Patient-Centered Medical Home Knowledge and Attitudes of Residents and Faculty: Certification Is Just the First Step

Fadya El Rayess, MD, MPH
Roberta Goldman, PhD
Christopher Furey, MD
Rabin Chandran, MD
Arnold R. Goldberg, MD
Gowri Anandarajah, MD

ABSTRACT

Background The patient-centered medical home (PCMH) is an accepted framework for delivering high-quality primary care, prompting many residencies to transform their practices into PCMHs. Few studies have assessed the impact of these changes on residents' and faculty members' PCMH attitudes, knowledge, and skills. The family medicine program at Brown University achieved Level 3 PCMH accreditation in 2010, with training relying primarily on situated learning through immersion in PCMH practice, supplemented by didactics and a few focused clinical activities.

Objective To assess PCMH knowledge and attitudes after Level 3 PCMH accreditation and to identify additional educational needs.

Methods We used a qualitative approach, with semistructured, individual interviews with 12 of the program's 13 postgraduate year 3 residents and 17 of 19 core faculty. Questions assessed PCMH knowledge, attitudes, and preparedness for practicing, teaching, and leading within a PCMH. Interviews were analyzed using the immersion/crystallization method.

Results Residents and faculty generally had positive attitudes toward PCMH. However, many expressed concerns that they lacked specific PCMH knowledge, and felt inadequately prepared to implement PCMH principles into their future practice or teaching. Some exceptions were faculty and resident leaders who were actively involved in the PCMH transformation. Barriers included lack of time and central roles in PCMH activities.

Conclusions Practicing in a certified PCMH training program, with passive PCMH roles and supplemental didactics, appears inadequate in preparing residents and faculty for practice or teaching in a PCMH. Purposeful curricular design and evaluation, with faculty development, may be needed to prepare the future leaders of primary care.

Introduction

The patient-centered medical home (PCMH) model[1,2] has emerged as a promising framework for delivering comprehensive, high-quality primary care that can lead to better health outcomes and positively impact patient and staff experiences.[3–9] Given the rapidly changing health care arena, it is essential that primary care residencies adapt to prepare the next generation of physicians to practice and take leadership roles in PCMH care settings.[3,10–12]

To date, most articles about residency PCMH training report descriptive statistics about resident, faculty, and practice characteristics prior to PCMH transformation,[13–15] barriers to PCMH implementation,[16–18] or examination of the process of practice redesign.[19–23] Others report the effects of PCMH-focused initiatives targeting specific populations.[24–26] A few have looked at the implementation of specific components of PCMH in a residency practice: team-based care,[27,28] group visits,[29] electronic prescribing,[30] and quality improvement.[31] An implicit premise in these articles is that residents will gain sufficient PCMH knowledge and skills from practicing in a certified PCMH and through exposure to an effective PCMH model. This assumes that the usual situated learning model[32] that is effective for mastery of direct patient care is also effective for acquiring PCMH competencies.

Few studies to date have evaluated the efficacy of this learning model or that of a structured PCMH curriculum. One study[19] focused on faculty and resident ratings of helpfulness of PCMH educational components. Another pooled resident survey data from 10 family medicine residency practices making progress toward National Committee for Quality Assurance (NCQA) certification, with each implementing different PCMH curricular changes.[33] Residents' self-assessment of their use of PCMH components and competencies improved; however, absolute values remained in the moderate range.[33] Furthermore, available qualitative studies are limited to views of key faculty and staff, all of whom are

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actively involved in PCMH practice transformation.[16,18,26,34]

The family medicine residency's faculty/resident practice at Brown University in Providence, Rhode Island, was an early adopter of the PCMH model, gaining Level 3 NCQA PCMH certification in 2010. At this time, similar to other residencies in early stages of PCMH transformation,[13,15,19–23] resident education in the PCMH model was provided primarily through longitudinal patient care in a PCMH practice, which was supplemented by didactics and focused, but brief, clinical experiences.

