and network affiliation, adjusting for teaching status (presence of medical students, residents, or fellows) and multi-specialty status (specialists other than primary care physicians present). Models were fit with GEE to account for network-level clustering, using empirical estimates of standard error.

†Practices with "frequently-used, multi-functional EHR" have an EHR that is frequently used and has all listed functionalities.

practices. This finding suggests that although some networks have fostered investment in EHRs, other factors (e.g., grants from health plans and quality improvement organizations) may also influence EHR adoption.

The study has limitations. First, the capabilities we studied do not encompass all of the potential attributes of the PCMH. Recent and evolving standards include attributes like having a personal physician-directed medical practice, providing access to care via telephone or email, and identifying health conditions important to the practice.^{15-17,21} Our intent was to evaluate, in a way suitable for research, capabilities common to PCMH proposals that were likely to be especially pertinent to measured quality, to require investment, and to be familiar to practicing physicians. Second, we chose to survey practicing physicians rather than managers. This constrained our ability to gather some types of practice information (e.g., detailed staff composition). Third, a cross-sectional study design limits inferences about causation. We cannot distinguish whether larger practice size makes investment in quality enhancing

capabilities more likely, or if such capabilities lead to growth. Similarly, we cannot tell whether some networks invest in EHRs or whether some networks selectively affiliate with practices already having EHRs. Finally, the study took place in Massachusetts, a relatively small state with a high concentration of major medical teaching centers. Some of these centers have led the adoption of EHRs, and their graduates may practice locally. This may limit the generalizability of some study findings.

Proposals to create PCMH standards and link payments to practices' quality enhancing capabilities signal a renewed focus on structural measures of primary care quality—though whether possession of these structural capabilities for quality will translate to better processes or outcomes remains uncertain.^{2,42} Our analysis suggests that on many structural measures, larger practices have an advantage over smaller practices, with network affiliation conferring a narrower advantage. Small, non-affiliated practices may therefore require the largest investments in order to achieve PCMH designation. If strong financial or regulatory incentives are

A. Awareness of patient experience results. **B. Initiatives to improve patient experience ratings.** **C. Frequently-used, multi-functional EHRs.**

Figure 2. Adjusted network-by-network prevalences of capabilities associating with network affiliation. For all 3 panels, $P < 0.001$ for variation among networks. Point estimates and 95% CI's (represented by error bars) are calculated using multivariable logistic models that include a dummy variable for each network, and adjust for practice size, multi-specialty status, and teaching status. In panel A, Networks A, B, and C were excluded from logistic modeling because 100% of respondents reported awareness of patient experience ratings. The median number of responding practices per network was 16 (range, 7-72). There were no significant relationships between the number of practices in a network and capability prevalence. In Panel C, Network A was excluded from the logistic model because none of its practices had frequently used, multi-functional EHRs.

tied to PCMH designation, such practices may be encouraged to grow, merge, or affiliate with networks of other sites. Alternatively, if structural investment proves too difficult for small practices, these practices may not be able to count on

PCMH-based payments in order to survive the "crisis" in primary care;^{14,43} structural improvements in primary care could come at the price of new access problems in areas predominantly served by small practices. As PCMH pilot

programs go forward, policy makers should monitor their effects on both quality and access to primary care.

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