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Determinants of Interdisciplinary Healthcare Team Functioning

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Determinants of Interdisciplinary Healthcare Team Functioning

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Doctor of Philosophy in Health Policy and Management

by

Karleen Frances Giannitrapani

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ABSTRACT OF THE DISSERTATION

Determinants of Interdisciplinary Healthcare Team Functioning

by

Karleen Frances Giannitrapani
Doctor of Philosophy in Health Policy and Management
University of California, Los Angeles, 2015
Professor Jack Needleman, Chair

Team functioning is a prerequisite to interdisciplinary healthcare teams achieving the goal of improving quality of care and patient outcomes. This three-paper dissertation examines barriers, facilitators and correlates of team functioning within patient aligned care teams (PACT), the Veterans Health Administration's implementation of interdisciplinary primary care teams and a patient centered medical home.

Interprofessional team-based models that expand the role of support staff are increasingly adopted in primary care practices. In the first study we query team members of a newly implemented medical home to identify factors that may inhibit nursing staff self-efficacy, a belief of possessing the capacity to execute a role effectively. We analyzed data from 79 key informants' interviews with primary care team members at six Veterans Health Administration (VA) clinics in Southern California. All sites had implemented Patient Aligned Care Teams (PACT), the VA's version of a patient centered medical home (PCMH). We identified three themes that produce the self-efficacy necessary for successful role expansion: 1) role training 2) time and resources for roles and 3) cross-disciplinary role agreement. Clarifying the factors that

impact self-efficacy for the role expansion of PACT staff can inform strategies for role transformation under other PCMH models.

The second paper aims to characterize PACT team members' perceptions of the role their direct supervisors play in day-to-day primary care team functioning. In this qualitative analysis we review teamlet members' perceptions of how their supervising middle managers are essential to the day-to-day functioning of PACT teamlets. Supervisors fulfill necessary leadership functions both within and across teams. They are involved in defining the specific roles and responsibilities of teamlet members, facilitating conflict resolution between teamlet members, setting expectations and mechanisms of accountability, facilitating within teamlet and cross teamlet coverage, and facilitating teamlet member initiated innovation. Within a multilevel system, frontline interdisciplinary teams continue to perceive the need for leadership by middle management supervisors from their own professional disciplines.

The primary objective of the third study is to employ a mixed-methods study design to identify modifiable practice climate factors associated with team function under PACT. We fielded a cross-sectional online survey of 818 providers and staff working in 23 VA primary care clinics in early stages of PCMH implementation. We simultaneously conducted semi-structure interviews with teamlet members. A cluster adjusted regression revealed perceived support from leadership, and satisfaction with the team were associated with team functioning. Attending local trainings, attending regional trainings, and attending trainings with team members were not. Qualitative interviews reveal substantial implementation variation in training. Identifying modifiable practice climate factors that are associated with team function at early stages of PCHM implementation can provide insight into where to invest resources during times of transition.

The dissertation of Karleen Frances Giannitrapani is approved.

Barbara S. Lawrence

Lisa V. Rubenstein

Elizabeth M. Yano

Jack Needleman, Committee Chair

University of California, Los Angeles

2015

DEDICATION

This dissertation is dedicated to my late grandfather Duilio Giannitrapani, PhD. Because of you, completing my doctorate has always been more of an inevitability than a possible life path.

I also dedicate this work to my parents: To my father for reading every word of every paper I have ever written and to my mother for using her life as an example to show there is no one right way or time to achieve one's goals.

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LIST OF ACRONYMS

AHRQ	Agency for Healthcare Research and Quality
LPN	Licensed Practical Nurse
LVN	Licensed Vocational Nurse
NP	Nurse Practitioner
PA	Physician Assistant
PACT	Patient Aligned Care Team
PCMH	Patient Centered Medical Home
PCP	Primary Care Provider
RN	Registered Nurse
VA	Veterans Health Administration
VAIL	Veterans Assessment and Improvement Laboratory for Patient-Centered Care
VISN	Veterans Integrated Service Networks

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Implementation science is collaborative and would not be possible without the hard work of those involved in all stages of intervention, implementation and evaluation. I am particularly grateful to Lynn Soban (chapter II), Alison Hamilton (chapter III), and Alexis Huynh (chapter IV) who serve as the second-authors on each of my three chapters. The chapters are much enriched by your area expertise and thoughtful guidance. I am also grateful to other co-authors including Hector Rodriguez, Susan Stockdale, Lisa Meredith, and Andrew Lanto for contributing to analysis and reviewing drafts of the manuscripts. I would also like to acknowledge Jessica Zuchowski and John McElroy for their invaluable contribution to primary data collection.

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This accomplishment is shared by the family members, mentors, and friends who provided the foundation from which all else became possible. I am especially grateful to my cousins Erika, Sam, Lauren, Victoria, and Monica for providing tangible support during my 8 years of graduate school in Los Angeles. I also deeply appreciate the dedication of my friends Andreas, Bob, CedarBough, Christine, Elizabeth, Julie, Ken, Mark, Razi, Wes, Willis, and Wintana whose constancy in my life has affirmed my belief that we can chose who we call family. Most importantly I share this accomplishment with my siblings Erik and Jacklyn Giannitrapani and my God-kids Marti, Baily, and Valerie Okech. Though often from afar, some the greatest joys I have experienced have been in watching you conquer little corners of our respective worlds. I add this dissertation to our collection.

VITA

Karleen Giannitrapani received a Masters of Public Health with a concentration in Community Health Sciences and Masters of Arts in African Studies from the University of California, Los Angeles in 2010 as well as a Bachelors of Arts in Anthropology and Religion with a Minor in Chemistry from Boston University in 2006. Giannitrapani is a recipient of the Agency for Healthcare Research and Quality Pre-Doctoral Traineeship, a UCLA Health Policy and Management Community Partners Scholarship, a UCLA World Language Scholarship for the study of Swahili, as well as multiple UCLA Regents Awards. At Boston University, she was a Boston University Merit Scholar and member of the Deans List.

Her research experience includes research assistant positions in the Boston University Medical School Department of Immunology, the UCLA Department of Health Policy and Management, and the VA HSR&D Center for the Study of Healthcare Innovation, Implementation, and Policy. She has served as a co-investigator on studies evaluating the system redesign of primary care within the VA, substance abuse disorder treatment for women Veterans, and measures for effective screening of pain. Her work has been accepted for peer reviewed presentations at the Society of General Internal Medicine, the Academy Health annual meeting, the Academy Health Conference on the Science of Dissemination and Implementation, the Interdisciplinary Research Group on Nursing Issues annual meeting, and the Patient Aligned Care Team Virtual Demonstration Laboratory conference.

Chapter I:

Introduction

Health care practices throughout the United States are increasingly adopting team based models in primary care that require significant organizational change. Many of these teams are interdisciplinary and include members from multiple professions. Team based approaches require health care professionals to work and collaborate in new ways. Most notably, they need to learn to operate not as individuals siloed within disciplines, but as contributors to a team with shared goals and responsibilities. Previous research has demonstrated that there are numerous challenges practices face when implementing interprofessional team-based models and has called for future work that provides insight into how best to support implementation of the changes required to create highly effective teams (Delva, 2008). This dissertation aims to advance the understanding of how to support the implementation of highly functioning interprofessional teams in primary care.

This work falls within the field of dissemination and implementation science, a relatively new focus in healthcare delivery research. Evidence based interventions are limited in their ability to achieve stated goals when an intervention fails to align well with the needs of a specific implementation site. Implementation science explores the methods that promote the integration of evidence based practices into healthcare practice and policy (Madon 2007; Eccles 2006; Wallin 2009). Under an implementation science based approach, we first identify evidence based interventions and then aim to understand how these interventions can successfully be adapted to real and diverse practice environments. Historically research in healthcare has focused on controlled studies and tightly defined environments. Dissemination and implementation science, by contrast, recognizes the need to understand implementation variability in less controlled real world practices (Øvretveit 2011; Damschroder 2009; Greenhalgh 2004).

To understand real world practice settings, implementation science methods rely on a combination of inductive and deductive approaches. In this dissertation we rely on a convergent mixed methods research design where quantitative and qualitative data are collected

simultaneously in the same settings. Rich qualitative data are particularly important to implementation science because they allow us to characterize implementation variability.

The specific evidence based intervention we evaluate in this dissertation is a Patient Centered Medical Home (PCMH). PCMH is a model for organizing primary care. Under the Agency for Healthcare Research and Quality (AHRQ) definition, PCMH has five core components (AHRQ 2015). A medical home is patient centered, meaning that the care is relationship-based and oriented towards the whole person, taking into respect their unique needs, culture, values and preferences. It provides comprehensive and coordinated care. Access to services is a high priority. It relies on a systems based approach to quality and safety. Medical homes have diverse structures, but all share these core principles. All of these components aim to provide patients with high quality care and to improve clinical outcomes (AHRQ 2015).

Patient Aligned Care Teams

In 2010, the Veterans Health Administration (VHA) implemented its version of PCMH which involved reorganizing front line staff into Patient Aligned Care Teams (PACTs), The smallest unit of a typical PACT team is called a teamlet and has the following structure: a primary care provider, a Registered Nurse care manager (RN), a clinical associate (usually a licensed practical nurse (LPN) or health tech), and an administrative associate (clerk). This interdisciplinary group of a provider and three full time equivalent support staff are assigned responsibility for a panel of patients. The panel sizes vary, but a typical panel assigned to one teamlet is 1200 Veterans. Multiple teamlets cluster to form a PACT team which also incudes axillary staff (See figure 1).

Under PACT each member has defined roles and responsibilities. However, as long as a task is within a teamlet member's scope of practice, there is room for some negotiation between teamlet members regarding who will assume which task and under what

circumstances. There are a number of responsibilities all teamlet members share. For example, each PACT staff member is responsible for: providing ongoing, continuous care, to one or more assigned panels of Veterans; for ensuring appropriate access is provided to patients assigned to the panel; for participating in team performance improvement activities; functioning at the full extent of their license and performing top of license tasks; and for providing health education and health coaching on wellness disease prevention, chronic care management, and self management skills to Veterans, commensurate with their level of documented professional training. Their discipline specific roles, as listed in the VHA Patient Aligned Care Team handbook can be defined as follows:

Primary Care Provider Responsibilities:

- Providing health care commensurate to the PCP's licensure and clinical privileges or scope of practice
- Ensuring each patient's care plan contains medical recommendations for clinically indicated care
- Offering clinically indicated health care services to patients assigned to the PACT, and providing for or arranging for care to which patients consent
- Sharing leadership for the team including shared delegation of appropriate care and care processes to appropriate team members
- Reviewing available clinical and performance data with the team, focusing on continuous improvement of critical team processes
- Ensuring each patient has same-day access for face-to face and telephone care visits during regular clinic hours
- Collaborating with the PACT Staff to develop personal health plans that incorporate care management and care coordination appropriate to the patient's needs

- Communicating with facility leadership regarding the resources needed by the PACT for optimal function

In summary, in addition to all of the clinical and care coordination responsibilities that providers have for their panel of patients, they also are assigned the role of being the teamlet leader, directing the PACT team through shared decision making, and ultimately providing direction regarding appropriate care and care processes to the other teamlet members.

RN care manager responsibilities:

- Providing all aspects of professional nursing service consistent with licensure, certification, nursing professional standards of practice and the clinicians Functional Statement with elements of practice
- Enhancing patient safety and quality of care by collaborating with PACT staff to develop, oversee, and manage care-management plans and care-coordination for patients assigned to PACTs
- Participating in modes of communication and care delivery including but not limited to secure messaging, telephone care, view-alert management (electronic messaging with VETS though a secure portal), shared medical appointments, clinical video tele-health visits, face to face visits etc…
- Identifying patient needs for involvement of discipline specific team members and discussing nursing recommendations with the provider
- Engaging relevant PACT staff to support nursing care, according to locally established informal and formal communication processes, including entering consultation requests to discipline specific PACT members

- Assuming full accountability for the appropriateness of assignments made by the RN care manager to clinical associates or administrative associates related to care management, care coordination, nursing services, and outcomes of care
- Entering orders in CPRS for tests per approved standardized RN care management protocols for primary care provider orders
- Ensuring same day access for face-to-face and telephone care visits
- Using nursing expertise, evidence based guidelines, and standardized nursing protocols to promote patient engagement, self-care and wellness, as well as to provide care to patients and determine care management requirements

Under PACT the RN assumes a care manager role, which among other things involves identifying patient needs for their individual care plan. Care management describes the oversight and management of a personal health plan for an individual patient or a cohort of patients with specific needs. Care management is a specific nursing skill set that not all primary care RNs will have been required to utilize in pre-PACT VA primary care settings.

Clinical Associate Responsibilities:

- Providing evaluation and care consistent with licensure, certification, and functional statement with elements of practice
- Collaborating with PACT staff to develop comprehensive health care plans and care management plans
- Managing clinic workflow, ensuring patients are placed in exam rooms in a timely manner, and providing direction to patients as they move through the clinic environment

The clinical associate, the Licensed Practical Nurse or Health Tech assigned to the teamlet, has a very brief role specific description of responsibilities in the PACT handbook. However, when taking into consideration the responsibilities listed for all PACT staff, the LPNs and Health Techs assuming the PACT clinical associate role, experience a meaningful role transition under the PACT model. Providing health education and health coaching about wellness and health care plans, a core strategy of PACT, is, for example, a task that often is shared with the clinical associates. They also, depending on the policies of a given facility, may be involved in visit remainder calls, post-hospitalization discharge calls, and communicating with patients via a secure messaging portal.

