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Examining How Primary Care Team Structures are Used and Their Effect on Cross-Disciplinary Relationships: A Qualitative Study

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Examining How Primary Care Team Structures are Used and Their Effect on Cross-Disciplinary
Relationships: A Qualitative Study

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of
Philosophy at Virginia Commonwealth University.

by

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List of Abbreviations

FQHC   Federally Qualified Health Center

IRB   Institutional Review Board

MA   Medical Assistant

MD   Medical Doctor

NCQA   National Committee for Quality Assurance

PCMH   Patient-Centered Medical Home

PTSD   Post-Traumatic Stress Disorder

RN   Registered Nurse

VA   Veterans Affairs

YMCA   Young Men's Christian Association

Abstract

EXAMINING HOW PRIMARY CARE TEAM STRUCTURES ARE USED AND THEIR EFFECT ON CROSS-DISCIPLINARY RELATIONSHIPS: A QUALITATIVE STUDY

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

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Team-based primary care is an innovative care delivery model that has the potential to improve access to comprehensive, coordinated, and high-quality patient care. It is understood that in order for primary care teams to work effectively, health care providers must work across disciplinary boundaries and develop strong relationships that enable them to coordinate their roles and expertise. This research investigated how health care providers make use of different team structures (i.e., tools) to manage their interdependent work, enabling them to deliver team-based primary care. This research also examined how team structures influence the intra-team relationships important for coordinating care. By exploring the different ways primary care teams enact team structures, this research identifies ways primary care teams use team structures differently to address the needs of patients and coordinate team-based care.

In-person interviews were conducted at 7 primary care clinics participating in a population health management program in a southeastern city in the United States. Research

participants from various health care disciplines (e.g., medicine, nursing, social work) were asked to describe their experiences delivering team-based primary care. Interviews were recorded, transcribed, and analyzed. Data were analyzed using a constant comparative approach in order to investigate how different team structures were used to address the needs of patients and the challenges of delivering team-based primary care.

The data suggested that primary care teams enact structures in different ways. In some teams, huddles were used to anticipate the specific needs of patients and coordinating care, referrals occurred via warm handoffs with co-located providers, and protocols were used to facilitate collaborative problem-solving. In other clinics, huddles were focused on clinic operations, referrals were performed using traditional methods (e.g., phone calls), and protocols were used to guide task delegation. Participants in some clinics described how team huddles were used to leverage high-quality relationships by fostering respectful interactions between team members. More research is needed to determine whether the use of patient-focused huddles, warm handoffs, and protocols that initiate problem-solving is associated with better patient outcomes, particularly for patient populations with complex medical and non-medical needs.

Chapter 1: Introduction

Background: Team-Based Primary Care Defined

Team-based care is proliferating across primary care clinics in response to demands for more comprehensive care, better chronic disease management, and greater efficiency (Bodenheimer & Pham, 2010; Chen et al., 2010; Grumbach & Bodenheimer, 2004; Saba, Villela, Chen, Hammer, & Bodenheimer, 2012; Schottenfeld et al., 2016; Sequist, von Glahn, Li, Rogers, & Safran, 2009). Team-based care has also been identified as an important innovation that can potentially protect overworked physicians from emotional exhaustion by distributing clinical work to non-physician providers (Helfrich et al., 2014). For the purpose of this research, team-based care is defined as "the provision of health services to individuals, families, and/or their communities by at least two health providers who work collaboratively with patients and their caregivers—to the extent preferred by each patient—to accomplish shared goals within and across settings to achieve coordinated, high-quality care" (Naylor et al., 2010).

Team-based care is recognized as a foundational element of primary care transformation because it can change the roles and configurations of existing physician and non-physician providers (e.g., medical assistants can be shared across the primary care clinic) (Chien et al., 2018; Ghorob & Bodenheimer, 2015). A major objective of the team approach is to have physicians and non-physician providers from multiple disciplines (e.g., medical assistants, nurses, pharmacists, social workers, and others) share responsibility for providing patient care and managing population health (Grumbach & Bodenheimer, 2004; True, Stewart, Lampman,

Pelak, & Solimeo, 2014). Consistent with Goetz Goldberg et al. (2013, p. 150), a primary care team consists of a physician and other non-physician providers who are responsible for the care of a defined panel of patients. Unlike traditional models of care organized around the preferences of the physician, the team model relies on several different non-physician providers working together to deliver patient-centered care that addresses patients' preventative and chronic disease management needs (Bodenheimer & Laing, 2007; Bodenheimer & Pham, 2010; Chen et al., 2010; Grumbach & Bodenheimer, 2004; Sequist et al., 2009; Sinsky et al., 2013). It is also understood that team-based care can enhance the capacity of primary care organizations to treat patients with complex health care needs because the greater variety of expertise can help identify and address the needs of the whole person (Schottenfeld et al., 2016; Yano, Bair, Carrasquillo, Krein, & Rubenstein, 2014).

Team-Based Care Implementation and Association with Outcomes

Despite the potential for primary care teams to deliver care that is more comprehensive and patient-centered (Sevin, Moore, Shepherd, Jacobs, & Hupke, 2009), previous assessments of team-based care implementation have yielded mixed results (Meyers et al., 2019; Reid et al., 2013; Reiss-Brennan et al., 2016; Rosland et al., 2013; Wen & Schulman, 2014; Willard-Grace et al., 2014). Reiss-Brennan et al. (2016) assessed whether adopting a team-based approach at an organization-level would improve patient care quality and reduce hospital utilization. They found that organizations that implemented team-based care were more likely to adhere to clinical guidelines for chronic disease management (e.g., diabetes), however team-based care was also associated with decreased care quality for patients with hypertension. Meyers and colleagues (2019) researched the association between team-based primary care and patient health care utilization and costs. They discovered, in general, that there was no statistically significant

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difference in inpatient hospitalizations and emergency department visits between patients receiving team-based care and patients who did not receive team-based care. However, in sub-population analyses, there was evidence to suggest that team-based care reduced unnecessary hospitalizations and emergency department visits for patients with two or more chronic conditions (Meyers et al., 2019).

Similarly, Nelson et al. (2014) studied whether implementing team-based care, as part of a larger multi-site primary care transformation initiative, was associated with patient outcomes. The authors found that emergency department visits were lower in primary care clinics that successfully implemented a team-based model, but implementation effectiveness was not associated with lower hospitalizations. Taken together, these mixed findings suggest that more research is needed to understand the consequences of team-based care. Specifically, the literature on primary care team interventions may benefit from a deeper understanding of how team-based primary care effectively addresses patients' health care needs and improves patient outcomes. Considering how team-based care is implemented varies from one clinic or from one intervention to another, it is important to understand what components of team-based primary care are associated with the observed changes in patient and clinic outcomes.

Structures and Relationship Characteristics of High-Functioning Primary Care Teams

In an effort to resolve some of the inconsistencies in previous studies, researchers have started to take a more fine-grained approach to understanding the key attributes of high-functioning primary care teams (e.g., Ghorob & Bodenheimer, 2015; O'Malley et al., 2015). Ghorob and Bodenheimer (2015), using reputational sampling, studied 29 primary care clinics known as innovators or having achieved better care quality and cost outcomes compared to their

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peers. These high performing clinics demonstrated a variety of attributes that enabled them to implement highly functional primary care teams that achieved quality and cost goals (Bodenheimer, Ghorob, Willard-Grace, & Grumbach, 2014). The authors developed a conceptual model consisting of nine elements that enabled clinics to shift from a physician-centric care model to a team approach. The model included (1) having the same team members work together; (2) co-locating staff (3) with defined roles; (4) creating standing orders that empower non-physician providers to provide routine services without physician supervision; (5) mapping workflows (e.g., how medical assistants room patients); (6) adding non-physician providers to allow physicians to (7) delegate tasks and decision-making to other team members; (8) establishing ground rules and expectations for how physicians and non-physician providers hold each other accountable; and (9) implementing structured communication mechanisms such as regular team huddles (Ghorob & Bodenheimer, 2015).

Other researchers (Cromp et al., 2015; O'Malley et al., 2015; Scholle et al., 2013) have noted similar facilitators of team-based primary care. O'Malley and colleagues (2015) evaluated 27 primary care organizations to better understand the characteristics of effective primary care teams and how they were implemented. They discovered that effective teams adopted new ways of delegating clinical tasks, expanded the roles of medical assistants and other non-physician providers (e.g., case managers) to provide more chronic disease management, and used structured means of communication (e.g., team huddles) to improve the flow of information and to clarify responsibilities. Similarly, True and colleagues' (2014) qualitative study revealed how task delegation, as a means of sharing clinical responsibilities, was facilitated by different types of organizational support, assets, and infrastructure. According to the researchers, the presence of shared team goals, mature and open communication, ongoing role negotiation, and a team

identity were common characteristics of primary care teams that effectively shared aspects of patient care (True et al., 2014).

We also know from previous research that implementing team-based care requires physicians and staff to have strong relationships (Crabtree et al., 2010; Noël, Lanham, Palmer, Leykum, & Parchman, 2013). Strong relationships, characterized by qualities such as trust and frequent interactions are considered important facilitators of team building and ongoing learning that enable primary care transformation (Jordan et al., 2009; Safran, Miller, & Beckman, 2006). For example, primary care teams are more likely to engage in continuous learning through problem solving when physicians and non-physician providers engage in open communication and teamwork to meet patients' needs (Flieger, 2017).

Although this body of research suggests that certain team structures and these aforementioned relationship characteristics are beneficial for team functioning, we know less about the processes by which team structures influence team relationships that facilitate team-based care. My research adds to this body of literature in a way that supports the progress the field has made in understanding team-based care by examining the interconnection between primary care team relationships and providers' enactment of team structures (e.g., Gittell & Douglass, 2012; Perlow, Gittell, & Katz, 2004). Specifically, in this dissertation, I unpack how primary care teams use team structures to influence team relationships, which in turn, affects providers' capacity to deliver team-based care. My objective in doing so is to better understand how primary care team members use team structures to work across occupational boundaries and build relationships necessary for coordinating and sharing information about complex patient care tasks within primary care clinics. I argue that how team structures are used could be connected to the quality of the team relationships between providers working in primary care

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clinics. In turn, these relationships help shape how providers communicate with each other and deliver team-based care. My research builds on previous studies (e.g., Flieger, 2017) by showing how primary care teams use team structures to foster (or not foster) relationships characterized by mutual trust and respect.

Conceptual Framing

As more primary care clinics look to implement a team-based approach, there are growing expectations that physicians and non-physician providers will work collaboratively to develop shared goals and deliver health services that meet the needs of patients. However, it is commonly understood that the relationships between physicians and non-physician providers are guided by the medical hierarchy (Nembhard, Alexander, Hoff, & Ramanujam, 2009). Training programs that separate physicians from non-physician providers offer few opportunities for disciplines to interact, share their clinical knowledge, and exchange ideas. Furthermore, individuals who rank lower on the hierarchy (e.g., nurses) may feel less inclined to offer suggestions or input out of fear of rejection or punishment (Nembhard & Edmondson, 2006).

Fortunately, researchers have identified two specific leverage points that can potentially improve collaboration across health care disciplines: team structures and high-quality relationships (Gittell, Edmondson, & Schein, 2011; Gittell, Godfrey, & Thistlethwaite, 2013). Management research on cross-occupational coordination shows that different team structures such as plans, routines, team meetings, and boundary-spanning roles may help team functioning by facilitating cross-boundary communication that leads to a shared understanding of each other's goals and helps develop mutual respect (Gittell, 2002). From this standpoint, team structures represent the technologies, roles, tools, and informal interactions that groups adopt and use to manage their interdependent work (Okhuysen & Bechky, 2009). Since cross-discipline

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communication is important for facilitating a shared understanding of team goals, these different structures or mechanisms are important for coordinating complex work tasks that requires teams to connect across disciplinary boundaries (Gittell & Douglass, 2012; Gittell, Seidner, & Wimbush, 2010; Leana & Van Buren, 1999). For example, in primary care teams that openly share ideas with each other during team huddles, physicians and non-physician providers are likely to reinforce a dynamic of collaborative problem-solving. However, if physicians and non-physician providers do not engage in open conversations during team huddles, they are less likely to use their relationship to facilitate collaboration.

According to previous research, team relationships are the "channels" through which teams achieve their goals and sustain team learning (Carmeli, Brueller, & Dutton, 2009). Scholars have proposed that high-quality relationships have the capacity to help teams adapt to changing circumstances in the work environment and enables the sharing of expertise (Dutton & Heaphy, 2003; Faraj & Xiao, 2006). High-quality relationships, based on having shared goals, shared knowledge, and mutual respect, play an important role in teams that need to share information across disciplinary boundaries. Research shows that when relationships between physicians, nurses, and therapists are characterized by timely communication, respect, and shared goals, patients receive better care and experience better outcomes (Gittell et al., 2000; Gittell et al., 2010).

In the same vein, researchers have shown that how team structures are enacted encourages or discourages relationships essential for effective coordination (Gittell, 2009; Gittell & Douglass, 2012). Different team structures such as team meetings can be used to facilitate conversations between disciplines which can help with the development of higher-quality relationships that enable coordination of tasks and the sharing of information (Faraj & Xiao,

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2006). However, some teams may choose to not engage in collaborative discussions during team meetings which means physicians and non-physicians are less likely to understand how each other's roles and responsibilities intersect. The differences in how certain team structures are enacted can thus facilitate or undermine the high-quality relationships that are central to coordinating work tasks.

Research Questions

Examining how team structures are used or not used by primary care physicians and non-physician providers could provide important information about ways clinics can foster and sustain strong relationships that enable teams to deliver comprehensive, patient-centered care, or conversely, undermine the development of high-quality relationships (e.g., Carmeli et al., 2009; Carmeli & Gittell, 2009; Dutton & Heaphy, 2003). Knowing how team structures sustain high-quality relationships requires not just an understanding of how they are used in practice, but whether they are used to strengthen the relationships through which team-based care is delivered. The nature of team structure enactment can also reveal important processes (e.g., helping, information sharing, speaking up about mistakes or concerns) that can facilitate cross-disciplinary collaboration. Given the proliferation of team approaches in primary care clinics, managers and practitioners would benefit from understanding how team structures and team relationships are connected and how they may help primary care providers achieve the intended outcomes of team-based care.

In this dissertation, I conduct a study of 7 primary care clinics to show how primary care team structures are used to deliver team-based care and how team members use these structures to influence team relationships that help achieve the intended outcomes of team-based care. My focus is on identifying the variation in how team structures are used across primary care teams

participating in a population health management program that serve uninsured patients with complex health care needs (e.g., one or more chronic conditions). These patients are particularly vulnerable to poor health outcomes and require stronger care coordination (Berenson, Doty, Abrams, & Shih, 2012). These clinics are ideally situated for researching the unique challenges of delivering team-based care and how team structures are used to facilitate patient care (or not). Thus, my intention for conducting this dissertation research in this setting, is to identify the different enactment patterns of team structures that can potentially improve the delivery of team-based care for patients with complex health care needs. This dissertation contributes to the broader primary care literature by showing how the enactment of these structures can influence the relationships that enable primary care providers to engage in collaborative practice (e.g., Miller, McDaniel, Crabtree, & Stange, 2001). In this context, team relationships refer to the formal and informal working relationships between primary care physicians and non-physicians within a primary care clinic.

Therefore, my dissertation addresses the following research questions:

(1) What, if any, differences are observed in how primary care teams enact team structures?

(2) How does the enactment of team structures influence intra-team relationships essential for delivering efficient and patient-centered team-based care?

Research Aims and Methodology

To answer my research questions, I conducted a qualitative study to determine more precisely how team structures and team relationships are interconnected. I collected data through semi-structured interviews with primary care physicians and non-physician providers from 7 primary care clinics that had or were in the middle of adopting team-based care approaches. All

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clinics provide services to predominantly underserved patient populations (either Medicaid-insured or uninsured), utilize electronic medical records, and have access to behavioral and social health providers (e.g., psychologists and social workers). During interviews, participants were asked to share their attitudes on topics such as team working relationships, team tasks and activities, and situations they had to take charge or step up to advocate for a patient. I conducted these interviews between July 2016 and March 2017.

