Transforming Primary Care Practice and Education: Lessons From 6 Academic Learning Collaboratives

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DOI: https://doi.org/10.1097/JAC.0000000000000117

J Ambulatory Care Manage
Vol. 40, No. 2, pp. 125–138

Transforming Primary Care Practice and Education

Lessons From 6 Academic Learning Collaboratives

Ursula Koch, MSc, MS; Asaf Bitton, MD, MPH; Bruce E. Landon, MD, MBA, MSc; Russell S. Phillips, MD

Abstract: Adoption of new primary care models has been slow in academic teaching practices. We describe a common framework that academic learning collaboratives are using to transform primary care practice based on our analysis of 6 collaboratives nationally. We show that the work of the collaboratives could be divided into 3 phases and provide detail on the phases of work and a road map for those who seek to emulate this work. We found that learning collaboratives foster transformation, even in complex academic practices, but need specific support adapted to their unique challenges. **Key words:** *academic health center, academic learning collaborative, medical education, patient-centered medical home, primary care transformation*

IN THE ERA of health reform, payers and providers are increasing efforts to reorganize health care delivery to achieve improved quality, better patient experiences, and reduced costs. Central to these efforts is the creation of a high functioning primary care system through the adoption of the patient-centered medical home (PCMH), which drives high-value care through an increased focus on access, prevention, and coordination (Federal Patient-Centered Medical Home [PCMH] collaborative catalogue of PCMH activities, 2012). The PCMH envisions accessible, continuous, patient-oriented, team-based, and comprehensive care delivered in the context of a patient's community (Bitton et al., 2010). Efforts to transform primary care practice are being supported by the development

Author Affiliations: *Federal Office of Public Health, Bern, Switzerland, and Institute of Primary Care, University of Zürich, Zürich, Switzerland (Ms Koch); Center for Primary Care (Drs Bitton and Phillips), Harvard Medical School, Boston, Massachusetts (Ms Koch); Division of General Medicine, Brigham and Women's Hospital, Boston, Massachusetts (Dr Bitton); and Harvard Medical School, and Beth Israel Deaconess Medical Center, Boston, Massachusetts (Dr Landon).*

The authors acknowledge the following groups of people for their contributions: (1) Collaborative leaders of the 6 Academic Health Center Collaboratives (Perry Dickinson, MD; Bonnie Jortberg, PhD, RD, CDE; Kyle Knierim, MD; Bill Warning, MD; Taj Mustapha, MD; Stuart C. Gilman, MD, MPH; and Kristen Goodell, MD); (2) the Commonwealth Fund and especially Brad Grey for critical feedback; (3) Ashlin Mountjoy and Elizabeth Griffiths, who supported with the coding of the interviews, as well as Casey Maloney and Megan Prock, who helped edit the manuscript and the figure.

Funding was provided by the Harkness Fellowship Program (Ursula Koch), and by the Center for Primary Care (Asaf Bitton and Russell Phillips). All authors take responsibility for the data, analysis, and conclusions included in this report.

Asaf Bitton was a faculty lead for the Academic Innovation Collaborative (AIC), which was profiled in this paper. Dr Phillips is the Director of the Center for Primary Care at Harvard Medical School, which helped fund the AIC, and he helped to lead the design of the collaborative. He also serves as an advisor to Rise Labs, which provides personalized nutrition coaching. Otherwise, the authors have no other potential conflicts of interest to report.

Correspondence: *Russell S. Phillips, MD, Center for Primary Care, 635 Huntington Ave, 2nd Floor, Boston, MA 02115 (Russell_Phillips@hms.harvard.edu).*

DOI: 10.1097/JAC.0000000000000117

of "learning collaboratives," a structure for collective transformation based on a quality improvement model that implements a series of sequenced changes with shared learning and measurement (Bitton et al., 2014; Institute for Healthcare Improvement, 2003, 2005; Langley et al., 2009). This structure helps transform work processes and organizational culture and improves performance through positive relationships and trust (Clancy et al., 2013; Gittell et al., 2010; Landon et al., 2007).