Administrative Associate Responsibilities:

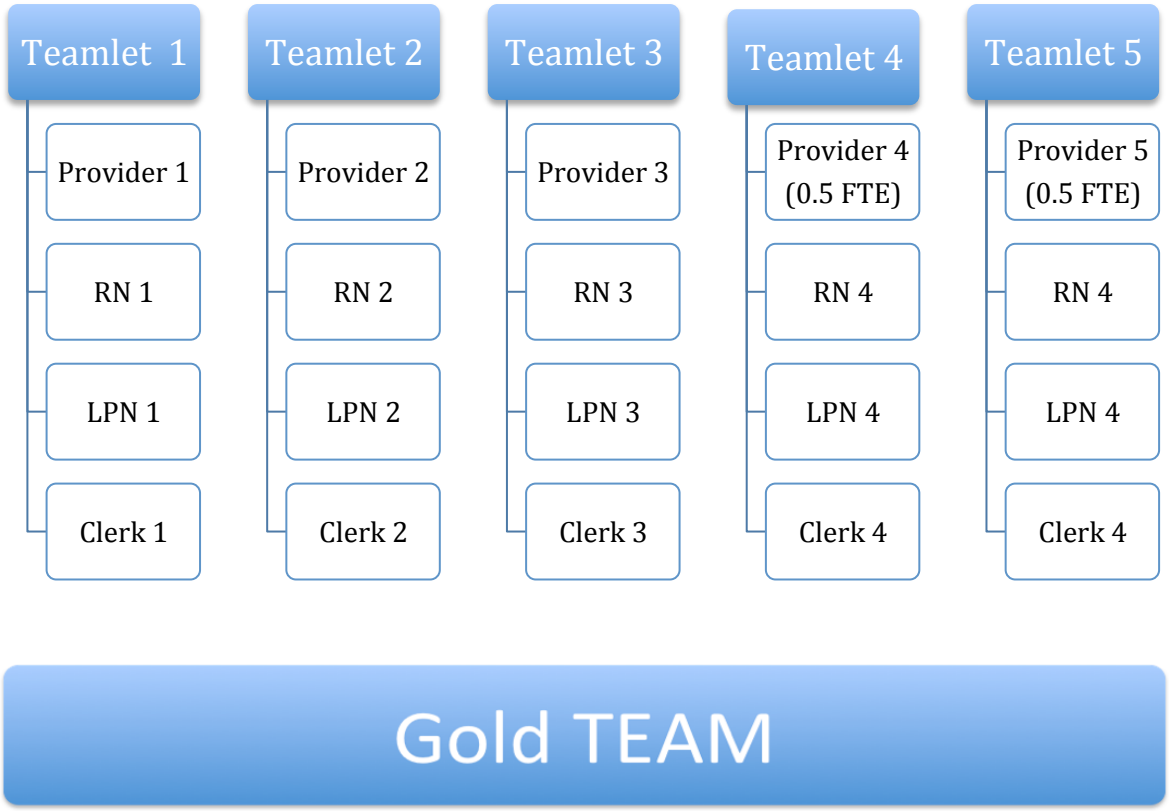
- Providing clerical support and administrative functions to PACT staff
- Collaborating with PACT staff to incorporate the logistical elements of care coordination into comprehensive care management plans
- Providing guidance and direction to patients and personal support persons for navigating the VA health care system and administrative functions in the VA
- Coordinating care for patients assigned for PACT

In the case that administrative personnel are not located physically proximate to their corresponding teamlets (for example some staff call centers), some of the clerical tasks fall to the other teamlet members.

Recent implementation studies have demonstrated significant variability in how teamlet structures are implemented (Rodriguez 2014). In the case that a provider is only in the primary care clinic part time, his/her supporting staff may also be assigned to other PACT teamlets. (See the below chart where RN4 LPN4 and Clerk 4 support both provider 4 and provider 5). The

fractional allocation of the support staff should match the level of appointment time of the primary care provider.

Figure 1: Sample PACT team structure including 5 teamlets



At a given facility there will be multiple teamlets who make up a team. A facility may have one or more teams (i.e. Gold team, Sliver team, Bronze team). Smaller community based clinics are typically comprised of one team while large medical centers may have five or more. Some of the large medical centers have also implemented PACTs for specific populations with special needs for example a Women's Health PACT, a Homeless PACT, and a Geriatrics PACT.

In addition to PACT teamlets, ancillary services are integrated into primary care at the team level. Examples of the other disciplines involved include pharmacy, social work, psychiatry and behavioral health etc. The inclusion of the various services will vary by facility but the national guidelines state that there should be, for example, one PACT pharmacist for every three panels of patients, one anticoagulation pharmacist for every five panels of patients, one registered dietician for every 6000 patients, and one social worker for every two panels of patients. All such guidelines can be found in the VHA PACT handbook.

A PACT demonstration project:

Beginning in 2010, under the direction of the national central office of the VHA, the PACT model was implemented throughout VA facilities across the country. Though the decision to implement the PACT model occurred at the national level, many of the decisions regarding how best to implement the model and how to transition the workforce into the new model occurred at more local levels. Decisions about both teamlet formation as well as training were guided by the direction of the national leadership, but some implementation decision-making occurred at the regional, facility, and even practice levels.

The Veterans Health Administration is divided into 21 administrative regions called Veterans Integrated Service Networks (VISNs). Our studies are components of a demonstration project evaluating the implementation of the PACT model in VISN 22, the administrative area covering Southern California and Western Nevada. VISN 22 is comprised of five local healthcare systems. Each local health care system is comprised of at least one medical center with the possibility of additional community based clinics; there are a total of 35 geographically distinct primary care practices clustered in the five local health care systems. These include clinics within a large medical center that may serve 7000-20000 patients, as well as smaller community based out patient clinics.

The demonstration project is called the "Veterans Assessment and Improvement Laboratory for Patient-Centered Care" (VAIL) and funded by the VA Office of Patient Care Services. A primary goal of VAIL is to test an Evidence Based Quality Improvement (EBQI) method for developing and spreading a culture of quality improvement within primary care services in VISN 22 (Rubenstein, 2014). VAIL has numerous aims, but all are centered around supporting PACT practices in their use of evidence-based quality improvement (EBQI) (Rubenstein, 2013) to implement PACT strategies. The EBQI strategies used by VAIL include the development of an interdisciplinary quality improvement council at each practice site, grant-supported improvement projects led by primary care team members, and use of a rapid-cycle quality improvement approach focused on data monitoring, feedback, and refining and disseminating effective teamlet practices (Rubenstein, 2014). Three of the five local healthcare systems in VISN 22 participate in VAIL. The three analyses presented below describe early implementation of the PACT model, and are components of the VAIL formative evaluation.

Research Objectives

This dissertation assesses various aspects of implementing interdisciplinary teams in the VA. The analyses presented below rely on the assumption that achieving the ultimate goals of PACT, providing high quality care and improving clinical outcomes, are contingent upon successful implementation of teams. To get the most comprehensive understanding of the factors that impact PACT team functioning, we investigate factors at the individual, team, and organizational levels.

In the first study we query team members of a newly implemented medical home to identify factors associated with role self-efficacy, a belief of possessing the capacity to execute a role effectively. Roles expand greatly under the PACT model and high PACT team functioning relies on all individuals achieving role self efficacy. In the second study we seek to understand PACT team members' perceptions of the role their direct supervisors play in day-to-

day primary care team functioning. Interdisciplinary PACT teams were implemented on top of disciplinary teams already in place. This study acknowledges the presence of the discipline specific supervisors, whose role was not addressed in the PACT literature, and attempts to clarify their contribution. The third study explores a mixed-methods study design to identify modifiable practice climate factors associated with team function under PACT. Together these analyses foster a comprehensive overview of the factors that are associated with PACT team functioning during early implementation.

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Chapter II:

Facilitating the Role Expansion of Clinical Associates on Interprofessional Primary Care Teams

ABSTRACT

Interprofessional team-based models that expand the role of support staff are increasingly adopted in primary care practices. In this study we query team members of a newly implemented medical home to identify factors that may inhibit nursing staff self-efficacy, a belief of possessing the capacity to execute a role effectively. We analyzed data from 79 key informants' interviews with primary care team members at six Veterans Health Administration (VA) clinics in Southern California. All sites had implemented Patient Aligned Care Teams (PACT), the VA's version of a patient centered medical home (PCMH). We identified three themes that produce the self-efficacy necessary for successful role expansion: 1) role training 2) time and resources for roles and 3) cross-disciplinary role agreement. Clarifying the factors that impact self-efficacy for the role expansion of PACT staff can inform strategies for role transformation under other PCMH models.

BACKGROUND

Since the passage of The Affordable Care Act in 2010, which incentivized the use of interprofessional team based models of primary care, there has been increased adoption of the patient centered medical home (PCMH) model of care delivery (Willard 2012). PCMH models aim to improve quality of care and patient care outcomes by sharing patient care with a dedicated interprofessional team of healthcare providers who have diverse skills and expertise (Ghorob 2012; Yarnall 2009). By distributing tasks that before might have been only carried out by a primary care provider over a team, the goal of providing patients with better quality and experiences of care can be realized (Ghorob 2012). The interprofessional teams can only achieve their goals, however, when team members work together and are highly functioning. A prerequisite of team functioning is the self-efficacy of each individual team member in his or her newly adopted team based role (Bandura 1977). Self-efficacy is a belief of possessing the capacity to execute a role effectively and is rarely achieved when role ambiguity and role overload persist (Bandura, 1977, 1986, 1997) (Kahn 1964) (Schaubroeck 1989).

In 2011 the Veterans Health Administration (VA) implemented a nationwide transformation of its primary care practices with the goal of providing veterans with high-quality, continuous, team based care. The transformation re-organizes all staff involved into Patient Aligned Care Teams (PACT) and represents the VA's version of a patient centered medical home. In their ideal form, all PACTs are comprised of a 4-member core interprofessional group with a primary care provider (PCP) that can be a physician, nurse practitioner, or physician assistant, supported by three full time equivalent PACT staff: a registered nurse care manager (RN), a clinical associate —usually a licensed vocational nurse (LVN), and a clerical associate (clerk) (LaVela 2014; Veterans Health Administration 2014). The teamlet members are responsible to their PCP for PACT related tasks, but officially report to a supervisor within their profession. Multiple core groups, known as "teamlets," cluster to form a PACT team which is

supported by auxiliary members from pharmacy, social work, mental health, and other disciplines.

Under PACT the roles of clinical associates in particular are greatly expanded (Veterans Health Administration 2014). The clinical associate role expands from providing basic patient care (i.e. taking patient vitals) to include health coaching and panel management activities like schedule "scrubbing" (Bodenheimer 2014) (Rodriguez 2014). Health coaching is a method increasingly used to support patients in implementing self-management strategies for chronic diseases and promoting positive behavior change for disease prevention (Bodenheimer 2014). Through elements adapted from motivational interviewing (Miller 2012) (Channon 2003) and the TEACH model (Kearney 2011), the clinical associate activates patients to engage in their own health care. There is increasing evidence that having primary care support staff assume components of a health coaching role positively affects patient health (Thom 2015) (Bodenheimer 2006) (Willard 2013). "Scrubbing" describes the process of the clinical associate proactively managing the PCP's schedule and ensuring patients are prepared for visits (i.e. they have had the correct labs done before they arrive) (Rodriguez 2014). Achieving the goals of team-based primary care under the PACT model is dependent on successfully expanding the roles of clinical associates to include these higher level tasks.

Overall, the goal of this study is to improve the understanding of facilitators and barriers to self-efficacy for role adoption when implementing greatly expanded roles for primary care staff under team based models of care. We query team members of a newly implemented medical home to identify factors that may produce role ambiguity and role overload as team members transition to expanded roles. Specifically we explore PACT teamlet member perspectives about the factors impacting clinical associates' successful role expansion under PACT.

METHODS

Setting

The VA health care delivery system is divided into regional administrative areas called Veterans Integrated Service Networks (VISN). This qualitative study uses data collected in VISN 22 as part of the Veterans Assessment and Improvement Laboratory for Patient-Centered Care (VAIL). VAIL is a demonstration laboratory evaluating PACT implementation in the VISN covering Southern California and Western Nevada (Rubenstein 2014). We conducted semi-structured interviews in six distinct clinics that had 12, 13, 10, 22, 31, and 14 teamlets, respectively.

Data Collection

To ensure we captured a range of perspectives we employed a quota sampling approach (Mainous 1991) to randomly select three individuals from each of five strata in each of the six sites participating in VAIL. The five strata include: PCPs working in the facility at greater than or equal to 50% full time; PCPs working at less than 50% full time; registered nurses; clinical associates; and clerks. For some strata, the supply of potential respondents was exhausted before a quota was achieved. We invited 144 individuals to participate and 79 agreed to be interviewed (response rate= 55%). Most interviews (71/79) were conducted in person; eight were conducted by phone. The most common reasons for not participating were lack of time (n=16) and the perception of not being qualified to participate (n=13). Interviews occurred between January 2012 and February 2013, approximately one to two years after each site began to implement PACT.

A semi-structured interview protocol covered the following domains: teamlet formation; teamlet communication; teamlet member roles and responsibilities; team training for PACT implementation; experiences of PACT changes; PACT's impact on Veterans; and experiences of leadership facilitation and support. Most interviews (n=77) were audio recorded, professionally transcribed and transcripts were cleaned to remove any identifying information.

Detailed notes were taken during the two interviews where the respondent did not agree to be recorded.

Data analysis

Four investigators independently reviewed five interview transcripts and developed code lists with code definitions, which were then compared and consolidated according to the codes that the investigators mutually agreed were prominent in the data. Once this top-level code list was finalized, eight interviews, two from each teamlet role, were then independently double coded by two investigators. The application of codes was compared and discussed to ensure consistent application of codes. (Macqueen 1998) Discrepancies were resolved by discussion and consensus-building. One investigator then coded the remaining interviews, and other members of the analytic team systematically reviewed the coding, commented on inconsistencies, and resolved these inconsistencies through discussion with the investigators. All analyses were conducted using qualitative analytic ATLAS.ti (Atlas.ti 2015). Presentation of results to VA leadership served as a validity check (Bernard 2010).