The purpose of this qualitative study was to (1) gain in-depth understanding of the absorption of PCMH knowledge and attitudes among senior residents and faculty after Level 3 PCMH practice recognition, and (2) identify further PCMH education needs of residents and faculty.

What was known and gap

Primary care programs are transforming ambulatory clinics into patient-centered medical home (PCMH) models, yet few studies have assessed the impact on knowledge, skills, and attitudes.

What is new

Residents and faculty had positive attitudes about the model, but expressed concerns that they felt inadequately prepared to implement PCMH principles into practice and teaching.

Limitations

Single specialty, single program approach limits generalizability.

Bottom line

Practicing in a PCMH by itself alone may not adequately prepare residents and faculty for practice or teaching in this primary care model.

Methods

Educational Methods

Setting: The family care center of the Brown University family medicine resident/faculty practice serves an urban, underserved community. It has been involved in a statewide chronic care collaborative since 2003, and became a Level 3 PCMH in 2010. All 39 residents and faculty practiced in the family care center, utilized the electronic health record, and worked in an interdisciplinary practice along with other health care providers (behavioral health, social work, nutrition, pharmacy, geriatrics, and a nurse care manager). Faculty, resident, and staff "PCMH champions" led diabetes group medical visits, organized quality improvement projects, and attended to PCMH practice transformation tasks.

Educational Approach: We relied on a situated learning[32] approach to PCMH training. Direct patient care in the PCMH practice involved active situational learning (eg, using PCMH resources and the interdisciplinary team). However, other PCMH competencies, such as population health, chronic disease management, and practice improvement, relied on passive situational learning and activities led by practice champions such as diabetes registry analysis or quality improvement projects. For residents, this learning process was supplemented by content learning through residency-wide didactics.[35]

Learning Activities: FIGURES 1A and 1B illustrate the specific learning activities that postgraduate year (PGY)–3 residents and faculty received prior to participating in this study. This degree of exposure to a formal PCMH curriculum was comparable to that in other residency programs.[13,15,19–23]

Evaluation

We conducted a qualitative in-depth individual interview study in the summer of 2011,[36] inviting all third-year residents and core family medicine faculty to participate. A PCMH grant coordinator conducted and audio recorded individual, in-person semistructured interviews, lasting approximately 30 minutes. Interviews were professionally transcribed. Two authors conducted the faculty interviews.

Instrument: We developed, tested, and modified interview guides using largely open-ended questions with spontaneous follow-up questions. At the time of this study, consensus regarding PCMH competencies was still emerging, and we selected questions that provided opportunities to explore residents' and faculty members' PCMH knowledge, attitudes, and experience. We included preparedness for practicing, teaching, and taking leadership roles within a PCMH setting.

The study received Institutional Review Board approval from the Memorial Hospital of Rhode Island.

Data Analysis: Five authors analyzed the data using the immersion/crystallization[37] method for qualitative analysis. This involved each researcher independently reading each transcript, while taking notes on emerging themes. Next, the authors met several times as a group to discuss data interpretation, potential biases, and application of the findings to residency