Although most teaching practices are located at academic health centers (AHCs) where the focus is on tertiary care, they are playing a critical role in training the primary care workforce and providing models for education (Fraher et al., 2013; Frenk et al., 2010; Fuchs, 2013). Their ability to succeed in practice transformation and to create new models for education may determine whether our nation can meet future primary care workforce needs. However, these AHC-based teaching practices have lagged behind community practices in transitioning to PCMH (Rieselbach et al., 2013). An important question arises: How will AHCs train our future primary care workforce if they are not able to provide opportunities for trainees to work and learn in transformed practices that mirror practices being created across the country? (Bitton et al., 2013). In this context, we set out to learn how AHC-based collaboratives transform both primary care practice and education. We sought to understand their aims and accomplishments and how they were initiated and structured. Our goal was to identify a common framework for medical home transformation within teaching practices that might be replicated by other AHCs.

METHODS

Participant selection and recruitment

Through formal and informal contacts and a search of the literature, we identified 8 collaboratives that were redesigning both primary care practice and education in AHC practices. Six of these collaboratives met all 3 of the following inclusion criteria for this study: (1) the use of a medical home across multiple primary care practices that applied to all patients; (2) the creation of a learning community with some form of financial and/or pedagogical support for transformation; and (3) the training of residents from 1 or more residency training programs.

Data collection and analysis

We used a descriptive and qualitative approach. We asked leaders from each collaborative to complete a questionnaire describing the demographics of participating practices, sources and amount of funding, types of technical assistance, evaluation plans, and measured outcomes. We interviewed 20 key informants using a semistructured interview. The areas of focus included genesis of the collaborative, transformation strategy and change package, residency redesign, and experience to date. We interviewed a minimum of 3 respondents (mean = 3.3, total = 20) from each collaborative including the overall leader, the education leader, and a clinical leader from a participating practice. Interviews lasted 45 minutes, on average. Each collaborative responded to the request for interviews and completed the survey. A study investigator (UK) performed each interview by telephone or in-person.

Analyses

Each interview was recorded and transcribed. Using NVIVO software (http://www.qsrinternational.com/about-qsr_company-profile.aspx), 3 reviewers who included 1 coauthor (UK) coded all interviews and refined codes as new or converging concepts were identified. The reviewers sought to identify common themes that explained how and why collaboratives were initiated, what enabled their implementation, and how their work was sustained over time. Differences of opinion were resolved by consensus. As a final validation, findings were shared and reviewed with key informants. The process was intended to be descriptive and focused on a summary of insights gained from the interviews and review of presented material. The Harvard Medical School Institutional Review Board approved the study.

RESULTS

Characteristics of the 6 participating primary care learning collaboratives are shown in Table 1. The collaboratives were widely distributed, with the Veterans Administration involving practices spread across the nation, and the others being focused in various regions. The collaboratives ranged in size from 4 to 53 practices and 24 to 700 residents and provided care for between 10 000 and 400 000 patients.

Using informant interview responses, we were able to categorize the work of the collaboratives into 3 distinct phases (Figure).

Phase 1: Building the intent

In each case, leaders recognized that their primary care training model was ill-suited to train our future workforce and were inspired to be at the forefront of "disruptive" change that focused on team-based care.

> The residency practices don't serve as good models of primary care. We needed to make them better practices that would attract medical students.

> We had to do better by our patients and the only way to do better would be to do something so big and crazy that it would be a shock to the system. Little changes were recipes for continued mediocrity.

All collaborative leaders had a clear vision of a model primary care practice and the potential of learning collaboratives.

> There's one thing to have this feeling how you want to do it, but (another) to have the skills around process change, team building, communication, systems, and quality improvement. You have to know what you're talking about before you tell other people what they might want to do.

In each case, collaborative leaders took advantage of a "window of opportunity" created by payment reform, or resources to support transformation.

> Our hospitals were taking on financial risk for total healthcare costs so they signed on because they realized that they needed to improve their primary care.