Using constant comparative methods, I analyzed interview data with a goal of understanding how team structures are used across the primary care clinics. I used qualitative methods because my focus was on understanding how primary care providers implemented and used team structures to address the challenges related to delivering high-quality team-based care. I also wanted to see specifically how the use of team structures were connected to the relationship dynamics of primary care teams. Interview data provides a richer description than survey data about team structure enactment and it allowed me to unpack the different ways these structures relate to team relationships. This approach is particularly useful because it helps to uncover the complex dynamics primary care teams face in their day-to-day activities and how they adapt to emergent patient needs. In addition, providers' rich descriptions of their work context are better able to capture the ways team structures are linked to the relationships between primary care team members.

I focus on the perspectives of frontline providers because successful implementation of team-based care will likely rest on how providers use structures to advance patient and clinic outcomes. Further, researchers have called for more studies that examine the experiences of providers implementing team-based care (Bitton et al., 2012; Hoff, 2013) because it provides a

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more nuanced picture of the primary care transformation process. My research attempts to answer this call by studying how team structures are used in practice.

Organization of Dissertation

The organization of the remainder of this dissertation is as follows. In Chapter 2, I review and synthesize the relevant literature on team-based primary care. I also introduce my theoretical framework that helped motivate my research questions and I explain how the framework contributes to our understanding of team-based primary care. In Chapter 3, I describe the methodology I used to conduct my qualitative research of 7 primary care clinics to explore team-based care implementation. In Chapter 4, I present my findings and discuss the practical and theoretical implications of my research. Finally, in Chapter 5, I focus on the contributions of my research and highlight potential future research opportunities.

Chapter 2: Literature Review and Theoretical Framework

Chapter 2 is divided into four subsections. In the first section I describe the emergence of primary care teams in the United States. In the second section I review the extant empirical research examining the impact of team-based primary care on clinical and other patient outcomes. Specifically, I wanted to better understand how the literature operationalized team-based primary care and how it would benefit from a closer examination of the contextualized processes and mechanisms that facilitate team-based primary care. In the third section I provide an overview of the intra-organizational coordination literature as a way to motivate my research questions and my investigation into how primary care team structures and relationships intersect. Finally, at the end of the chapter, I discuss the research implications and the contributions of my dissertation with respect to the team-based primary care literature.

Emergence of Primary Care Teams

Primary care is defined as "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustainable partnership with patients, and practicing in the context of family and community" (Institute of Medicine, 1996). What makes primary care distinct from other health care domains is its specific focus on first contact, continuous (ongoing), coordinated, and comprehensive care (Starfield, 1994). First contact refers to the physician acting as an entry point to the health care system for the patient who is in need of services. Continuous care refers to the longitudinal, regular source of care the patient receives. Coordinated care is the linking of

patients to the appropriate services (physical, behavioral, or social). Finally, comprehensive care includes services that promote prevention and preserve health (Starfield, Shi, & Macinko, 2005).

It is generally understood that primary care plays an important role in improving population health, but there are also signs that the primary care system in the United States is under distress (Bodenheimer, 2006). There are several obstacles that continue to compromise the quality of primary care delivery including physicians not having adequate time to provide necessary preventative and chronic disease services (Østbye et al., 2005) and the increasing prevalence of chronic conditions (Ward & Schiller, 2013; Ward, Schiller, & Goodman, 2014). One report estimates that about half of all American adults have at least 1 chronic condition and about 1 in 4 adults have multiple chronic conditions (Ward et al., 2014). Also, the complexity of care continues to increase as new techniques and pharmaceuticals are developed, making it difficult for a single medical specialty or health care professional to provide all necessary care (Morrison, Goldfarb, & Lanken, 2010). Other challenges such as physician shortages (Petterson et al., 2012), an increase in the demand for behavioral health and community services (Fiscella & McDaniel, 2018), and rising health care costs (Bodenheimer & Fernandez, 2005) have yielded calls from researchers and policymakers to redesign and strengthen primary care delivery.

In response to these calls, policymakers and professional organizations have turned their focus to team-based primary care (Naylor et al., 2010), defined as:

> the provision of health services to individuals, families, and/or their communities by at least two health providers who work collaboratively with patients and their caregivers—to the extent preferred by each patient—to accomplish shared goals within and across settings to achieve coordinated, high-quality care (Mitchell et al., 2012, p. 5).

Over the last two decades, primary care redesign efforts have promoted team-based care as a strategy to improve access to high-quality primary care services for more patients and

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improve patients' health outcomes (Rosenthal, 2008). The key idea behind the changes brought about by team-based care is that the responsibility of care and care coordination belongs to the patient's personal physician and *team* of health care professionals. Consistent with previous research, primary care teams are defined as a group of physicians and non-physician providers who are responsible for the care of a defined panel of patients (Goetz Goldberg et al., 2013, p. 150).

Compared to traditional primary care practice, high-functioning primary care teams are considered to be more adaptive to the needs of the patient because they can provide physician feedback as well as various types of case management services to patients with chronic conditions (Rothman & Wagner, 2003). These teams may consist of a variety of specialists or other non-physician providers like care managers, social workers, pharmacists, registered nurses, behavioral health specialists, and community health workers, to name a few. The diversity of roles and expertise in primary care teams is expected to increase the provision of necessary preventative and chronic disease services while also giving non-physician providers (e.g., medical assistants or nurses) more responsibility to implement patient care plans and education. Roles such as nurse care managers, for example, are typically assigned a panel of patients who need assistance transitioning from one care setting to another or managing their diseases (Crabtree et al., 2010; Goetz Goldberg et al., 2013). Many third-party payers also incentivize primary care clinics to commit to the team-based approach and provide resources for clinics looking to implement the tools, strategies, and roles (e.g., case management) that support coordinated patient care (Standards and Guidelines for the National Committee for Quality Assurance's Patient-Centered Medical Home, 2017).

For these aforementioned reasons, team-based care is recognized as an important innovation that is necessary for primary care clinics to adapt to the emerging needs of patients and respond to the external challenges of delivering patient-centered care. As I describe in the following section, team-based care has been implemented and tested in a variety of ways. In part, this variety reflects the differences in how primary care clinics configure primary care teams and the specific outcomes they measure. For example, some studies operationalize team-based care as the pairing of a physician with a non-physician provider such as a medical assistant. Other studies view team-based care as a set of different activities or behaviors related to sharing primary care tasks amongst physicians and non-physician providers. At the same time, some evaluations have tested the association between team-based primary care and patient satisfaction (Hunt et al., 2008) while others have tested the association between team-based primary care and health care utilization (Reiss-Brennan et al., 2016). However, this variety across studies and clinic redesigns makes it difficult to determine the efficacy of the team-based approach as a way to improve primary care delivery and patient outcomes. I provide a general overview of this important research below.

Operationalization of Team-Based Primary Care

Variation exists with respect to how researchers have operationalized team-based care. Notably, intervention studies have defined team-based primary care as a reconfiguration of primary care physicians and other non-physician providers (Meyers et al., 2019; Nelson et al., 2014). For example, in Meyers et al.'s (2019) study, physicians and medical assistants were paired with each other as a primary care team. In another study, team-based care consisted of non-physician providers such as care management nurses, psychologists, and social workers organized around a physician (Reiss-Brennan et al., 2016). In this sense, previous studies have

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operationalized team-based care in a rather narrow way by focusing specifically on the static

pairing of providers in a variety of configurations (e.g., MD-MA; MD-RN, etc.). Although a

team configuration, where physicians are paired to a specific non-physician team member, are

theorized to facilitate better working relationships (Grumbach & Bodenheimer, 2004), additional

research is necessary to understand what types of configurations work best for delivering team-

based care to different types of patients or patient populations.

Other studies have taken the operationalization of team-based care a step farther by

defining it as a model of care where physicians and non-physician providers share the workload

of providing primary care services (e.g., D'Afflitti et al., 2018). These team-based models are

called shared care models because different members of the team deliver different aspects of care

such as medication reviews, diagnosis, education, and counseling (Sinsky et al., 2013).

Compared to other team-based care models that emphasize fixed or static membership (i.e.,

pairing of providers), shared care models focus on the activities and actions of primary care team

members as they complete their work.

Across various health care systems and training programs (Chen et al., 2010; Kearney,

Post, Pomerantz, & Zeiss, 2014), the shared care model enables primary care teams to identify

care gaps, perform routine screenings, and educate patients on how to self-manage their diseases

(Ladden et al., 2013; Willard & Bodenheimer, 2012). The purpose of these arrangements is for

nurse practitioners, pharmacists, or other non-physician providers to take on some of the work

physicians are unable to carry out due to time constraints and high workloads (Bodenheimer &

Laing, 2007; Bodenheimer & Pham, 2010). These types of arrangements have also been referred

to as "teamlets," or small teams that work together to provide care to a shared panel of patients

(Rosland et al., 2013). A teamlet may consist of a physician and medical assistant but may also

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include other non-physician providers when necessary (e.g., licensed practical nurse or nurse case manager). In such arrangements, non-physician providers are given the responsibility to manage the care of patients with chronic conditions, provide preventative health screenings, and reconcile patients' medications (Rosland et al., 2013).

Although shared care models emphasize the use of stable team pairings (True et al., 2014), they also require teams to adapt to the changing needs of patients. Under these models, teams must also be flexible and adapt when a team member is absent or when other expertise is necessary (e.g., social work) (Mitchell et al., 2012). As a result, providers must understand that the necessary backgrounds, expertise, and skillsets to address patients' needs consistently change and thus who they work with also needs to change. This idea of adapting the team to patients' needs stands in stark contrast with the stable pairings approach of other team-based models because teams must focus on how they will work together to coordinate care tasks and deliver primary care services to patients. It is unclear from the studies on stable team pairings whether or how certain team configurations facilitate collaboration and the development of shared goals based on the patients' needs. If teamlets are the proposed vehicles to deliver team-based care, it would benefit primary care practitioners to take a closer examination of how these teams work collaboratively to accomplish shared goals and provide coordinated services to patients.

Team-Based Primary Care Interventions and Outcomes

Given the variety of ways researchers have operationalized team-based primary care (e.g., stable team pairings, shared care models, and teamlets) it is equally important to note that studies have examined different outcomes associated with team-based care. Although this variety is expected given the unique goals and objectives of team-based care across studies, it makes it challenging to assess the efficacy of team-based care to some extent. Regardless, team-based

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care studies have emerged to test whether a shared care approach could facilitate better outcomes for patients and the clinics that serve them.

For example, Reiss-Brennan et al. (2016) analyzed yearly clinical encounter data from 113 primary care clinics within an integrated health care delivery system. Team-based care was measured at a clinic-level using a standardized tool to determine if clinics employed different work processes (e.g., established routine workflows, care coordination for chronic disease, and consistent use of decision support tools) consistent with a shared care model. Although intervention sites were rated based on whether or not they implemented the specific work processes, it was unclear if and how these processes were operationalized differently across teams. Regardless, the authors assessed whether adopting a team-based approach at a clinic-level would improve patient care quality and reduce hospital utilization. They found that patients receiving team-based care, compared to traditional primary care services, experienced significantly higher rates of quality measures such as screening for depression, adherence to recommended diabetes examinations, and annual visits with a primary care physician. Team-based care was also associated with reductions in emergency department utilization, but was not related to other service utilization (e.g., specialty visits). Given the potentially different configurations of primary care teams and the activities implemented, it is difficult to conclude which aspects of the team-based care intervention predicted the outcomes under study.

Meyers and colleagues (2019) evaluated the association of team-based primary care with patient health care utilization and costs. The authors defined team-based care, or "teaming," as a set of "dynamic activities, including coordination and collaboration, that allow individuals to work together to deliver shared goals" (Meyers et al., 2019, p. 55). The intervention consisted of a large scale reorganization: Primary care physicians were put into teams, patients were

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empaneled to specific physicians, and team activities and training were introduced to enhance teamwork. Each primary care clinic was allowed to configure their teams independently which meant that some clinics designated some providers (e.g., physician, nurse, medical assistant, or social worker) to the same team while other clinics designated some providers to be shared across the clinic (see Chien et al., 2018). Besides designating teams, the intervention involved the adoption of team huddles (i.e., short team meetings to discuss patients) and the implementation of population management systems. Despite these major changes, the researchers discovered that there was no statistically significant difference in inpatient hospitalizations and emergency department utilization between patients receiving team-based care and patients who did not receive team-based care. But team-based care was associated with decreases in hospital utilization for patients with two or more chronic conditions. Although not explored by the authors, it is possible that the variation in how health care services were coordinated and how primary care teams were configured may have at least partially explained their mixed findings.

In another evaluation at the Veterans Affairs (VA) Administration, Rosland et al. (2013) defined team-based care as the implementation of teamlets (i.e., physician, registered nurse care manager, licensed practical nurse or medical assistant), regular team huddles, and patient chronic disease management via face-to-face or telephone encounters. Rosland and colleagues (2013) analyzed the changes in patient care processes as a result of implementing team-based care and found that in-person physician visits slightly decreased in the years following implementation while the amount of telephone encounters increased. Although this may suggest an opportunity for cost savings, it was unclear whether or not these changes were related to clinical outcomes. It is also important to mention that the implementation of teams coincided with other changes such

as enhanced patient health records allowing patients to access personal prescriptions, same-day appointments, and provider training in motivational interviewing and patient-centered communication—making it difficult to ascertain what specifically led to the observed changes in outcomes.

Similar mixed findings have been observed in studies examining physician and pharmacist partnerships, a particular type of primary care team configuration. Carter et al. (2015) studied a specific collaboration model in which a pharmacist, co-located in a primary care clinic, created care plans and made recommendations for the physician to adjust patients' therapy. Pharmacists also provided patients with recommendations for improving medication adherence and lifestyle modification strategies. The results of the study showed that the physician-pharmacist collaborative model was not significantly associated with blood pressure control at 9-months post-intervention despite significant reductions in blood pressure within specific sub-populations. However, Zillich et al. (2015) evaluated a different type of pharmacist care management program in which pharmacists were co-located in primary care clinics and were allowed to meet individually with patients to provide education and make medication adjustments. In their intervention, physicians would meet briefly with the pharmacists to discuss initial treatment options, but the pharmacist was permitted to make treatment decisions based on clinical practice guidelines. They found that patients who were referred to the program experienced significant improvements in multiple blood pressure outcomes (e.g., improved blood pressure control). It was suggested that the pharmacists helped achieve these improvements by acting as "physician extenders," meaning they were able to make changes to drug regimens in order to meet the preferences of the patients (Zillich et al., 2015).

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Despite the potential for improving clinically meaningful outcomes for patients, there are differences in how physician-pharmacist team models are implemented which could explain the mixed findings. For example, in the Carter et al. (2015), study pharmacists created a care plan with recommendations for therapy adjustments that could be modified by the physician. However, in the Zillich et al. (2015) study, physicians referred patients to pharmacists who were permitted to make treatment decisions using clinical practice guidelines. It is unclear how the working relationships between physicians and pharmacists facilitated patient care delivery. It is also possible that other intervention activities such as patient education and lifestyle modification strategies complemented physician-pharmacist collaboration which could further explain the variation observed in patient outcomes.

Although there is increasing recognition that team-based care is important for improving patient outcomes, associations have been generally mixed (Reid et al., 2013; Reiss-Brennan et al., 2016; Rosland et al., 2013; Wen & Schulman, 2014; Willard-Grace et al., 2014). In part, previous evaluations have not or have only partially identified the specific components of team-based care (e.g., pairing of providers) that are associated with patient outcomes. Furthermore, efficacy studies continue to muddle the effects of team assignments or configurations with other intervention components (e.g., patient education and enhanced electronic medical records) which makes it difficult to ascertain the association between team-based care and patient outcomes. Thus, research conducted at the clinic-level, examining whether or not team-based care is associated with improved outcomes, could benefit from a complementary approach that examines the contextualized processes and mechanisms that facilitate the delivery of team-based primary care. To build on these previous intervention studies, more research examining the

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specific actions of primary care providers as they work together to deliver coordinated, team-based care is necessary.

