Effects of Hospital Systems on Medical Home Transformation in Primary Care Residency Training Practices

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Abstract: Most primary care residency training practices have close financial and administrative relationships with teaching hospitals and health systems. Many residency practices have begun integrating the core principles of the patient-centered medical home (PCMH) into clinical workflows and educational experiences. Little is known about how the relationships with hospitals and health systems affect these transformation efforts. Data from the Colorado Residency PCMH Project were analyzed. Results show that teaching hospitals and health systems have significant opportunities to influence residency practices' transformation, particularly in the areas of supporting team-based care, value-based payment reforms, and health information technology. **Key words:** *education, family practice/education, family practice/organization & administration, graduate, internal medicine/education, internship and residency/organization & administration, internship and residency/trends, medical, patient-centered care/organization & administration, primary health care/organization & administration, program evaluation, quality improvement/organization & administration*

THE PATIENT-CENTERED MEDICAL HOME (PCMH) has become a widely accepted model for improving the primary care

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delivery system. Practices and health systems that have implemented the PCMH model have shown improved patient experience of care and lower per capita costs (Nelson et al., 2014; Nielsen et al., 2015; van Hasselt et al., 2015; Yoon et al., 2013). Since the major primary care professional organizations endorsed the PCMH model in 2007 (American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, American Osteopathic Association, 2007), primary care residency practices have begun integrating the core principles of the PCMH into clinical workflows and educational experiences (Koch et al., 2015).

The Colorado Residency PCMH Project was developed to assist primary care residency training practices in PCMH implementation and curriculum redesign. Operating since 2009, the collaborative engages all 10 of

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Colorado's Family Medicine residency training practices and one Internal Medicine residency primary care track practice using a practice facilitation change model (Nagykaldi et al., 2005; Nutting et al., 2010; Rhydderch et al., 2006) to transform these programs and practices into PCMHs via practice improvement and curriculum redesign. The PCMH project provided stipends, practice facilitators, biannual learning collaborative meetings, evaluation support, and access to consultation tools and resources.

Collaborative leaders recognized early on that residency training practices face additional challenges when implementing the PCMH model compared with nonresidency primary care practices (Fernald et al., 2011; Lindbloom & Ringdahl, 2014; Markova et al., 2012). Challenges include yearly loss of experienced, graduating physicians, annual influx of new physicians lacking experience in quality improvement (QI) and working in interprofessional teams, lack of consistency in residents' month-to-month practice schedules, reduced patient-provider continuity, work hour restrictions, funding pressures affecting numbers of primary care residents, little time and space for skill training, and faculty physicians distracted by heavy clinical, administrative, and academic demands.

Part of the challenges to transformation faced by primary care residency training practices may be due to their financial and administrative affiliations with teaching hospitals and larger health systems. These complex relationships bring additional regulatory, accreditation, and educational requirements that affect residency practices significantly. The number of resident positions offered each year, out-of-clinic service obligations, nonphysician staffing, and capital improvements may also be influenced.

While teaching hospitals and health systems stand to benefit from implementing the PCMH model in their training practices, little is known about how hospitals and health systems affect those PCMH transformation efforts. This study sought to determine how teaching hospitals and health systems affect residency training practices' ability to incorporate medical home principles into their curriculum and clinical workflows.

METHODS

Setting

A total of 11 residency practice sites from 10 primary care residency programs participated in the Colorado Residency PCMH Project (1 program has 2 tracks that differ by continuity practice site and affiliated hospital system). All of Colorado's 10 Family Medicine residency training practices participated in the collaborative since its inception in 2009. One General Internal Medicine residency training practice joined the collaborative in 2012.

All sites are located in urban or suburban locations, with 3 practices affiliated with for-profit health systems and 8 affiliated with not-for-profit health systems. The practices varied in the total number of residents (range, 12-24) and nonresident clinicians (range, 2.5-14.0 full time equivalents). Annual visit volume ranged from 6927 to 44324 patient visits in 2014. At the beginning of the project, only 4 of the practices had an electronic health record (EHR), but at the time of this report all practices used EHR systems purchased by their affiliated hospital systems. Supported by practice facilitators funded by the collaborative, all practices achieved level 3 PCMH recognition from the National Committee for Quality Assurance.