The top-level code list represented broad themes that consistently arose in interviews. These themes included: team functioning; team formation; roles and responsibilities; role ambiguity; role overload; training; coverage; leadership support; and resources. When the top-level coding was complete the investigators reviewed the code “roles and responsibilities” and identified sub-themes that emerged where roles and responsibilities co-occurred with role ambiguity and role overload. As themes and sub-themes emerged they were defined and operationalized with inclusion and exclusion criteria.

RESULTS

Overview

Interviews were completed with 79 teamlet members: 29 PCPs, 18 RNs, 20 clinical associates and 12 clerks. Each interview lasted between 19 and 60 minutes and occurred

between January 2012 and February 2013. Clinical associates at all six sites had been assigned to specific teamlets and were generally responsible for one to three providers. Teamlet members confirmed that on highly functioning PACT teams, the roles of clinical associates expanded to include tasks beyond the day-to-day management of the clinic. See Table 1 for a summary of the tasks teamlet members mentioned as expanded under PACT.

Table 1: Expanded Role of Clinical Associates under PACT

Tasks mentioned in interviews	Before PACT	After PACT
Patient Vitals	Yes	Yes
Managing Clinic Flow	Yes	Yes
Checking Patients in/out	Yes	Yes
Triaging	Some	Yes
Walk-ins	Some	Some
Managing Secure Messages from Patients	No	Yes
Schedule Scrubbing	No	Yes
Pre-appointment Phone Calls	No	Yes
Responsible for a Consistent Panel of Patients	No	Yes
Obtaining and Checking Lab Results	No	Yes
Health Coaching/ Motivational Interviewing	No	Yes

We identified three themes that related to the self-efficacy necessary for successful role expansion. (See Table 2). We also identified sub-themes that inhibit self-efficacy under each theme.

Table 2: Themes that produce self-efficacy for clinical associate role expansion

Theme 1. Training	
Sub-Themes	Receiving incomplete training or limited training Receiving inconsistent training within a site Not receiving training together with teamlet members
Theme 2. Time and Resources	
Sub-Themes	Not enough time for expanded tasks Inadequate space that accommodates needs of expanded tasks Poor task mix
Theme 3. Cross Disciplinary Agreement	
Sub-Themes	Insufficient coordination between medicine and nursing leadership about staff roles PCPs not aware of boundaries of staff roles Lack of synchronicity between staff roles and what PCPs would like staff roles to be

Theme 1. Training

Teamlet members found training useful for (1) clarifying clinical associates' roles, (2) providing skills necessary for teamwork, and (3) providing skills specific to expanded roles (e.g., health coaching and scrubbing). Below is an example of a successful training. In this example teamlet members attended a physical training together with their teammates.

> *"It [the training] worked very well. We had little scenarios where we got to be hands-on with our teamlets and work with them to go through each scenario—if a patient did this, or if there was miscommunication. We got to get close to one another and actually see how we can work things out without getting upset." [LVN]*

Further, training participation can facilitate role expansion by teaching the skills necessary to assume a new role. Clinical associates who had attended trainings felt prepared to assume the new PACT health-coaching role*:*

> *I think they taught me a better way [of doing health coaching] in training. I thought I was teaching them right, but they gave me a better understanding of doing it." [LVN]*

The nature and extent of staff participation in PACT training, however, varied for each teamlet across the six study sites. Clinical associates attending PACT trainings with their teamlet members experienced a greater ability to execute new roles than did those who had only minimal or no PACT training, had trained with other teams, or had received different training than others at their sites.

<u>Incomplete training</u>

Some PACT clinical associates received no training beyond written guidance which led to frustration as exemplified by this clinical associate:

> *"We have not been trained…we're doing things according to the way we think that they should be done. But nobody sat us down and said… what is PACT and what PACT stands for—we know what it stands for, but we really haven't had any training as to "do*

this, do that, this is how it should be done, and these are your guidelines for this procedure under PACT." We don't have that guidance so we're kind of like the blind leading the blind... We need training." [LVN]

Inconsistent training provided to clinical associates within a site

Failing to implement the training in a systematic way for all clinical associates working at a given site created further frustration, and consequently led to some discouragement around making an effort to assume all of the new task of the new role when *"nobody else is doing it":*

"Nurses are very angry about not receiving any training whatsoever regarding PACT… [leadership] sent one team [to training]…and they're [the trained team] not very pro-PACT… they could care less, so they didn't share that information… that information was kind of lost and then what you hear from them is like, "Dammit, nobody else is doing it so…If I'm the only one who's doing it, I might as well not do it." [LVN]

Teamlet members did not receive training together as a teamlet

Some clinical associates received training together with their RN, PCP, and clerk, while other clinical associates trained with another teamlet. Clinical associates reported challenges learning the skills necessary to work in a team when they did not attend the training with their teamlet members. Many who reported attending training without their teamlet echoed the sentiment reported below*:*

"I was sent with not people from my team, but just a clerk on this team, an LVN from that team, and no doctor. And then we got through the meeting and we found out that, wow, we really probably should have came here as a teamlet. "[LVN]

Theme 2. Time and Resources

In order to successfully implement a role expansion clinical associates highlighted a need for sufficient time, appropriate resources, and a realistic task mix.

Lack of time for expanded role tasks

Some clinical associates felt they lack time to meet all of their obligations. This LVN, for example, stated that due to many competing demands on her time, she did not have enough time to document all patient phone encounters.

> *"I don't type the note every time we call… My phone numbers suck, I'm just going to tell you right now, because I call them on the phone but I don't have time to make a note about every phone call that I'm making*." *[LVN]*

Lack of private space to do expanded role tasks

In addition to time for the expanded role, teamlet members highlighted the need for appropriate space to carry out the expanded tasks. One RN described how lack of space and time for tasks poses a challenge for the clinical associates at her site:

> "*I know that the LVNs are trying to like do the scrubbing of the list and those types of functions. That's real difficult because they don't always have their own space to do it or the time with everything else that's going on… From the moment the clinic starts, it's running all day…And so, when do they [LVNs] have time to do their list scrubbing? It's usually when they can grab a moment… I know that it's really difficult for them to do what they should be doing with scrubbing the list*." *[RN]*

Poor task mix and competing demands

When clinical associates are given too many tasks without sufficient bandwidth to execute them, some tasks will be compromised, and the role expansion fails. Clinical associates indicated the

importance of appropriate task mix in minimizing role overload. For example, in addition to expanding the clinical associate role to include new job responsibilities, some clinical associates are assigned to work with multiple teamlets: *"in a lot of cases a nurse here is assigned to be part of multiple teamlets… So yes, there is definitely a concern about overload*." [LVN] The added time and effort required to coordinate care with multiple teamlets may compromise the clinical associates' ability to dedicate time to expanded role tasks.

Theme 3. Cross Disciplinary Role Agreement

Teamlet members identified three barriers to role expansion that center around lack of coordination and agreement about roles between the nursing and medicine disciplines. These interprofessional coordination failures inhibit clinical associates from fully assuming the PACT roles and responsibilities that would best support team functioning.

<u>Insufficient coordination between medicine and nursing leadership about staff roles</u>

First, they identified insufficient coordination between medicine (PCP) and nursing leadership about staff roles. Specifically, they identified inconsistent understandings between the professions about the responsibilities of the non-PCP teamlet members (e.g., RNs and clinical associates)**.** One RN describes the crux of the problem:

> *"Nursing leadership needs to talk to medical leadership —it's frustrating sometimes because my provider will come back from a meeting [with medical leadership] and we'll say we were told this by our nursing leadership and they [Providers] were told we would do something totally different* [*RN].*

<u>PCPs not aware of boundaries of staff roles</u>

Second, we found that PCPs were not consistently aware of the parameters of the non-PCP teamlet members' roles. Clinical associates can either be LVNs, or health technicians, which have different scopes of practice. PCPs were not always aware of the scopes of their staff:

> "*So we don't have an LVN. We have a health tech….And I still don't understand. That's me, as a provider, I don't understand where they draw the line that's different for Health tech versus LVN in the nursing group." [PCP]*

As a result of this lack of awareness PCPs often asked clinical associates to engage in tasks that were not approved by their service line nursing supervisors. One provider describes being concerned that by being uninformed about the boundaries of the staff's roles and scopes she was potentially placing her clinical associate in a situation that would create a lack of role clarity:

> "*A nurse will say, "Well, I want to do this for you, but at the same time we were told we're really not supposed to do this for you." And so I [the PCP] say, "Well, I'm the physician here. I'm making a clinical decision." I tend to feel that I'm placing the RN or the LVN in a quandary in a sense that, okay, who do I follow, my nursing leader or my doctor." [PCP]*

<u>Lack of synchronicity between staff roles and what PCPs would like staff roles to be</u>

This contributed to the third coordination failure, which was that the parameters set by clinical associates' supervisors often did not align with the need identified as top priorities by the PCPs. PCPs expressed frustration that their needs were not being accommodated within the expanded clinical associates roles:

> *"The issue here is defining the roles... frustration comes from the fact that they're [the nurses] not getting laws or mandates from their leadership that would best suit physician's desires*." [PCP]

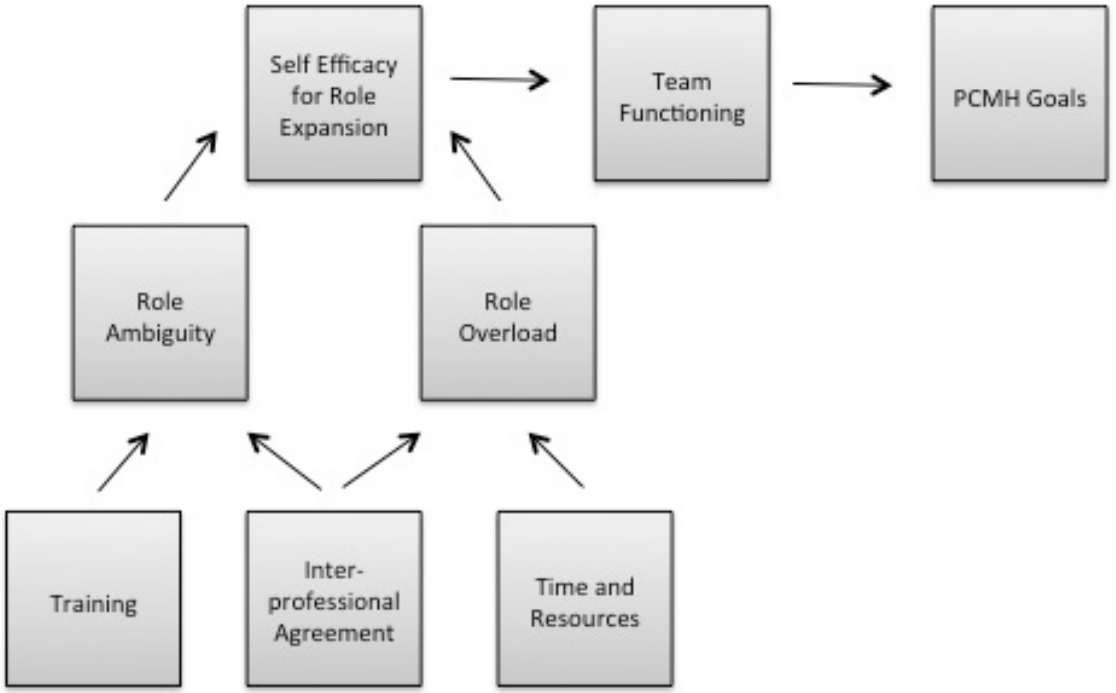
A PCP from another site echoed this frustration saying:

"*their [clinical associate] scope of practice was not where it's supposed to be in terms of the PACT model. It was just based on what the nursing supervisor said they could do and couldn't do*." *[PCP]*

DISCUSSION:

Our qualitative study found that the successful adoption of expanded roles for clinical associates is facilitated by: training; adequate time and resources; and interprofessional agreement on the roles. These facilitators of role expansion align well with previous research that has explored using licensed practical nurses to their top of license capacity (Kelsey, 2006) (Barber 2000). Figure 1. presents a conceptual overview of our findings as they relate to two theoretical constructs specific to roles: role overload and role ambiguity. Role overload can occur when there are too many demands or responsibilities for an individual to fulfill in a given amount of time or with a given set of resources. Role ambiguity involves a lack of clarity about an expected behavior in a given position (Kahn 1964). Below we describe our findings in relationship to each construct.

Figure 1. Conceptual model



Optimally, roles serve as a coordinating mechanism for organizations and teams as they create shared understandings of responsibilities for tasks and facilitate continuity in behavior over time. In context of interdisciplinary teams where staff report to both their teamlet PCP and to a supervisor within their discipline, interprofessional agreement about roles is centrally important. When leadership of medicine and nursing do not share an understanding of the boundaries of the roles for clinical associates, for example, role ambiguity can result. Role ambiguity not only compromises the role expansion of an individual teamlet member, it compromises the functioning of the entire PACT team of which they are a part. When there is insufficient coordination between medicine and nursing leadership about staff roles, with inconsistent understandings across disciplines about the responsibilities of the nursing teamlet members, clinical associates cannot be expected to thrive. Nursing and medical leadership must operate from a shared understanding of the roles of clinical associates, to assure that all

teamlet members are adequately informed of these roles and supervised from this framework. Without a shared understanding between the nursing and medicine disciplines, clinical associate role clarity under the PACT model may continue to be a challenge.

Role self-efficacy or the feeling of being effective in a role can be compromised by role overload, which can occur when a person is faced with too many expectations (Biddle 1986). Role overload is of great concern as it is a known predictor of turnover and burnout among nurses (Lu 2008) (Meredith 2015). Our data indicated that role overload largely co-occurred with being assigned to multiple teamlets or having too many competing demands in a bounded amount of time. In order to prevent role overload during role expansion, attention needs to be paid to time, resources such as space, and appropriate task mix.

Training creates a venue for leadership to communicate clear roles to staff and failure to implement thorough and consistent training on roles has consequences. Lack of training or insufficient training has the implication that staff never received meaningul guidance about their roles or the roles of their teamlet members. Further, the provision of the inconsistent training of all clinical associates within a site may dampen the spread of expanded role adoption.