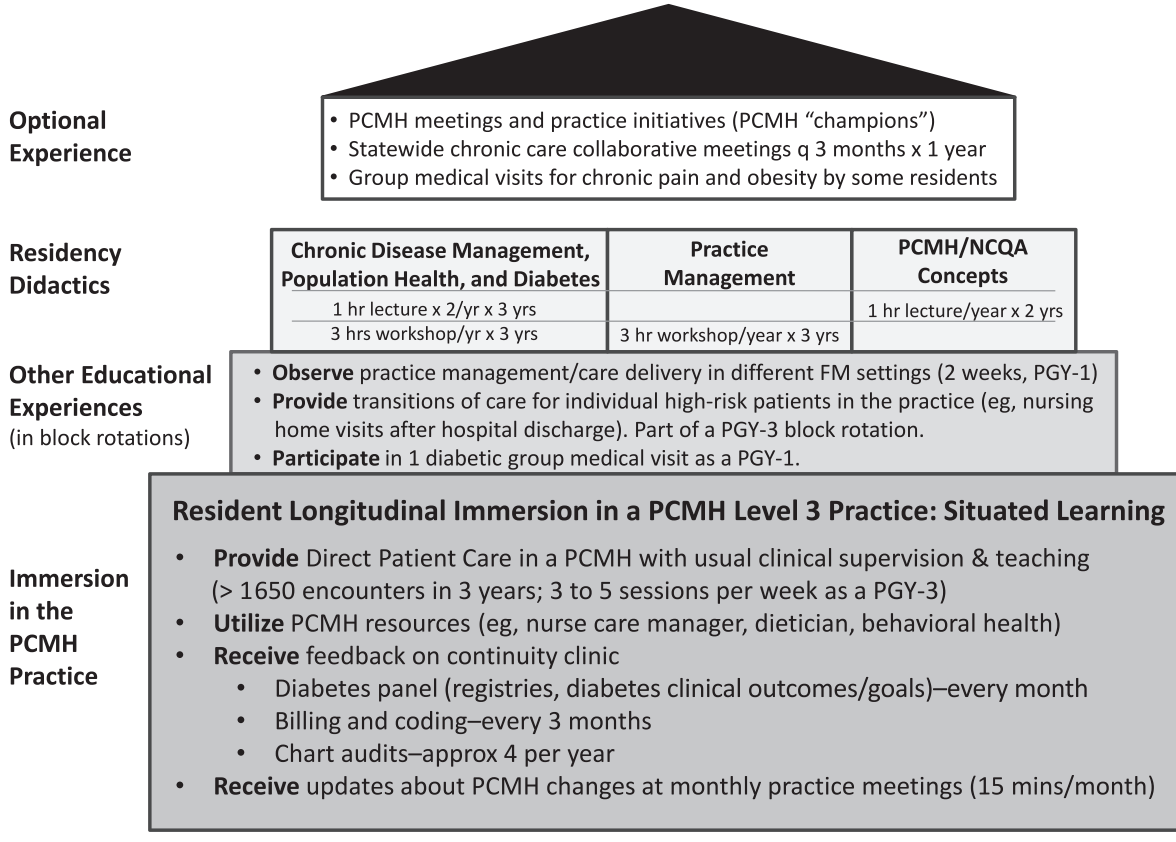

FIGURE 1A
Resident PCMH Training
Abbreviations: PCMH, patient-centered medical home; NCQA, National Committee for Quality Assurance; FM, family medicine; PGY, postgraduate year.

PCMH education. We addressed alternative interpretations and discussed the data until we reached consensus on interpretation.

Overall, we analyzed 29 interviews, comprising the following: 12 of 13 PGY-3 residents (1 graduated early) and 17 of 19 core family medicine faculty (2 were excluded due to leadership roles in the study). Participant characteristics and common interview themes are shown in TABLE 1.

Results

Resident Opinions of the PCMH Model

Many residents expressed positive attitudes toward the PCMH approach, including high-risk patients getting better care and improved productivity (TABLE 2). Residents indicated that the approach is "How most of us [would] have practiced in an ideal world anyway." Yet several expressed concern: "It's not for me"; "It's too idealistic"; "It's only for large practices—not for small"; and indicated there may be "too many challenges to fully implement." Residents also worried about increased oversight eroding physician autonomy and having inadequate resources to achieve PCMH goals.

Resident Definitions of PCMH

Most residents articulated a vague conceptualization of PCMH principles, and 9 of 12 residents were unable to list principal elements. Many spoke of a team approach; however, they almost exclusively mentioned a new nurse care manager and appeared unaware of the PCMH contributions of other interdisciplinary team members. Aspects mentioned less often included the following 2 factors: patient as part of the team and funding linked to quality improvement. Notable omissions were attention to transitions in care and improving access. Only half of the residents reported knowing about the existence of NCQA PCMH certification criteria, and few could explain them, even in broad terms. The exceptions to this were the resident champions.