Evaluation

This report drew from a subset of the comprehensive evaluation of the Colorado PCMH Residency Project, using field notes kept by the practice facilitators, key informant interviews, practice summary reports, surveys, and meeting notes.

Analysis

Researchers reviewed more than 650 separate practice facilitator field notes completed from 2009 through 2014. In addition, 2 members of the research team conducted semistructured interviews with practice QI

team members and/or leadership at all 11 practices, which included the prompt, "How can hospital systems effectively support further PCMH work in your program?" In 2013, we also surveyed teaching faculty in the residency programs about PCMH skills and proficiency and about which PCMH skills and abilities were helped or hindered most by the practice or system in which they taught.

The analysts first used a template coding style to efficiently segment the field note and interview data with a priori codes (based on literature review and project objectives), while also allowing for the emergence of new conceptual codes (Crabtree et al., 1999). The segmented data subsequently were organized into broader conceptual categories for further review and coding.

ATLAS.ti (version 7; Scientific Software Development, GmbH, Berlin, Germany) was used to manage, code, and retrieve data during analysis. Using the summary reports, a meta-matrix of themes was organized into major analytical constructs and sorted by data source (Miles & Huberman, 1994). Data in the matrix were successively reviewed and refined to arrive at a summary table and a synthesis of cross-data results. The matrix was reviewed for conceptual completeness or competing or alternative interpretations. A final set of themes was reviewed for refinement by the authors.

This project was reviewed by the Colorado Multiple Institutional Review Board and approved as exempt from further human subjects review.

RESULTS

Field notes and interviews

Analysis of the data collected revealed several themes suggesting ways that hospital systems could better support residency practice transformation: enhance health information technology (HIT); address new duties through flexible roles and new personnel; adopt value-based compensation reforms; and allow practice input on transformation (Table).

Practices need EHR systems with the functionality to pull tailored queries, the ability to stratify reports by provider, data access at the practice level, and confidence that the data are accurate. Some practices experienced extended delays in implementation of PCMH elements due to EHR implementation or upgrades, could not empanel patients at the level of the residents, could not stratify reports by resident, or found that reports were inaccurate through internal validation, all of which limited their ability to use data for practice transformation. The needs of the residency practices for such data were consistently a low priority for the health systems' HIT services. Practice leaders thought that hospital systems could better tailor data systems to the unique needs of primary care practice transformation by, for example, providing relevant data quickly to inform QI activities and offering expanded IT support services. Despite periodic successes and improvements in EHR and registry functionality over time, this was a recurring challenge for all practices.

Practice leaders noted the necessity of practice-level flexibility in defining staff roles and duties rather than adhering to strict system-centric scope of practice standards. Practices recognized that team-based care involves evolving roles, staffing formulas, and use of time at a level more than hospital systems were willing to accommodate. Multiple practices experienced difficulty securing dedicated staff time for PCMH activities and QI meetings or additional personnel such as care managers. Furthermore, interview respondents, QI team members, and clinic leaders agreed that hospital systems were in the best position to support increased staffing and advanced primary care activities such as care management and integrated behavioral health not fully covered by traditional fee-for-service reimbursements. Conversely, some practices reported successfully obtaining hospital system support for PCMH transformation in the form of hiring additional physician assistants by demonstrating how PMCH performance had boosted funding. Another practice described operating as a PMCH "learning

Table. Themes and Excerpts From Field Notes and Semistructured Interviews

Theme	Excerpts
Enhance health information technology • Functional and communicative data systems • Data systems access • Data accuracy	"We can make improvements quickly if we have the data we need. Have to be nimble and have reporting capabilities." "Functional registries . . . still working to get functionality, more than a year down the road." "Need access to your data and . . . department level tools." "Need a quality IT person. Lots of turnover here."
Address new duties through flexible roles and new personnel	"Flexible job descriptions are key here. Need to be able to take on roles and responsibilities beyond a very specific, narrow job description. For us, job title has a huge impact on access to various systems, after the EMR switch." "Most important is staffing. The implementation we want takes more people. Great patient care to have these positions, but can't expect people to pick up all of the work and maintain their effectiveness." "Staffing—we have no RN's or LPN's. Resources could be distributed differently. They have let us operate differently than their other practices, but they could be doing more." "Need the personnel to allow us to do this work." "It is a hospital-centric view. We need them to understand the need for cross-training and flexibility of roles."
Adopt value-based compensation reforms	"The system could support us better by understanding the value of good care management; there is not enough value placed there. It costs less, is better for patients, and small savings per patient add up." "A lot of it comes down to the fact that without payment reform, we cannot do this. These positions do not generate revenue directly." "A different way of counting work is needed. Would love to have out-of- exam room interactions with patients, if we had the ability to communicate otherwise. Dedicated time for more in-depth phone work and follow-up. This is "free" work we are doing." "[Hospital System] is for profit—PCMH keeps patients out of hospital, so that presents a conflict."
Allow practice input on transformation	"[Hospital system] got very excited about PCMH. Whole division . . . trying to certify multiple practices. But it was very regimented and prescribed. We're trying to provide our expertise to the group." "We were teaching the hospital about PCMH."