The Enactment of Team Structures in Primary Care

Team-based primary care represents a fundamental change to the way primary care is delivered. There is a growing expectation that health care providers will work collaboratively to develop shared goals and deliver services that meet the needs of patients. However, it has been long demonstrated that the relationships between health care providers are guided by the medical hierarchy (Nembhard et al., 2009). Traditionally, physicians and non-physician providers are trained in their own specialty which typically creates problems for collaboration across disciplines and makes the implementation of innovations like team-based care increasingly difficult. In the medical hierarchy, physicians rank higher than nurses and other health care providers; this hierarchy may mean individuals who rank lower on the hierarchy may feel less inclined to offer input and openly discuss concerns out of fear of rejection or punishment (e.g., Nembhard & Edmondson, 2006).

However, researchers have identified specific leverage points that have the potential for transforming these deeply embedded relationships between physicians and non-physician providers. Two of the leverage points that have received significant attention have been team structures (i.e., structural interventions) and the development of high-quality relationships. According to the relational model of organizational change (Gittell et al., 2011), well-designed team structures can support the strong interpersonal relationships necessary for coordinating work. Strong intra-team relationships characterized by high-quality communication, shared goals and knowledge, and mutual respect enable organizations and their teams to achieve desired outcomes (e.g., Gittell et al., 2000).

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Management research has specified a variety of team structures that are necessary for groups to coordinate effectively (Okhuysen & Bechky, 2009). Team structures or mechanisms are the technologies, roles, tools, and interactions that groups adopt and use to manage their interdependent work (Gittell, 2002; Okhuysen & Bechky, 2009). Okhuysen and Bechky (2009) identify five types of team structures. *Roles* are prescribed positions or relationships that help group members understand who does what. *Plans* and *rules* establish how individuals interact and carry out their work. *Routines* make visible the key tasks that must be completed by bringing people together and creating a common perspective across groups. *Objects* or representations communicate information to the right person at the right time to help mobilize action. Finally, *proximity* or the actual distance between two or more individuals, makes work more visible and facilitates information exchange. Management research on cross-occupational coordination have shown that *plans*, *routines*, *boundary objects*, *proximity*, and boundary-spanning *roles* may help team functioning by specifying who is responsible for what tasks and by facilitating cross-boundary communication that leads to a shared understanding of team goals (Bechky, 2003a; Gittell, 2002). In this respect, coordination is an interdependent process that relies on strong interpersonal relationships between employees to get work done (Adler, Kwon, & Heckscher, 2008).

Management research also shows that through the use of different structures, teams have the potential to influence the quality of coordination. For example, the use of shared spaces (i.e., proximity) that allow team members to engage in problem solving may help develop a shared understanding about each other's roles and responsibilities which is important for coordinating complex work tasks (Okhuysen & Bechky, 2009). In the same vein, researchers have also shown that how roles are enacted encourages or discourages relationships essential for effective

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coordination (Gittell, 2009; Gittell & Douglass, 2012). For instance, Gittell and Douglass (2012) offer an example differentiating between two types of nurse case manager roles. In one context, a nurse case manager may be responsible for a large "checklist" of patients which may make it difficult for them to dedicate time and gather information on patients from other team members. In another context, a nurse case manager may be focused on a smaller cohort of patients and, as a result, use their remaining time to collaborate with other team members to customize care plans for individual patients. The role of the nurse managing a large pool of patients may value the prioritization of patient problems while the role of the nurse managing a smaller pool of patients may value and afford the integration of information across providers (i.e., boundary spanning). From this perspective, team structures can be enacted in a variety of ways which has implications for how information is shared or how coordinated work is achieved (e.g., Claggett & Karahanna, 2018).

Previous research suggests that the different types of team structures provide opportunities for employees to more or less interact with each other (Gittell, 2002). In fast-paced work environments like health care (Faraj & Xiao, 2006) employees may depend on different structures to achieve their goals at specific times. In some instances, *pre-specified* plans and procedures are necessary to specify exactly who should perform work tasks. In other situations, structures like team meetings can give employees more *flexibility* to exercise their agency about what information they share and who they share it with (Claggett & Karahanna, 2018). In this sense, team structures represent templates for how employees interact and engage with each other. Similar categorizations such as *formal* and *informal* coordination mechanisms have also been used to describe the different types of team structures (see Claggett & Karahanna, 2018; Gittell & Douglass, 2012; Okhuysen & Bechky, 2009).

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When teams implement pre-specified plans, like standardized protocols, it is assumed that team members will interact less to develop a shared understanding of the task-at-hand. It is possible that these types of pre-specified or automated structures could diminish opportunities for team members to develop the deep, trusting relationships necessary to coordinate complex work tasks (Feldman & Rafaeli, 2002). However, the opposite is also possible. For example, in Faraj and Xiao's (2006) study of trauma teams, protocols were designed such that individual team members could understand how certain tasks were related so that they could adapt their response depending on the needs of the patient. In the same study, trauma teams also implemented team meetings which allowed the different disciplines to have face-to-face interactions (Faraj & Xiao, 2006). These interactions, via the protocols and team meetings, enabled team members to develop a better understanding of how their roles and responsibilities intersected with each other. These types of open discussions can also make the work of teams highly visible which can lead to a better mental map of how individual tasks are connected (Gittell, 2002). Thus, how teams choose to use team structures can influence how team members interact with each other and what information they share when coordinating their work.

The emergence of team-based primary care has brought about the adoption of different types of team structures in primary care clinics. In studying 29 high-performing primary care clinics, Ghorob and Bodenheimer (2015) identified a subset of structures suggestive of improved care, better patient experiences, and greater staff satisfaction. These mechanisms included defined roles with training and skills checks, standing orders/protocols, defined workflows, team huddles, and opportunities for minute-to-minute interactions (Bodenheimer et al., 2014; Ghorob & Bodenheimer, 2015). Table 1 provides a general overview of each of these structures.

Table 1

Team Structures of High-Performing Primary Care Teams

Team Structure (Type)	Attributes	Classification
Standing orders (Object)	Physician-approved orders that allow team members to provide specific services to patients. For example, under appropriate conditions, nurses are allowed to conduct tasks like prescription refills for patients with hypertension. This frees more time for the physician to perform more complex diagnostic tasks.	Pre-specified (Less agency) e.g., Registered nurse refills prescriptions according to diabetic patients' appointment history and cholesterol measurements.
Defined workflows (Plan)	Plans or rules that inform team members how to handle patients during the clinic visit. Workflows refer to processes that clearly map the order of a specific task such as rooming the patient or re-routing incoming phone calls from patients.	Pre-specified (Less agency) e.g., Once lab results are obtained by the medical assistant, they send the results to the registered nurse who then calls the patient to discuss the normal or abnormal results.
Defined roles (Role)	Outlining who does what and when; formal and informal job descriptions that makes it clear who is monitoring specific patient outcomes and who contributes to what tasks (e.g., case management).	Somewhat flexible (Some agency) e.g., The medical assistant role of conducting routine blood tests for diabetics and managing appointment lists provides less autonomy than the role of health coach, patient advocate, or data analyst. How a medical assistant carries out these more autonomous roles is likely to differ depending on the needs of patients and the team.
Face-to-face communication (Proximity)	Implementation of huddles, team meetings, and promoting informal, minute-to-minute communication.	Flexible (More agency) e.g., Team huddles can be used for previsit planning or to solve problems about specific complex patients.

Note. Team structures are adapted from Ghorob and Bodenheimer (2015).

Many of these structures have helped primary care clinics move from a traditional, physician-centric care model to a team-based model that emphasizes shared responsibility for

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patient care (Helfrich, Dolan, Fihn, et al., 2014). Effective team interventions in primary care settings have typically incorporated, at a minimum, a few of the structures in Table 1 (e.g., Rosland et al., 2018). We know from previous research that these structures can help team members with providing feedback and planning care activities before patient visits (Bodenheimer & Smith, 2013; Fiscella, Fogarty, & Salas, 2016; Fiscella, Mauksch, Bodenheimer, & Salas, 2017).

We can also see that, based on previous management research, each team structure can be classified in one of two ways. Structures such as roles, standing orders, and workflows can be considered more programmed or standardized team structures. These *pre-specified* structures provide greater predictability in terms of who is responsible for specific tasks and when tasks need to be completed. These structures are also intended to reduce variation and to standardize the work and behavior of individual workers. Although this predictability can help teams streamline communication and work tasks, it can be difficult for teams to develop defined workflows or standing orders for every care task. More *flexible* structures such as team huddles may be necessary to respond collectively to an emergent patient demand. Team members can use these meetings as a way to familiarize with each other's roles and responsibilities and determine which team member has the requisite expertise to address the patient's needs. It is also possible that other team structures are *somewhat flexible* (e.g., defined roles). For instance, a nurse may have little autonomy in conducting activities such as medication reconciliation and documenting patient health status. However, nurses may have greater autonomy in carrying out activities like data analysis, patient education, and practice improvement that are unique to the needs of their team or patient panel population.

We know from management research that certain team structures (e.g., team meetings) provide members greater flexibility to choose who they interact with, what information they share and how they share it. On one hand, flexible structures like team huddles (Rodriguez, Meredith, Hamilton, Yano, & Rubenstein, 2015) may be used by team members to engage in collaborative discussions and build the strong relationships necessary for delivering team-based care. On the other hand, huddles may be used in a way that is not conducive to collaborative discussions. For instance, members may not feel comfortable sharing information which can make it harder for team members to develop a deeper understanding of how each other's roles and responsibilities intersect. As illustrated in Table 1, when team structures are flexible they allow team members greater opportunities to influence how they interact and what information they share. With these types of structures, the type of information and how it is shared is driven by the emergence of team demands or patient needs.

Although the team structures in Table 1 have been described previously (Fiscella et al., 2017; O'Malley et al., 2015; Rodriguez et al., 2015; True et al., 2014), I posit that we need to consider the ways these structures are being enacted. Previous studies that do not explain how team structures are used differently may be overlooking ways primary care teams can implement these structures to facilitate or impede the delivery of team-based care. This variation may also have implications for understanding how primary care team members use these structures to leverage their expertise and coordinate their work (or don't). Thus, there is an opportunity to better understand the different ways primary care teams enact team structures and whether these enactments are productive or unproductive for delivering team-based primary care.

I attempt to fill this gap by answering the following research question given that the degree of agency in how team structures are used could possibly vary:

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Research question 1: What, if any, differences are observed in how primary care teams enact team structures?

Connections between Team Structures and High-Quality Relationships

Carmeli, Brueller, and Dutton (2009, p. 83) describe team relationships as the "channels" through which teams achieve their goals and sustain team learning. In high-quality relationships individuals are likely to exchange more ideas that enable task-based problem-solving and collaboration (Dutton & Heaphy, 2003). In their theory of high-quality relationships, Dutton and Heaphy (2003) proposed that relationships can vary on their functional characteristics including their ability to (a) withstand strains and tension (i.e., tensility), (b) process emotional information between individuals, and (c) be open about to new ideas and influences. These functional relationship characteristics can help explain how teams can more or less adapt to changing circumstances within the work environment, display a range of emotions that help individuals understand each other, and speak up about new challenges.

Similar relationship qualities also play a key role in coordinating interdependent work that is essential for team performance (Gittell, 2002). According to theory, relational coordination occurs "through frequent, high-quality communication supported by relationships of shared goals, shared knowledge, and mutual respect [that] enables organizations to better achieve their desired outcomes" (Gittell et al., 2010, pp. 2-3). Thus, reciprocal relationships require that individuals integrate their knowledge and develop an understanding of how their work is connected.

The relational model of change implies that strong relationships, as well as the mechanisms that foster them, have the capacity to improve health care performance and efficiency (Gittell et al., 2013). Strong relationships promote an attentiveness to the needs of

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others and allow team members to bring their unique perspectives to bear in order to respond effectively to emergent demands (e.g., Faraj & Xiao, 2006). Through these relationships team members can learn about one another's strengths and weaknesses which can help them know who they can turn to for help. Researchers have shown that this team-centered approach to coordinating work and solving problems precipitates when individuals feel comfortable to help one another despite their area of expertise (Perlow et al., 2004).

Researchers have even observed that team relationships, specifically their interaction patterns, play an active role in perpetuating team structures (e.g., Perlow, Gittell, &; Katz, 2004). From the perspective of organization researchers (Ranson, 1980; Orlikowski, 2000, Feldman & Pentland, 2003), prescribed team structures influence emergent interactions which in turn reinforce or undermine these structures. In other words, organizing structures and team relationships are part of a mutually reinforcing loop where prescribed structures of the team shape and are shaped by team member relationship and interaction patterns. The attributes of team relationships, from this standpoint, can perpetuate the team structures enacted by team members.

Teams that can integrate members' expertise and perspectives are more likely to develop a shared understanding of the situation, but also make use of team structures that foster mutual respect and shared goals among team members. For example, the use of team meetings that encourage individuals to speak their mind and offer ideas to solve a specific problem creates a space that enables the development of relational trust and respect. Subsequently, these high-quality relationships are likely to foster an attentiveness to situational demands and to each other (Gittell &; Douglass, 2012) which can lead to changes in team structures that support communication and coordination between team members.

From this perspective, the interactions between team members can have a significant impact on the types of team structures that are produced, reproduced, or changed (Giddens, 1984). When individuals engage in behaviors such as helping, group decision-making, and coordinating care they enact a particular set of organizing processes that provide information about how work is performed. For instance, the interactions of primary care teams can provide information about how work is organized and how the responsibility of care is distributed across the team. In primary care teams that openly share ideas with each other, team huddles may reinforce a dynamic of collaborative problem-solving. However, in teams that are more hierarchical, providers may be less open to sharing ideas. In this case, team members may be discouraged to collaborate and take part in group decision-making during team huddles. How work gets accomplished, therefore, is a reflection of how primary care team members interact with one another and how they work across disciplines.

This reinforcing loop between structure and team relationships has been the focus of more recent research in organizations and teams in high-paced environments (Bechky, 2006; Faraj & Xiao, 2006). Theory suggests that sharing expertise is especially important in these environments because it allows team members to share their know-how and develop shared mental models of how work tasks get accomplished (Faraj & Sproull, 2000). When individuals are able to develop strong relationships they create capacity to share information across disciplinary boundaries because communications are based on a foundation of shared goals, shared knowledge, and respect (Gittell, 2006; Gittell, 2002). As a result, teams can expect to experience higher-quality output and better outcomes. For instance, when the relationships between team members (e.g., physician, nurse, therapist) are characterized by timely communication, mutual respect, shared goals, and shared knowledge (i.e., high relational

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coordination), patients experience shorter lengths of stay in the hospital and perceive their care to be of higher quality (Gittell et al., 2000; Gittell et al., 2010).

Similar relationship qualities have been identified as being important for primary care team performance (Benzer et al., 2016; Dieleman et al., 2004). Lanham and colleagues (2009) showed that thriving clinics displayed seven relationship qualities that reinforced a collaborative culture. The seven characteristics included trust, mindfulness (e.g., openness to new ideas), heedfulness (i.e., individuals are aware of how their work and that of others contribute to team goals), respectful interaction, diversity in individual perspectives, both work and non-work related conversations, and a mix of face-to-face and lean (e.g., electronic) communication. These relationship qualities facilitated change while also helping primary care teams reach care quality goals. These studies also show that cross-disciplinary relationships, characterized by open communication, respect, and an understanding of other's expertise, as well as team structures (e.g., electronic communication tools) function concurrently to facilitate team-based care.

Furthermore, it is essential for team members to leverage the different team structures or mechanisms that can foster strong cross-disciplinary communication. For example, in a study of 6 primary care organizations, Rodriguez et al. (2015) examined how huddles were implemented in the context of primary care transformation. They assessed team members teamwork experiences and perceptions of their practice environments and found that daily huddles helped team members have a better understanding of their roles and responsibilities because the huddles allowed each person to provide feedback and answer questions specific to each patient. Other researchers have shown that team meetings allow providers to figure out difficult problems that may arise during the course of patient care delivery (Shunk, Dulay, Chou, Janson, & O'Brien, 2014; Stout, Zallman, Arsenault, Sayah, & Hacker, 2017).

