

# Establishing Teams

## How Does It Change Practice Configuration, Size, and Composition?

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**Abstract:** Little is known about how practices reorganize when transitioning from traditional practice organization to team-based care. We compared practice-level (1) configuration as well as practice- and team-level (2) size and (3) composition, before and after establishing teams. We employed a pre-/poststudy using personnel lists of 1571 to 1711 staff (eg, job licenses, titles, and team assignment) and practice manager surveys. All personnel (physician and nonphysician) worked within 18 Massachusetts academic primary care practices participating in a 2-year learning collaborative aimed at establishing team-based care. We found that establishing team-based care can involve changing practice configurations and composition without substantially changing practice size. **Key words:** *academic medicine, primary care, team-based care*

**T**EAM-BASED care is increasingly viewed as key to achieving quality and value in health care (Grumbach & Bodenheimer, 2004; Institute of Medicine Committee on Quality of Health Care in America, 2001). Researchers have associated team-based care

in primary care settings with greater patient access to care, continuity of care, and improved chronic disease management for conditions like diabetes and depression (Lemieux-Charles & McGuire, 2006). Primary care providers (PCPs)—physicians and nurse practitioners/physician assistants serving in primary care roles—and non-PCP clinicians

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(eg, medical assistants) who experience more positive team dynamics report significantly greater career satisfaction and perceptions of safety culture (Blumenthal et al., 2017; Brooks et al., 2017; Sheridan et al., 2016; Song et al., 2017; Willard-Grace et al., 2014). Thus, major primary care societies and accrediting bodies (eg, American Academy of Family Physicians and National Committee for Quality Assurance) have endorsed the team-based model of care (American Academy of Family Physicians et al., 2007; National Committee for Quality Assurance, 2014), and commercial and public-sector payers are shifting toward value-based payment models that create new incentives for team-based models of care (Blumenthal et al., 2013; Burwell, 2015; National Committee for Quality Assurance, 2014).

Despite the push toward establishing teams in primary care, little is known about how primary care practices actually organize themselves into teams (Bodenheimer, 2007; O'Malley et al., 2014; Peikes et al., 2014; Reynolds et al., 2015; Rich et al., 2012). Available studies have tended to focus on clinical care teams of physicians and nurses, rather than broader concepts of team members (which can include non-PCP clinicians [eg, social workers and dieticians] and non-clinical staff [eg, front desk clerks]) (Chien et al., 2010; Medves et al., 2010; Willard-Grace et al., 2014). There is also a need to understand how new types of practice personnel (eg, care coordinators and community health workers) may change the composition of primary care practices. Lastly, lack of information leaves practices that desire to adopt team-based models with little guidance as to how to approach the task. Practices may be particularly interested to know whether transitions can be undertaken without substantially increasing staff to serve new roles (eg, care managers and health coaches) or requiring existing personnel to serve or extend existing functions (Bodenheimer, 2015; Patel et al., 2013).

Team-based approaches to primary care are likely to be of particular interest to academic primary care practices because teams may provide important scaffolding for PCPs who

typically only engage in direct patient care part-time and devote the remainder of their time to alternative academic goals (eg, teaching, research, and administration) (Blumenthal et al., 1997; Levinson et al., 1993). Because team-based care may enable academic primary care practices to serve their multiple missions, academic practices may be particularly invested in understanding the process of establishing teams.

Furthermore, more can be learned about the resulting team size and composition after practices establish teams. Organizational management literature emphasizes the critical impact of team design on practice function and makes suggestions about optimal team size (eg, 6 people per team tends to be a rule of thumb) (Hackman, 2002), but to our knowledge, no information exists on team size in academic primary care practices (Hackman, 1987; O'Malley et al., 2014; Tuetpker et al., 2013).

The overall aim of this study was to understand how 18 academic primary care practices transitioned into teams. Our specific aims were to compare practice-level (1) configuration as well as practice- and team-level (2) size and (3) composition, prior to teams (2012) and after establishing teams (2013-2015).

## METHODS

We conducted a pre-/poststudy using data from 2012 (before practices established teams) and for 3 subsequent years, 2013-2015 (after practices established teams). The Harvard T.H. Chan School of Public Health Institutional Review Board approved this study.