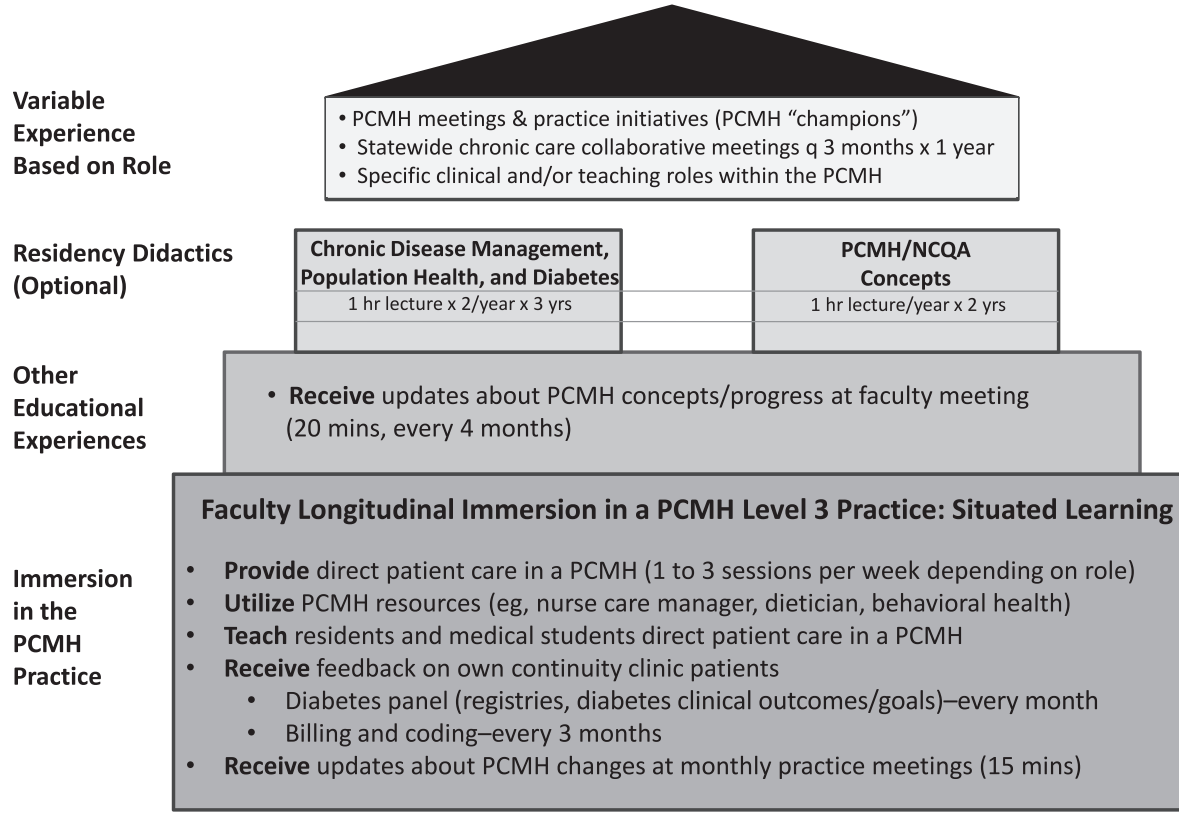

FIGURE 1B
Faculty PCMH Training
Abbreviations: PCMH, patient-centered medical home; NCQA, National Committee for Quality Assurance.

PCMH Learning Sources

Overwhelmingly, residents reported that they learned about PCMH from the family care center medical director. Less frequently mentioned venues included clinical practice meetings, lectures, and 1-on-1 learning from preceptors or a nurse care manager.