Phase 2: Creating the collaborative structure

We identified a common sequence of collaborative creation. Collaborative leaders planned and structured the collaborative, agreed on goals, selected a quality improvement and practice transformation model ("change package"), obtained financial resources, encouraged leadership engagement and institutional support, and created an organizational structure. This structure provided organization and governance and arose from the university or medical school or from an external organization. Resources often included access to a shared information and technical assistance with practice coaching or facilitation. All collaboratives facilitated learning through in-person learning sessions, webinars, or conference calls (Table 2).

All 6 collaboratives included in-person collaborative learning sessions (occurring at least twice annually) separated by action periods when practices did the work of improvement. Five collaboratives adopted Plan-Do-Study-Act cycles of improvement testing, and all focused on the implementation of the PCMH model (Table 3). The change package was intended to build capacity for change. In the words of one respondent, the goal was to

> Help them understand that what they had done in the past is not going to work and that the sequenced measurements and methodical quality improvement tactics would help them get to where they wanted. Not working harder, not wishing that it were true, but rather having a method and a way to do this.

> A big piece of it was not just implementing [the] patient-centered medical home, but implementing an ongoing sustainable change in quality improvement effort within the practices.

All collaboratives engaged local practice leaders, who were typically educators and clinicians. Practices were required to form interprofessional teams (including residents), attend meetings (eg, learning sessions and conference calls), use metrics to assess change sequentially, and share data regularly across the collaborative (Table 2). Financial

Table 1. Learning Collaborative Characteristics

Name and Location of Collaborative	Harvard Academic Innovation Collaborative (AIC) (MA) (Academic Innovations Collaborative, 2011; Center for Primary Care Harvard Medical School, 2011)	Colorado Residency PCMH Collaborative (HealthTeamWorks, n.d.; The Colorado Family Medicine Residency PCMH Project, 2014)	I3 Collaborative (VA, NC; SC) (Patient-Centered Primary Care Collaborative, 2013; I3 Population Health Collaborative, 2013)	Minnesota Primary Care Transformation Collaborative (Minnesota Primary Care Transformation Collaborative, 2013; University of Minnesota, Medical School Department of Medicine, 2013)	Pennsylvania Residency Program and Community Health Center Collaborative (PA) (Pennsylvania Academy of Family Physicians and Foundation, 2011-2014, 2014; Residency Program & Community Health Center Collaboratives, 2014)	Academic PACT Veteran Health Administration, National (PACT, 2013; U.S. Department of Veterans Affairs, 2013)
Duration	Phase 1: 2012-2014; Phase 2: 2014-2016	January 2009 to January 2015	Phase 1: 2006-2009 Phase 2: 2009-2011 Phase 3: 2012-2015	Pilot period: January 2013 to July 2014	Phase 1: 2010-2014 Phase 2: 2011-2014	June 2010 (planning), July 2011—ongoing
Number of participating practices	19	11	24 (+29 sites)	4	24 + 20 community health center	5 Sites
Average number of patients	300 000	64 000	>400 000	>10 000	>19 000	272 110
Number of residents	457	141	680-700	50	860	554[a]
Safety net practices	25%	10%	Yes	None	50%	Yes
Types of residencies	IM, Peds, Med/Peds, FM	FM, IM	FM, IM, Peds	FM, IM, Peds, Med/Peds, nursing, pharmacy	FM	IM, NP, PA, psychology, pharmacy, social work, nutrition

Abbreviations: AIC, Academic Innovation Collaborative; FM, family medicine; IM, internal medicine; MA, Massachussets; NC, North Carolina (state of I3 Collaborative); NP, nurse practitioner; PA, physician assistant; PACT, Patient Aligned Care Team; Peds, pediatrics; PCMH, patient-centered medical home; SC, South Carolina (State of I3 Collaborative); VA, Virginia (State of I3 Collaborative).

[a]Interprofessional by mandated structure.