### Study context

We studied 18 Harvard-affiliated primary care practices across 6 academic medical centers that participated in the 2-year Academic Innovations Collaborative (AIC) (Bitton et al., 2014), which continued for 2 more years as the AIC Comprehensive-Accessible-Reliable-Efficient-Safe (AIC CARES) initiative, such that practices were in a learning collaborative for 4 consecutive years, 2012-2015.

In 2012 (AIC year 1), practices focused on establishing teams if practices had “no teams” or were uncertain about the number or membership of teams (n = 14) or strengthening them if they did (n = 4) (eg, empaneling patients to teams). In 2013 (AIC year 2), practices concentrated on supporting team-based activities (eg, introducing “huddles” to plan patient care) (Bitton et al., 2014; Wagner et al., 2012). From 2014 to 2015 (AIC CARES years 1 and 2), practices dedicated themselves to using established teams to improve patient safety in the primary care setting, especially with respect to the early detection of breast and colorectal cancer and reducing preventable harm for patients with complex care needs. Interventions were delivered in face-to-face meetings every 4 months and through monthly webinars, one for “day-to-day” leaders and one for all practice team members, by faculty experts in clinical quality improvement strategies and systems transformation (Bitton et al., 2014).

At the beginning of each learning collaborative, practices received a lump sum payment to be used in any manner that Medical Directors thought appropriate—equivalent to \$3 per-member-per-month (PMPM) for AIC and \$0.5 to \$1 PMPM for AIC CARES (Bitton et al., 2014). Because the learning collaborative did not attach any directives to these funds, practices could allocate their funds however they wished, which gave them the opportunity to hire new staff or change full-time staffing allocations for existing personnel. As part of the AIC process, practice leaders articulated that financial constraints, unfilled vacancies, turnover, and having many staff who only worked part-time hindered practices’ ability to establish teams, as did inadequate buy-in from staff and balancing the priorities of several transformation initiatives outside of the AIC. Thus, practices’ staffing allocations likely reflected such barriers.

**Practice characteristics**

Six practices were located within hospitals and 12 within community settings in the Boston area of Massachusetts (see Supplemental Digital Appendix 1, available at:

<http://links.lww.com/JACM/A81>). Practices cared for a mean of 14 537 (standard deviation [SD] 9191; range 3326-33 742) unique patients annually through a mean of 41 201 (SD 24 310; range 9550-100 221) encounters before transitioning to team-based care (Table 1). Forty-one percent (SD 18%; range 18%-86%) of patients were commercially insured, 17% (SD 11%; range 7%-40%) had Medicare coverage, and 31% (SD 20%; range 5%-54%) had Medicaid coverage. Thirty-six percent (SD 24%; range 5%-85%) of patients were of white racial/ethnic backgrounds, whereas 63% (SD 24%; range 15%-95%) were nonwhite.

**Data sources**

We collected each practice’s personnel list annually between 2012 and 2015 and

**Table 1.** Practice Characteristics Before Team Formation, 2012

	Mean (SD)
Annual practice volume, n	
Unique patients	14 537 (9 191)
Encounters	41 201 (24 310)
Encounters per unique patients	3.3 (1.2)
Payer mix, %	
Medicare <sup>a,b</sup>	17 (11)
Medicaid <sup>a,b</sup>	31 (20)
Commercial	41 (18)
Self-paying	4 (3)
Other	7 (7)
Patient characteristics, %	
White	36 (24)
Hispanic or Latino	29 (24)
Black or African American	20 (16)
Asian/Pacific Islander	4 (4)
Race not otherwise specified	10 (10)
Patients requiring interpreter services	28 (21)

Abbreviation: SD, standard deviation.

<sup>a</sup>Excluding pediatric practices.

<sup>b</sup>Including pediatric practices, %

Medicare	15 (11)
Medicaid	37 (22)

conducted a practice manager survey in 2012 and 2014. The personnel lists included each staff member's job title, job description, and whether a staff member was assigned to a team, or served as a "float" across more than one team or served the entire practice generally. When relevant, the lists specified each staff member's academic degrees and state licensure credentials. For PCPs, the lists also included the amount of time each spent directly caring for patients within the practice, standardized to a 40-hour work week. The practice manager surveys gathered patient population information and sources of revenue.