In the same vein, there is a growing emphasis on using co-located teams for the purposes of improving communication and the frequency of encounters between primary care team members (Mundt et al., 2015; Sinsky et al., 2013; Xyrichis & Lowton, 2008). Theoretically, when providers are co-located in the same clinic it provides greater opportunities for each person to share information and make recommendations which can lead to better patient outcomes. Mundt et al. (2015) demonstrated that when teams had dense face-to-face interactions they were able to develop clear and realistic goals for patient care which put them in a better position to deliver high-quality cardiovascular care compared to teams that did not have frequent interaction. However, Mundt and colleagues (2015) did not look at how other team structures (e.g., team meetings) were enacted or how they contributed to better patient outcomes.

Despite what we already know about the importance of high-quality relationships in primary care, and how team structures facilitate team behaviors (e.g., communication and providing feedback) and the development of shared cognitions (e.g., shared understanding of responsibilities), there is less information about how primary care teams use team structures to facilitate (or impede) high-quality relationships. Although high-quality relationships are beneficial for team functioning, we need to learn more about the processes by which the enactment of primary care team structures shapes team relationships. Since team-based care is defined by the collaborative working relationships between physicians and non-physician providers (Mitchell et al., 2012), we need to better understand how team structures are used to bridge occupational boundaries to facilitate care coordination and the delivery of comprehensive patient care services.

To build on this previous research, I research how team structures are enacted by primary care providers and how their enactment can foster and sustain high-quality relationships that

enable teams to deliver comprehensive, patient-centered care. Given the important role team relationships play in delivering high-quality care (e.g., Gittell et al., 2000; Mundt et al., 2015), I attempt to explore not just how team structures are used in practice, but whether they are used to strengthen the quality of relationships through which team-based care is delivered. Therefore, the second question I will answer with my research is:

> *Research question 2: How does the enactment of team structures influence intra-team relationships essential for delivering efficient and patient-centered team-based care?*

Research Implications

Given the proliferation of team-based approaches in primary care settings, managers and practitioners would benefit from understanding how team structures and team relationships complement each other to help primary care providers achieve the intended outcomes of team-based care. I posit that both team structures and relationships are important for understanding how team-based care is delivered. In this dissertation, I attempt to show how primary care team structures are used and how they influence the intra-team relationships essential for team-based care. The implementation of team-based care offers an opportunity to research how team structures are enacted and how they influence the relationships that encourage (or discourage) primary care providers to engage in collaborative practice (e.g., Miller et al., 2001).

My research examines variations in how team structures are enacted which may help explain some of the mixed findings between team-based care and patient outcomes (e.g., health care utilization and patient satisfaction). By examining how primary care teams enact team structures and how these enactments influence team relationships, my research begins to explore how certain enactment patterns may affect the delivery of

team-based primary care. Also, my research will provide information about why primary care teams are more or less effective at using team structures to facilitate cross-disciplinary collaboration. Understanding the nuances of how team structures are enacted is important because it may provide primary care teams and their managers with practical information about ways to deliver team-based care that better addresses the needs of the patients they serve.

Chapter Summary

In this chapter I reviewed the literature on team-based primary care. Researchers have shown that team-based care has the potential for improving primary care delivery. One area of focus that may further our understanding of what enables primary care teams to deliver team-based care is examining the intersection between team structures and relationships. In my research I argue that the structures themselves do not facilitate team-based care, but how they are enacted on a day-to-day basis influences the intra-team relationships essential to delivering team-based care. With this research, I hope to resolve at least some of the inconsistencies observed in previous evaluations of primary care teams by observing the variations of team structure enactment. In the next chapter I explain the methods I used to answer my two research questions.

Chapter 3: Methods

The purpose of this chapter is to discuss the research methods used to answer my two research questions. In general, I conducted qualitative interviews at 7 primary care clinics between July 2016 and March 2017 in order to elicit examples on how physicians and non-physician providers worked together to perform team-based primary care. These providers are ideal participants because of their potential to provide rich information about team composition, configuration, behaviors, and characteristics in this setting. I used two forms of data collection including semi-structured interviews, and non-participant observation, when permitted. The interview data were analyzed in an iterative fashion by going back and forth between the data, the extant literature, and the emerging theoretical constructs (Miles & Huberman, 1994; Strauss & Corbin, 1998).

I used an interpretivist approach which is typically used in psychology, health care, and social science research. This approach contends that reality is subjective and changing; there is no single truth (Bunniss & Kelly, 2010). I used an interpretivist approach because I wanted to gather a detailed representation of how team-based care is understood by those who experience it. A qualitative approach was also adopted for this dissertation because my overall objective was exploratory in nature. In the following sections, I describe the context of my research, the study sample, data sources, and my analytic approach.

Context of Study

Primary care clinics located in Central Virginia participating in a population health management program for uninsured patients were sampled for this research. I focused on these clinics because they served patients with complex health care needs (e.g., one or more chronic diseases and/or psychosocial needs). I highlight the patient populations in these clinics because a large proportion of patients that have complex health care needs tend to be uninsured. As a group of patients that are particularly vulnerable to poor health care outcomes, uninsured patients require greater care coordination (Berenson et al., 2012) and are thus ideally situated for studying how team-based care is carried out in this setting. These clinics were also identified because the administrative offices of the program were housed within a single academic health center. This made it easier to identify the cohort of clinics participating in the program and understand the feasibility of recruiting clinics for my research.

The population health management program contracts with primary health care providers within the community and is responsible for coordinating patients' health care services and access to primary care. One of the objectives of the program is to improve care coordination between primary care providers and specialists in the region while also minimizing unnecessary emergency department utilization. The program facilitates this coordination through two primary channels. First, the program's administration arm sends email newsletters to providers and holds routine meetings to allow primary care providers and their staff to express concerns and offer suggestions for improvement. Second, the program utilizes off-site case managers to assist patients with serious illnesses adhere to physician recommendations and improve self-management skills.

I sent an introductory email to either a practice manager or a primary care provider at a total of 30 clinics who participated in the population health management program. All clinics served predominately adult patients and were located in the same greater metropolitan area of Central Virginia. I selected clinics in the same metropolitan area in order to control for market factors and patient demographics (e.g., poverty rates, race characteristics, Medicaid penetration, etc.).

A total of 7 primary care clinics responded to my request to participate and agreed to help with the recruitment of volunteers. I arranged for in-person meetings and follow-up emails or phone calls to talk with practice managers and physician leaders about the logistics of recruiting volunteers. Copies of the recruitment materials for this research can be found in Appendix I.

At the onset of this research I had a working relationship with a program coordinator who oversaw relationships between the academic health system housing the population health management program and the community-based primary care clinics. The program coordinator was instrumental because she provided access to contact information of primary care providers who participated in the population health management program, and facilitated email communications between me and the clinics.

The Virginia Commonwealth University Institutional Review Board (IRB) approved this dissertation. All participants were provided with information sheets explaining the purpose of my dissertation research and their role as voluntary participants in my dissertation. Research participants provided informed consent prior to data collection.

Sample

Study site characteristics.

My sampling strategy focused on identifying primary care clinics that participated in the population health management program and had implemented team-based care. At the patient-level, this strategy allowed me to observe variation in how team-based care was delivered in different clinics for patients who had unique needs depending on their health and psychosocial limitations. In general, the clinics identified for this dissertation represent extreme cases (Eisenhardt & Graebner, 2007) because they treated high volumes of uninsured and chronically ill patients who necessitate high levels of care coordination. It was important to select extreme cases in this context because I needed to develop a better understanding of the constructs and relationships central to team-based primary care. Team processes and relationship dynamics would ideally be more transparent in these clinics because addressing the needs of complex patients requires team members to frequently share information and collaborate on patient and team goals. Data for this 9-month qualitative research were gathered from the 7 primary care clinics willing to participate. All clinics provided services to predominantly poor patient populations (either Medicaid-insured or uninsured), utilized electronic medical records, and had access to behavioral and social health practitioners (e.g., psychologists and social workers) on-site or on a referral basis. Each clinic emphasized the use of teamwork to organize around the needs and preferences of patients. Five of the primary care clinics were owned and operated by an academic medical center, 1 was a free clinic, and 1 was a federally qualified health center (FQHC). Additional characteristics of each clinic can be found in Table 2.

Table 2

Team-Based Care Components across 7 Primary Care Clinics

Clinic	Team Members (Examples)	Clinic Characteristics	Patient Population Characteristics	Team Characteristics
Academic Health System Setting				
Clinic A Non-PCMH certified	Physicians; registered nurses; licensed practical nurses; medical assistants; social worker; and pharmacist	General internal medicine -Part-time physicians -Full-time nurses -Physicians share nurses	Patients with a variety of chronic conditions (e.g., hypertension, diabetes, dementia); low socioeconomic status; high uninsured population	Physician-nurse dyads (i.e., teamlets); other non-physician providers available upon request/referral (e.g., social worker)
Clinic B Non-PCMH certified	Physicians; registered nurses; licensed practical nurses; medical assistants; social worker; and pharmacist	General internal medicine -Part-time physicians -Full-time nurses -Physicians share nurses	Patients with a variety of chronic conditions (e.g., hypertension, diabetes, dementia); low socioeconomic status; high uninsured population	Physician-nurse dyads (i.e., teamlets); other non-physician providers available upon request/referral (e.g., social worker, psychologist); teams consist of physician trainees resulting in team instability
Clinic C PCMH certified	Physicians; medical assistants; psychologist; social worker; and pharmacist	Family medicine -Part-time physicians -Full-time nurses -Physicians share nurses	Patients with a variety of chronic conditions or behavioral health needs; about 18% of patients are Medicare insured, 10% Medicaid insured; low uninsured population	Physician-nurse dyads (i.e., teamlets); other providers shared across the different dyads (e.g., psychologist)
Clinic D PCMH certified	Physician; nurse practitioner; nurse case manager;	General internal medicine	Patients with 5 or more chronic conditions (e.g., diabetes, congestive heart failure); high	Large, interdisciplinary team including physician and other non-

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(Table 2 continued)

	social worker; community health workers; medical outreach workers	-Group led by physician and nurse practitioner -All staff co-located	social needs; high uninsured population	physician providers; co-located hold daily and weekly team meetings
Community Setting				
Clinic E PCMH certified	Physicians; medical assistants; care coordinators; social workers; medication case workers; bilingual patient advocates	Family medicine -Wide variety of services including 19 subspecialties (e.g., cardiology) -About 52% of providers are volunteers -Physicians are part-time	Patients with at least 1 chronic condition (about 70% of population); working poor population; primarily Spanish-speaking Latinos (about 85% of population); high uninsured population	Physician-nurse dyads (i.e., teamlets); some full-time personnel, but several volunteers; other non-physician providers (e.g., social worker) shared across teams
Clinic F PCMH certified	Physicians; medical assistants; dental hygienists; mental health specialists; licensed clinical social worker; pharmacists	Family medicine -Integrated care teams onsite to provide primary care, behavioral health, oral health, and pharmacy services -On-site pharmacy -Providers grouped into teams (e.g., "blue team" and "green team")	Patients with a variety of chronic conditions and co-occurring mental health conditions (e.g., bipolar); 13% Medicaid insured; 80% of patients below federal poverty level; high uninsured population	Two major teams within clinic: medical and behavioral health; providers groups into smaller teams consisting of a physician, nurse, and behavioral health specialist; dental services shared across teams
Clinic G PCMH certified	Physicians; nurses, medical assistants; social worker; pharmacists	Family medicine -Part-time physicians -Full-time nurses	Patients with a variety of chronic conditions (e.g., hypertension, diabetes); low socioeconomic status; about 50% Black; high uninsured population	Physician-nurse dyads (i.e., teamlets); teams may consist of physician trainees

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(Table 2 continued)

		-Part-time psychology students -Programs available for patients infected by HIV/AIDS -Bilingual staff -On-site pharmacy		resulting in team instability

Note. PCMH=Patient-centered medical home; HIV/AIDS=Human immunodeficiency virus/acquired immunodeficiency syndrome.

All but 2 of the clinics (both located in the academic medical center) were designated by the National Committee for Quality Assurance (NCQA) as patient-centered medical homes (PCMHs). Although delivering team-based care is a common feature of PCMH-accredited clinics (Helfrich et al., 2014), including non-PCMH clinics in this research allowed me to explore potentially greater variation in how team-based care was delivered. Previous investigations have also observed that attaining PCMH recognition does not necessarily suggest that a primary care clinic has made all the necessary changes to function as a medical home (McNellis, Genevro, & Meyers, 2013). Regardless, it is important to note that PCMH clinics may also implement different innovations like enhanced patient access, electronic medical records, and informal learning collaboratives. These types of innovations are unlikely to be seen in non-PCMH clinics. Thus, by including non-PCMH clinics in this research, it is possible that there are other factors that could explain variation in ways not related to this dissertation. Despite these variations in clinic characteristics, there was greater consistency in the types of patient populations served. The clinics participating in this program had implemented the use of case managers and other health care professionals (e.g., social work and community health workers) to support patients with chronic and severe medical conditions. Participants were also asked

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about the composition of their teams within the clinic to get a better understanding of team characteristics.

My sample included a range of primary care clinic types (e.g., health system-owned, community health center, FQHC) because my objective was to observe variation in how team-based primary care was performed in clinics that see a large percentage of medically complex patients (e.g., multiple chronic conditions) and how it affected the way clinics delivered comprehensive health services. It is important to note that team-based care was implemented at different times across clinics and it was difficult to pinpoint when each clinic formally implemented teams. Some teams had been in place for at least 1 year as a result of implementing the PCMH model (e.g., Clinics D and F). In other clinics (e.g., Clinics A and B), it was unclear when team-based care was formally implemented and if it was previously implemented as part of a previous quality improvement initiative. Since team-based care is often implemented at the clinic-level, the primary unit of analysis for this dissertation was at the clinic-level. A clinic-level analysis allowed for cross-site comparisons of team-based care implementation processes, team relationship dynamics, and the enactment of team structures at each clinic. This allowed me to further explore variation in ways team-based care was delivered.

Sampling approach.

I used a mix of purposive and snowball sampling approaches. Specifically, I initially used purposive sampling to recruit participants from multiple disciplines including medicine, nursing, behavioral health, social work, and pharmacy because the objective of my dissertation was to understand how interdisciplinary team-based care was performed. Recruiting participants from multiple disciplines was important for gathering various perspectives on how different roles performed team-based care and how each understood their responsibilities addressing patients'

health care needs. I also wanted to understand how the different disciplines implemented and used team structures (e.g., huddles, meetings, and standing orders) to address the challenges related to delivering high-quality care in the primary care setting.

Due to budget limitations and logistical barriers, it became difficult to recruit sufficient participants for this dissertation research solely using purposive sampling. As a result, I also allowed research participants to identify potential recruits for my dissertation research (i.e., snowball sampling). Participants were recruited via three channels (1) via email between July 2016-March 2017, (2) through in-person recruitment efforts during monthly clinic staff meetings, and (3) participants suggesting potentially interested volunteers to recruit during data collection. Regarding recruitment method (3), participants facilitated the introductory meeting between me and the potential new volunteer. Individuals who were suggested to participate via snowball sampling were provided the same information sheet explaining the purpose of the dissertation and their rights as volunteers.

Data Sources and Data Collection

Semi-structured interviews.

Semi-structured interviewing was used throughout the data collection process as a way to understand primary care providers' perceptions around interdisciplinary team-based care processes, characteristics, and behaviors. These interviews allowed providers to express their attitudes on topics such as working relationships, team tasks and activities, and team values. Interviews were conducted between July 2016 and March 2017. The tenets of theoretical sampling guided the direction of the interviews (Glaser & Strauss, 1967): as initial themes emerged from earlier interviews, they shaped the focus of subsequent interviews.

I used a semi-structured interview protocol (Appendix II) consisting of different questions to ask participants to tap into team activities and behaviors. This protocol was useful because it provided a starting point for data collection and analysis. As data collection moved forward, some of the questions asked from one interview to the next began to change to gain clarity on emerging concepts. The intent of these interviews was to capture a broad range of perspectives and responses relevant to team-based primary care. Thus, questions asked in subsequent interviews were tailored to capture more information on the categories that emerged during the analysis of preliminary interviews. The semi-structured interview protocol, therefore, was refined after an initial round of 12 interviews.