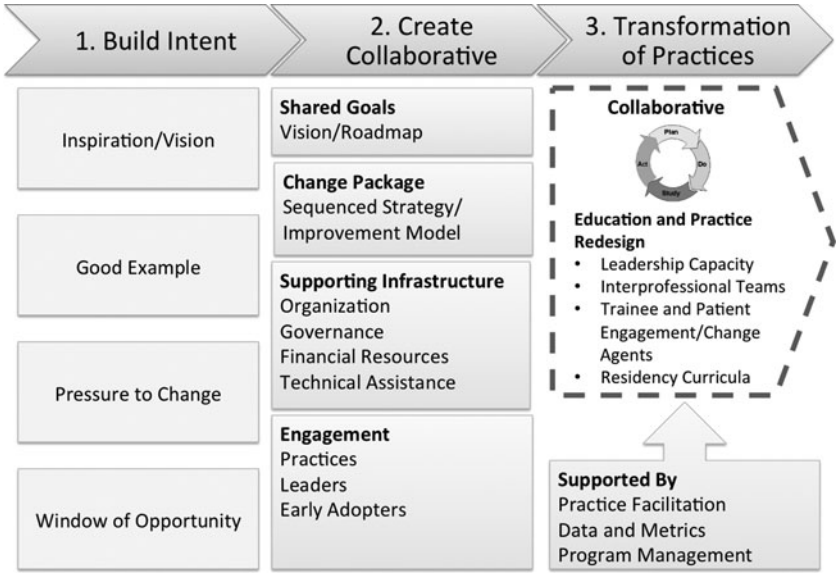

Figure. Shared model for transformation of primary care teaching practices in academic health centers. The figure describes the 3 phases of transformation of academic health center learning collaborative.

incentives and social strategies (eg, external medical home recognition and competition among practices) were used to engage practices and to ensure institutional support.

Phase 3: Transformation of practices

All collaboratives found that culture change was essential to create a learning community that embraced ongoing quality improvement. Iterative process change cycles were keys to developing capacity by bringing teams together around common work.

> We learned that we were doing too much didactic teaching at the beginning, too much telling people what to do. So we had to move very aggressively towards interaction . . . You have to learn it by doing . . . it's continuously testing and doing and learning and picking the right measures and guiding them to a coaching strategy while we engage their leadership in making sense of this whole effort and linking it with the existing efforts at each institution.

Requiring practices to come together to share examples of both successes and failures helped build trust and a culture of improvement and collaboration. Viewing others' progress inspired practices that were not doing as well. For example, one respondent reflected that

> The other thing that made a big difference was over time some practices and programs really starting taking off and making a lot of change. That had a ripple effect."

> Getting suggestions as far as what works at other places and what hasn't worked is extremely helpful rather than trying to reinvent the wheel each time.

Creating accountability was a very important feature of the learning community. The priorities of the practices generally drove the concrete content areas of change (eg, choosing to "huddle" as a team before seeing patients). Collaboratives struggled to balance the need to provide structure (eg, sequenced strategy for change, required data) to hold participating practices accountable while offering sufficient flexibility to adapt to the local practice context. Collaborative leaders tried to model flexibility by testing a variety of educational and transformational approaches at learning sessions and other meetings. Collaboratives differed in required accountability in terms of goals, metrics, and time frames, ranging from strict accountability to no

Table 2. Organization and Structure of the Collaboratives

	AIC	CO	I3	MN	PA	VHA
Organizing body	Harvard Medical School Center for Primary Care	University of Colorado Family Medicine, Colorado Association of FM Residencies, Health Team Works	Universities of North Carolina, South Carolina, and Virginia	University of Minnesota, School of Nursing, College of Pharmacy	Pennsylvania Academy of Family Physicians	Coordinating Center, Office of Academic Affiliations, US Veterans Health Administration
Application	Yes	No	Yes	Yes	No	Yes
Requirements for participation	Specific goals, metrics/ monthly data report; EHR, patient, and resident engagement, participation in meetings	All FM residency programs, with one internal medicine program joining once underway; participation in meetings, practice facilitation, and other practice and curricula transformation efforts	Participation in meetings, monthly data report, interprofessional change team (resident included); staff development	Time for meetings and active engagement in redesigning curricula	All FM residencies in PA considered. Fully engagement in meetings, monthly data report, interprofessional change team (resident included)	Interprofessional team, affiliations with nursing and other health professions schools; core educational objectives and outcomes measurement; curriculum design: minimum 30% primary care training; interprofessional faculty: Codirector model; protected time: leadership, teaching, and mentoring