Challenges arose for the clinical associates both when they did not feel adequately trained on their own role and also when their assigned provider was unaware of the boundaries of their role. Interprofessional agreement about roles is compromised when teamlet members have not received adequate explanation of the boundaries of their counterpart's roles. Interestingly, while providers expressed some confusion on the boundaries of clinical associate's roles, the registered nurses on the teamlets did not. Perhaps the fact that the RNs have the same supervisors and are within the same discipline helped RNs have a better understanding of the clinical associate's role and scope of practice.

Interprofessional primary care teams are considered an important strategy to provide patient centered primary care that includes preventative care and chronic disease management (Grumbach 2004) (Al Sayah 2014). The top of license tasks included as part of the clinical

associate role expansion, such as panel scrubbing and health coaching, are the most likely to be dropped when the barriers are too high or there are too many competing demands and role overload occurs. If the clinical associates cannot fulfill these elements of their expanded roles, then the collective efforts and goals of the interprofessional team are compromised.

LIMITATIONS

The interviews in this study were conducted in a subset of six practice sites in one VA healthcare system planning area. Though all six clinics were in Southern California, they do represent a range of environments including large medical centers and community based out-patient clinics. Also, the interviews were conducted over an 18 month period, with the practice sites being at varying phases of implementing the PACT model. This limited us from making between-site comparisons. A strength of the sample of respondents, however, is that it is large and interdisciplinary. We interviewed individuals in all four main teamlet roles (PCP, RN, clinical associate, clerk) at all six sites and consistently asked all respondents about the day-to-day functioning of their teamlet as well as roles, training, and support from leadership. The results are therefore able to portray a diverse array of perspectives and to provide a comprehensive overview of the front-line staff's perceptions.

CONCLUSIONS

The systematic qualitative analysis of teamlet member interviews at 6 study sites that had implemented expanded roles of clinical associates under PACT revealed common themes related to the self-efficacy of clinical associates' ability to execute their new roles. These identified themes have implications for healthcare professionals working in interprofessional teams in a variety of settings. Our study focuses on clinical associates because their role expansion under PACT was large and complex. However, the themes identified could apply to a PACT teamlet member in any role. Better understanding the factors that impact the PACT

clinical associate role expansion can inform strategies for role transformation under other PCMH models. Future studies might empirically test the relationships in this model as well as evaluate the relative importance of these factors.

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Chapter III:

The Role of Middle Managers in Supporting Interdisciplinary Primary Care Teams

ABSTRACT

Background: The Veterans Health Administration (VHA) is a national managed healthcare system with multiple levels of management. Separate middle managers in this multilevel system focus on specific healthcare professions and products. VHA primary care is organized as a Patient Centered Medical Home model that is based on continuity management of patient panels by interdisciplinary "teamlets" consisting of primary care providers, nurses and clerks. While the teamlets are envisioned as interdisciplinary in this new model, teamlet members may continue to report separately to middle management supervisors within their respective disciplines. Little is known about the role of middle managers in medical home implementation.

Objective: To **examine and characterize** teamlet members' perceptions of the role of middle management in primary care operations and teamlet functioning in an outpatient setting.

Design: Observational.

Participants: 79 front line staff (MDs, NPs, RNs, licensed professional nurses, clerks) on VA PACT teams from 6 VA clinics in Southern California.

Approach: Formal qualitative data collection and analysis based on semi-structured interviews of frontline staff on VA PACT teams in 2012 to 2013.

Key Results: Teamlet members perceive their supervising middle managers as essential to the day-to-day functioning of PACT teamlets in terms of: defining the specific roles and responsibilities of teamlet members, facilitating conflict resolution between teamlet members, setting expectations and mechanisms of accountability, facilitating within teamlet and cross teamlet coverage, and facilitating teamlet member initiated innovation. Teamlet members highlighted challenges when middle manager involvement was lacking.

Conclusions: Within a multilevel system, frontline interdisciplinary teams continued to perceive the need for leadership by middle management supervisors from their own professional disciplines for solving interdisciplinary problems, setting role-specific schedules and expectations, and fostering innovation. Greater focus on the structure and training of middle managers for participation in PCMH models is needed.

BACKGROUND

Since the passage of the Affordable Care Act in 2010, which incentivizes strategies that reduce costs and improve quality, there has been increased adoption of the Patient Centered Medical Home (PCMH) model in primary care practices (Willard 2012). PCMH is a team-based approach to accessible, continuous, coordinated care that has been found to produce positive patient outcomes (Williams 2012). Because higher functioning PCMH teams are more likely to provide high quality care and produce the desired outcomes, PCMH team functioning and its determinants have become a major focus for PCMH improvement efforts (Yarnall 2009; Crabtree 2011). Providing front line staff with clear leadership of day-to-day functions is one of the criteria known to contribute to team functioning (Ghorob 2012; Tuepker 2014; Hackman 2002).

In 2010, the Veterans Health Administration (VHA) implemented its version of PCMH which involved reorganizing front line staff into Patient Aligned Care Teams (PACTs), called "teamlets." See figure 1 for the mandated PACT teamlet structure which has the following configuration: a primary care provider (PCP) who can be either a Medical Doctor (MD), Physician Assistant (PA) or Nurse Practitioner (NP), a Registered Nurse (RN), a clinical associate who is usually a vocational nurse (LVN) or health tech, and an administrative associate (clerk)(Hackman 2002; Veterans Health Administration 2014; Rodriguez 2014). Together, this small interdisciplinary group of a provider and three full time equivalent support staff are assigned responsibility for a panel of approximately 1200 patients. Figure 2 shows how multiple teamlets cluster to form a “PACT team.”

Figure 1. Mandated PACT Teamlet Configuration

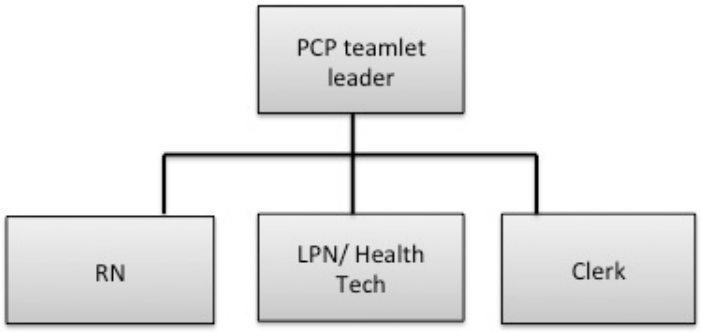
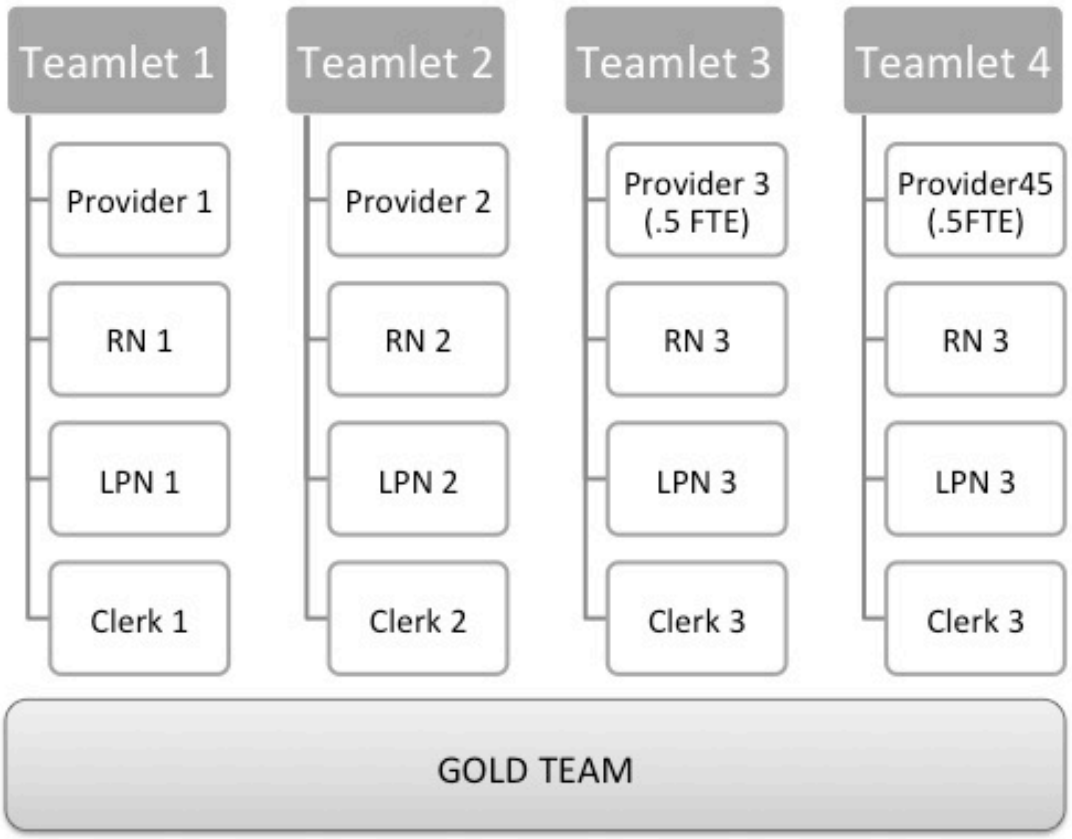


Figure 2. Sample PACT Team Configuration Including 4 Teamlets



This sample team is comprised of four teamlets. Providers 1 and 2 are full time while 3 and 4 are 50% of a full time equivalent (FTE) provider. Providers 3 and 4 share teamlet staff so that each staff supports the equivalent of a full time provider and a full panel of patients. Out-patient clinics with lower patient volume may have all teamlets cluster into one team. Larger sites, such as medical centers (7000 - 20,000 patients), might have 3-5 teams each comprised of multiple teamlets. Staff within the same discipline have coverage responsibilities for other teamlets within their team (Rodriguez 2014).

From management theory we find the concept of a bounded team where 1) all team members know who is on their team and 2) the team is small enough for everyone to each have a specific set of tasks and responsibilities while working together to achieve a common goal (Hackman 2002). In a small private practice setting it is easy to image how a team could function in this way: there would be one PCP, with a few nurses or clerks that help support all patient needs ranging from direct care to answering questions, to appointment reminders and scheduling. In more complex systems the idea of a bounded team is less realistic.

PCPs are described in the PACT literature as having the role of "teamlet leader," responsible for directing the teamlet through shared decision making and ultimately providing direction regarding appropriate care and care processes (Veterans Health Administration 2014). Despite the fact that PCPs are conceptualized as the teamlet leaders, supervision of the support staff on the teams is provided, at least in part, by discipline-specific middle managers (e.g. nurse or administrative supervisors). These middle mangers are responsible for performance evaluations and bonuses of PACT staff. The middle managers report hierarchically to medical center managers within each of their disciplinary service lines.

Middle management is subordinate to executive management and responsible for one or two lower levels of staff in a hierarchical organization (Beck 2009). Medical center managers in turn report to medical center executive administration (i.e., Director, Chief of Staff, and Director of Nursing). There are thus at least two levels of middle managers whose decisions can affect how teamlets carry out their day-to-day work. A combination of PCP leadership and discipline-specific middle management hold a matrix of responsibility over various front line staff. Therefore, while responsible to the teamlet PCP for PACT responsibilities, nursing staff, for example, also report to a nursing supervisor directly above them in their service line. Despite the central involvement of middle mangers in overseeing PACT teamlet members, there was a policy omission and they were not considered in the initial PACT literature.

Birken et al posit that middle managers play a central role in the implementation of healthcare innovations. Specifically the authors present a conceptual framework where direct supervisors are key to implementation effectiveness by diffusing and synthesizing information regarding innovation implementation, mediating between strategy and the day-to-day activities required to implement innovations, and selling innovation implementation (Birken 2012). To generate hypotheses about how to create ideal conditions for team functioning in a newly implemented model, we conducted a qualitative study that explored teamlet members' perceptions about day-to-day supervision of the teamlet members. Specifically, we explored the ways in which direct supervisors affect teamlet functioning and support teamlet members in carrying out day-to-day PACT responsibilities.

METHODS

Setting

The data for this study came from the Veterans Assessment and Improvement Laboratory for Patient-Centered Care (VAIL), a demonstration laboratory evaluating PACT implementation in one Veterans Integrated Service Network (VISN) (Rubenstein 2014). VAIL takes place in VISN 22, the administrative area covering Southern California and Western Nevada and is comprised of five local healthcare systems. The six VAIL demonstration sites are outpatient clinics with 12, 13, 10, 22, 31, and 14 teamlets, respectively.

Data Collection

We employed a quota sampling approach to randomly select three individuals from each of five strata in six sites participating in VAIL: PCPs working in the facility at greater than or equal to 50% full time; PCPs working at less than 50% full time; Registered Nurses; Clinical Associates; and clerks (Mainous 1991). For some strata, the supply of potential respondents was exhausted before a quota was achieved. We invited 144 individuals to participate and 79

agreed to be interviewed (response rate= 55%). Most interviews (71/79) were conducted in person; eight were conducted by phone. The most common reasons for not participating were lack of time (n=16) and the perception of not being qualified to participate (n=13). Interviews occurred between January 2012 and February 2013, approximately one to two years after each site began to implement PACT.

A semi-structured interview protocol covered the following domains: teamlet formation, teamlet communication, teamlet member roles and responsibilities, team training for PACT implementation, experiences of PACT changes, PACT's impact on Veterans, and experiences of leadership facilitation and support. Most interviews (n=77) were audio recorded, professionally transcribed, and transcripts were cleaned to remove any identifying information. Detailed notes were taken during the two interviews where the respondent did not agree to be recorded.