Resident Preparedness

When asked about their preparedness to implement general PCMH principles, 9 of 12 residents reported feeling somewhat prepared. In contrast, when asked about their preparedness to implement specific PCMH principles, most admitted that they felt unprepared. Additionally, few had well-developed definitions of PCMHs or hands-on experience in certain basic skills essential for PCMH implementation, such as running quality improvement projects or analyzing chronic disease registries. Although some residents had attended group medical visits, none had led one. Barriers to learning included lack of time to read or attend meetings, and in some cases, failing to use opportunities to learn about PCMH because residents felt they would not use the knowledge after graduation.

Faculty Opinions of PCMH

Faculty varied in their opinions about PCMH (TABLE 3). Two-thirds held positive views, including that it is "great," "exciting," and "what family doctors have tried to do all along and now there are resources." Other faculty members were concerned that the PCMH concept is still essentially hierarchically physician led and not sufficiently patient centered. Some felt that it lacked a prevention focus, it centered too much on chronic disease management and transitions of care, and it did not adequately address prenatal care and services for pediatrics populations.

Faculty PCMH Knowledge and Teaching Skills

Faculty varied in their self-rated PCMH knowledge, depending on their educational focus. On a scale of 1 to 10, self-rated knowledge ranged from 2 to 8 (mean

TABLE 1
Summary of Major Findings in Resident and Faculty Interviews

Major Findings	Residents (N = 12)	Core Faculty (N = 17)
Interviewees included	▪ PGY-3 residents in family medicine	▪ 12 academic family physicians ▪ 5 other core faculty (geriatrician, nutritionist, geriatric NP, academic PharmD, and clinical social worker)
Attitudes toward PCMH	▪ Generally positive ▪ Several concerns	▪ Generally positive ▪ Several concerns
Knowledge of PCMH concepts	▪ Most had a vague concept ▪ Few had specific knowledge (resident PCMH champions)	▪ Varied by teaching role ▪ Poor to very good self-rating ▪ Few considered themselves proficient
Experience with PCMH clinical activities	▪ Limited to passive roles (eg, observer of group medical visits, receiver of registry data, hearing about PDSA cycles)	▪ Varied by role ▪ Outpatient clinical leaders (more) ▪ Other faculty (limited)
Source of learning about PCMH	▪ Primarily from a single faculty PCMH champion (medical director)	▪ Variable depending on role
Preparedness to incorporate PCMH activities or to teach PCMH model	▪ Majority self-rated "somewhat prepared" ▪ Majority had little direct experience with participation or leadership in PCMH activities, except using PCMH resources	▪ Most self-rated not adequately prepared ▪ Most only taught about specific PCMH resources (eg, nurse care manager)
Barriers to learning about PCMH	▪ Insufficient time to read e-mails, attend lectures, or outside activities	▪ Insufficient time to learn new concepts ▪ Inadequate communication (re: PCMH changes)
Suggestions to improve preparedness	▪ More involvement in PCMH activities ▪ More time ▪ More teamwork ▪ Better framework within which to understand small PCMH details	▪ Better framework: What are we trying to teach? ▪ Better communication systems (re: PCMH changes)

Abbreviations: PGY, postgraduate year; NP, nurse practitioner; PharmD, Pharmacist PhD; PCMH, patient-centered medical home; PDSA, plan-do-study-act.

= 6.6), and the ability to teach PCMH concepts ranged from 4.5 to 8 (mean = 6.9). The highest self-rated scores were from clinical faculty directly involved in practice transformation.

Barriers to Teaching and Implementing PCMH Concepts

Faculty identified insufficient time to learn and insufficient communication about planned changes as significant barriers. Most reported that they were less prepared than they would like. Few respondents referred to specific PCMH concepts when teaching; instead, they referenced components such as open access, team-based care; chronic disease; and practice management without using the specific terminology. The most commonly mentioned PCMH resource was the nurse manager.