I obtained informed consent from each participant before starting interviews (Appendix III). Each participant was provided either a paper or electronic version of the informed consent form for their records. Participants had the choice to have the interview where they felt most comfortable. Most interviews took place behind closed doors in offices, observation rooms, or other private locations within the clinic. Participants were not reimbursed for their participation, however, each participant was entered into a raffle to win a $200.00 pre-paid gift card. Only one participant was randomly selected to receive the gift card which was distributed at a later date.

At the start of each interview, interviewees were told to think about and consider the individual roles they worked most closely with as it related to delivering primary care in their clinic or unit. Since primary care physician and non-physicians can often work with multiple teams, I understood that there would not be enough time to have participants describe their experiences with multiple teams in detail. Throughout the interviews participants were asked to provide specific examples of times when they "took charge" or had to "step-in." These types of prompts were used in order to encourage participants to give rich descriptions of situations when

they had to assert themselves within the context of delivering team-based care. I also asked follow up questions about the factors that facilitated or impeded effective team-based care.

Participants were also encouraged to provide rich details (e.g., "Can you tell me more about…") about teamwork processes or other topics that emerged during our interview. Participants were asked to avoid using specific names during the interview, and instead, refer to co-workers or team members using roles or titles (e.g., "nurse," "social worker," and "physician") to protect anonymity. Although I took hand-written notes during the interviews, they were limited to the extent that they were used to remind me to follow-up on specific responses. The decision was made to not take detailed notes during interviews because it allowed me to actively listen and respond to interviewees and to limit the amount of distractions.

All interviews were digitally recorded and transcribed. All participants gave permission to have their interviews recorded. Interviews were transcribed verbatim by a professional transcription service company. I subsequently edited all transcripts to ensure accuracy and de-identified locations, individuals, and formal names or titles. After the data were collected and digitally transcribed, the interview recordings, interview notes, and paper versions of the transcripts were locked in a secure office. A key of identifiers was created and stored in a separate secure location in order to protect confidential participant information.

I conducted a total of 30 semi-structured interviews across the 7 primary care clinics. The interviews lasted anywhere from 28 to 67 minutes, with the average interview lasting about 44 minutes. The interviews produced a total of 713 single-spaced pages of typed transcripts.

Non-participant observations.

To further understand primary care teamwork behaviors, I conducted non-participant observations of physicians and non-physicians at Clinic D during their weekly staff meeting.

Although the other 6 clinics were approached and asked about the potential for observations, I was unable to obtain access. I observed a total of 13 meetings over the course of my dissertation with each observation lasting about one hour. My primary objective was to develop a broader sense of how providers in these weekly meetings interacted with one another and how the information that was shared within the meetings shaped decision-making and problem-solving.

All of the meetings took place in a board room within the academic medical center. Participants were aware of my presence in the room. Members were provided an informed consent sheet and were allowed to not participate if they chose not to. Before each meeting I placed myself in the corner of the room and took notes of my observations on a notepad. I used an observation protocol to focus the topics and areas of discussion that I took notes on (e.g., "Do team members do any planning to anticipate disruptions in workflow?"). No patient or staff identifiable information was collected during the meeting. The observation data resulted in 59 pages of single-spaced, hand-written notes. These notes were strictly used to supplement the evidence from the interviews. The notes were not typed and were not part of the coding process.

Repeated observations with the same clinic allowed me to build a rapport with the individual members and to gather a large amount of data across multiple meetings. Observing a single multidisciplinary clinic provided insight into team dynamics and facilitated intra-clinic comparisons as the number of observations increased. My repeated attendance also afforded me the opportunity to see how the content of meetings changed from week to week.

Data Analysis

I used an iterative process of immersion, coding, and memo writing to analyze the interview data. Each step in the analysis process is described below.

Immersion and coding.

Immersion is the process of reading and re-reading transcripts and field notes to better retain and process information that was gathered during data collection. The practice of reading materials multiple times made it less likely I would miss identifying patterns in the data and improved my ability to reinterpret data after new information was brought to bear. Immersion was important because it allowed me to gain a deeper understanding of the study context and stimulated idea generation (Hunter, Lusardi, Zucker, Jacelon, & Chandler, 2002). Rather than waiting until after data collection was complete to conduct analyses, immersion in the data made analysis more manageable and efficient.

Coding occurred in multiple stages following the constant comparative method (Glaser & Strauss, 1967). I initially performed open coding using NVivo (version 12.0) software, allowing for concepts and categories to develop based on the properties and dimensions of the text (Miles & Huberman, 1994). Provisional codes were developed as I read and reread the transcripts. Provisional codes were used to capture actions and behaviors related to team-based care or clinic characteristics that seemed to facilitate or impede team-based care. As new provisional codes emerged, the transcripts were reanalyzed using the new coding structure. This process allowed me to cluster segments of data relating to a particular research question, construct, or theme (Miles & Huberman, 1994). Codes were applied to segments of text ranging from only a few words to multiple paragraphs. During the analysis process, I met with my dissertation chairperson every 2-3 weeks to review the coding scheme and refine the research findings.

Reading through the transcripts, I was looking for descriptions of how team structures were being used, particularly how they were used to facilitate care coordination within primary care teams. The Okhuysen and Bechky (2009) framework was useful during this part of the

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analysis process because it helped to categorize the different team structures (i.e., mechanisms) such as roles, objects, and proximity being used across the primary care clinics. The preliminary codebook related to team structures can be found in Appendix IV. I established a coding rule to enhance the validity of the coding process. The rule was that in order for a code to be substantiated, at least 2 interviewees had to have described the same or similar phenomenon related to delivering team-based care. The 2 interviewees did not have to be from the same clinic or work together on the same team. This rule allowed me to keep coding consistent but also identify themes that repeatedly emerged across interviews and clinics.

Table 3 summarizes the data structure produced as a result of the data analysis. During the provisional coding process, I applied the codes in Appendix IV and further developed the proximal codes in Table 3. The proximal codes were related to themes that emerged around how team structures were used and how they shaped the relationship dynamics of primary care teams. Most of the descriptions provided by interviewees focused on how different team structures were used to address the challenges of delivering high-quality team-based care. After reviewing the proximal codes and the data identified there, I reread and recoded each of the transcripts a second time to identify instances where team structures were described or were put into use. This type of coding, where the important underlying concepts emerged from the data, is an inductive approach because a theoretical framework was not guiding the code definitions. I relied on providers' rich descriptions of their work context to capture the ways team structures were used to strengthen (or weaken) relationships between team members.

In the third and final round of coding I moved to an axial coding mode: I began to relate the most prevalent and important proximal codes and I further defined what each code meant (Strauss & Corbin, 1998). Important codes focused on the activities of primary care team

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Table 3

Data Structure Summary

Proximal Codes ➡	Axial Codes ➡	Theoretical Categories
• Give updates about patients and identify gaps in care (e.g., medical, behavioral health, or social needs) • Gather information and to ask questions about incoming patients (e.g., using the huddle sheet) • Encourage team members to speak up and share ideas about how to improve a patient's outcome (e.g., team members discussing ways to get more medical supplies for a patient) • Announce upcoming or new services that are available for patients who need help managing specific chronic conditions or have unmet social needs • Reflect on what happened during the workday (e.g., what went well, what didn't go well, what do we need to change in the future)	Statements about how primary care team structures are used • Patient-focused • Limited-use or status quo	Type of structure use
• Share information about what happened during patient encounters (e.g., updating team members during a warm handoff) • Provide recommendations for improving care processes or coordination of tasks (e.g., putting "boundaries" on specific roles, asking for clarification about a person's role on the team) • Collaborate on treatment decisions or modify a patient's therapy (e.g., conversations emerge between team members about to enact a specific protocol) • Vent frustrations when a patient is not engaging with their care. (e.g., use huddles to provide support for team members) • Limited interactions across disciplines during clinic session	Statements about the effects of team structure use on team-based care coordination • Frequent cross-disciplinary coordination • Limited cross-disciplinary coordination	Team-based care coordination
• Having trust to delegate jobs or tasks to other team members (e.g., enacting standing orders to empower other team members to take responsibility of a task) • Trusting team members to get the job done • Respect for each other's skills and expertise • Strong interpersonal bonds that allow teams to decompress	Statements about the qualities and/or attitudes of team relationships • Positive attitudes • Indifferent attitudes	Intra-team relationships

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members (e.g., cross-training) and the specific use-patterns of team structures (e.g., patient-specific vs. non-specific). Thus, I consolidated related codes that were generated during the second round. The consolidation process allowed broader themes and concepts to emerge related to the delivery of team-based care. The process of integrating categories was useful because it allowed me to delineate the relationships between the codes and how they were connected. The coding process moved in an iterative fashion from labeling (1) the different ways team structures were enacted, (2) how team structures were used to facilitate or undermine primary care team relationships, and (3) in what ways providers believed team relationships shaped how team structures were enacted. The theoretical categories in Table 3 correspond to the overarching theories that were discussed in Chapter 2—that is, team structure use, team-based care coordination, and intra-team relationships. I manually created all codes for this dissertation in NVivo software (version 12.0).

Memo writing.

Alternatively, memos capture the researcher's thoughts about a particular topic and help discern how participants make sense of a given situation or event. Throughout the analysis, memos were written to make connections between codes and the data and facilitate constant comparison (Glaser, 1965). Writing memos help to identify gaps in understanding or questions that remained during data collection and analysis. Earlier memos helped me to articulate my initial ideas about the data and later ones connected the categories across interviews. A total of about 48 typed memo pages were created.

Summary of Study Methods

In this chapter, I have described the methods I used for my research on team-based primary care. My research followed an emergent strategy consisting of collecting data from

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multiple primary care sites and an iterative process of analyzing the data and reflecting on preliminary insights. This iterative process was particularly important because it helped to tie together underlying concepts resulting in a sharper understanding of the interconnections between team structures and team relationships. The qualitative approach I adopted for this research was particularly useful for uncovering the complex dynamics that primary care providers face as they engage in their day-to-day activities. Providers' rich descriptions of their work context captured ways team structures and team relationships were interconnected. I describe these findings in Chapter 4.

In this chapter, I present my findings from analyzing the interview data. In the sections that follow, I use quotes from interviews with research participants to demonstrate the richness of the data and provide examples of ways primary care team members used team structures and described team relationships. The experiences of primary care team members, as discussed below, were also important for developing a deeper understanding of team-based primary care in clinics serving vulnerable populations.

Interviewee Characteristics

A total of 30 volunteers participated in face-to-face interviews. Seventy percent of participants were female and 60% provided patient care full-time (i.e., at least 5 days per week). At the time interviews were conducted, participants worked on average about 5 years in their respective roles. Table 4 summarizes the number of interviewees from each clinic and their corresponding roles. At each clinic I spoke with at least one physician or nurse practitioner (n=11 total) and one or more non-physician providers including nurses (n=7 total), social workers (n=3 total), psychologists/behavioral health specialists (n=2), pharmacists (n=2), and a counselor (n=1). I was also able to interview medical outreach workers from Clinic D (n=4 total).

Differences in Team Structure Enactment

Primary care providers in this research described using team structures in a variety of ways to address the demands of patients and their teams. Specifically, primary care teams used

huddles, patient referrals, and protocols to varying capacities to help coordinate the care of

vulnerable patients and facilitate the delivery of team-based care.

Table 4

Interviewee Characteristics

Clinic	Number of Participants	Roles (Number of Participants)
A	2	Physician (1); Registered nurse (1)
B	4	Physician (2); Licensed practical nurse (2)
C	3	Physician (2); Psychologist (1)
D	11	Nurse practitioner (1); Registered nurse (4); Pharmacist (1); Social worker (1); Medical outreach worker (4)
E	2	Nurse practitioner (1); Social worker (1)
F	6	Nurse practitioner (2); Mental/Behavioral Health Specialist (1); Medical social worker (1); Pharmacist (1); Counselor (1)
G	2	Physician (2)
Total	**30**	

Note. Each participant was interviewed once.

The use of team huddles to share information.

The coding process revealed that some clinics emphasized using team huddles to share

patient-focused information in order to anticipate the needs of both patients and team members.

Other clinics used them primarily to share clinic-focused or operational information.

Patient-focused huddles to anticipate patients' needs.

Some clinics (Clinics C, D, and F) described how they tailored the use of team huddles to

share patient-specific information. During the huddles, team members would offer details about

the patients' particular difficulties accessing various community resources and what options were

available to mitigate these barriers.

> *So the purpose of the team huddles is to inform the team members what patient each team member needs to see and why, and also to find out are there any barriers of care that we need to troubleshoot from. And so [the nurse practitioner] leads the team huddles. We are open and honest, and we give [the nurse practitioner] our opinions.* (Medical Outreach Worker, Clinic D)

The sharing of patient-specific information enabled team members to better identify which resources or expertise would be necessary to address the patient's medical issues or social barriers to care. In these situations, the team huddles were used to strategize how the team would help patients obtain necessary community services.

> *And the case manager can step in and say well let's see what we can do about facilitating that through Meals on Wheels or something like that where [the patient] get their, they get some of their needs met better. We had some work done on coordinating with the YMCA or the, their diabetes program and getting the case managers to refer a lot of diabetic clients to them for exercise. Or diet, nutritional needs, and meeting their nutritional needs for education and things like that.* (Mental Health Specialist, Clinic F)

Huddles were also useful for providing team members with status updates about patients which enabled the team to anticipate unmet patient needs. For example, by keeping track of patients' current health status during weekly huddles, team members were able to identify what resources needed to be mobilized in order to address patients' needs.

> *So we go down that list. Whoever's following [the patient], they say, "Hey, any updates on such and such?" We just go down the list, and whatever patient we get to that's in that category they ask for updates. If there are no updates, then we circle back to 'em the following week. If there are updates, then we discuss the updates… We discuss what may need to be done [for the patient], whether they need to be taken off [the list]. Whether they need to be moved to another category that's on the list. Whether they need a particular resource.* (Medical Outreach Worker, Clinic D)

Huddles at the beginning of the day were particularly important because they allowed teams to quickly identify the best person to address patients' financial or social barriers to care. Once the team understood which person was going to help the patient (e.g., help the patient fill-out a specific application), the huddle was used to close the communication loop between the team members responsible for helping the patient obtain necessary resources.

> *And really I kind of go based on my last note, the things that we discussed. So if there were any social issues, if there were any barriers… So maybe it is I referred this patient at the last visit to the social worker. The social worker was supposed*

to help with the Medicaid application. So when [the patient] come back to the following visit, based on that note or memory, I'm checking in with social work at the beginning of the day. "Hey, can you check in with this patient to see if they followed through on their Medicaid or if they received their Medicaid." (Nurse Practitioner, Clinic D)

The patient-focused nature of team huddles also gave providers the opportunity to share their unique perspectives about each patient. By sharing each of their unique perspectives during team huddles, providers believed it helped the team to combine their expertise and help address patients' needs more effectively.

I think by having our huddles or our team meeting, I get to hear other dimensions of the client that we're all working with in conjunction. I get to hear the – the therapist, their perspective of the person that we see. I get to know exactly what the medical issues are… But it gives us the opportunity to learn from each other and we take all of our skills and kind of put them together, and I think that we provide a better service when we do that. (Counselor, Clinic F)

Providers from Clinics C, D, and F would also use team huddles to coordinate team clinical tasks to anticipate what tests or services patients would need before they arrived for their visit. During team huddles, team members would use "huddle sheets" or "worksheets" to facilitate coordination by helping physicians and non-physician providers identify the appropriate clinical tests patients needed. Huddle sheets were described by participants as a type of object that helped team members know what topics and patients they needed to discuss during the huddle session and what specific tasks team members needed to complete to prepare for upcoming patient visits. Primary care teams created huddle sheets as a way to collect standardized information about patients' health maintenance needs. For instance, worksheets were used to remind team members which patients needed to have certain blood tests performed during or before their upcoming clinical visit.