Data analysis

Four investigators independently reviewed five interview transcripts and developed code lists with code definitions, which were then compared and consolidated according to the codes that the investigators mutually agreed were prominent in the data. Eight interviews, two from each teamlet role, were then independently double coded by two investigators and the application of codes was compared and discussed (Macqueen 1998). Discrepancies were resolved by discussion and consensus-building. One investigator then coded the remaining interviews, and other members of the analytic team systematically reviewed the coding, commented on inconsistencies, and resolved these inconsistencies through discussion across the team. All analyses were conducted using ATLAS.ti (ATLAS.ti 2009). Presentation of results to VA leadership served as a validity check.

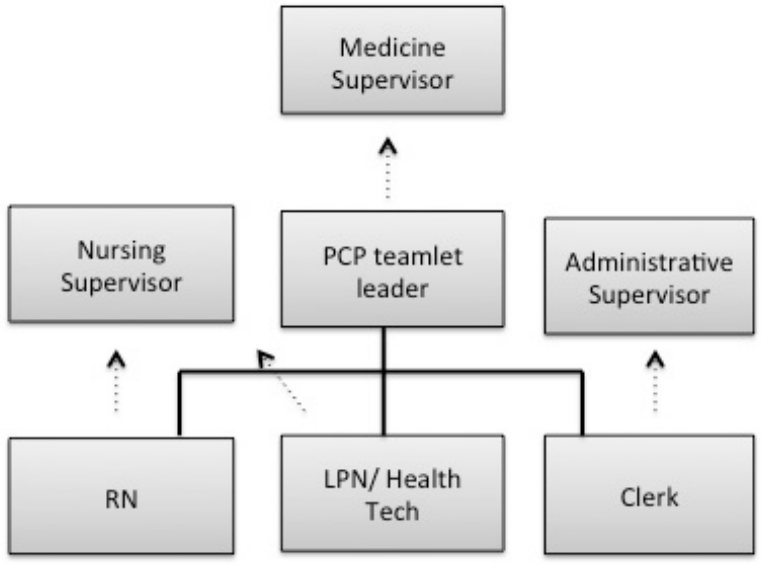
RESULTS

Interviews were completed with 29 PCPs, 18 RNs, 20 clinical associates, and 12 clerks. Each interview lasted between 19 to 60 minutes and occurred between January 2012 and February 2013.

Updating the PACT Model to Include Supervisors

PACT teamlet members confirm that day-to-day supervision of providers and staff on the PACT teamlets is done, at least in part, by discipline-specific supervisors. PCPs including Medical Doctors, Physician Assistants and Nurse Practitioners reported to a supervisor in the medicine service line, RNs, LVNs and Health Techs reported to a supervisor in the nursing service line, medical support assistants or clerks reported to a supervisor in the administrative service line. See figure 3 for PACT teamlet configuration including direct supervisors. Supervisors from three disciplines (Medicine, Nursing, and Administration) are involved in the day-to-day functioning of a PACT teamlet. Only the PCPs had supervisors in the department of primary care where PACT is housed. The Nursing and Administrative supervisors belong to services external to Primary Care and have varying levels of involvement with PACT.

Figure 3. The PACT Teamlet Configuration Including Supervisors



Teamlet members confirm that day-to-day teamlet function is directly impacted by coordination between the supervisors in the three service lines involved. Teamlet members identified five themes relating how supervisors provide guidance or support for the day-to-day functioning of PACT teamlets. Supervisors: clarify roles and responsibilities, facilitate teamlet initiated innovation, support conflict resolution, provide coverage strategies, and set expectations.

Text Box 1: Overview of the Key Roles Supervisors Play in Supporting Teamlets

- **Clarify roles and responsibilities**
  - Define and communicate clear roles
  - Prevent role overload
  - Facilitate implementation of new or expanded roles
- **Facilitate teamlet initiated innovations**
  - Provide a venue for teamlet members to raise ideas
  - Take teamlet ideas up the chain of command to senior leadership to influence policy
  - Coordinate about implementing changes across disciplines
- **Support conflict resolution**
  - Provide agency and voice to staff teamlet members
  - Provide mediation
- **Provide coverage strategies**
  - During planned and unplanned absence
  - When there are low or incompletely staffed teamlets
  - To address inequitable work load distribution
- **Set expectations**
  - About roles and responsibilities
  - About timelines
  - To minimize and address resistance to change

Theme 1: Supervisors Clarify Roles and Responsibilities

Teamlet members across all three disciplines (Medicine, Nursing, and Administration) indicated their direct supervisor within their specific service line as the place to turn when seeking clarity on responsibilities and role definitions. Staff further indicated that nurse and administrative supervisors play the key role of assigning tasks and defining task distributions between staff in the same role. Across all roles and sites, teamlet members identified that when

there is confusion about who is responsible for doing a specific task, proactive involvement by the supervisors can clarify and help resolve role confusion.

Notably, on highly functioning teamlets, PCPs highlighted that their staff teamlet members turned to their nursing or administrative supervisor when seeking role clarification: *"My nurse, RN… I know that if she's not clear, she goes to the Nurse Clinic Manager and it clarifies her role."* [PCP] On lower functioning teamlets, however, some teamlet PCPs envisioned their staff assuming roles that conflicted with the staff roles defined by staff supervisors. In such cases supervisors assert their authority to ensure staff work within their scope of practice or as this quote demonstrates, to facilitate the implementation of new roles.

> *"Some doctors were not in agreement [about the boundaries of the LVN role]. They didn't want their nurses to do that [calling patients]... But then our other boss [Nurse supervisor] said it was important and we should start doing it..."This boss said yes". It has to be done."* [LVN]

When staff receive direction about their roles from their teamlet PCP that conflicts with the guidance of their supervisor, they defer to their supervisor as the final voice of authority.

Theme 2: Supervisors Facilitate Teamlet Initiated Innovation

Overall, teamlet members in all roles highlighted the importance of their supervisor in facilitating innovation or change. Further, teamlet members highlighted that though PACT teamlets are interdisciplinary, most changes in team processes involve changes in disciplinary specific roles or responsibilities. On highly functioning teamlets, where implementing changes occurred effectively, staff described having a teamlet PCP who encouraged them to go to their supervisor and initiate the change within their service line:

> *"I'm very shy… But if it's [an innovation] that I felt really deeply about, I'd probably speak to my providers about it, but then they'll probably say you need to speak to your supervisor. Go through the supervisor."* [Clerk]

Changes have to be approved within the separate service lines and it is the supervisors who facilitate communication up the chain. Teamlet members across all three service lines agreed with this RN who described meetings with supervisors as an opportunity for teamlet members to raise ideas:

> *"We go into specific RN/LVN meetings, nursing meetings [led by the nurse supervisor], just kind of bounce things off and see what we can do. And if we can, we send them [the ideas] up the chain and hope they get addressed, and if not, then they come back down."* [RN]

Another key to implementing change that teamlet members across the roles agreed upon is the need for supervisors to coordinate about changes across the disciplines.

> *"So, you want to effect a change, I have certain things that I would like my team to do, I would have to take it to my Physician's Supervisor…I went to her and she listens and… she has her own feedback and she tells me why it's not feasible, or if it's feasible, she'll take it to the meeting, or she'll talk to the Nursing Supervisor."* [PCP]
>
> *"I go through that chain and usually I can get answers right away from the Physician Supervisor …if it's something that is reasonable and can be done or that she thinks that it could change, then she takes it to the Nursing Supervisor."* [PCP]

Teamlet members highlight three ways that the innovation process breaks down: 1) When teamlet members are unsure of to whom they should raise their ideas 2) when teamlet members don't feel comfortable raising ideas to their direct supervisor in their service line and 3) when there is lack of communication and coordination across supervisors in the various disciplines about how to implement change. The two following quotes illustrate how failures of supervisor coordination break down the innovation process:

> *"I brought up my issues [having the teamlet do something differently], they [supervisors of PCPs] always say, "They're [the nurses and clerks] under a different leadership" … You [the teamlet] have to go through so many channels of approval and it has to be*

done at the very top, which is so hard. No change gets really effected in any significant manner." [PCP]

"I don't have any power to [make] changes. It [a suggested innovation] goes to the leadership of the physicians and I don't know [what happens]—, the nurses here follow orders from the higher ups at a different site, the big hospital. And, so there's a huge chain of command that it goes through, so to effect change, it doesn't… like in a private practice….under one leadership [occur]… more rapidly. Here, everything is just so slow, [there are] meetings of committees and it takes forever and then ultimately nothing ever gets done. That's my experience in six months of being here. Nothing changes." [PCP]

Theme 3: Supervisors Support Conflict Resolution

PCPs and staff agreed that one of the most important ways supervisors provide support is by being a resource for conflicts occurring within the teamlet. Particularly, the nursing and administrative staff emphasized that having the option of involving the supervisor within their service line gave them "agency" and "voice" on the teamlet. Many staff confirmed the sentiment this RN described:

"When you [the Nurse] can't solve it on your own, when you have to keep on saying the same thing repetitively, when your voice is not being heard, that's the only time that I've had to pull outside people [Nurse Supervisor] to come in." [RN]

Staff report bringing their supervisor to a meeting with their teamlet when they are unable to navigate and resolve teamlet conflicts on their own. ***"****We [teamlet members] try to directly communicate, but sometimes that doesn't work. We sometimes use a manager [to advocate for us] and they come into the meeting."* [LVN]

PCPs also confirmed that supervisors "could" play a key role in conflict resolution. However, when staff supervisors would not engage with PCPs about finding a solution to a conflict with one of their supervisees, achieving resolution became challenging. For example,

one PCP highlighted that in general PACT broke down the *"silos within the teamlet roles"* and that under PACT the PCPs felt they now had more authority to "task" staff to support them in various ways. However, assigning new tasks without creating conflict *"was a challenge… with the MSAs [clerks]… because of the personality of the supervisor who was working at the time."*

Theme 4: Supervisors of Nursing and Administrative Staff Provide Coverage Strategies

In general, PCPs covered for the other PCPs on teamlets within their team and few examples of supervisor intervention occurred*: "we have 12 doctors in our team—if we take off one or two days, it goes to the entire physician group to cover, because we have a message system that goes to our team."* [PCP] For nursing and administrative staff, however, the supervisors were central to facilitating coverage. Many echoed this PCP's description of the mechanism of coverage for nurses on her teamlet:

> *"The LVNs and RNs… some of them start later or stay later, and the issue was who's covering whom…you have to account for who's out sick, who's on vacation, who's car got stuck on the highway… The Nursing Supervisor, she has been sending out these e-mails to everybody saying here's the people who are out today, here's the people who are covering for the people who are out today."* [PCP]

The need for supervisor engagement was particularly true for incomplete teamlets, i.e. a teamlet missing an RN and having to rely on cross-teamlet coverage for RN level tasks. Nurses indicated that the need for cross coverage was a daily challenge. Supervisors were highlighted as playing a key role in both navigating unplanned absences as well as preparing for planned absences.

> *"So before we go on vacation or anything,—my manager and I push it on the other girls is that if you're going to be gone, let everybody know, all the other LVNs and RNs that you're not going to be here and that your patients should not be scheduled in your clinic because you're not going to be here."*[LVN]

In addition to navigating coverage issues relating to absenteeism, clerks relied on supervisors to address "fairness issues" and provide cross-coverage as a way of arbitrating unbalanced workloads. Administrative supervisors made temporary reassignments when the clerks on some teams were experiencing exceptionally high patient loads and were unable to recruit the help of another clerk on their own.

Theme 5: Supervisors Set Expectations

Teamlet members across all roles perceived their supervisors as being responsible for setting expectations relating to roles and responsibilities. Supervisors of staff also establish timelines and expectations around how long various tasks should take. Further, they can establish expectations that inhibit providers and staff from resisting change. One LVN, for example, experienced challenges with other nurses not embracing the new PACT responsibilities, and explained: some of *"the nurses, I notice that they are resistant to the changes and they think that PACT is the worst thing."* In cases where there is an involved nurse supervisor in the position to assert authority and create expectations, the PACT nurses cannot choose to resist their new PACT responsibilities.

Conversely, teamlet members reported that when supervisors were not involved in setting PACT expectations, some staff might not assume new tasks and might shirk their responsibilities.

> *"I think our nurse manager…She doesn't care how things are done as long as that person [the nurse] is there that day. If she works or doesn't work, it's okay. As long as that person is there in name then she's present that day."* [LVN]
>
> *"Sometimes her [an LVN] own patients try to check in and if the patient checks in at 2:30, she will just let it [the patient] wait until 3:40 [staff leave at 4] and then say, "Hey, I got to go so you guys [other nursing staff] got to take care of this patient." Management*

has not been enforcing that everybody needs to do their own work…Management is not having these people be accountable." [LVN]

DISCUSSION

Previous work has shown that direct supervisors are essential in helping staff navigate day-to-day work in complex clinic settings (Schmalenberg 2009). Our paper highlights exactly which day-to-day roles that supervisors assume, support team functioning and ultimately successful PCMH implementation. This qualitative analysis found that the direct supervisors of teamlet members, most notably the nurse managers supervising LVNs and RNs and the clerical administrators supervising medical support assistants, are centrally important to optimal day-to-day functioning of PACT teamlets. Teamlet members across the four different core teamlet roles identified these supervisors as critical factors affecting PACT teamlet functioning. Despite the centrality of their involvement, supervisors of PACT teamlet members do not yet appear in PACT written guidance. Our findings lend support toward establishing specific roles for supervisors in the PACT model as well as provide guidance on how to implement these roles across a variety of settings.

Hackman underscores that team bounded-ness, where each member knows who is on the team as well as her responsibilities, is a key ingredient of team functioning (Hackman 2002). Our findings align well with this theory of team functioning, which suggests that if supervisors are to fill key roles in implementing innovations, they need to be considered part of the team. Recent literature on PACT implementation has highlighted the importance of leadership as a key ingredient to PACT success (Tuepker 2014). These findings include both clinic and institutional level leadership. In this analysis we highlight that the perception of leadership of day-to-day functioning of the teamlet can be variable. Specifically, teamlet members' direct supervisors, are much more involved in day-to day-team functioning than any current published version of the PACT model would suggest.