### **Practice configuration**

We designated staff as team members or floats if they were marked as belonging to one team or more than one team, respectively. If there was no team designation listed, we verified with practices that these staff served in a function that supported the whole practice (eg, billing).

### **Practice size**

We used headcounts of all staff to examine general practice size.

### **Practice composition**

We used 4 measures to assess practice composition: (1) headcounts of different staff types, (2) the number of full-time equivalent (FTE) PCPs (eg, if 2 PCPs worked 0.50 FTE, then they counted as 1 FTE PCP), (3) staffing ratios of each non-PCP staff per 10 FTE PCPs, and (4) patient panel size per FTE PCPs. Within the personnel lists, practices reported the panel size for each PCP, which was standardized based on FTE and a 40-hour work week. We classified MDs, DOs, and nurse practitioners/physician assistants as PCPs if practices indicated that the clinicians had their own panel of patients and functioned independently. Physicians-in-training (eg, residents) constituted their own category because of their training status and because continuity clinics were generally run differently from the primary care practice as a whole (eg, more didactic education and fewer visits-per-hour than fully-trained PCPs).

Non-PCP clinicians included nurse practitioners/physician assistants who were not designated as PCPs, registered nurses, medical assistants, social workers (and other mental/behavioral health personnel), and allied health professionals (eg, dietitians). Nonclinical staff comprised administrative staff (eg, front desk secretaries), community health workers (eg, para-health educators and patient navigators), and business staff (eg, billing clerks).

### **Team size**

We calculated the mean number of staff assigned to one team to gauge team size. For the practices that indicated the formation of subgroups within teams, or "teamlets," in their personnel lists, we calculated the mean number of staff assigned to one teamlet. Our measures of team size did not include the number of staff assigned as floats or supporting the entire practice.

### **Team composition**

We calculated staff membership within teams, as defined by the percentage of teams containing at least 1 person for each staff type.

### **Sensitivity analysis**

We examined whether our outcomes of interest would be different by type of practice, hospital- or community-based. We also investigated how staffing ratios would shift if we included residents within the PCP count (on average, 10 residents were equivalent to 1 PCP).

### **Analytical approach**

Our unit of analysis was the same as the unit of intervention—the practice (except where noted about team size and composition). We used descriptive statistics to express frequencies and distributions, and 2-sided *t* tests and analyses of variance for our pre/posttrend analysis. A *P* value of .05 or less was considered statistically significant. We used STATA, version 13.1 (StataCorp, College Station, Texas).

**RESULTS**

We had 100% response rates for our annual personnel lists and practice manager surveys.

**Practice configuration**

A few common configuration strategies were present across practices in the transition to team-based care, regardless of whether the practice was small ( $\leq 50$ ), medium (51-150), or large ( $> 150$ ) in terms of total staff. Irrespective of practice size in the first year of the AIC (2012), by the fourth year (2015) common strategies included (a) 17 of 18 practices subdivided their practices into more than 1 team, (b) 12 of 18 shared staff across specific teams or more generally across the practice as “floats,” and (c) 7 of 18 further subdivided teams into “teamlets” (Figure). During team formation between 2012 and 2013, practices assigned a mean of 71% (SD 24%) of their staff to teams and left 29% (SD 24%) as floats. After the third year of teams (2015), the percentage of staff assigned to teams increased slightly to 74% (SD 16%), leaving 26% (SD 16%) of staff as floats or practicewide supports, but