Before each session, the physician and the nurse talk and the nurses have a worksheet that they've completed, which has very basic stuff about the patient, so their age, what they're coming in for, and then the nurses do a brief chart review

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that looks at some of the health maintenance stuff. Then we talk together about okay, well I noticed that she was anemic on her last visit so let's make sure we go ahead and get a hemoglobin when she comes in, you know, point of care tests, and we kind of do that kinda thing. (Physician, Clinic C)

Similar types of worksheets, like those that included a list of incoming patients for the day, helped non-physician providers know what tests or services needed to be prepared before the patients were seen by the physician.

At least what happened, you had a patient list for the day, right, and you review the needs and the patient. Well, maybe this patient's gonna need labs, so that the [medical assistant is] ready to do labs, and so it's talked about, what the needs are of that patient for that day and the panel of patients. (Pharmacist, Clinic F)

Another participant from Clinic G also illustrated how worksheets were used as a part of team huddles to facilitate coordination. When these worksheets were used during huddles it helped team members anticipate what preventative treatments needed to be provided.

[The nurse] prepares these pre-visit summaries before each clinic that lists things she predicts her patient is going to need, any vaccines they might need, any labs they might need. (Physician, Clinic G)

As described in Chapter 3, I also observed weekly team meetings in Clinic D to take note of and better understand how primary care teams behaved and coordinated care. These team meetings provided a safe environment for all team members to "pipe in" and make others aware that they needed to follow up with a patient. Through observation, I noticed how the team focused their conversations on individual patients that were particularly challenging to engage. Each week team members would update one another about the patients they saw and the changes in their health status. These updates were significant because they exposed gaps in the patient's care plan and facilitated strategizing sessions on how to address the patients' needs and better engage them with the team. For example, in one team meeting, a social worker offered his assistance to help a patient obtain stable housing. The nurse practitioner then requested the social

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worker to get in contact with the patient to explain to him the team's plan. Clinic D interviews confirmed that these types of exchanges were common and that my observations aligned with participants experiences.

> *Is there something outstanding that needs to be addressed? Has there been some latest development that done happened since we last seen them? So everybody got input on their part and what they need to do… If I need to interact with anybody, I say so at that point. 'I'm gonna need you to help me do this or that.' And likewise, they do that to me.* (Social Worker, Clinic D)

Using huddles to enact cross-training.

In Clinics D and F, team huddles gave some primary care teams a designated time to engage in cross-training. Cross-training was described as the process of team members sharing updates about new protocols or policies that effected patient care delivery. Participants described how they would use the time during huddles to "keep up on things" such as specific clinical competencies or resources that could help address vulnerable patients' needs.

> *And so we've kind of talked about some of the process like, "Well, what is registration doing about that?" And can – assigning a team member to like try and follow up with the registration stuff to get clarification. I think – and then as well as like the cross training area of that sometimes is kind of more operations. Like, "Hey, you know, we're changing the [therapy] groups we offer." And we would like let the team know. So that's kind of like an operations function of it.* (Medical Social Worker, Clinic F)

In this respect, cross-training allowed team members to "fill in" for each other or back each other up when other team members were not physically available or were too busy to provide patients with necessary resources.

> *But we are cross trained with one another. So there may be times where I'm in the clinic helping out with what the outreach workers do over there, the onboarding, talking with the patients, doing a little education, talking about healthy plates, finding out whatever their issues may be.* (Medical Outreach Worker, Clinic D)

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Cross-training during team huddles allowed team members to share their unique knowledge which also allowed team members to work collaboratively across patients when necessary.

> *So we're cross trained so that if, um, the [medical assistant (MA)] can't triage, maybe I'll triage while the MA does whatever the MA is doing so that we can – can move forward to see the patient… It's the collaboration and the team work and the respect that the team members here have for each other…I think it does develop over time, but I think it also comes from where – when people are cross trained, willing to jump in and help, and it's for the good of the patient…but we also will work across patients.* (Pharmacist, Clinic F)

Clinic-focused huddles to debrief and share operational information.

Clinics A, B, and E used team huddles in a less patient-focused manner compared to the other clinics. Instead, like in Clinic B, huddles were used for debriefing staff on events that required clinician intervention and for addressing operational issues.

> *[The nurses] actually have a huddle now at 3:00 every afternoon. They're like, "Hey, what worked well today? What didn't?" You know this person had bedbugs, and the good thing is someone noticed they had bedbugs right away and secluded them in a room, and there's a whole process of getting that taken care of and getting the cleaning staff to properly clean the room and to isolate the patient and make sure there's nothing else going on. So I think the staff are very alert to that.* (Physician, Clinic B)

Another participant from Clinic B acknowledged that their teams did not share in-depth information about specific patients during huddles, but they did use huddles to debrief—reflect upon their experiences from earlier in the workday. When asked to expand on what goes on during team huddles, the nurse described how team members would discuss situations that posed a threat to patient safety or less serious situations that impacted patient flow (i.e., efficiency) such as having insufficient supplies.

> *We have a sheet and the first question is are there any safety moments. So did we have anybody that had a safety issue or [patient] that may have had a fall, you know, anything dealing with safety. Then after that is discussed, [the nurse will] ask, what went well today. So that gives the providers and all staff a chance to*

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express what went well. Most of the time [the providers are] happy because their patient flow was good, the patients got roomed in a timely process. Any type of teamwork issues… Like today in huddle, one of our providers, she had a problem with supplies. So apparently she needed some gowns and we didn't have any gowns. And then if there is anything as far as what didn't go well, the next question would be what can we do different next time. (Licensed Practical Nurse, Clinic B)

From an operational perspective, nurses also mentioned that having these types of huddles were useful because it gave team members a chance to come together and discuss potential solutions to making sure patients were seen in a timely manner.

And then [the nurses will] go like, what didn't go well, and everybody be truthful. I mean if something didn't go right, like some people, they said, you know, I had a patient at 10:00 but that patient didn't get checked in 'til 11:30. When that happened, we tried to go from the front desk to the nurses, to see what happened so we can stop that. (Licensed Practical Nurse, Clinic B)

Furthermore, during my interviews at Clinic E, one participant expressed her dissatisfaction with the current way her team was using huddles. More specifically, their team huddles were used as a platform to share operational issues and general clinic reminders, not in-depth information about specific patients.

What [the huddles] have – dare I say – disintegrated into, is kind of a more mundane thing – like we'll say, "Everybody make sure you're wearing your nametag. Make sure that when you park you're really saving space in the back lot for the patients"… [Those announcements are] not really contributing to a culture of safety and quality. (Nurse Practitioner, Clinic E)

The same nurse practitioner went into greater depth explaining how her team missed a valuable opportunity to use the team huddle to prepare for an incoming patient suffering from post-traumatic stress disorder (PTSD). The participant believed that team members should have used their huddle time more adequately by strategizing and understanding how the patient's mental state would cause them to adjust how they provided care.

[The patient] came in and it was very busy, it was very loud, he felt like he wasn't being waited on in a timely fashion, and he completely lost it and had a meltdown.

Scared a small child that was in the waiting room. It was a mess. And I said, "Look." Yes, we need to sit down and have a talk with him, because that's unacceptable behavior. But that should've been something in the morning huddle where we said, "Mr. So-and-so is coming in this morning. For those of you who are unfamiliar, he has this extensive site mental health history that includes PTSD. He doesn't do well with high sensory input… "That's a perfect example of something that should've been a huddle," because everyone needs to hear that. Front office, clinicians, nursing. Everyone should've known that this man was coming in and that he triggers that easily. (Nurse Practitioner, Clinic E)

Although participants from Clinics A, B, and E admitted that they shared patient-related information with other team members, some described how they did not regularly engage in huddles to share this type of information and to proactively plan for incoming patient visits.

I think that it would be beneficial…to have a team meeting. So, [X] is a patient that needs housing and he's obese and has diabetes, and whatever, so we're gonna all come together and figure out his care plan. That doesn't happen here as far as I know… (Social Worker, Clinic E)

The use of referrals to obtain specialized expertise.

The interview data also revealed that clinics varied in how they referred patients—connecting them with the necessary specialist and resources to address their needs. In some primary care teams, members enacted warm handoffs to facilitate a face-to-face referral while other clinics used standard referral processes by setting up follow up appointments with the patient.

Enacting warm handoffs in co-located clinics to facilitate referrals.

In co-located clinics (Clinics C-G), physicians and non-physicians shared the same workspace which gave them considerable access to different types of clinical and non-clinical expertise to help address a variety of patient demands. Participants talked about how having co-located resources and expertise facilitated face-to-face referrals, enabling team members to easily access referrals from the appropriate expert.

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[The patients] have nothing, they're really, really sick…I feel like my responsibility for those other aspects are already solved by having resources…when you have a social worker, I don't have to be a hero and try and track everything down…He can do eyeglasses…he can do other things that I don't have to be an expert on…I could and I would do it, but it's easier when you have some of those resources to be able to utilize them. (Pharmacist, Clinic D)

The accessibility of non-physician expertise (e.g., psychologists and social workers) enabled several primary care teams to enact "warm handoffs"—or the exchange of information and the transition of patient accountability from one team member to another. Warm handoffs were common in situations when patients demonstrated one or more educational deficiencies, behavioral health issues, and/or social support needs.

[To the case manager] Could you help them with…a Medicaid application or they're having some problems with their insurance or they're having some social issues at home that I think is affecting their counseling. (Nurse Practitioner, Clinic F)

From participants' perspectives, when warm-handoffs were possible, it allowed other non-physician providers to establish a relationship with the patient so that they could start to identify some of the non-medical issues that were affecting the patient's health.

[The psychologists] sit back in the doctors' workroom… it's really easy to communicate with them… You'll say, "Hey, I've got a patient here who's feeling really down. Her brother died a week ago," and at that point the psychologist will say, "Yeah, we have time to see them today," and you kind of give a big of a handoff in terms of what's going on… [The psychologist will] check with the patient… You'll discuss what's going on, and you'll talk about like the psychologist will say, "I gave her… some coping mechanisms and diet guidelines or whatever." And I'll say, "Okay, that sounds great," or I'll say, "What did you think about how she's talking about blah, blah, blah?" Then they'll give what they thought about that, and then I'll coordinate with the psychologist, like a follow-up appointment… (Physician, Clinic B)

Warm handoffs played an important role because they allowed physicians and non-physicians to see patients on the same day which meant patients could more easily access the necessary clinical services, counseling, or education to address their needs.

...having the social worker literally in our office five days a week has resulted in warm handoffs and that is one of the best things...the first thing I do is say [to the patient], "Would you mind seeing Miss P. for me?" And I would walk her over and say, "Miss P., do you think you could peek in on us in room six?" And I would literally hand them off and then [the social worker] would sit with the patient and figure things out. (Physician, Clinic C)

Also, in co-located clinics, team members could identify the appropriate team member(s) more easily which made it possible for providers to engage in cross-disciplinary collaboration more frequently.

But as the provider may need something, it could be daily. It could be weekly. [The conversation] varies... we're here on the same floor, so we have easy access to each other... I used to be [upstairs], so when we started integrating the team members, I [moved down a floor] so I could be touched and reached out. (Counselor, Clinic F)

Enacting standard referrals via non face-to-face methods.

Unlike the co-located clinics that routinely enacted warm handoffs to perform patient referrals, the clinical and non-clinical expertise available to primary care teams from Clinics A and B were more dispersed. In other words, these teams relied on standard referral processes, like making phone calls to outside personnel, with the expectation that a team member would follow up with the patient. These standard, more traditional referral processes were enacted when the needs of the specific patient were outside the scope of the team's expertise.

Well for the social work case we have to request social work to come see a specific patient...after the fact where we say, "Well we will ask our social worker to contact you and see if there are resources in the community...that's how that is handled. (Physician, Clinic A)

Other means for contacting providers outside of the clinic, like paging, were also used to facilitate face-to-face consultations between physicians and social workers. These interactions helped with providing status updates about specific patients while also educating providers about useful resources.

I mean, social work I think is a really vital resource, especially for our patient population. And I will page her and she will come down and her notes are very detailed, and she'll talk to me afterwards, too, and be like, "This is what I think is going on." And she'll have to educate me about changes in Medicare and be like, "You know, now things are changing…[the patient's] insurance will want him to go to another doctor… (Physician, Clinic B)

Varied uses of care protocols.

Care protocols, in general, provide guidelines and directions to primary care team members about how to perform specific tasks. Clinics, however, varied in how they used them: some used them to facilitate task delegation while others also used them to facilitate collaborative problem-solving.

Using care protocols to delegate tasks.

In clinics A and C, team members mentioned using care protocols or guidelines as a way to help share the workload. Participants from Clinic C described how they used protocols, like standing orders, as a way to delegate work tasks away from physicians. In doing so, it shifted certain care responsibilities from one team member to another, making one person on the team accountable for completing the task.

Some things do require standing orders, like the vaccine part, but yeah. So we've worked to help empower the nursing staff to go ahead and do stuff that needs to be done without waitin' for a physician to remember it or to write the order… (Physician, Clinic C)

In Clinic A, one nurse explained how certain protocols were posted on the internet and provided the specific guidelines for performing certain procedures. Nurses would access these guidelines when they triaged patients and would go through them to understand what steps they needed to take to assess the order of treatment.

There are certain protocols, or even guidelines, you know, about doing certain procedures, like with the A1Cs and even with triage…but there is something in the internet that we're supposed [to] go to when we're talking with [a patient] and on the telephone…they've got certain steps to see someone's got a headache. There

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are certain steps that they're saying, questions that you ask [the patient]…it's like an algorithm kind of thing…so there's processes for everything now… (Registered Nurse, Clinic A)

Using care protocols to initiate collaborative problem-solving.

Participants from Clinics C and F mentioned how they used protocols to share their ideas and to engage in collaborative problem-solving. In Clinic C, team members would share their protocols with each other and it would facilitate conversations about which treatments or procedures would benefit the patient most. Thus, protocols were a structure that facilitated conversations across disciplines.

> *I pulled up one reference site and was reading through it. Okay, according to this, I think [the patient] needs the [pneumonia vaccination]. And so I relayed that to the nurse, and the nurse came back and said, "You ordered this [vaccination], but I think he just needs the other one." I said, "Well, you know, I looked this up here and this is how I interpreted that." And she said, "Well, let me show you what I have," and she showed me her protocol, and it was about the same and it wouldn't have been a big deal which one he got really, and it could be interpreted both ways, but hers was written a little bit more clearly the other way. I'm, like, awesome. Change the order, give him that one.* (Physician, Clinic C)

In Clinic F, a mental health specialist used one or more protocols to demonstrate to the team how they could better manage a suicidal patient with a history of substance abuse. These types of problem-solving conversations were important for showing how specific work processes affected patient care delivery.

> *I have had to insist on certain protocols and procedures, based upon requirements for [the clinic]. We use case examples…what would happen if we were to overlook the [behavioral health] assessment process. For instance, a suicidal client coming in and getting a very solution-based approach is ultimately, you run the risk of overlooking the suicidal thinking and not managing the larger issues. Particularly with regard to substance abuse. You know, there have been instances where we've had disagreements about maybe crisis management…staff in the middle of a therapy session couldn't jump up and provide crisis management unless they knew the client. So we kind of had to come down, brass tacks in terms of what was really doable and what was ultimately gonna be beneficial to the client. And I think we've all got a much better idea of what each*

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other's constraints are and what the needs are in terms of how the clients are affected by our processes. (Mental Health Specialist, Clinic F)

Using Team Huddles to Shape Primary Care Team Relationships

Interdisciplinary huddles also played an important role in fostering high-quality intra-team relationships between physicians and non-physician providers in some of the clinics. For example, in Clinic D, team huddles were used to build strong relationships between team members. A participant felt that by building these "bonds" their team was able to pool their expertise and collaborate more effectively; mentally preparing them to address patients' demands.

> *So we do – with the huddle, though it's more patient directed, it also – it helps to – one, it helps to build good communication between team members. Two, the huddle allows us to bond. It's a bonding experience because you get input on the different patients and so forth, and what we need to do, and people can give their input…the biggest thing is being open and transparent about what's going on with the patients so that we are aware of how to approach them in some cases…You are taking care of the needs of the team member from a mental standpoint so that they can go in and meet that patient.* (Nurse Practitioner, Clinic D)

These conversations also had positive downstream effects such that team members would know they could turn to other team members for help when they needed it.