In this analysis we enumerate key roles that teamlet member supervisors preform. One of the highest priority recommendations of this work is therefore that the roles and responsibilities of middle managers be codified in a model that includes them and acknowledges the central importance of their contribution to team functioning. Discovering the extent to which supervisors of teamlet members play a critical role in day-to-day support of particularly lower status teamlet members, calls us to question the theoretical PACT model where the PCP is responsible for leading staff through navigating, negotiating, and fulfilling their day-to-day PACT roles and responsibilities. Our results indicate that such a model overlooks the importance of supervisors. Having identified at least five leadership needs that would be better fulfilled by supervisors of teamlet members than the PCP team leader, we reimagine the PACT model to include the leadership pathways relevant to day-to-day team functioning.

When implementing a team based model of primary care in a large clinic based setting, it is important to take into consideration the disciplinary structure that is already in place. The concept of inter-professional team functioning likely diverges from a functionally organized health system, since the labor force is not siloed by discipline (Burns 2011). Decisions impacting team member roles, responsibilities and activities are routinely made by discipline-specific leadership. Primary care providers are rarely direct supervisors of nurses or clerks. Instead, registered nurses and licensed practical nurses report to nurse managers and are under the nursing leadership, while clerks report to their managers and are under the administrative leadership. The results indicate that the supervisors of the PACT teamlet staff play a central role in facilitating successful implementation of PACT roles and responsibilities.

Specifically of interest are nursing supervisors who supervise over 50% of the teamlet members. Since the nursing supervisor is a significant institutional voice of authority over staff on teamlets, engaging the nursing supervisors is important when implementing any role changes and expansions that are fundamental primary care system redesign efforts. Engaged and supportive nursing supervisors can be conceptualized as important to strategies of

providing primary care staff with clear roles and expectations as well as help with teamlet conflict resolution. More engaged and supportive supervisors may be particularly useful in settings where staff and providers have longstanding organizational tenure and may be resistant to change, particularly in the case of increased workload and responsibilities.

Also of interest is the key role that supervisors play in facilitating collaboration and coordination across teamlets. In the case of day-to day challenges like a high volume of walk-in patients and staff absenteeism, teamlet members need support with facilitating coverage. This is not the type of problem that their PCP teamlet leader can help them solve, because what the teamlet members require is support from the voice of authority who can assign cross teamlet duties.

Our expanded understanding of the role of supervisors highlights the need for coordinated interdisciplinary leadership approaches to governing PACT. Nursing supervisors, Clerical/administrative supervisors, and PCP supervisors need to communicate. Without interdisciplinary leadership coordination, complications and conflicts between teamlet leads (i.e., PCPs) and supervisors may continue to arise and cause confusion and lack of role clarity in teamlet staff.

LIMITATIONS:

The interviews in this study were conducted in a subset of six practice sites in one VA healthcare system planning area. Though all six clinics were in Southern California, they do represent a range of environments including large medical centers and community based out-patient clinics. Also, the interviews were conducted over an 18 month period, with the practice sites being at varying phases of implementing the PACT model. This limited us from making between-site comparisons. Another limitation is that variations in supervision structures were not clearly documented between the sites. We therefore were unable to clearly distinguish the exact level of leadership individual respondents were referring to when talking about their

leadership. Future research would want to be sure to clarify local practice leadership from local health system and medical center leadership.

IMPLICATIONS

The important role that supervisors play in facilitating team functioning in PCMH models needs to be given more consideration in implementation strategies. The front line staff implementing the PACT model described multiple ways in which their direct supervisors are essential to the day-to-day functioning of VA PACT teamlets. Our results support the Birken's conceptual framework regarding the contribution of middle managers to implementing innovation (Birken 2012; Birken 2013; Birken 2015). We extend their findings by enumerating specific roles supervising middle managers play in implementing PCMH models and by highlighting the problems that result from when there is lack of interdisciplinary collaboration between these supervisors. Because it is the direct supervisors who are responsible for explaining and enforcing the specific responsibilities that front line staff assume, it is important to invest in the training of not only primary care team members but also their supervisors. Our expanded understanding of the role of supervising middle managers in PACT team functioning supports efforts to use interdisciplinary leadership approaches to governing primary care practices implementing team-based models. It is necessary to formally develop mechanisms for interdisciplinary collaboration between supervisors from all disciplines involved.

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Chapter IV:

Inconsistent Implementation of Training and Primary Care Team Functioning

ABSTRACT

We employed a convergent mixed methods study design to identify factors associated with team functioning during early implementation of multidisciplinary care teams in primary care. Specifically, we explored team members' perceptions of factors associated with team functioning during the implementation of patient aligned care teams (PACT) – the Veterans Health Administration's version of a patient centered medical home (PCMH) model. Results of a baseline survey with providers and staff revealed team functioning as associated with organizational practice climate variables, perceived leadership support and team satisfaction. Unexpectedly, no association was found with PACT training. Qualitative data offers insights into why teamlet members might not have perceived training as associated with team function: 1) not all teamlet members received training; 2) some teamlet members who did attend PACT trainings were unable to identify that they had attended training; 3) teamlet members did not consistently attend trainings together with members of their team; 4) teamlet members did not consistently view strategies offered in trainings as helpful or feasible. If training is not implemented consistently and tailored to provider and staff needs, it may have a limited ability to foster team functioning on newly implemented multidisciplinary care teams.

Keywords
Multidisciplinary teams, team-based care, team functioning, training, mixed methods, Veterans

INTRODUCTION

Patient centered medical homes (PCMH) rely on teams to share in patient care and are increasingly adopted in primary care practices in the United States and around the world (Solberg 2009). While there is wide variety across PCMH implementation strategies and even the structures of teams implemented, consensus exists around the goal of creating teams that are effective at producing high quality, coordinated, and continuous patient centered care (Wagner 2012). Team functioning is widely understood as fundamental to achieving team effectiveness (Lemieux- Charles 2006). Achieving the goals of PCMH models, therefore, relies on an assumption that the teams will function well.

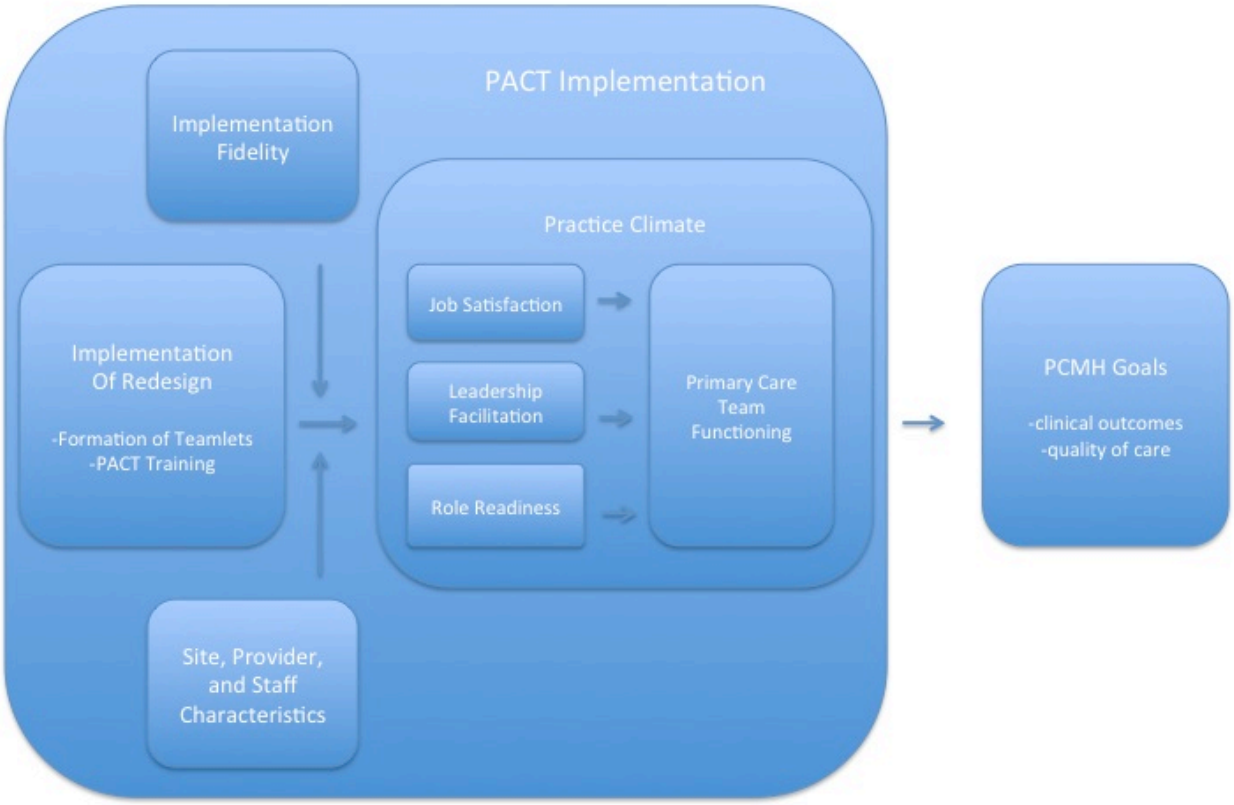
Highly functioning PCMH teams have proven difficult to implement for a variety of reasons (Xyrihcis 2008; Yeager 2005; Solimeo 2015). One important reason is that creating multi-disciplinary teams in historically disciplinary environments requires substantial local redesign (Leasure 2013; Sinsky 2103). Another is that individuals require new skill sets to adapt to the new team-based work environment (Salas 2009). Previous research has suggested organizational climate variables such as support from leadership, satisfaction with team, and training all play an important role in facilitating teams (Cohen 1997; Taplin 2013).

Training is an important implementation strategy employed to support health care professionals in acquiring new skills and adapting to new processes (Leggat 2007). Interdisciplinary training acknowledges the varying roles of all the disciplines in healthcare and aims to enhance the way they collaborate and work together (Cubic 2012; IECE 2011; Delva 2008). Previous research has identified that the production of functioning teams can be supported by collaborative models that train professionals together (Schuetz 2010). Historically, medical physicians, nurses and other professionals received training exclusively within their disciplinary silos (Leggat 2007; Wake-Dyster 2001). Team training represents a new challenge

for many of the health care professionals joining or transitioning to teams during PCMH implementation.

Guided by the previous literature we employed a convergent mixed methods study design (Miller 2013) to assess the cross-sectional relationship between team functioning and factors hypothesized to impact team functioning during the early stage PCMH implementation. The specifics of the PACT implementation will be described under setting.

Figure 1. Conceptual Model



The primary objective of this study is to identify modifiable factors associated with team function to inform future primary care redesign implementations. Specifically we hypothesized job

satisfaction, leadership facilitation, role readiness, and training would be positively associated with team functioning after controlling for site characteristics and provider and staff characteristics. We further hypothesized that implementation fidelity would mediate the relationship between PACT training and team functioning.

METHODS

All procedures were approved by the institutional review boards of the Greater Los Angeles VA Healthcare System (2011–070725 and 2011–030295) and the RAND Corporation (HSPC Project ID: 2010–0870).

Setting

This study was undertaken as part of the Veterans Assessment and Improvement Laboratory (VAIL), an initiative aiming to support and evaluate the Veterans Health Administration's (VAs) transition to a team based patient-centered medical home (Rubenstein 2014). The VA began implementation of its version of the PCMH model, known as PACT (Patient Aligned Care Team) in 2010. Under the model, providers and staff are re-organized into "teamlets" and trained to work in interdisciplinary teams. A typical PACT teamlet has the following structure: a primary care provider (a physician, physician assistant, or nurse practitioner), a registered nurse (RN) care manager, a clinical associate (usually a licensed vocational nurse—LVN), and an administrative associate (clerk). Primary interview and survey data were collected from teamlet members in all four roles. Multiple teamlets cluster to form PACT teams, which are supported by ancillary staff such as Pharmacy and Behavioral Health Sciences. Ancillary team members were excluded from our analytic sample.

The VA is divided into administrative regions called Veterans Integrated Service Networks (VISNs). VAIL is involved in supporting and evaluating the implementation of the PACT model in VISN 22, the administrative area covering Southern California and Western

Nevada. VISN 22 is comprised of five local health care systems, each of which have multiple distinct practice sites. Six of these practice sites are engaged with VAIL. We conducted semi-structured interviews with teamlet members at the VAIL sites and fielded a survey to 21 geographically distinct practice sites in VISN 22.

In conjunction with reorganizing providers and staff into teamlets, PACT implementation involved various trainings which we divide into two categories for simplicity: regional trainings that teamlet members had to travel to attend or local trainings hosted at local clinic sites. These trainings covered a variety of topics from PACT goals and teamlet member roles and responsibilities, to motivational interviewing and communication.