Discussion

We examined PCMH knowledge and attitudes among residents and faculty in a single family medicine residency following Level 3 PCMH practice accreditation. While faculty and residents generally had positive attitudes toward PCMH, they also had significant concerns, including, ironically, about losing true "patient-centered care." Despite utilizing PCMH resources, they lacked specific knowledge and felt inadequately prepared to implement PCMH principles in their future practice or teaching. Exceptions were resident and faculty

TABLE 2
Main Findings From Resident Interviews

Question	Range of Responses	Representative Quotations
Opinions about PCMH	Positive	"Since implementing it, I [have] definitely seen [that] a certain subset of our patients have gotten care who would otherwise not have gotten care." "[Having nurse care managers is] making a huge difference in people's lives." "I think it's innovation and thinking—looking at things, doing PDSA cycles, and really rapidly changing practices instead of kind of becoming stagnant." "Looking at outcomes and targeting goals is certainly a good thing for patients." "Supposed to be able to deliver better and more complete health care"
	Concerns	"I wonder how doable it would be once I leave a place like this that has a lot of resources." "I'm not interested per se in saying I have a PCMH practice." "Haven't seen benefit yet." "More checks and balances." "It's kind of for the sake of doing it as opposed to having an actual outcome to support it . . . someone can be a Level 4 medical home, but their outcomes are no different than anyone else's, they're just better at remembering to check those boxes."
Knowledge of PCMH principles	No knowledge	Most often given answer: "No." "I don't think so." "It's a hard definition." "I can't say that I fully understand all of the intricacies of PCMH."
	Vague	"Getting the patient to be center of our care." "A lot of technical jargon." "Gatekeeper." "Primary care physician runs and is involved in all aspects of care."
	More specific	"Meaningful use." "Group accountability." "Open-access EMR." "Quality improvement." "Focusing on chronic disease." "It's more than just the doctor's appointment. It's every single step."

Abbreviations: PCMH, patient-centered medical home; PDSA, plan-do-study-act; EMR, electronic medical record.

PCMH champions who had been actively involved in PCMH transformation.

Although several studies have examined practice transformation at residency sites,[19–23] few have focused on educational outcomes.[33] Those that did mostly addressed specific clinical interventions in the PCMH setting.[27–31] One study[33] demonstrated some improvement in resident self-reported PCMH competencies, but absolute rating remained moderate. Our study provides contextual insights into why residents' and faculty members' PCMH competency may remain less than ideal after PCMH accreditation. Despite positive attitudes, specific knowledge and skills do not appear to be adequately assimilated through simply practicing in a PCMH.

Studies of faculty have included interviews with faculty champions, field notes of PCMH transformation meetings, and surveys.[28,34] Our study extends the findings by providing insight into the needs of faculty not centrally involved in PCMH transformation, and suggests that faculty development is needed in basic PCMH concepts. Our findings also point to a need to improve communication regarding the PCMH approach.

Many primary care residency programs are struggling with how to prepare graduates for practice in PCMHs. Our findings support the TransforMED National Demonstration Project concept that "creating a PCMH is much more than implementing the discrete model components" necessary for NCQA accreditation.[38] Transformation is an ongoing process[39,40] that requires strategies aimed at engaging faculty, residents, and staff. Our findings also suggest that immersion in a PCMH practice with supplemental didactics, while an important first step, is not adequate to prepare residents for future practice or to prepare faculty for teaching.

In the situated learning model, learners gain mastery through immersion in their community of learning and gradually move from the periphery to