laboratory" for the hospital system, allowing some freedom to operate differently from other system practices.

In addition to staffing formula adjustments, practices needed compensation for additional staff in these positions and strongly emphasized the need for an alternate reimbursement structure that appropriately compensates an evolving care model. Some of the hospital systems were slow in moving toward value-based contracting, which impeded practice movement toward full PCMH

implementation. While hospital systems have made progress in recognizing cost-benefits and health outcome improvements, there is still room for improvement.

Some hospital systems' hierarchical leadership structure and policies delayed PMCH transformation. Multiple practices reported system restrictions on standing orders, preventing flexibility in staffing duties described previously. Once hospital systems started moving toward more widespread PCMH implementation across their primary care practices, their selection of clinically important conditions for NCQA PCMH recognition application sometimes conflicted with those previously selected by residency practices that started working on the recognition process earlier, delaying the process and causing rework. In contrast, another hospital system recognized their residency practice as an early adopter and used the clinically important conditions chosen by the residency practice for all practices as the basis for the multisite PCMH application, which minimized disruptions at the practice level and facilitated the spread of PCMH concepts to other system practices.

Faculty survey

Of 105 faculty who were invited, 67 (63.8%) faculty from the practice sites responded to a survey that asked which PCMH skills were helped or hindered most by their practice or hospital system. A slight majority of respondents (51%) reported that their hospital systems helped with integrating mental and behavioral health, whereas a majority of respondents (58%) reported that their hospital systems hindered their use of registries and measures (Figure). Overall, more respondents indicated that their hospital systems helped with change processes (such as leadership, staff engagement, and QI) than hindered. Yet, more respondents indicated that hospital systems hindered efforts around access and scheduling and conducting population management than helped.

DISCUSSION

Information obtained through interviews of practice leaders and QI team members, field notes collected by practice facilitators and project staff for more than 6 years, and faculty
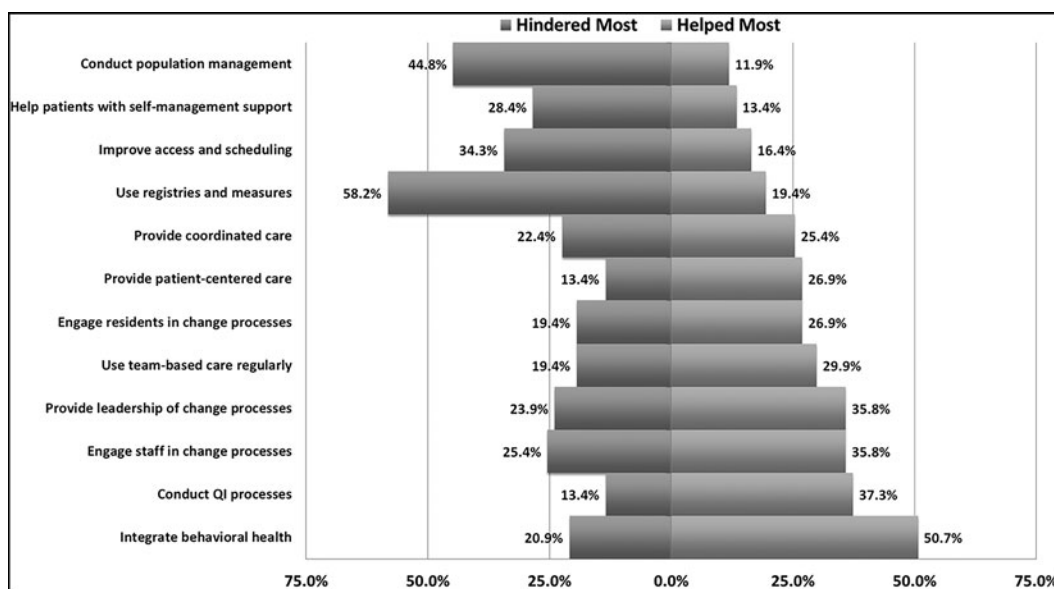
Figure. Percent of faculty who responded which patient-centered medical home skills and abilities are hindered or helped most by their hospital system. QI, quality improvement.