Quantitative Methods

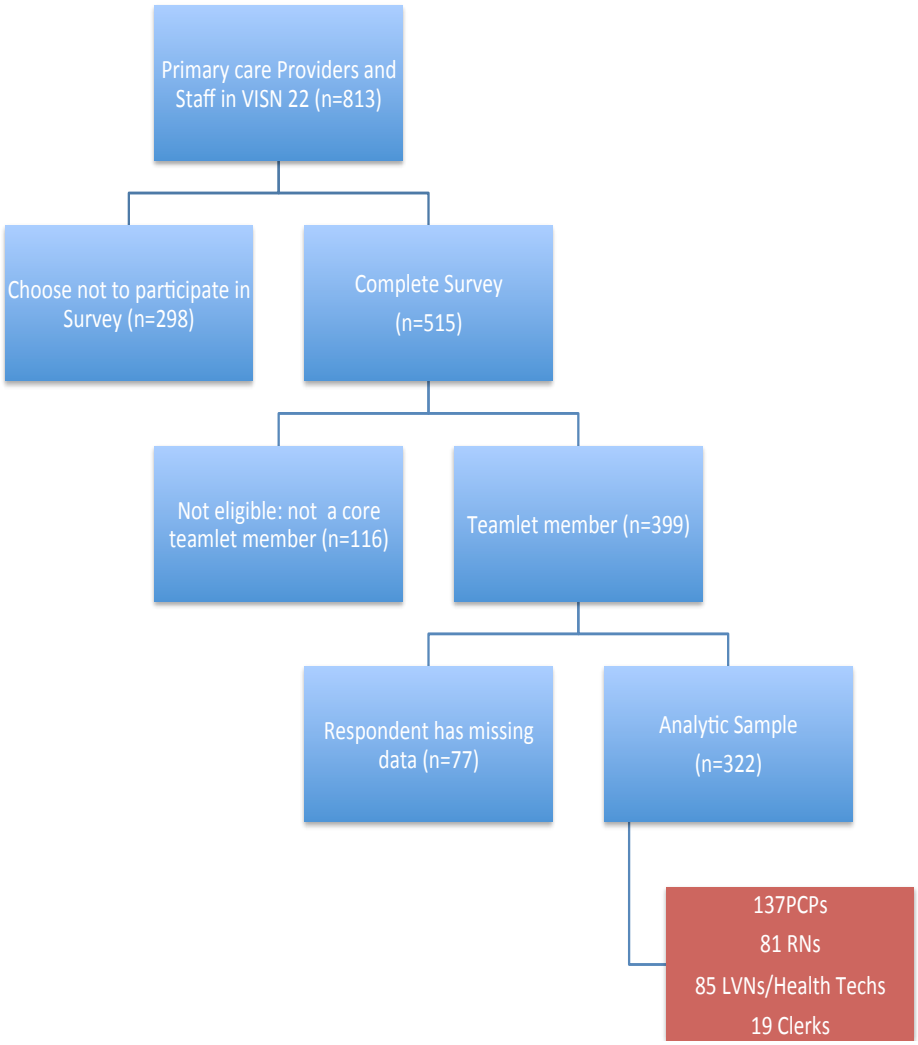
Analytic Sample

The quantitative data for the study comes from two web-based surveys that were sent concurrently to a census of all the providers and staff working in primary care at 21 sites in VSN 22 between November 30, 2011 and March 30, 2012. The provider survey and staff survey asked questions that covered the same topics and domains. All of the questions used in the analyses were identical on both surveys. In the survey, providers and staff were asked questions about their professional background and characteristics, teamlet and team composition and characteristics, individual perceptions and experiences of PACT, the organizational context, perceptions of patient centered care, and personal characteristics. Some of the scales developed from combining questions asked on the survey were adapted from other previous studies while others had to be developed. For example, a number of the items measuring professional characteristics (clinician type, medical specialty, years since completing training, and years at this VA) were previously used in previous VA and RAND studies: Medical Outcomes Study, Partners in Care, and Quality Improvement for Depression.

Conversely, the team composition and characteristics scales measuring, for example, teamlet membership reliance on the teamlet, were developed for the VAIL evaluation.

Of the 813 individuals in the census, 515 responded (overall response rates 63%). From the 515 respondents we excluded anyone from the final sample who did not meet the job role criteria for being a core teamlet member. Specifically we kept respondents who were Providers (physicians, nurse practitioners, and physician assistants), registered nurses (RNs), licensed vocational nurses (LVNs) or health technologists, and clerks. The roles excluded include pharmacists, dieticians, mental health providers, and social workers. Additionally, we excluded respondents for failing to meet three additional criteria we required for classification as a core PACT teamlet member. These criteria are: 1) the respondents had to answer yes to a binary yes/no question of "are you a member of a PACT teamlet"; 2) if the respondent was a provider, they had to indicate that they were in clinic at least a minimum of one half day per week; 3) if the respondent was a staff member, they had to indicate that they were a member of 6 or less teamlets. There were 399 individuals who met these inclusion criteria. We excluded an additional 77 individuals who had either missing data on at least one of the final model covariates or had an outlying response that was rationally impossible. Leaving a final analytic sample of 322 (137 PCPs, 81 RNs, 85 LVNs, and 19 Clerks).

Figure 2. Analytic Sample



Measures

We performed a principal components analysis and confirmed where items were loaded onto a common factor. Items were excluded if they showed low internal consistency. We used this method to create a scale for the dependent variable, *team functioning*, as well as the independent variables *leadership support* and *role self-efficacy*. Except for clinic characteristics, all measures were self-reported from a survey of Providers and Staff.

Dependent Variable

An intended outcome of interest of the PACT implementation was reorganizing the workforce into functioning teams. As such, team functioning was operationalized as teamlet members' assessments of having the acquired team processes and skills to function collaboratively. The items included in the final scale include: 1) members of our team actively share their special knowledge; 2) some members of my team lack the knowledge and skills that they need; 3) members of this team have more than enough talent and experience; 4) our team is quite skilled at capturing the lessons that can be learned; 5) everyone in this team has the special skills that are needed for team work. The scale had high internal validity with a Cronbach's alpha of .81.

Each of the items represents a 5-point Likert scale. Item two was reverse coded so that for all five questions a higher score represented a better outcome: a value of 1 indicated low team function and a value of 5 indicated high team functioning. We used a method adapted from the functional status questionnaire to construct the scales and created a continuous variable ranging from 1-100. Respondents were required to have answered at least three of the five questions for their responses to be included; otherwise the data was considered missing. If they met this exclusion criteria, their score is reported as a proportion of their max possible score (i.e. if they answered three questions the maximum score is 3, if they answered all of the questions, the maximum score is 5).

Independent variables

Consistent with the method used to construct the dependent variable, we created continuous variables for leadership and role readiness each ranging from 1-100.

A nine item leadership scale was composed of the following items: 1) leadership provides measurable objectives for implementing the strategy; 2) leadership recognizes and rewards progress in implementing change; 3) leadership believes that the current clinic patterns

can be improved; 4) leadership encourages changes in clinic patterns to improve patient care; 5) leadership Is willing to try new clinical protocols; 6) leadership works cooperatively with senior leadership/clinical management; 7) leadership understands difficulties related to the implementation of PACT; 8) leadership uses measures or evidence from the literature; 9) leadership encourages nursing initiative. Respondents were required to have answered at least 5 of the 9 questions for their responses to be included; otherwise the data was considered missing.

A five item role readiness scale was constructed of the following items: 1) as we implement PACT I feel I can handle it with ease; 2) there are some PACT related tasks that I don't think I can do (reverse coded); 3) I have the skills that are needed to make PACT work; 4) there are some tasks expected of my role in PACT that I don't have time for; 5) my past experiences make me confident that I will be able to perform successfully. Respondents are required to have answered at least three of the five questions for their responses to be included; otherwise the data was considered missing. These items were adapted from the change efficacy subscale developed by Holt et al (Holt 2007).

Satisfaction with the teamlet was measured by one item, which asked teamlet members to report their level of satisfaction with their teamlet (1-5 Likert scale).

Training was assessed by three separate individual items. Teamlet members reported number of hours spent in: 1) local PACT educational activities (0 – 120 hours); 2) regional PACT educational activities (0-150 hours); 3) PACT training of any kind with their teamlet members (0 -120 hours). Log transformations were explored due to the presence of positive skewness. Ultimately we chose not to transform the training variables in the final model because sensitivity analyses revealed no differences to using non-transformed variables.

Covariates

Covariates explored were age, gender, race/ethnicity, tenure at the clinic, job type, and site type. Age and tenure at the clinic were reported in years. Gender was dicatomous. Race/ethnicity was divided into four categories Latino, non-Latino Asian, non-Latino Black, and non-Latino White. Job type followed the four teamlet member categories. Sites were broken into four categories by size and distance from a large medical center: large medical centers; large community based outpatient clinics; small community based outpatient clinics within 30 miles of a large medical center; small community based outpatient clinics further than 30 miles from a large medical center.

Statistical Analysis

All statistical analyses were conducted using Stata version 13.1. Univariate statistics were computed to assess distributions and variation in all variables. Bivariate analyses were used to examine the relationship between team functioning and independent variables. Correlations were explored between covariates. Use of transformation and interactions were explored and ultimately not included in final model.

We stratified the survey responses into VAIL and non-VAIL sites and used chi-square statistics to characterize baseline differences between VAIL and non-VAIL sites. We employed cluster adjusted multivariate regression to assess the cross-sectional relationship between team-functioning and factors hypothesized to impact team-functioning during the early implementation of the system redesign of primary care.

Survey weighting

We developed post stratification survey weights that take into account both job type and clinic site. Assigning each person a weighted score allowed us to control for non-response bias by role and site. Weights were calculated based on the sampling frame of all primary care

providers and staff in VISN 22. To assess sensitivity to survey non-response, and minimize it as a potential source of bias, all analyses are run both weighted and non-weighted.

Sensitivity analysis

Several sensitivity analyses were conducted to assess the sensitivity of findings to model specifications as well as the necessity of using imputation to deal with missing data. Imputations were ultimately not used because no difference was found between the final model and full case analysis with imputations. Other sensitivity analyses involved testing random effects and other hierarchical models. No difference was found between the hierarchical models and the weighted cluster adjusted model that ultimately was chosen as the final model for its parsimony.

Qualitative data and analysis

The semi-structured key informant interviews focused on the early PACT implementation experiences of teamlet members of the first six practices engaged in VAIL. Individual teamlet member interviews were conducted in two waves (three practices per wave) based on the phased implementation of EBQI support. Interviews occurred between January and June 2012 for Wave one practices and between September 2012 and February 2013 for Wave two practices. A quota sampling approach (Mainous, 1991) was used to randomly select three individuals from each of five strata at each practice: PCPs working in the facility at greater than or equal to 50% full time; PCPs working at less than 50% full time; RN care managers; LVNs; and clerks. For some strata, the supply of potential respondents was exhausted before a quota was achieved (for example one site did not have a full quota of clerks so we chose to oversample health technicians and LVNs). This sampling approach (vs. interviewing all teamlet members on a single teamlet) broadened the representation to include more teamlets at each practice site while also facilitating satisfaction of IRB concerns about protection of participant

confidentiality. We invited 144 individuals to participate and 79 were interviewed (response rate= 55%). Over the course of the two waves, interviews were completed with 29 Primary care providers, 18 RN care managers, 20 clinical associates (LVNs/health techs), and 12 clerks.

Because we randomly selected potential participants within each role, the key informants generally belong to different teamlets than others interviewed from their practice. Most interviews (71/79) were conducted in person; eight were conducted by phone. The most common reasons for not participating were lack of time (n=16) and the perception of not being qualified to participate (n=13). We developed a semi-structured interview protocol and refined the interview guide during the course of data collection to reflect emergent themes. The 45-60 minute interview covered the following domains: teamlet formation; teamlet communication; role changes; team training for PACT implementation; experiences of PACT changes; PACT's impact on Veterans; experiences of leadership facilitation and support.

Most interviews (n=77) were audio recorded, professionally transcribed, and transcripts were cleaned to remove any identifying information. In the case of the two interviews that were not audio recorded, transcripts were generated in the following manner: the interviews were attended by two researchers where one asked the interview questions and the second interviewer took detailed notes on each domain in the interview guide.

To qualitatively understand the variables included in the survey, we used a combination of deductive and inductive approaches. We began the analysis by developing a codebook based both on the VAIL logic model (Rubenstein, 2014) as well as the open coding of five transcripts by two researchers. Themes which we refer to as codes were identified by open coding, checked against the conceptual model, and reviewed in a research team meeting. After consensus was reached on the codes by three researchers, the code-book was used by one researcher to code all 79 interviews. Discrepancies were resolved by discussion and consensus-building. One investigator then coded the remaining interviews, and other investigators reviewed coding and commented on inconsistencies, which were resolved through

discussion and clarification. Recursive coding was employed in that as new themes emerged, previously coded interviews were re-coded to include that theme (Macqueen 1998). Finally, we performed a content analysis using ATLAS.ti of the domains team functioning and training.

RESULTS

Survey Results

Teamlet members from the six VAIL demonstration sites reported similar individual characteristics as the teamlet members from other clinics in VISN 22 (See Table 1). The two groups were comparable in terms of tenure at the VA, gender, and race/ethnicity. The only statistically significant difference between the VAIL and non-VAIL sites was in age. Compared to teamlet members from the VAIL sites, the non-VAIL sites were on average two years older [48.88 years vs 46.80 years]. The teamlet members also reported similar team characteristics with no statistically significant differences between groups.

Table 1. Characteristics of Respondents from Vail and Non-Vail Primary Care Practice Sites

	Vail Sites	Non-Vail Sites	P-Value*
Sample Totals			
Sites (n)	6	16	
Respondents	218	245	
Job Type			
PCP	104	87	
RN	54	54	
CA	72	57	
Clerk	15	2	
Respondents Characteristics			
Age (mean yrs, SD)	48.12 (10.99)	48.88 (11.53	0.01
Tenure (mean yrs, SD)	8.34 (7.9)	7.96 (8.82)	
Gender (% male)	35%	35%	
Race/Ethnicity (%)			
White (non-Latino	38%	44%	
Black (non-Latino)	13%	13%	
Latino	14%	16%	
Other (non-Latino)	34%	26%	
Team Characteristics			
Providers and Staff			
Identified as teamlet (% yes)			
PCP	88%	84%	
RN	96%	98%	
CA	99%	92%	
Clerk	93%	68%	
Staff			
Member to how many teamlets (mean, SD)			
RN	2.11 (1.41)	1.88 (1.37)	
CA	2.10 (1.79)	2.01 (1.46)	
Clerk	4.29 (4.89)	4.27 (7.39)	
Providers			
Half-days in clinic (mean, SD)	4.66 (3.12)	5.58 (3.70)	

*P-Values are shown for characteristics that were significantly different (P<0.05) between VAIL and non-VAIL sites

Table 2. provides descriptive statistics for the dependent variable and predictors of interest from the conceptual model.