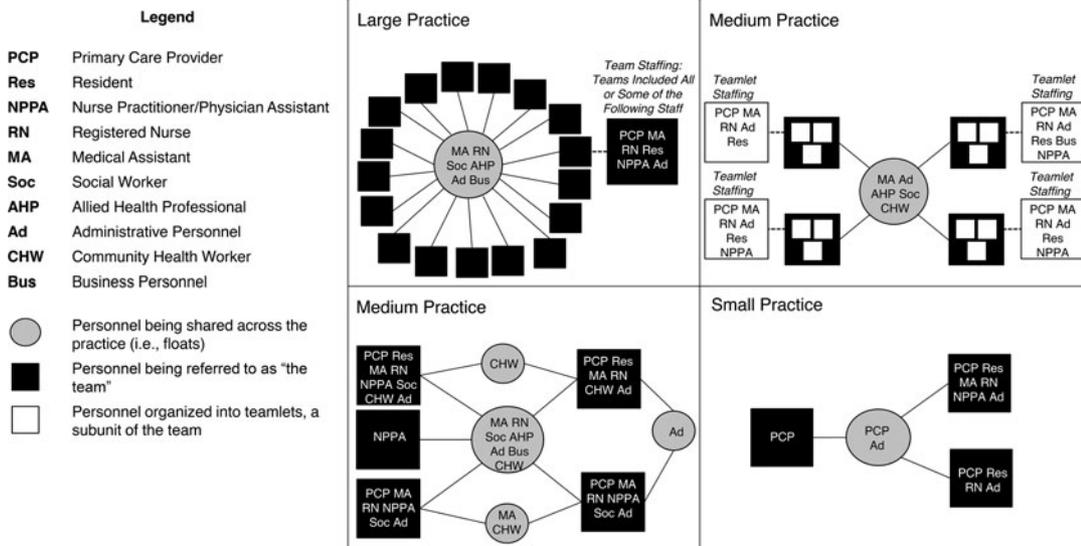
the 2013-2015 change was not significant ( $P = .66$ ).

**Practice size**

Practice size, defined as the headcount of all staff, did not change significantly when comparing 2012 to each subsequent year 2013-2015 (Table 2). Practices had a mean of 92 staff (SD 81; range 24-310) prior to team formation in 2012 and 95 (SD 77; range 31-312) staff members 3 years following team formation in 2015 ( $P$  for trend = .99).

**Practice composition**

While headcounts of different staff types and the number of FTE PCPs did not change over time, practice composition, as defined by staffing ratios, did change over time (Table 2). In general, all non-PCP staff per 10 FTE PCPs increased by about half from 45.5 (SD 21.6; range 17.0-91.0) in 2012 to 67.1 (SD 29.1; range 31.4-123.1) in 2015 ( $P = .02$ ). Specifically, per 10 FTE PCPs, the staffing ratios of nurse practitioners/physician assistants and administrative staff increased significantly between 2012 and 2015. The ratio of nurse



**Figure.** Examples of diverse practice configurations after the first year of teams, 2013. These configurations represent the common strategies that practices implemented, regardless of practice size. Specifically, while practices generally created teams, some also implemented floats and/or created teamlets. Small, medium, and large practices had a total staff of 50 or less, between 51 and 150, or more than 150, respectively.

**Table 2.** Practice Size and Composition Before and After Team Formation, 2012-2015

	2012 No Teams Mean (SD)	2015 Teams Y3 Mean (SD)	P Value
<i>General practice size, N</i>			
Total staff	92 (81)	95 (77)	.99
<i>Practice composition, N</i>			
PCPs <sup>a,b</sup>			
FTE PCPs <sup>a,b</sup>	11.1 (8.1)	8.7 (6.2)	.33
Panel size per FTE PCPs	1075 (252)	1135 (256)	.26
Residents	26 (37)	25 (32)	.92
Non-PCP clinicians <sup>b</sup>			
Nurse practitioners/physician assistants	3 (3)	4 (3)	.88
Registered nurses	9 (8)	9 (7)	.97
Medical assistants	9 (5)	11 (7)	.52
Social workers	3 (4)	3 (4)	.57
Allied health professionals (eg, dieticians)	2 (2)	2 (2)	.72
Nonclinical staff			
Administrative staff (eg, front desk secretaries)	14 (10)	16 (11)	.65
Community health workers (eg, patient navigators)	2 (3)	3 (3)	.12
Business staff (eg, billing clerks)	3 (4)	3 (2)	.75
<i>Staffing ratios, N per 10 FTE PCPs<sup>a,b</sup></i>			
Non-PCP clinicians <sup>b</sup>			
Nurse practitioners/physician assistants	0.4 (0.8)	2.6 (3.3)	.02
Registered nurses	8.2 (3.9)	11.8 (7.1)	.07
Medical assistants	9.5 (4.0)	13.2 (7.0)	.07
Social workers	3.3 (5.2)	4.9 (5.2)	.38
Allied health professionals (eg, dieticians)	2.3 (3.3)	2.4 (2.8)	.98
Nonclinical staff			
Administrative staff (eg, front desk secretaries)	13.7 (5.5)	18.5 (7.1)	.03
Community health workers (eg, patient navigators)	2.0 (3.1)	4.0 (3.6)	.08
Business staff (eg, billing clerks)	2.4 (2.4)	4.0 (5.8)	.19