TABLE 3
Main Findings From Faculty Interviews

Theme	Variation in Responses	Representative Quotations
Opinion about PCMH	Positive	"I think it's a great concept that's being formalized and recognized throughout the country and reimbursed appropriately and valued now for something that we've done for 50 years."
		"I'm a big fan . . . it's a great concept . . . it's got a lot of great tools that people will be able to use."
		"It might be an effective marketing tool for FM."
	Concerns	"It's very doctor focused."
		"There needs to be greater emphasis on interdisciplinary teams."
		"It's also focused on the sickest of the sick, not on actual prevention and family support."
		"My concern from the beginning is we're not involving pregnant patients."
		"We better be very careful about making sure that it's not about the finances only."
Preparedness to teach	General faculty	"Not as well as I should."
		"It's more at the management level where I don't have that kind of institutional or organization level experience to do that. I work in teaching organizations not in patient care organizations in terms of my leadership roles."
		"I'd say I'm probably in the middle. You know, I've gone to several lectures . . . I've done some reading on it."
		"I'm just sort of getting it now. So I think that most people don't have—they have just a very vague notion. It's unfortunate that it doesn't translate well into concrete thinking."
	PCMH champions	"Because of my other teaching role, I've learned a little bit more about some of the background of it."
		"As a team leader, I was also asked to attend a number of other things, which really helped me improve my knowledge on PCMH."
Explicit incorporation of PCMH principles into teaching	General faculty	"I don't think so" . . . it's not explicit . . . but I am using the PCMH model."
		"By allowing residents to know what resources are available because of PCMH."
		"Probably indirectly . . . I don't think I've used the term once ever in teaching."
		"Care coordination. That's something that my guess is what most faculty are emphasizing. And it's just because the patients, especially in the family care center, frequently are so medically complex. So you're dealing with the medical issues, social issues, and financial issues."
	PCMH champions	"The underlying philosophy of [PCMH] is something I'm talking to residents about constantly without using the new lingo."
		"At team meetings, we start kind of bouncing around some ideas that would make [the residency clinic] a more patient-centered practice. On geriatrics rotation, [there is a] session on interdisciplinary team training."

Abbreviations: PCMH, patient-centered medical home; FM, family medicine.

the center.[32,41] In other clinical domains, immersion during residency moves learners from novice to expert in patient care skills, likely due to prevailing faculty expertise in the area. Our study suggests that for PCMH skills this is not yet the case, as most faculty preceptors were not yet expert enough to provide a robust PCMH community of learning. Therefore, PCMH training requires curricular innovations that intentionally move residents and faculty from the periphery to the center of PCMH activities, decreas-

ing reliance on opportunistic learning and transforming passive learning into active learning and leadership.[32,41,42]

Our study has several limitations. It was conducted at a single family medicine program, which had recently achieved Level 3 PCMH accreditation, and the findings may not be applicable to other programs and settings. Interviews were designed to elicit attitudes and knowledge perceptions, but may not reflect resident behaviors with patients in the PCMH setting, which may be more informed by PCMH practices than residents realize.

Conclusion

Resident immersion in a PCMH practice that has achieved Level 3 accreditation should be considered just the first step in the process of ensuring faculty and resident familiarity, comfort, and efficacy with the PCMH model. Purposeful curricular design, implementation, and evaluation are needed to adequately prepare the future leaders of primary care transformation.

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Fadya El Rayess, MD, MPH, is Associate Director of Family Medicine Residency and Assistant Professor (Clinical), Department of Family Medicine, Warren Alpert Medical School of Brown University; **Roberta Goldman, PhD,** is Professor (Clinical), Department of Family Medicine, Warren Alpert Medical School of Brown University, and Adjunct Professor, Department of Social and Behavioral Sciences, Harvard School of Public Health; **Christopher Furey, MD,** is Assistant Professor (Clinical), Department of Family Medicine, Warren Alpert Medical School of Brown University; **Rabin Chandran, MD,** is Associate Professor (Clinical), Department of Family Medicine, Warren Alpert Medical School of Brown University; **Arnold R. Goldberg, MD,** is Professor of Family Medicine, University of Southern Florida Morsani School of Medicine, Department of Family Medicine, Lehigh Valley Family Health Network, and Medical Director, Lehigh Valley Family Health Center; and **Gowri Anandarajah, MD,** is Director of Faculty Development and Professor (Clinical), Department of Family Medicine, Warren Alpert Medical School of Brown University.

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Corresponding author: Fadya El Rayess, MD, MPH, Memorial Hospital of Rhode Island, Department of Family Medicine, 111 Brewster Street, Pawtucket, RI 02860, 401.729.2235, fadya_el_rayess@brown.edu

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