(*continues*)

Table 2. Organization and Structure of the Collaboratives (*Continued*)

	AIC	CO	I3	MN	PA	VHA
Transformation strategy (change package)	IHI Quality Improvement Model (Institute for Healthcare Improvement, 2003) Improvement 2003 and Qualis/MacColl Center Sequenced Change Strategy (QualisHealth, n.d.) Change Concepts for Practice Transformation 2013	IHI Quality Improvement Model ("Plan-Do-Study-Act"-Cycles); PCMH and Patient Engagement Strategies	IHI Quality Improvement Model (Phases: CCM, PCMH; Population Health)	PCFDI (Oregon Health & Science University, 2001-2014, 2014) Primary Care Faculty Development Initiative (PCFDI) 2014 Educational Initiative based on PCMH Model (Oregon Health & Science University, 2001-2014, 2014) Primary Care Faculty Development Initiative (PCFDI) 2014	IHI Quality Improvement Model and Chronic Care Model	PACT Model (U.S. Department of Veterans Affairs, 2013) Patient Aligned Care Team (PACT) 2013 (VHA's version of PCMH). Elements of other strategies included (eg, Chronic Care Model).
Funding	$14 Million over 2 y (HMS Center for Primary Care and contribution from each AHC)	$2.9 Million from the Colorado Health Foundation	3 Phases: average of $1.3 million/phase through grants	Small grant Minnesota Medical Foundation	$1.3 Million/phase from PA Department of Health, CDC and other grants	VA Funding: $5 million ($1 million per year for each center of excellence)

(*continues*)

Table 2. Organization and Structure of the Collaboratives (*Continued*)

	AIC	CO	I3	MN	PA	VHA
Use of funding: residencies	Protected staff time, office redesign, and equipment/ supplies.	Protected time, NCQA application; care coordinators, redesign space (colocation); teaching and patient material	Meetings, buy staff (eg, nurse), data collection and report.	No funding for practices	No funding for practices	Education and evaluation infrastructure (eg, program leadership; administrative support; curriculum development; trainee stipend
Use of funding: centralized	Full-time program manager at each large AHC; protected time for practice transformation; learning sessions; leadership academy; coaching; design, operation, and evaluation	Practice coaching, PCMH curriculum, learning sessions, leadership development, IT/EHR consultation	Meetings, webinar, Web site	Faculty education, evaluation, working groups, and meetings	Faculty/staff education, webinars and Web site, meetings	Coordination center: (measurement, meetings; practice facilitation, coordination)

Abbreviations: AHC, Academic Health Center; AIC, Academic Innovation Collaborative; CDC, Centers for Disease Control and Prevention; CCM, chronic care model; CO, Colorado Residency PCMH Collaborative; EHR, electronic health records; FM, family medicine; HMS, Harvard Medical School; IHI, Institute of Healthcare Improvement; I3, Virginia, North and South Carolina Collaborative; IT, Information Technology; MN, Minnesota Primary Care Transformation Collaborative; NCQA, national committee for quality assurance; PA, Pennsylvania Residency Program and Community Health Center Collaborative; PACT, patient aligned care team; PCFDI, primary care faculty development initiative; PCMH, patient-centered medical home; VA, Veterans Administration; VHA, Veteran Health Administration.

Table 3. Elements of Practice Facilitation

	AIC	CO	I3	MN	PA	VHA
Interprofessional teams	√	√	√	√	√	√
Learning sessions	√	√	√	√	√	√
Webinars	√	√	√	√	√	√
Conference calls	√	√	√	√	√	√
Shared Web site	√		√		√	√
PCMH E-learning modules		√				√
Personal coaching	√	√	√	√	√	√
Leadership sessions	√	√				√
Resident participation on teams	√	√	√		√	√
NCQA PCMH application		√	√		√	
PCMH monitor assessment	√	√			√	
Monthly update reports	√		√		√	
Data sharing between practices	√	√	√		√	√
Curriculum redesign assistance	√	√				√

Abbreviations: AIC, Academic Innovation Collaborative; CO, Colorado Residency PCMH Collaborative; I3, Virginia, North and South Carolina Collaborative; MN, Minnesota Primary Care Transformation Collaborative; NCQA, National Committee for Quality Assurance; PA, Pennsylvania Residency Program and Community Health Center Collaborative; PCMH, patient-centered medical home; VHA, Veteran Health Administration.

requirements, but all collaboratives agreed that without accountability, there was no change. Lessons included the following:

Data drives a lot of your work.