Abbreviation: FTE, full-time equivalent; PCP, primary care provider; SD, standard deviation.

<sup>a</sup>Including MDs, DOs, nurse practitioners, and physician assistants that sites designated as primary care providers.

<sup>b</sup>Excluding residents.

practitioners/physician assistants to 10 FTE PCPs increased approximately 6-fold from 0.4 (SD 0.8; range 0-2.2) in 2012 to 2.6 (SD 3.3, 0-12.3) in 2015 ( $P = .02$ ). The ratio of administrative staff increased by about one-third from 13.7 (SD 5.5; range 6.4-24.4) to 18.5 (SD 7.1, 10.8-33.3) ( $P = .03$ ). Staffing ratios did not change significantly between 2012 and 2015 for registered nurses ( $P = .07$ ), medical assistants ( $P = .07$ ), social workers ( $P = .38$ ), allied health professionals ( $P = .98$ ), community health workers ( $P = .08$ ), or business staff ( $P = .19$ ). Patient panel size per FTE PCPs also

did not change over time—the mean number of patients per FTE PCP was 1075 (SD 252; range 630-1664) in 2012 and 1135 (SD 256; range 801-1581) in 2015 ( $P$  for trend = .26).

### Team size

Eighteen practices created 93 teams overall during the first year of the AIC, with a mean of 5 (SD 4) teams per practice. Teams had a mean of 14 (SD 10; range 2-37) members each (Table 3). Neither the number of teams nor team size changed significantly over time ( $P = .50$  and  $.08$ , respectively).

**Table 3.** Team Size and Composition After Team Formation, 2013-2015

	2013 Teams Y1 Mean (SD)	2015 Teams Y3 Mean (SD)	P Value
<i>Team size, n</i>			
Total teams	5 (4)	6 (5)	.50
Average staff per team	14 (10)	22 (16)	.08
	Teams Containing $\geq 1$	Teams Containing $\geq 1$	
<i>Team composition, %</i>			
PCPs <sup>a,b</sup>	76	70	
Residents	55	53	
Non-PCP clinicians <sup>b</sup>			
Nurse practitioners/physician assistants	33	29	
Registered nurses	42	46	
Medical assistants	53	58	
Social workers	10	13	
Allied health professionals (eg, dietitians)	7	5	
Nonclinical staff			
Administrative staff (eg, front desk secretaries)	63	66	
Community health workers (eg, patient navigators)	10	10	
Business staff (eg, billing clerks)	7	7	

Abbreviations: PCP, primary care provider; SD, standard deviation.

<sup>a</sup>Including MDs, DOs, nurse practitioners, and physician assistants that sites designated as primary care providers.

<sup>b</sup>Excluding residents.

Teamlets had a mean of 6 (SD 6; range 1-16) members in 2013; 33% of all teamlets comprised 1 person (usually the PCP or an administrative scribe). In these cases, a team broke up, and 1 person worked solo—at least part-time. In 2015, teamlets still consisted of 6 (SD 6; range 2-16) members, and the frequency of 1-person teamlets decreased slightly to 23%.

### Team composition

Out of the 93 teams formed by 2013, 76% of teams included 1 person or more in the PCP role, 42% included 1 or more in the registered nurse role, 53% included 1 or more in the medical assistant role, and 63% included 1 or more in the administrative role (Table 3). While most teams centered around a PCP, 24% of all teams did not have a PCP; these teams typically consisted of all residents or a combination of medical assistants and/or

administrative staff. This pattern continued through the third year of teams (2015).