> *It can have a good impact on how we work through – work throughout the rest of the day… I don't know if I really just kind of looked at it as kind of like as I'm describing it now. I know the conversation helps. I know that it kind of knowing who's on board or it helps you want to learn. It's a good impact in the sense that you know you're not alone, two, maybe you forgot something that you could relate to another team member that could kind of help take off some of that burden.* (Nurse Practitioner, Clinic D)

One nurse explained how her team felt like a "family" that respected one another's opinions and suggestions. The nurse also believed that mutual respect was important because it allowed the team to develop common goals about doing what was in the best interest of the patient.

It's like a big family here. So even though I'm – you know, we disagree, but we are allowed to, you know, verbalize any suggestion that we may have. And I think we, you know, respect one another. So whatever opinion, you know, whether I agree with it or not, I still respect what you're saying. Um, so, and, um, I think we all have that, um, common goal of, you know, doing whatever is best for the patient. (Registered Nurse, Clinic D)

In Clinics D and E, team huddles provided opportunities for team members to openly offer assistance when they realized that their expertise could benefit the patient. This open communication, in turn, fostered respect which made it easier for team members to seek advice on how to handle a specific patient case.

And I think kind of having those open lines of communication, like, "Hey, yes, I know that I've been practicing medicine longer than you've been practicing, but you're a specialty provider so I'd like your opinion." It fosters respect. It fosters that two way communication. And, in turn, it makes it easier for me to approach her when I have a question about a complex [identification] situation. (Nurse Practitioner, Clinic E)

Having respect for other team members was one reason Medical Outreach Workers felt inclined to share ideas that would help facilitate patient care.

And no one person looks down on another for what they do. We all – so what I'm trying to say is we all respect our position. And so we are able to share what works because some things that I might find out from a patient or what helped me may be beneficial to the RN case manager that's working with the same patient or the RN who was seeing the patient or the provider gets the understanding of why this patient is doing X, Y, Z. But I definitely feel comfortable with sharing. And I think everybody does. We're able to share, bounce things off of each other. I think that's what makes it work more. (Medical Outreach Worker, Clinic D)

Chapter Summary

In this chapter I demonstrated the various ways primary care teams enacted team huddles, patient referrals, and care protocols. For example, the interview data suggests that some teams used huddles to anticipate the needs of patients and train team members about resources and new policies while other teams focused on sharing information related to the operations of the clinic. In co-located clinics, many of the patient referrals

occurred via warm handoffs where the patient was introduced to another team member during a face-to-face encounter. In clinics where non-physician expertise was not physically available, patient referrals were performed using traditional phone and pager methods, both non-face-to-face methods. Participants in some clinics also described how the use of huddles shaped team relationships (e.g., trust and respect) which helped support the delivery of team-based primary care. However, it is important to mention that there was very limited evidence to suggest that the use of team structures influenced team relationships in this study. In the next chapter, I discuss these findings and the implications of my research on team-based primary care.

Chapter 5: Discussion

The purpose of this dissertation was to understand how primary care team members used team structures and how they influenced high-quality relationships necessary for delivering team-based care. My data revealed that primary care providers in my dissertation used team structures in a variety of ways to address the demands of patients and their teams which had implications for how team members shared information, obtained specialized expertise, initiated collaborative problem-solving, and leveraged intra-team relationships. Given the cross-sectional nature of my research though, it is not entirely clear whether team structure use influenced intra-team relationships or vice versa. Interview data suggested that the quality of team relationships (i.e., quality of interactions and attitudes towards other team members) may have also influenced how team structures are used.

In this final chapter, I discuss the findings from my dissertation research and how they fit into the broader team-based primary care literature. I also explain research and practical implications, study limitations, and future research opportunities.

Overview of Research Findings

In this section, I summarize my research findings explaining how team structures were used in primary care clinics and how their use may reflect the nature of primary care team relationships.

How primary care team structures are used and why it matters.

According to my interviews with primary care physicians and non-physicians, team structures—huddles, referral processes, and protocols—were enacted in a variety of ways to serve the purposes of primary care team members and their patients. My dissertation shows that primary care teams can use similar team structures differently to address the needs of patients or the team.

Differences between patient- and clinic-focused huddles.

Some clinics enacted patient-focused huddles to anticipate the needs of specific patients and plan how they would address the medical and non-medical needs of those patients. These patient-focused huddles enabled team members to identify patients' challenges accessing community resources and to strategize about ways to address them. By using huddles in this manner, some teams were able to develop a shared understanding of each other's roles and expertise which prior research suggests improves team coordination (Okhuysen & Bechky, 2009). For example, when huddles were used to anticipate the unmet needs of patients (e.g., social or financial barriers to care), team members were able to quickly discuss and identify solutions to help the patient access necessary resources.

The implementation of patient-focused huddles is akin to what previous researchers discovered in high-functioning teams (Rodriguez et al., 2015; Salas, Wilson, Murphy, King, & Salisbury, 2008) where huddles were routinely used to focus on pre-visit and treatment planning for patients with complex needs. My data further shows that huddles can be used to carve out a specific time for providers to openly discuss incoming patients and brainstorm ideas about ways to address their unmet needs. In some primary care teams, these huddles encouraged providers to offer expertise and share their unique perspectives about specific patients. Such interactions

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exemplified the ways huddles were used by some clinics to develop shared goals of doing what was best for the patient while also promoting team problem-solving across disciplinary boundaries (Faraj & Xiao, 2006; Gittell, 2002). Furthermore, when team huddles focused on patients' needs, it increased providers' understanding of how each other's roles and actions fit into the bigger picture of delivering team-based primary care. Increasing the familiarity of team members' roles is one way to develop stronger relationships which encourages members to embrace their interdependence and enhancing coordination (Gittell, 2002; Okhuysen & Bechky, 2009). Also, during these huddles, some teams relied on huddle sheets or worksheets to facilitate coordination by anticipating the specific tests or services patients needed. Using the huddles this way made access to expertise and resources easier for patients because it helped mobilize expertise at the right place and time.

Team huddles were also important for sharing updates about new protocols and policies that affected patient care delivery. This process of cross-training enabled team members to stay current on specific clinical competencies, resources, or operational changes that could impact how team members work as a team. Using huddles to cross-train providers was a way for team members to jump in and help when other providers needed assistance. This form of interpersonal learning (Sung & Choi, 2014) allowed team members to adapt quickly to emergent demands and recognize ways to increase team efficiency. For example, cross-training providers on how to perform specific tasks, like scheduling appointments, enabled the clinic to flow—moving patient visits along so providers would not get backed up. My findings show that cross-training enabled team members to help and provide assistance when other team members were too busy to complete a task. Cross-training may be an important team learning process that contributes to primary care team efficiency because it may result in primary care physicians delegating more

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non-diagnostic tasks to other non-physicians. Therefore, just as cross-training can improve

shared knowledge among team members (Marks, Sabella, Burke, & Zaccaro, 2002), it may also

be possible that cross-training efforts in primary care can help providers work to the "top of their

training," meaning they spend less time doing tasks that could be done effectively by another

team member (Goetz Goldberg et al., 2013).

Yet, in other clinics, team members used huddles in a less patient-focused manner,

conversations focused more on operational information and less on discussing the specific

medical and non-medical needs of patients. Debriefing about what happened during the day

enabled team members to identify problems and discuss potential solutions to clinic-specific

issues. However, when huddles were described in this manner, providers focused more on the

clinic operations and less on how they were going to deliver and coordinate care to patients. In

the clinics that used team huddles to discuss clinic operations, providers felt that there were

opportunities to improve team coordination with respect to how they prepared for incoming

patients. In Clinic D participants described how they used huddles to address both patient and

clinic-focused needs. This may suggest that striking a balance between discussing patient and

operational updates are necessary to facilitate team-based primary care.

Enactment of patient referrals: warm handoffs and standard referrals.

My findings also highlight the significance of expertise accessibility with respect to

enacting patient referrals. In some primary care teams, when physicians and non-physicians were

co-located in the same clinic, referrals were facilitated via warm handoffs which enabled team

members to directly transfer accountability for the patient from one provider to another.

Essentially the emergent dialog between team members during warm handoffs brought to bear

information about patients' conditions that led to providers spelling out their specific next steps

(e.g., schedule a follow-up visit, provide a same-day appointment, or provide in-person counseling). The accessibility of non-physicians, like psychologists and social workers, made for more efficient information sharing and enabled teams to close the communication loop. In doing so, team members could ascertain the specific responsibilities of each provider. Most importantly, warm handoffs were used to facilitate immediate referrals between providers which allowed patients to have easier access to necessary resources, similar to the handoffs emphasized in team-based care models that integrate primary care and behavioral health services (Davis et al., 2015). These warm handoffs, therefore, were used by some clinics to make face-to-face introductions between patients and providers, allowing for providers to engage in brief clinical consultations.

The lack of co-location in other clinics coincided with a more traditional patient referral to non-physicians. The traditional referral approach would have patients waiting to receive a call back from a specialist which could mean some patients will experience a delay receiving necessary educational materials, counseling, or referrals to community organizations. Therefore, because of the increased face-to-face interactions and close proximity (Bechky, 2003b) between physicians and non-physicians, warm handoffs reinforced a more collaborative approach to primary care delivery, holding providers accountable for the care and resources they gave to patients.

The different uses of care protocols.

My data also suggests that care protocols can do more than specify how clinical tasks are delegated. Protocols, in general, offer specific information about how a task should unfold and provides team members a shared view of each person's roles and responsibilities. My data suggests that protocols also have the potential to initiate collaborative problem-solving (e.g.,

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Kellogg, Orlikowski, & Yates, 2006) in primary care teams. For instance, behavioral health specialists used care protocols to demonstrate to other team members how care processes affected patient care. Using protocols to demonstrate the requirements of certain care processes were ways to facilitate problem-solving because it gave team members a chance to share their own interpretations about how protocols should be applied to specific patients. Drawing on protocols in this manner made it possible for other team members to see how primary care and behavioral health activities intersected. Management research (Kellogg et al., 2006; Orlikowski & Yates, 1994) shows that the use of specific communication objects (e.g., memos and reports) help to facilitate communication across communities of practice and facilitate cross-boundary information flow. In this research, some teams enacted protocols such that it facilitated collaborative problem-solving between disciplines.

The use of huddles and the effects on primary care team relationships.

According to some of the participants in this dissertation research, team huddles allowed primary care teams to leverage their team relationships to help deliver team-based care. When these meetings were used to share patient-specific information, primary care team members were given the opportunity to build the high-quality relationships (Dutton & Heaphy, 2003) that enabled them to coordinate their tasks more effectively. By communicating the specific needs of patients, team members used these huddles to develop a better understanding of how their work spanned across disciplines and what role each member played in addressing patients' specific needs. Building a shared understanding of roles and responsibilities was one way members were able to leverage their team relationships. Previous research shows that when team members from different work functions coordinate their work by frequent communication (e.g., regular team

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huddles) they are likely to develop stronger relationships that lead to better coordination and better team performance (Gittell et al., 2010).

Primary Care Research Implications

Researchers have previously recognized the importance of team-based primary care to address the needs of complex patient populations and for improving the delivery of primary care services (e.g., Song et al., 2015). My research reaffirms existing research by identifying some of the underpinning processes of team-based care. Primary care providers rely on and use team structures to develop strategies and address the basic unmet needs of patients with chronic conditions. In developing and carrying out these strategies, there is evidence that primary care teams differ with respect to how they use team structures and utilize their expertise to address patients' needs. For example, when primary care teams have access to non-physician expertise to engage in warm-handoffs, the face-to-face interactions between providers can help develop a shared understanding of how tasks and responsibilities intersect. In doing so, warm-handoffs may allow team members to tap into their interpersonal relationships and develop a deeper understanding of each other's expertise (Feldman & Rafaeli, 2002).

My dissertation also builds on previous research by demonstrating how team huddles can be used to leverage high-quality relationships in time-constrained work contexts (Faraj & Xiao, 2006; Gittell, 2002). Using huddles to anticipate the needs of specific patients is one way to encourage discourse that can lead to shared team decision-making and developing a better mental map of patients' needs. My findings also reaffirm existing research on ways team huddles offer primary care teams a way to adapt to changing patient needs and clinic operations (Rodriguez et al., 2015; True et al., 2014) while also promoting respectful interactions across disciplinary boundaries, leading to better coordination.

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Finally, my findings build on previous research examining primary care teams (Ghorob & Bodenheimer, 2015; O'Malley et al., 2015) by showing how primary care teams use team structures. The enactment of team huddles and warm handoffs, for example, offer providers opportunities to make decisions about what information they share and who they share it with. In my data I see that some primary care teams can better leverage their expertise by using huddles to focus on the needs of the patient and co-locating providers so that they can engage in warm handoffs. Teams can also use protocols to stimulate collaboration so that providers in different disciplines can share their perspectives on specific care processes. Furthermore, when expertise is not co-located, as was the case in the non-PCMH clinics (i.e., Clinics A and B), it may limit the team's ability to have richer face-to-face interactions that lead to shared accountability. By not having face-to-face interactions it may be more difficult for providers to understand each person's roles or responsibilities in delivering team-based care. In general, my research echoes the broader literature on primary care team relationships (Miller et al., 2001) because I show that how team structures are enacted may influence how primary care providers leverage the intra-team relationships necessary for delivering team-based primary care.

Practical Implications

As primary care clinics continue to adopt and implement team-based models, a significant challenge will be to identify and provide opportunities for primary care physicians and staff to develop and maintain strong intra-team relationships. High-quality relationships, as other researchers have shown (Dutton & Heaphy, 2003), provide the means through which information is shared and individuals develop a shared understanding of each other's roles and responsibilities. This relationship-centered view of team development raises concerns about managers and physician leaders relying too heavily on infrastructural changes to facilitate team-

based care delivery (Berenson et al., 2008). An overemphasis on changing the configurations of teams and team workflows without acknowledging the impact such changes have on primary care team relationships could possibly hinder collaboration and the delivery of team-based care.

Although there are multiple benefits for managers and physician leaders to implement team huddles to facilitate team-based care, the key is in *how they are used* by frontline staff. Huddles that focus on the needs of specific patients may encourage team members with unique expertise (e.g., accessing social resources) to engage in strategizing and problem-solving. These types of huddles may enhance providers' self-efficacy and perceptions about engaging in cross-disciplinary collaboration. Daily huddles could also benefit a team's ability to adapt to changing demands depending on when and how they are enacted. For example, getting an update about a patient's condition as they are about to be discharged from the hospital could improve the coordination of care between multiple providers or identify ways to intervene with the patient before they leave the hospital.

Managers should not underestimate the value of face-to-face communications, especially when it involves providers from different training backgrounds and professional ideologies. In contexts with few opportunities to have face-to-face interactions, teams could use video calls (e.g., secured versions of Skype^{TM} or other video conferencing applications) to potentially discuss patient cases and strategize how the team will address patients' needs and coordinate care. Also, as managers continue to implement interventions that focus on care coordination (Zulman et al., 2017), they may want to focus on understanding the way specific roles and responsibilities intersect. In other words, managers may want to find ways that make it easier for physicians and non-physicians to focus on their interdependencies which may help enhance teams' abilities to work together and improve patient care delivery.

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Practitioners and managers may also benefit from this research because it suggests some practical recommendations for sustaining dialogue between interdisciplinary teams. Intrapersonal processes such as knowledge-sharing can stimulate teams to combine their existing knowledge in novel ways and increase the team's responsiveness to changes in patient demands Although the aforementioned processes can potentially improve the quality of primary care and help clinics attend to the needs of their patients (Safran et al., 2006), my research offers insights into the steps frontline providers can take to stimulate the sharing of expertise and knowledge by how they enact various team structures. When team structures are used to bridge disciplinary boundaries, primary care team members are more likely to develop shared goals and shared understandings about roles and responsibilities.