surveys illustrate the influence teaching hospitals and health systems have on the ability of residency training practices to implement the PCMH model.

Tension surrounding team-based care was documented in the field notes and semistructured interviews. The team-based workflows necessary for PCMH transformation require substantial changes to roles, particularly for staff (Markova et al., 2012; Roth et al., 2009). While the nature and extent of these changes depend on circumstances, strengths, weakness, and resources at the local practice level, hospital systems play a commanding role in determining the scope of practice for nonclinicians in these residency practices. Practice and faculty leaders reported spending considerable effort in convincing the systems to allow changes to existing staff responsibilities or to hire new personnel.

Lack of value-based compensation models played a key role in this perceived friction. These practices belong to hospitals and health systems that almost exclusively rely on reimbursements tied to face-to-face provider visit volume. The residency practices participating in this collaborative were measured and rewarded on the basis of this volume-based approach, while at the same time struggling to implement the PCMH model that requires non–face-to-face activities such as registry management, team huddles, asynchronous communication strategies, care management, and care coordination that are not reimbursed by most fee-for-service insurance plans or valued by the hospital system.

In some cases, limited value-based payments helped practices implement the PCMH model. Some practices were able to make a strong financial case for PCMH transformation by successfully leveraging value-based payments offered by certain pilot projects and payers. While relatively small, these payments allowed them to gain health system approval for hiring new staff and allowing more expansive scope of practice for their medical assistants and nurses. With the anticipated expansion of value-based payments by Medicare, Medicaid, and commercial payers in coming years, more practices may be able to capitalize on such opportunities to support PCMH activities.

Poor HIT, particularly the limitations of EHRs and registry functionality, were among the most universal challenges reported by primary care practices working to transform. Similar to findings in other settings (Bates & Bitton, 2010; DesRoches et al., 2010; Morton et al., 2015; O'Malley et al., 2015), HIT functions required for advanced PCMH activities were rarely available or optimized in the Colorado primary care residency practices assessed here. For the PCMH model to be successfully implemented, practices will need more robust HIT including consistent support for empanelment, care management, validated and relevant data to inform QI, patient engagement, risk stratification, and tracking patient and population outcomes over time.

These practices were not selected to represent residency practices generally. So, the actual impact of teaching hospitals and health systems on other residency practices may vary on the basis of their particular local circumstances. However, this covered all family medicine and 1 general internal medicine residency practice in Colorado, with representation of most residency organizational types other than military residencies. Therefore, many themes likely will be similar given all residency practices share certain organizational, regulatory, accreditation, and educational constraints.

This is not a report on the effectiveness of a particular practice transformation intervention, and the validity of the observations reported was not assessed. This evaluation did not specifically ask questions about early barriers, and coaches were not explicitly instructed to document on hospital or system support in their field notes. Likewise, without comparison data from nonresidency practices, the analyses were unable to determine the extent to which this description of hospital support may apply to nonresidency teaching practices.

This study was not intended or designed to compile a complete account of hospital effects on residency practices. Other important aspects of hospital support for PCMH

transformation no doubt exist. Further exploration and classification of these support sources could improve the literature and support residency practice leaders in their transformation efforts.

Teaching hospitals and health systems have significant opportunities to influence primary care practice transformation. Residency training programs can be fertile ground for leading and testing innovation for health systems. Residency graduates can lead the way for practice transformation within the system as they move into their future roles. This report elucidates the lessons learned from our state's experience at this juncture. With the increasing and widespread adoption of new models of primary care in the health care system, it is crucial for primary care residency programs to provide training and experience in PCMH and related models of care. Residency training practices may be able to use some of the themes presented in this reported to better align culture and systems of care to implement the PCMH model.

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