### Hospital- versus community-based practices

Hospital-based practices were significantly larger than community-based practices before and after team formation ( $P = .006$  and  $P = .007$ , respectively), and there was no change in this practice size difference between 2012 and 2015. There was generally no difference in practice configuration nor practice- or team-level size across the study period by practice type (see Supplemental Digital Appendixes 2-3, available at: <http://links.lww.com/JACM/A81>).

### Residents

After including residents as PCPs, the staffing ratio for administrative staff per FTE

PCP was no longer significant, although the staffing ratio for nurse practitioners/physician assistants remained significant (see Supplemental Digital Appendix 4, available at: <http://links.lww.com/JACM/A81>). All other findings did not change after including residents as PCPs.

## DISCUSSION

This study illustrates that academic primary care practices changed practice configuration and composition more so than they changed practice size when involved in a learning collaborative focused on team-based care that included funding at the level of \$3 PMPM annually. This finding is important because practices had the means to hire new personnel but chose to focus on changing relationships between existing personnel rather than adding new personnel to practices. This finding suggests the importance of high-functioning interpersonal dynamics to the primary care setting. Although the practices we studied were all affiliated with the same medical school within Massachusetts, the practices we studied varied in terms of stage of transformation toward team-based care (some had started and some had not), care setting (hospital- vs community-based), practice size, and patient demographics.

Our study makes several unique contributions. First, we examined changes for all staff—clinical and nonclinical—not just the relationship between PCPs and nurses with a particular disease focus, as has been typically available (Chien et al., 2010; Medves et al., 2010; Willard-Grace et al., 2014). This approach to concepts of teams may be important because including all personnel types is crucial to understanding how primary care practices pursue team-based care. Second, our study contributes critical empirical information about what stakeholders might expect regarding panel sizes for PCPs in academic primary care practices, since there is a paucity of information and many question existing projections about what is reasonable to expect (Alexander et al., 2005; Altschuler et al., 2012;

Raffoul et al., 2016). Third, this study can be connected to our other studies, which have shown that staff ratings of team dynamics and corresponding PCP ratings of career satisfaction both increase significantly during this period. This suggests that team dynamics can improve when academic primary care practices are in the midst of reconfiguring staff relative to one another during the transition to team-based care (Song et al., 2017). Lastly, to our knowledge, this is the only study to have examined team size from an organizational management perspective (Hackman, 2002). A risk of teams that are too large is that the transaction costs for coordination and information exchange among members can outweigh collaboration gains, causing team performance to decline (Mueller, 2012; Steiner, 1972). Our findings suggest that teams in academic primary care may be subject to the pitfalls of overly large teams. However, approximately one-third of AIC practices subdivided their teams into teamlets, with a mean of 6 personnel each. Thus, practices may establish teamlets as a strategy to create team structures of a more manageable size.

Theoretically, a shift toward team-based care like the one that we observed in this study could allow PCPs to either care for a larger panel of patients or more effectively care for an existing panel of patients. However, we found no significant change in PCP panel sizes adjusting for full-time equivalence, which suggests that the former did not occur, at least not in the initial years of establishing or strengthening teams.

## Limitations

Our study captured the early stages of team development in a large number of academic primary care practices with a diverse array of sizes and structures at baseline. All practices were based in the Boston area of Massachusetts, which may offer insight into how team-based academic primary care may approach health reform like the 2010 Affordable Care Act. Since the Massachusetts health reform occurred in 2006, the payment

and delivery system patterns in Massachusetts may reflect patterns that practices in other parts of the United States may be experiencing more fully now. In addition, because we were not able to measure provider or patient outcomes in this study, future research should focus on examining how team structure relates to team performance and ultimately patient health and health care.

## CONCLUSIONS

It is possible for academic primary care practices to establish team-based care by focusing on practice configuration and composition. Given the potential consequences of overly large teams as reported in organizational management literature, practices may want to consider smaller teams and teamlets where possible.

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