Research Limitations

Despite these findings, there are several limitations that are important to note. First, this is a small, exploratory study that included 7 primary care clinics in a single geographic region that all served primarily uninsured patients with complex health care needs. This is a limitation because I did not sample from a generalizable sample of primary care clinics, including those that did not primarily care for medically complex patients. Managers and practitioners should use caution before extrapolating these findings to their own setting. Nonetheless, I gathered data from different types of primary care clinics (i.e., FQHC, academic health center, etc.) in an effort to improve generalizability around clinics that served high proportions of vulnerable patients. Second, after speaking with research participants, it became clear that primary care teams had been in different stages of implementing team-based care. In other words, some clinics (e.g., Clinic D) had been providing team-based care longer than others (e.g., Clinic C) which could give some teams an advantage of having more time to learn ways to best adapt team structures to

their clinic needs. This is a potential limitation because previous research suggests that cumulative experience is a significant predictor of team learning which can lead to better performance (Pisano, Bohmer, & Edmondson, 2001). Future research would benefit from understanding the long-term benefits of using team structures and how they are used to address both patients' and teams' needs.

Third, the connections between team structure enactment and team relationships are exploratory in nature. My objective was to understand how team structures were used to influence team relationships. For example, future research should test more formally whether perceptions of team relationship quality are associated with having frequent team huddles that focus on addressing patients' unmet needs. More specifically, researchers may want to test the relationship between primary care team's relational coordination (Gittell et al., 2000), which measures teams' communication frequency and quality, and time spent in huddles to plan for the workday (Helfrich et al., 2014). Such tests will provide a more rigorous examination of the association between team structure enactment and team relationships. Fourth, this dissertation research was cross-sectional in nature. Responses to interview questions were collected at a single point in time, making it difficult to discern the casual pathway between the enactment of team structures and team relationships.

Fifth, due to resource limitations and time constraints, my sample size is relatively small. As a result, there are likely other insights about the use of primary care team structures that I did not observe. Sixth, my dissertation lacked rigorous observational data across multiple clinics. Therefore, it is not clear which specific collaborative behaviors were associated with primary care team functioning or high-quality team relationships. However, I was granted access to team meetings at one of the clinics which afforded me an opportunity to observe conversations and

better understand how team members interacted with each other. Finally, the interview data were collected, analyzed, and summarized by a single researcher. Thus, it is possible I missed alternate themes as I conducted data analysis. However, I had regular meetings with an expert in qualitative research to discuss the coding scheme which helped me refine my research findings throughout the duration of the dissertation.

Future Research Opportunities

Future quantitative studies are needed to explore the associations between team structure enactment and primary care outcomes. Specifically, do the use of patient-focused huddles, warm handoffs, and protocols to initiate problem-solving have a greater impact on the quality of care for some patients more than others? It may be the case that using team huddles to emphasize interdisciplinary collaboration has a more significant impact on the quality of care for patients with high social barriers to care compared to healthy patients. Patients lacking the necessary social support to navigate the health care system will likely benefit more from the strategies primary care teams develop during team huddles. Future studies are also needed to compare how warm handoffs and standard referral processes influence patient outcomes. Does the content of warm-handoffs or the length of speaking and listening influence patient outcomes (e.g., adherence to treatment plans or increased patient engagement in health care decision-making)? Furthermore, in what ways does cross-training contribute to better team functioning compared to other team processes like team monitoring (e.g., "tracking progress toward goal accomplishment") (Benzer et al., 2016)?

Future investigations also need to shed light on how team structure usage is related to patient and clinic outcomes. Although this was not the focus of my dissertation, my data suggests that teams that used team structures to anticipate the needs of patients felt better prepared to

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address patients' medical and non-medical needs. Thus, there are opportunities to better understand how primary care teams differ with respect to their capabilities to gather and utilize expertise to address the unmet medical and social needs of vulnerable patients while using team structures.

Also, to remedy the lack of observational data in my research, future studies should focus on using methods that enable researchers to naturally observe primary care teams providing team-based care. Such methods such as shadowing primary care providers and using video recordings to capture real-time observations of teams (Morgan, Pullon, & Mckinlay, 2015) could help validate the interview data I gathered for my research.

Although participants in this dissertation generally agreed that team-based care was helpful to patients, it will be advantageous to determine whether certain team structures and how they are enacted have a greater impact on patient outcomes compared to others. For instance, do primary care teams that take a "bundle" approach (Garman, McAlearney, Harrison, Song, & McHugh, 2011) to team structure enactment experience better patient outcomes than teams that do not take that approach. In other words, do patients treated by teams that (1) use team huddles to anticipate patients' needs, (2) enact warm-handoffs to share rich information about patients, *and* (3) use protocols to initiate problem-solving conversations experience better clinical care quality than patients being treated by teams that do not enact these aforementioned team structures in a similar manner? The findings from this dissertation research could potentially generalize to other primary care clinics because it demonstrates how teams enact similar structures in different ways. If teams adapt team structures to the needs of the clinic, we can anticipate that the different types of "bundles" that primary care teams adopt will depend on the types of patients they serve. A closer examination of the different types of bundles that work best

for healthy compared to chronically-ill patients could provide a better understanding of how and when certain team structures should be used to address the needs of specific patient populations.

Research is also needed to understand whether and how high-quality team relationships influence the enactment of primary care team structures. It would be useful to conduct longitudinal studies into how the enactment of primary care team structures change as team relationships strengthen or weaken over time. Do teams that work together for longer periods of time use team structures in different ways than teams that have only just started working together? If and how must primary care teams adapt the use of team structures during periods of high staff turnover? Perhaps other clinic characteristics such as organizational leadership is related to the extent to which team structures are used to encourage teamwork and relational coordination (Gittell et al., 2013)? Research using survey methodologies may be a good starting point to answer these questions because we can start to quantify how organizational characteristics enhance or dampen the relationships between team structure enactment and teamwork processes.

Conclusion

The complexity of primary care, especially involving the care of vulnerable patients, necessitates a team-based approach. In my dissertation I explored how primary care teams use team structures and to a limited extent, how they influenced the cross-disciplinary relationships necessary to deliver team-based care to vulnerable patient populations. My data provides support that how team structures are used has important implications for how teams anticipate the needs of patients, obtain specialized expertise, span disciplinary boundaries, and develop strong relationships needed to deliver team-based care. Team-based care requires that providers reach across disciplinary boundaries to share and integrate expertise relevant to patient care. In this

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respect, coordination is facilitated when team structures are used in a proactive manner, allowing team members the opportunity to plan for specific patients, identify the requisite expertise to meet patients' demands, and develop a shared understanding of how work gets done. This research provides evidence of ways primary care teams can leverage their intra-team relationships and facilitate cross-disciplinary interactions to help them identify and address the comprehensive needs of vulnerable patient groups.

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Vita

Matthew John DePuccio was born on February 22, 1988 in Albany, New York. In May 2010, he graduated with a Bachelor of Science in Biochemistry with a Minor in Sociology from St. Lawrence University in Canton, New York. In May 2012, he obtained a Master of Science in Health Policy and Management from the University at Albany, State University of New York, School of Public Health.

He started his doctoral studies in in Health Services Organization and Research at Virginia Commonwealth University in August 2012. While a doctoral student in the Department of Health Administration at Virginia Commonwealth University, Matthew worked with Dr. Laura McClelland as a graduate research assistant. He also was a program evaluator and data analyst at the Virginia Commonwealth University Office of Health Innovation.

Matthew relocated to Columbus, Ohio in 2019 to begin postdoctoral research at The Ohio State University Wexner Medical Center.

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Formal participation email invitation to primary care personnel

SUBJECT: "You are invited to participate in a research study about primary care teams!"

[Dear Dr. / Mr. / Ms. X]:

My name is Matt DePuccio, a doctoral student from the Department of Health Administration at Virginia Commonwealth University (VCU). My dissertation research focuses on teamwork experiences of primary care team members at various safety net clinics. I invite you to take part in my dissertation study and volunteer 30-40 minutes of your time to have a single interview, with me. Your experience as a health care provider can contribute much to our knowledge of primary care team dynamics.

As for scheduling an interview, I will defer to your time preference so we do not disrupt your patient care schedule. The interview will take place in a private location of your choice. If permitted, the interview will be audio-recorded. My goal is to conduct this interview between August and October.

Your participation in this research is entirely voluntary and confidential. You will not be expected to disclose private information. No one from your organization will have access to your interview responses and your name and identity will not be used in any writing, transcriptions, publications, or presentations. There is no payment for participating.

If you are interested in setting up an interview, please reply to this email and I will reply to your message as soon as possible so we can set a time and location to have the interview.

Again, your assistance would be vital to the success of this research and I look forward to hearing from you! If you have any questions, please contact me.

Thank you for your time,
Matthew DePuccio, M.S.

Semi-structured interview protocol

The following semi-structured interview protocol will be used to direct the one-on-one interviews with primary care team members.

Understanding how primary care team members interact with one another is an important next step to improving patient care delivery. Specifics about team member interactions can provide information about how teams make the most of one another's knowledge, skills, and expertise.

With this in mind, I ask you to please consider the following questions and how they relate to your primary care team. When I say "primary care team," I mean the smallest unit of individuals within the clinic that care for a specific patient panel. Throughout the interview, please avoid using other people's names when answering questions.

1.) What is your role at this clinic?

2.) How long have you been working at this clinic in your current role?

3.) Can you tell me what a typical team looks like at this clinic?

4.) Who is on your team at this clinic? Or, what staff members do you work most frequently with in caring for patients?

5.) Can you describe the types of patients you serve at this clinic? In terms of general health, payer status, or socioeconomic status?
   a. What type of issues do patients often present with?
      i. Issues could be health, insurance, or socioeconomic-related (i.e., relevant to care coordination).

6.) Can you tell me about a time when it was difficult for you to speak up about a patient issue to your team? What was it that got in the way or made it difficult for you to do so?

7.) Are there things about your team that make it easy for you to communication with one another?

8.) How do you communicate these issues to your team?

a. Do these communications ever take place before the shift begins (for example, team huddles or pre-shift meetings?)
b. Can you expand on what happens during huddles? What does your team talk about during these meetings?

9.) Can you give an example of a time when you decided to reach out to someone outside of your core team (it could be a manager, community resource)?
a. Why was it important that you connected with this person or resource? (What motivated you?)
b. What happened after you reached out to them?
c. Did the team recognize the initiative you took?

10.) Do you ever ask for help from someone who is not on your core team? (That is, someone different from the group of individuals you identified above)?
a. Can you give an example?

11.) Can you talk about a community resource your team usually works with? Who interacts with this resource most and why? How did the relationship between the team and the resource come about?

12.) Do you (or another member of your team) experience challenges connecting with these partners or resources?
a. What are some of the things that make it easy for you and your team to connect with these resources?
b. How do you know these community resources help patients? What are the benefits for patients and your team?

Research consent form

VCU IRB NO. HM20005714
An Investigation into Primary Care Team Heterarchies

Greetings! You are being asked to participate in a dissertation research project being conducted by Matt DePuccio from Virginia Commonwealth University, Department of Health Administration.

PURPOSE: The purpose of this study is to learn how changes in primary care team needs cause shifts in team leadership dynamics. Questions will be asked about times when team leadership shifted from one team member to another and the basis for such dynamic shifts in primary care teams.

PROCEDURE: Matt, the researcher, will be interviewing approximately 30-67 clinicians and staff members who work with other people in a primary care team. The interview will take place at your workplace or at another mutually agreed upon location at a time that does not disrupt your practice's care schedule. The interview will last approximately 30-40 minutes. If you agree to participate, you will be asked to talk about the ways you and your team members work together, share information, deal with unexpected situations, and manage team meetings or "huddles." The interviews will be audio-recorded.

RISKS: The potential risks of this study are minimal. There is small risk of loss of confidentiality, and you may be uncomfortable with some of the questions in the interview. If you agree to participate, the contact address and information you provide will be used for matching purposes. Your contact information will be exchanged with a unique pseudonym which will be separated from your transcript to minimize any data transparency risks. These pseudonyms are only accessible to the researcher. Your contact information will not be used for any other purposes except when contacting the sole recipient of the raffle prize (see below). You can skip any questions that you are not comfortable with answering. You can also choose to stop the interview at any time.

ALTERNATIVES: Your alternative is not to participate in this study.

BENEFITS: The study is designed to learn about primary care team dynamics and behaviors at primary care clinics, and not to benefit you personally. But, the information we learn from

people in this study will be adding to the body of knowledge about team dynamics and leadership behaviors that are associated with high-performing primary care teams.

CONFIDENTIALITY: Your interview will be completely confidential. No one from your organization will have access to your interview responses. With your permission, your interview will be audio-recorded and the audio files will be stored in a locked file cabinet. Audio files will be destroyed upon completion of the study. Your name and identity will not be used in any writing about team dynamics in primary care practices. Pseudonyms will be used in all transcriptions, writings, publications or presentations. Identifying details about you or your workplace will be disguised to further protect your confidentiality. People other than those doing the research, such as agencies, VCU departments, and committees, may look at the study records. They make policies about how research is done and have the right to review these records.

VOLUNTARY PARTICIPATION AND WITHDRAWAL: Your participation in this study is voluntary. You may decide to not participate in this study. Your decision not to take part will involve no penalty or loss of benefits to which you are otherwise entitled. If you do participate, you may freely withdraw from the study at any time. Your decision to withdraw will involve no penalty or loss of benefits to which you are otherwise entitled.

PAYMENT FOR PARTICIPATION: Participants completing the interview will not be paid or compensated for their time by Matt or the research team.

CONTACT PERSONS: If you have any questions about this research study, please feel free to contact the researcher, Matt DePuccio at depucciomj@vcu.edu or (804) 828-7411. You can also contact the researcher's faculty advisor and Principal Investigator, Prof. Laura McClelland of VCU Department of Health Administration at (804) 828-6064. If you have questions about your rights as a study participant, please contact the VCU Institutional Review Board, which oversees studies involving human subjects at (804) 827-2157 or msmarkow@vcu.edu.

Thank you so much for your time and participation in this research!

CONSENT: I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. My signature says that I am willing to participate in this study. I will receive a blank copy of the consent form once I have agreed to participate.

_____
Participant Name (Printed)

_____
Participant Signature   Date

_____
Name of Person Conducting Informed Consent Discussion
(Printed)

_____
Signature of Person Conducting Informed Consent Discussion   Date

_____
Principal Investigator Signature (if different from above)   Date

Matthew DePuccio, Co-Investigator

Preliminary codebook from data analysis

Type/Code	Aspects of coordinating that participants discussed	Example
Mechanisms	*Elements of mechanisms that participants discussed and/or which their activity focused on in order to cope with patients' needs*	
Objects & Protocols	Descriptions of instruments that help coordinate work by delineating boundaries and sharing information	
Huddle sheets / worksheets	Descriptions of where patient data is stored and how it is utilized	Pre-visit forms, summaries
Protocols	Descriptions of tools and other documentation outlining individual responsibilities and tasks	Written orders; standing orders
Proximity	Descriptions of work arrangements and/or group activities that bring individuals closer together; purposes of arrangements/activities	
Huddles	Descriptions about the topics discussed during group gatherings; who is involved with these gatherings; how these gatherings are designed	Discussions of work being assigned (who will do what); patient needs; discussing what tasks will be done
Assigned "teams"	Descriptions of who is "teamed" together; characteristics of teams	"Blue team" and "green team"; physician-nurse pairings
Roles	Descriptions of a person's job or expectations (i.e., who does what); descriptions of relationships between two or more individuals	
Care management roles	Descriptions of gathering information from patients and other activities that are expected of providers; descriptions of who does what to manage patient care activities	Patient rooming activities; home visits; gathering external information and outreach calls (e.g., boundary spanning roles)
Role overlap	Descriptions of providers performing tasks that are typically done by other providers	Nurses provide continuity for patients (and clinicians)

Routines	Descriptions of repeated patterns of behaviors that facilitate coordination	
Care processes	Descriptions of processes to facilitate care between team members or departments	Immunization processes; medication management (e.g., labeling, storing, distribution); scrubbing charts
Warm handoffs	Description of exchanging information and the patient from one provider to another	Reaching out to the psychologist for a behavioral health consult