We tell the practices that they need to have a clear vision and we work with them on their own objectives. We didn't do that for the first three years, because we were reluctant to feel like we were imposing our will. We've learned that if you don't have accountability, clear goals and metrics, things just don't get done.

External technical advice about transformation and project management was essential but needed to flexibly adapt to local context and value available expertise. For example, facilitators had to recognize the complex job descriptions held by academic faculty and ever-changing resident schedules. Project managers were able to maintain an ongoing focus on transformation goals to keep practices moving forward. Advisors helped provide validation and identify relevant benchmarks and approaches. The extent of practice coaching and project management support varied substantially across collaboratives, in part related to variation in funding. Some collaboratives had only small grants that supported expenses related to meetings, while others supported the practices with generous financial or personnel support (Table 2).

Although the change package was specified and selected during the second phase, it was refined when practices "did the work." The following 4 key components of the change packages emerged: creating leadership capacity, interprofessional teams, engaging residents and patients as change agents, and residency redesign.

Leadership capacity

The predominant model of leadership was flexible interprofessional leadership where leadership was shared among team members. Achieving this goal was sometimes difficult as nonphysician team members sometimes felt particular challenges when it came to leadership.

It took a lot to have shared authority and responsibility. (Non-physicians) were insecure about it, and felt they didn't have the skills. Physician co-directors came to this with experiences as leaders. That's not the way NPs and nurses are trained. And that put them at a real disadvantage.

And so those are issues that we've recognized as contributing to the challenge of getting a true collaborative leadership that's agnostic to profession.

Creation of interprofessional teams

An early focus for the collaboratives was creating effective interprofessional teams with each member working at the "top of their license." These were seen as critically important and represented distinct changes from existing models.

Empowering the staff . . . that also is a part of the cultural change.

You need to understand, who is in a team and how to communicate.

The care teams also became the quality improvement teams. It became a way to learn how to work together within the context of the quality improvement teams.

Engaging trainees and patients as change agents

Residents were often involved through quality improvement projects. For some, inclusion of trainees in the redesign process was viewed as central to their strategy from the outset, while for others, this became a lesson to be learned over time as trainees were incorporated as "change agents" long after the collaborative had begun. Collaboratives highlighted the residents' innovative thinking, strong vision and commitment, as well as the opportunity to leverage peer motivation as an important bottom-up force for change within the practices.

The residents who have been involved have been essential to the process. They have great ideas, and they're the future workforce. And their peers see that and hear it. So if they're not on board then I don't know what we're doing.

There are things that the residents can say that speaks to their peer residents with an authority that I cannot bring . . . it's also true that their perspective [is] very much the frontline of what we do . . . And so, there's learning that I can take form the residents that are involved.

Patients brought energy to the transformation process and their presence helped create more open discussion and prioritization. However, most practices were reluctant initially to involve patients in the work of transformation because they did not want to put practice shortcomings on display. Practices that engaged patients did so through advisory councils, structured feedback processes (eg, through focus groups, comment cards), or by integrating patients into improvement teams; those that did found it beneficial.

For the changes to become truly transformative, to change the whole nature of the relationships in healthcare, the patients have to be a part of the process.

Residency curricula redesign and implementation

Collaboratives offered a package of curricular elements that could be adapted by the practices to address local needs and context. This instructional framework was closely aligned with the overall change package. All of the collaboratives focused on experiential learning with reflective phases and different degrees of formal instruction. Residents were incorporated into learning sessions. Although didactic formats varied, they all focused on content that included interprofessional learning, quality improvement, medical home principles, patient engagement, leadership and management training, and communication skills (Table 4).