Table 2. Descriptive Statistics for dependent variable and predictors of interest

Measure	Mean (SD)	Range
Team Functioning	72.29 (20.07)	0 - 100
Leadership Facilitation	58.59 (20.71)	0 - 100
Role Readiness	71.71 (18.41)	6.25 - 100
Satisfaction with Teamlet	3.73 (1.15)	1 - 5
Hours in local training	12.06 (16.51)	0 - 120
Hours in regional training	18.57 (24.34)	0 - 150
Hours in training with teamlet	13.40 (18.21)	0 - 120

Team function ranged from 0-100 with a mean of 72.29 and a standard deviation of 20.07. The wide standard deviation indicates that our dependent variable has a meaningful amount of variability and it is appropriate to expect variation due to predicting factors. Bivariate comparisons with the categorical variables revealed a statistically significant association between team functioning and gender (F= 7.19, df 1, p-value .01) and job type (F=5.65, df 3, p-value 0.00) but not with race/ethnicity or (F=0.34, df 3, p-value .79) or site type (F=0.74, df 3, p-value 0.52). OLS regression analysis results provided evidence that hypothesized modifiable factors (perceived support from leadership (B* =0.37, p-value =0.00), role self-efficacy (B*= 0.34, p-value =0.00), and satisfaction with the teamlet(B*=12.33, p-value =0.00)) are positively significantly associated with team functioning. None of the three variables describing training had a statistically significant association with team functioning.

Some exclusions were made from the final model when variables were correlated with another predictor. For example, age was excluded due to its high correlation of .48 with tenure. Attending training together with teamlet was also excluded do to its high correlation of .99 with hours in regional trainings. Race/ethnicity (Pearson chi2 (9) =67.73, p-value 0.00) as well as gender (Pearson chi2 (3) = 30.13, p-value 0.00) were also excluded from the final model because they were highly, significantly associated with job type. Their exclusion was a choice to maximize observable differences between job types.

We conducted a regression of individual assessment of team functioning measured on the 0-100 scale on the team members individual and professional characteristics, their assessment of leadership support, role readiness, team functioning and training, and work site characteristics, adjusting the standard errors for clustering at the site level. Assessment of team functioning was positively associated with leadership support and satisfaction with the teamlet. No association was observed with team functioning and role readiness, job type, or either training variable. Respondents at large outpatient clinics and small inpatient clinics more than 30 miles from a Medical Center had team functioning scores approximately 3 points higher than respondents at Medical Centers, although this difference was not statistically significant. Respondents at small clinics less than 30 miles from a Medical Center had team functioning scores 7.26 points higher than respondents at Medical Centers, a difference that was statistically significant ($p<0.01$)

Table 3. Regression of team functioning score on individual and professional characteristics, leadership support, role readiness, team functioning and training, and work site characteristics

Predictor		B*	(SE)**	P Value*
Provider and Staff Professional Characteristics				
Tenure in clinic (years)		-.02	(.13)	0.89
Job Type				
	PCP	reference		
	RN	2.24	(2.81)	0.43
	LVN	4.55	(2.30)	0.06
	Clerk	2.41	(4.13)	0.57
Modifiable Factors				
	Leadership support	0.12	(0.05)	0.03*
	Role readiness	0.07	(0.05)	0.19
	Satisfaction with teamlet	11.37	(1.09)	0.00*
	Hours in local trainings	0.023	(0.03)	0.47
	Hours in regional trainings	0.01	(0.04)	0.79
Site Characteristics				
Clinic type				
	Medical Center	reference		
	Large outpatient clinic	3.02	(1.50)	0.06
	Small outpatient clinic (<30 miles)	7.26	(1.82)	0.00*
	Small outpatient clinic (≥ 30 miles)	3.35	(1.75)	0.07
Overall F= 77.02, P-value 0.00				

*Significant at alpha=0.05 | ** The standard errors were adjusted for clustering at the site level

After controlling for other leadership support, role readiness, teamlet satisfaction, and other covariates, there is no observable statistically significant association between team functioning and either of the training variables.

Interview Results

We turned to qualitative interviews with respondents from VAIL sites for insight on why hypothesized factors showed no association with team functioning in the early stages of PACT implementation. Qualitative analysis revealed nuanced results regarding the way in which teamlet members perceived and experienced training. First of all, some teamlet members did not receive training:

"I know my nurse has gone to it. As far as me and my doctor, we were scheduled to go somewhere but unfortunately that meeting was…conference was cancelled. I'm not sure the reason for it. So we have not had a change to go yet."

Secondly, a subset of teamlet members representing multiple sites, were unable to identify if training that they had attended was PACT training:

"*I guess I did go to one recently and it had to do with like some motivational interviewing, and there was like another one similar to that, but I don't feel that I've been to any formal PACT training."*

Third, it was more common for teamlet members to report attending training with other people or part of their teamlet than it was for them to report attending a PACT training together with their complete teamlet.

Text Box 1. Teamlet member quotes about with whom they attended PACT Training

- "Well, it was me and my RN because my provider had already gone to… a different site… since she had already gone… she couldn't go any more so I kind of attached… myself to another team."
- "One other thing is that the other doctor that I work with, he does not believe in the PACT model. In fact, he has refused to go to the training sessions with our teamlets."
- "I went with my RN who actually kind of refused to sit with us throughout the whole meeting."
- "I was sent with not people from my team, but just a clerk on this team, an LVN from that team, and no doctor. "
- "I've been to the PACT training. I went to the one here in San Diego with my old doctor. And the funny thing about that is one week after my old primary care provider went to the training he quit his job. So now my new doctor has to go. And also my RN, I believe she still needs to go even though she's been working here for a while."
- "I know my nurse has gone to it. As far as me and my doctor, we were scheduled to go somewhere but unfortunately that meeting was…conference was cancelled. I'm not sure the reason for it. So we have not had a change to go yet."

In addition to the content covered in the survey (receipt of training and attending training together with teamlet members), the interviews also assessed teamlet members' perceptions of if the training was helpful. Some found it helpful, however, many reported feeling that the guidance given in the training was not feasible in their specific situations.

> *"Yeah, there were useful things that they tell you but in practice it's not viable, like meet with your teamlet in the morning. If I have to meet with my teamlet, I have to be here before 7:00 so that's not viable for me."*

DISCUSSION

This study relied on cross-sectional survey data that was collected concurrently with the interviews. Because of the concurrent data collation, we are able to triangulate the sources and utilize interviews to better understand survey findings. In this study we sought to empirically identify organizational climate factors associated with team functioning during the early implementation phase of a patient centered medical home. Guided by literature and the VAIL implementation framework we hypothesized that the factors associated with team functioning during early stages of implementation would include leadership support, satisfaction with teamlet, and training. After controlling for facility size and type, tenure at the VA, race/ethnicity, job type, and self-efficacy for the role, we found our hypothesized factors to have a positive statistically significant relationship with team functioning, with the exception of training. The survey results indicated no association between any of the training variables and team functioning.

We turned to the interview data for insight into this unexpected result and found that the lack of association with training might be a reflection of poor training implementation fidelity. The interview results support the hypothesis from the conceptual framework that asserted implementation fidelity could play a role on the pathway between training implementation and

team functioning. To accompany the restructuring of providers and staff into PACT teams, the VA had implemented a series of regional PACT trainings that included team based instruction on the communication and collaboration skills necessary for effective teamwork. Interview results, however, revealed meaningful inconsistencies in the way training was implemented. Of particular interest is the fact that very few teamlet members reported attending trainings with their complete teamlet. If the teamlets do not attend the team trainings together, it seems unlikely that the trainings will facilitate the production of team-based processes and skills. It was likely an intention of the intervention (PACT training) for the teamlets to train together and have a collaborative multidisciplinary experience. However, due to training implementation inconsistencies, this did not occur. Future efforts should acknowledge that interdisciplinary training might be a new and unusual experience for team members and provide the necessary structure to compensate for this. Unless mandated to train in their multi-disciplinary group, teamlet members might choose to cluster within their own disciplines.

The findings also suggest that there may be resistance to multi-disciplinary training. The results provide examples of teamlet members refusing to attend the training. There were various reports of teamlet members attending the same training, but refusing to participate together as a team. Interestingly, the resistance is not clustered in only one role. The results contain examples of both nurses and primary care providers demonstrating avoidant behaviors. Future implementation efforts should anticipate this resistance to mitigate any potential consequences.

Though we employed a rigorous mixed methods design, there are some limitations. One is that the interviews were conducted only in VAIL pilot sites and do not represent the perspectives of all teamlet members who participated in the PACT redesign or even PACT redesign in VISN 22. We address this in Table 1, which demonstrates that during early implementation, VAIL sites are equivalent on most characteristics to non-VAIL sites. Further, VAIL had selected clinics to be pilot sites based on their likeliness to be high achievers during

early implementation. The implementation inconsistencies highlighted in the qualitative interviews therefore likely give a conservative portrayal of all of the variations in PACT training implementation. A notable limitation of the quantitative analysis is that it is cross-sectional and therefore causality cannot be inferred from the associations demonstrated.

CONCLUSIONS

Identifying modifiable practice climate factors that are associated with team function at early stages of PCHM implementation can provide insight into where to invest resources during times of transition. In the early stages of PACT implementation, teamlet members responses revealed associations of team functioning with leadership support and satisfaction with the teamlet. No association was found between PACT training and team functioning. Training, however, is likely an important strategy for fostering multi-disciplinary communication and collaboration in a traditionally siloed environment. Our study does not make the conclusion that training is not important. Rather it demonstrates that implementing multi-discipline trainings are not automatically associated with improved team functioning and encourages future PCMH efforts to take training implementation fidelity seriously.

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Chapter V:

Conclusion

The three papers in this dissertation have examined team functioning and factors that may be associated with it during the early stage implementation of a patient centered medical home. When combined together to represent one body of work the analyses are able to provide insight on individual, team, cross-team and organizational level factors.

The first study examined factors relating to self-efficacy. The interest in self-efficacy stems from an assumption that it is a prerequisite to team functioning. Specifically we employed inductive qualitative methods to better understand factors that produce the self-efficacy necessary for successful adoption of an expanded role for clinical associates in team based models of primary care. The literature on adopting roles and responsibilities agrees that role overload, role ambiguity, and role conflict are factors that can inhibit self-efficacy in a role. In this analysis we chose to focus on role overload and role ambiguity because those were the themes that emerged in our data. Future research could seek to expand the framework presented to also explore the pathways to role conflict in PCMH.

The themes that emerged as modifiable factors associated with self-efficacy were training, time and resources, and cross-disciplinary agreement. Each of the three can impact role overload or role ambiguity and consequently effect self-efficacy for an expanded role. Specifically, lack of or inadequate training can cause role ambiguity; insufficient time or resources can produce role overload; failures in cross-disciplinary agreement about roles can produce either or both. While training and resources are established predictors of role self-efficacy, the identification of the importance of cross-disciplinary role agreement for successful self-efficacy during role expansion represents a contribution to the literature. Future studies might empirically test the relationships in this model as well as evaluate the relative importance of these factors.

The second study relies on the same qualitative interview data as the first, but takes an entirely different approach. This study evaluates teamlet member perceptions of how

supervisors contribute to the day-to-day function of teamlets. Teamlet members identified five themes around supervisor involvement. Supervisors: clarify roles and responsibilities, facilitate teamlet initiated innovation, support conflict resolution, provide coverage strategies, and set expectations. These themes demonstrate that supervisors are involved in supporting both the function of individual teams as well as facilitating function across multiple teams in the same clinic.

Supervisors support individual teams by ensuring the teamlet members from their discipline have a clear understanding of their roles and responsibilities as well as clear expectations about how to contribute. They also support individual teams by facilitating teamlet initiated innovation because they are in the unique position to take ideas up the disciplinary chains of command to a level of leadership where interdisciplinary decision making can occur. They are centrally involved in solving the team function challenges that arise as a direct consequence of absenteeism and workload inequity. Specifically, when team functioning is compromised due to incomplete staffing, supervisors can facilitate a base level of function for all teams in a given clinic by implementing within-discipline across-teamlet coverage strategies. This acknowledgement of the unique contribution middle management level supervisors play in primary care team functioning is notable and novel. Previous studies have not considered the role of discipline specific supervisors during the implementation of multi-disciplinary primary care teams.

The third study relies on cross-sectional survey data that was collected concurrently with the interviews used in the first two studies. In this study we sought to empirically identify organizational climate factors associated with team functioning during the early implementation phase of a patient centered medical home. Guided by literature and the VAIL implementation framework we hypothesized that the factors associated with team functioning during early stages of implementation would include leadership support, satisfaction with teamlet, and training. After controlling for facility size and type, tenure at the VA, race/ethnicity, job type, and

self efficacy for the role, we found our hypothesized factors to have a positive statistically significant relationship with team functioning, with the exception of training. We turned to the interview data for insight into this unexpected result and found that the lack of association with training might be a reflection of poor training implementation fidelity.

In the early stages of implementation where longitudinal data is not yet available, it is not possible to assess causal relationships with team function. It is, however, possible to characterize factors associated with team function. To that end this mixed methods dissertation relies on a combination of inductive and deductive approaches and the cross-sectional data available at an early implementation phase of PCMH to provide insight on modifiable factors at multiple organizational levels. This three study dissertation collectively addresses factors on the pathway to team functioning in team based models of primary care and suggests answers to the questions of both how and to whom to target implementation strategies.

Most importantly, the findings of all three studies promote coordinated interdisciplinary strategies for managing and leading interdisciplinary primary care teams. A main finding of the first study was the importance of cross-disciplinary role agreement. Cross-disciplinary role agreement could be facilitated by cross-disciplinary communication and coordination of supervisors and leadership. Future efforts of implementing interdisciplinary teams would benefit from formally considering the roles and involvement of, not just team members, but individuals at all levels of an organization.

A likely next step in this line of inquiry would be to empirically test the relationships between team functioning and the factors identified in the qualitative studies. This dissertation makes the important contribution of identifying modifiable factors and opens up opportunities for future research on producing highly functioning primary care teams in complex multidisciplinary environment.