Collaboratives found that effective experiential (workplace) learning depended on a pedagogical environment that modeled and supported new ways of providing care. Education occurred within the context of practice teams, ideally by trainees from different professions working and learning together from interprofessional faculty. If all members of the team were to influence learning, all staff must be developed as teachers, and the collaborative needed to be designed around the teaching mission (eg, by housing team members in shared space for both practice and education). Rescheduling and logistical support were key structural components that needed to be integrated as part of residency redesign.

Table 4. Overview of Trainee/Residency Education Curricula

	On the Job	Lecture	E-Learning Modules	Learning Sessions	Workshops Working Groups	Webinars	Program (eg, Leadership Academy)
Promotion of inter-professional training and collaboration	I3, MN, VA (local); CO, AIC, PA	VA (local), CO	CO, VA (local)	MN, AIC, PA, VA (local and national), CO	MN, VA (local), PA, CO	CO, PA, VA (national)	MN, VA (local)
Principles of PCMH	I3, MN, VA (local), CO, AIC, PA	I3, VA (local), CO, PA	CO, VA (local)	I3, MN, CO, AIC, PA, VA (local)	VA (local), CO, PA	I3, CO, AIC, PA	CO, VA (local)
Leadership/management skills	I3, CO, AIC, PA, VA (local)	PA, VA (local), CO	CO, VA (local)	I3, CO, AIC, PA, VA (local)	VA (local), PA, CO	AIC, PA	CO; AIC, VA (local)
Communication skills	I3, MN, VA (local), CO, PA	VA (local), CO, PA	CO, VA (local)	MN, VA (local), AIC, CO, PA	VA (local), CO, PA	PA	AIC, CO, VA (local)
Quality improvement skills (eg, Lean/Six sigma)	I3, MN, VA; CO,AIC, PA, VA (local)	I3, MN, VA (local) CO, PA	I3, VA (local), CO	I3, CO, AIC, PA, VA (local and national)	VA (local and national), CO, PA	I3, AIC, CO, PA	AIC, VA (local and national)
Practice redesign (change management)	I3, CO, AIC, PA, VA (local)	I3, CO, PA, AIC, VA (local)	I3, CO, VA (local)	I3, CO, AIC, PA, VA (local)	CO, PA, AIC, VA (local)	I3, CO, PA, VA (local, national)	AIC, VA (local)

Abbreviations: AIC, Harvard Academic Innovation Collaborative; CO, Colorado Residency PCMH Collaborative; I3, Virginia, North and South Carolina Collaborative; MA, Minnesota Primary Care Transformation Collaborative; MN, Minnesota Primary Care Transformation Collaborative; PA, Pennsylvania Residency Program and Community Health Center Collaborative; PCMH, patient-centered medical home; VA, Veterans Administration.

The challenges of working in AHC teaching practices

The complex and hierarchical culture of AHCs was a challenge for the collaboratives, as it was sometimes difficult to engage across disciplines and to encourage patient-centered relationship-based coordinated care. Part-time practitioners, high staff turnover, and large and complex patient panels created additional challenges. Separate reporting structures within AHCs created barriers to team alignment. Basic tenets of advanced primary care, such as "team huddling," posed challenges, because getting part-time providers together in real time was not easily accomplished. Residency redesign challenges included finding ways to help faculty simultaneously learn and teach new practice improvement skills and sustaining the institutional commitment to the educational mission in the face of challenges to primary care practice. Other challenges included adapting to residents' workload as part-time providers of patient care and the complexity of meaningfully incorporating residents into teams when their schedules and responsibilities varied dramatically from month to month and across residency programs.

> It's hard and extremely busy. They see hundreds of patients a day, many of whom are poor and have enormous needs and you're asking them to completely change the way they work while they're getting more patients . . . and while they have huge staff turnover and . . . most of them are understaffed to begin with.

There were also concerns that AHCs devalued primary care.

> Some of the senior leaders are in the old mindset that the people who rule the hospital are the specialists and the surgeons, and that primary care is on the bottom.

Key differences among collaboratives

Important structural differences existed among the collaboratives in terms of the duration of work, degree of funding and support, and requirements for participation or curricula (Table 2). As the transformation work was focused on both practice and residency redesign, it was often difficult to distinguish one effort from the other as change always had an impact on trainee experience and residency redesign always influenced practice transformation. Some collaboratives used this mutual dependence as a part of their strategy, while others prioritized practice transformation ahead of residency redesign.

Early results

All collaboratives are evaluating outcomes. Four collaboratives are collecting data on trainee experience and learning. One collaborative is evaluating changes in the educational environment and one is evaluating a new e-learning curriculum. All collaboratives are sharing stories of the changes in their practices from the perspective of faculty clinicians, staff, and trainees. Leaders reported that the collaboratives were successful in creating teams and in creating cultures of trust, improvement, innovation, collaboration, and learning. For 1 collaborative, external PCMH recognition was an important measure of success. Another used a validated self-report measure, the Patient-Centered Medical Home-Assessment (PCMH-A) to demonstrate improvements across all the areas of practice change, and all partner institutions have chosen to extend the duration of the collaborative.

> We created a community that's excited.

> We created teams where there were none.

> We created a lot of hope where there wasn't much.

> We built a learning community, where (we) learn from each other and share things with each other . . .

All collaboratives reported some positive clinical outcomes on the basis of tests of change within practices (Forman et al., 2014; Reid et al., 2011), but data collected systematically across an entire collaborative are not yet available. Those that studied resident engagement and learner skills and knowledge reported improvements (Jortberg et al., 2014). Collaborative leaders were convinced that a nuanced evaluation that documents

changes in culture, leadership capacity, and team function is essential to sustain their work.

DISCUSSION

We examined 6 novel academic primary care learning collaboratives and described a common transformation process and series of key steps that should be useful for other systems that want to transform primary care practice and training together as illustrated in the Figure. We found that learning collaboratives effectively support change, even within complex AHCs. The learning collaboratives we studied created a culture of collaboration and shared learning between trainees and teachers and a culture defined by teamwork where responsibility, accountability, and leadership moved from a single individual to an interdisciplinary team.

These collaboratives were similar to nonacademic collaboratives in important ways: (Nadeem et al., 2013) they sustained change by building local capacity and ownership, providing a support network, and creating a culture of continuous learning and quality improvement. Like all collaboratives, they needed to overcome inertia, lack of internal expertise, poorly aligned payment incentives, and inadequate information systems. Changes in payment and leadership engagement were identified as critical facilitators of change and sustainability (Fuchs, 2013; Nutting et al., 2011; ØVretveit et al., 2002).

Academic health center primary care collaboratives differed from other collaboratives in important ways. In addition to confronting the challenges of working in AHCs, academic collaboratives were challenged further by the teaching mission of these practices and the need to accommodate the schedules of trainees, especially those from other health professions (Egger et al., 2012). Putting residents into teams and helping them to coordinate care for their patients requires additional time, resources, and planning compared with nonteaching practices (Bitton et al., 2013). However, we found that the educational mission provides an important impetus to practices to transform, as educators are inspired to prepare their trainees for practices of the future and residents themselves can serve as change agents.

Our work was limited by the small number of collaboratives studied, but only a small number of AHCs are engaged currently in this type of practice transformation. However, the fact that the separate collaboratives converged around a similar general transformation model suggests that we identified important themes that are likely to be and useful to other AHCs embarking on primary care redesign.

In summary, we describe a convergent common approach to primary care transformation through learning collaboratives. The educational mission of AHCs provides an important impetus for these practices to transform. Our findings suggest a path forward for AHCs committed to transforming primary care practice and education within teaching clinics. Clearly, rigorous evaluation is needed to demonstrate the value of these collaboratives over time. The shared knowledge that resides within these collaboratives could be important resources for other AHC redesign efforts. Research is needed to define an optimal change package and resource infusion for AHC primary care practices and how best to spread change broadly across other teaching practices and to sustain a culture of innovation and continuous improvement.

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